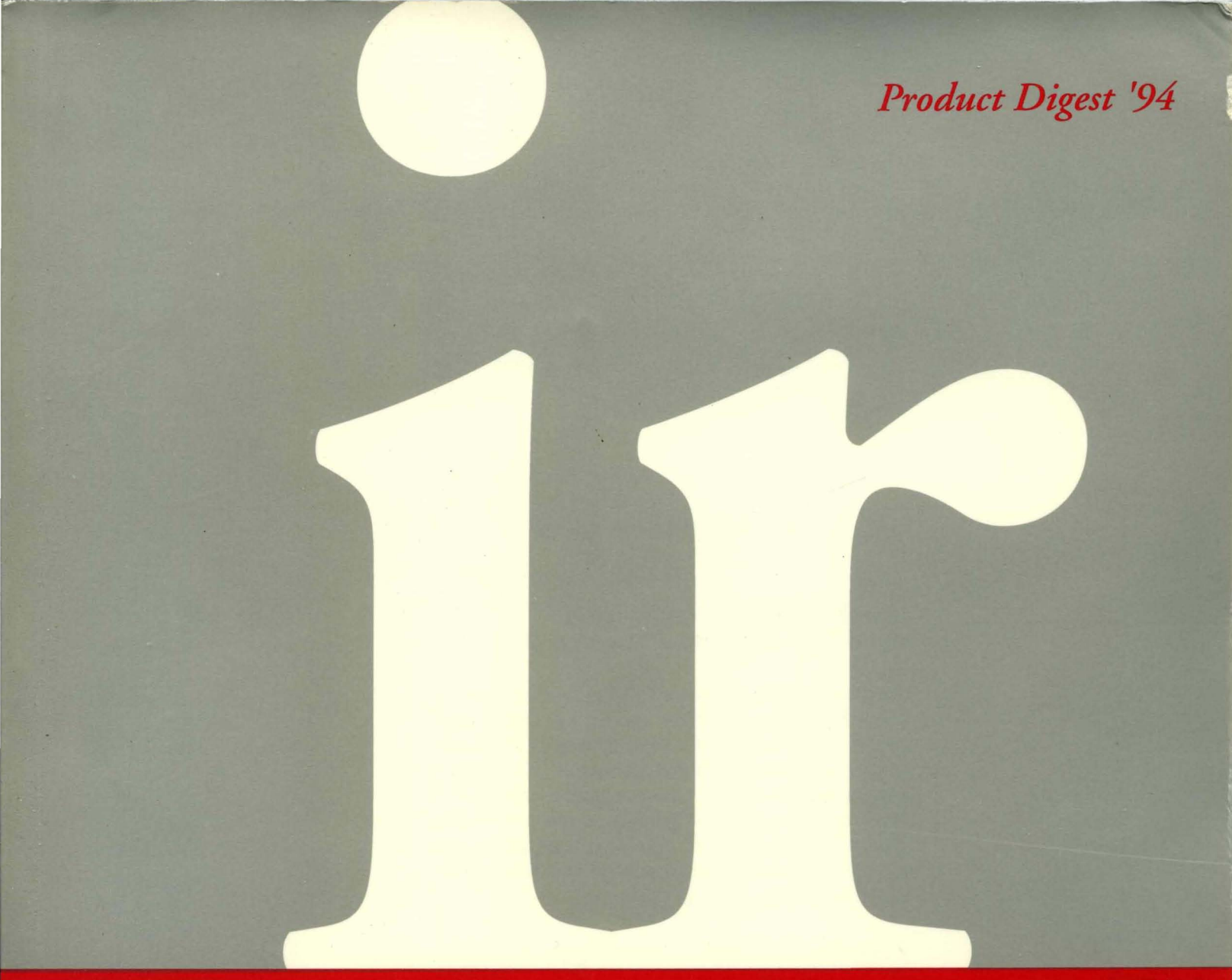
Product Digest '94



Power semiconductors
designed to save you time and money

IOR International Rectifier

SFC-94

International
IOR Rectifier

PRODUCT DIGEST

Short Form Catalog 1994

First Printing

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International
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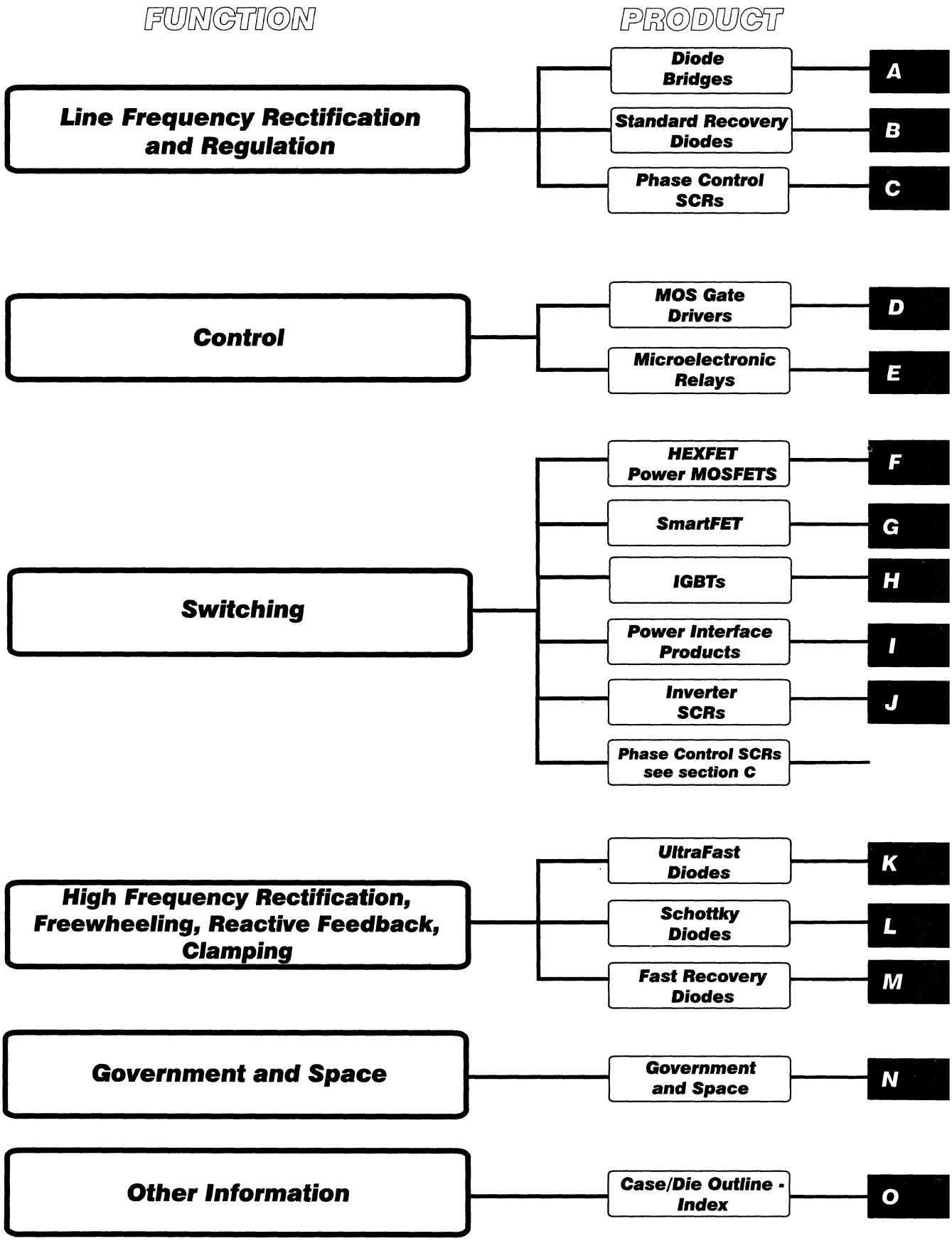
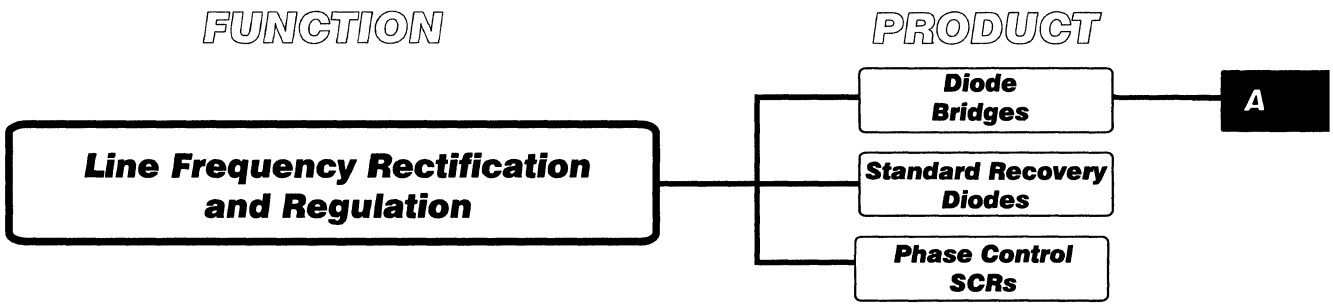
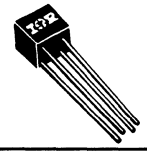
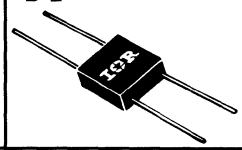
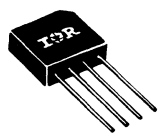



FUNCTION
PRODUCT
Line Frequency Rectification and Regulation
Diode Bridges
Standard Recovery Diodes
Phase Control SCRs
A

Diode Bridges

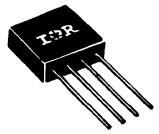
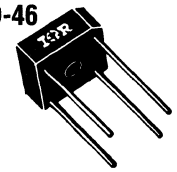
Bridges
Single Phase Diode
1.0 to 3.0 Amps

Part Number	V_{RRM} (V)	I_O @ T_C (A)	I_O @ T_C (°C)	V_{FM} @ I_{FM} Tj = 25°C (V)	V_{FM} @ I_{FM} Tj = 25°C (A)	I_{FSM} (2) 50 Hz (A)	I_{FSM} (2) 60 Hz (A)	I_{RM} (3) (μA)	R_{thJC} (K/W)	Case Outline Number (9)	Notes	Case Style
DF005S DF01S DF02S DF04S DF06S DF08S DF10S	50 100 200 400 600 800 1000	1.0	40	1.0	1.00	30	31	5	60	B1	(6) (7) (8)	D-71 
DF005M DF01M DF02M DF04M DF06M DF08M DF10M	50 100 200 400 600 800 1000	1.0	40	1.0	1.00	30	31	5	60	B2	(7) (8)	D-70 
1B005S 1B01S 1B02S 1B04S 1B06S 1B08S 1B10S	50 100 200 400 600 800 1000	1.0	40	1.0	1.00	30	31	5	60	B1	(6) (7) (8) (10)	D-71 
1B005 1B01 1B02 1B04 1B06 1B08 1B10	50 100 200 400 600 800 1000	1.0	40	1.0	1.00	30	31	5	60	B2	(7) (8) (10)	D-70 
1KAB5E 1KAB10E 1KAB20E 1KAB40E 1KAB60E 1KAB80E 1KAB100E	50 100 200 400 600 800 1000	1.5	45	1.0	1.00	50	52	10	—	B3	(5) (7)	D-38 
18DB05A 18DB1A 18DB2A 18DB4A 18DB6A 18DB8A 18DB10A	50 100 200 400 600 800 1000	1.8	50	1.2	2.83	50	52	10	—	B4		D-2 
2KBB5 2KBB10 2KBB20 2KBB40 2KBB60 2KBB80 2KBB100	50 100 200 400 600 800 1000	2.0	45	1.0	3.00	50	52	10	—	B5	(5) (7)	D-37
2KBB5R 2KBB10R 2KBB20R 2KBB40R 2KBB60R 2KBB80R 2KBB100R	50 100 200 400 600 800 1000	2.0	45	1.0	3.00	50	52	10	—		(5) (7)	

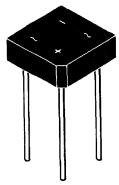
(2) 100% V_{RRM} reapplied. Tj = Tj max. = 150°C.
(3) Tj = 150°C.
(4) Tj = 100°C.
(5) Available with 3mm and 5mm cropped leads. To specify add suffix 'L3' for 3mm and 'L5' for 5mm, e.g., 1KAB10EL3
(6) Available on tape reel as per outline drawing on page 0-2. To specify add 'TRR16' or 'TR16' suffix, e.g., 1B02STRR16, DF02STR16.
(7) I_O @ ambient temperature.
(8) R_{th} is junction-to-ambient.
(9) For case outline drawing see page 0-2.
(10) Available in Europe only.

Bridges
Single Phase Diode
1.0 to 3.0 Amps

International IOR Rectifier

Part Number	V_{RRM} (V)	I_O @ T_C (A)	I_O @ T_C (°C)	V_{FM} @ I_{FM} Tj = 25°C (V)	V_{FM} @ I_{FM} Tj = 25°C (A)	I_{FSM} (2) 50 Hz (A)	I_{FSM} (2) 60 Hz (A)	I_{RM} (3) (µA)	R_{thJC} (K/W)	Case Outline Number (9)	Notes	Case Style
2KBP005 2KBP01 2KBP02 2KBP04 2KBP06 2KBP08 2KBP10	50 100 200 400 600 800 1000	2.0	50	1.0	2.00	60	63	10	—	B6	(5) (7)	D-44 
KBPC1005 KBPC101 KBPC102 KBPC104 KBPC106 KBPC108 KBPC110	50 100 200 400 600 800 1000	3.0	50	1.0	1.50	50	55	10	—	B7		D-46 

Bridges
Single Phase Diode
6.0 to 8.0 Amps

Part Number	V_{RRM} (V)	I_O @ T_C (A)	I_O @ T_C (°C)	V_{FM} @ I_{FM} Tj = 25°C (V)	V_{FM} @ I_{FM} Tj = 25°C (A)	I_{FSM} (2) 50 Hz (A)	I_{FSM} (2) 60 Hz (A)	I_{RM} (3) (µA)	R_{thJC} (K/W)	Case Outline Number (9)	Notes	Case Style
KBPC6005 KBPC601 KBPC602 KBPC604 KBPC606 KBPC608 KBPC610	50 100 200 400 600 800 1000	6.0	50	1.0	3.00	100	109	10	—	B8		D-72 
KBPC8005 KBPC801 KBPC802 KBPC804 KBPC806 KBPC808 KBPC810	50 100 200 400 600 800 1000	8.0	50	1.0	3.00	125	137	400	—			

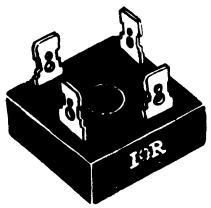
Bridges
Single Phase Schottky

Part Number	V_{RRM} (V)	I_O @ T_C (A)	I_O @ T_C (°C)	V_{FM} @ I_{FM} Tj = 25°C (V)	V_{FM} @ I_{FM} Tj = 25°C (A)	I_{FSM} (2) 50 Hz (A)	I_{FSM} (2) 60 Hz (A)	I_{RM} (4) (µA)	R_{thJC} (K/W)	Case Outline Number (9)	Notes	Case Style
1BQ20 1BQ40	20 40	1.0	45	0.65	1.00	30	31	5	60	B2	(7) (8)	D-70 

(2) 100% V_{RRM} reapplied. Tj = Tj max. = 150°C.
(3) Tj = 150°C.
(4) Tj = 100°C.
(5) Available with 3mm and 5mm cropped leads. To specify add suffix 'L3' for 3mm and 'L5' for 5mm, e.g., 1KAB10EL3
(6) Available on tape reel as per outline drawing on page 0-2. To specify add 'TRR16' or 'TR16' suffix, e.g., 1B02STRR16.
(7) I_O @ ambient temperature.
(8) R_{th} is junction-to-ambient.
(9) For case outline drawing see page 0-2.

Bridges
Single Phase Diode
10–35 Amps

Part Number		V_{RRM} (V)	I_O (A)	T_C (°C)	V_{FM} @ I_F (V)	@ I_F (A)	I_{FSM} (3) 50 Hz (A)	I_{FSM} (3) 60 Hz (A)	R_{thJC} DC (1) (K/W)	Case Outline Number (4)	Notes	Case Style
	100JB05L	50								B1	(2) (5)	D-34A
	100JB1L	100										
	100JB2L	200										
	100JB4L	400	10	65	1.3	16	125	130	3.5			
	100JB6L	600										
	100JB8L	800										
	100JB10L	1000										
	100JB12L	1200										
	100JB14L	1400										
	100JB16L	1600										
26MB05A	250JB05L	50										
26MB10A	250JB1L	100										
26MB20A	250JB2L	200										
26MB40A	250JB4L	400	25	65	1.1	40	335	350	1.7			
26MB60A	250JB6L	600										
26MB80A	250JB8L	800										
26MB100A	250JB10L	1000										
26MB120A	250JB12L	1200										
26MB140A	250JB14L	1400										
26MB160A	250JB16L	1600										
36MB05A	35MB05A	50										
36MB10A	35MB10A	100										
36MB20A	35MB20A	200										
36MB40A	35MB40A	400	35	60	1.2	55	400	420	1.2			
36MB60A	35MB60A	600										
36MB80A	35MB80A	800										
36MB100A	35MB100A	1000										
36MB120A	35MB120A	1200										
36MB140A	35MB140A	1400										
36MB160A	35MB160A	1600										



U.L. RECOGNIZED
File no: E62320

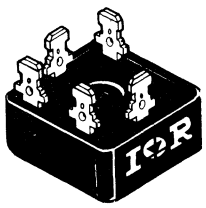
(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 2700V–50 Hz.
(3) 100% V_{RRM} reapplied. T_j = T_j max. = 150°C.
(4) For case outline drawing see page 0-2.
(5) V_{FM} @ 25°C.

Bridges

Three Phase Diode

25–160 Amps

International IOR Rectifier

Part Number	V_{RRM} (V)	I_O (A)	T_C (°C)	V_{FM} @ I_F (V)	@ I_F (A)	I_{FSM} (4) 50 Hz (A)	I_{FSM} (4) 60 Hz (A)	R_{thJC} DC (1) (K/W)	Case Outline Number (5)	Notes	Case Style
26MT5 26MT10 26MT20 26MT40 26MT60 26MT80 26MT100 26MT120 26MT140 26MT160	50 100 200 400 600 800 1000 1200 1400 1600	25	70	1.26	40	300	314	1.42	B2	(3)	D-63 
36MT5 36MT10 36MT20 36MT40 36MT60 36MT80 36MT100 36MT120 36MT140 36MT160	50 100 200 400 600 800 1000 1200 1400 1600	35	60	1.19	40	400	420	1.16			U.L. RECOGNIZED File no: E62320
60MT80K 60MT100K 60MT120K 60MT140K 60MT160	800 1000 1200 1400 1600	60	85	1.75	100	350	370	0.370	B3	(2)	
70MT80K 70MT100K 70MT120K 70MT140K 70MT160	800 1000 1200 1400 1600	70	85	1.55	100	400	420	0.292			
90MT80K 90MT100K 90MT120K 90MT140K 90MT160	800 1000 1200 1400 1600	90	90	1.6	150	650	680	0.210			
110MT80K 110MT100K 110MT120K 110MT140K 110MT160K	800 1000 1200 1400 1600	110	90	1.4	150	800	840	0.178			
130MT80K 130MT100K 130MT120K 130MT140K 130MT160K	800 1000 1200 1400 1600	130	85	1.63	200	950	1000	0.155			
160MT80K 160MT100K 160MT120K 160MT140K 160MT160K	800 1000 1200 1400 1600	160	85	1.49	200	1200	1260	0.121			U.L. RECOGNIZED File no: E78996

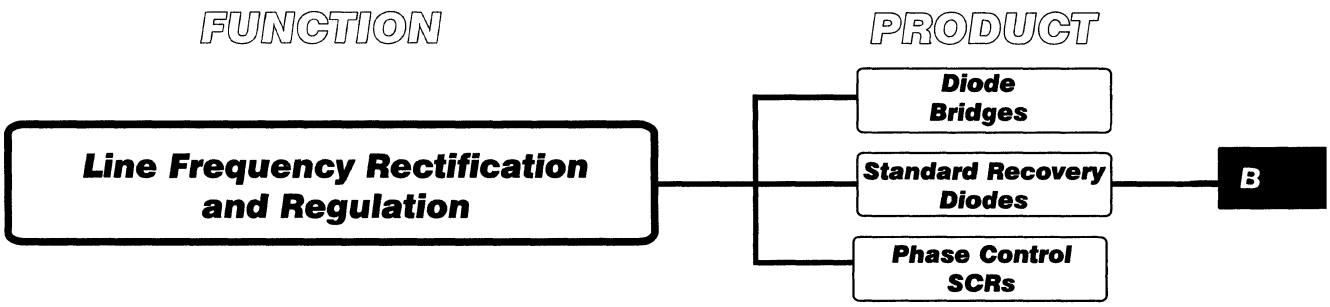
(1) Value given for R_{thJC} is per module.

(2) RMS isolation voltage: 4000V–50 Hz.

(3) RMS isolation voltage: 2700V–50 Hz.

(4) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 150°C.

(5) For case outline drawing see page 0-2.


FUNCTION
PRODUCT
Line Frequency Rectification and Regulation
Diode Bridges
Standard Recovery Diodes
Phase Control SCRs
B

Diodes

Die

International
IOR Rectifier

Pre-Passivated Diode Die [1]

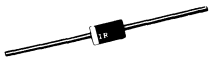
Die Part No. (2)	Side Dimension (Inches)	Passivation	Current $I_{F(AV)}$ (A) (3)	Voltage Range (V)	Equiv. Device Series
IR150DR-G	0.150	Silicone Rubber	16	100–1200	6F, 12F, 16F
IR180DR-G	0.180	Silicone Rubber	25	100–1200	21PT, 4AF, 100JB, 250JB 36MB-A, P100, 26MT, P400
IR210DR-G	0.210	Silicone Rubber	40	100–1200	8AF, 40HF, High Voltage 100JB, 250JB, 35MB-A, 36MT B40HF, B40D/J
IR230DR-G	0.230	Silicone Rubber	45	100–1200	—
IR280DR-G	0.280	Silicone Rubber	70	100–1200	70HF
IR350DR-G	0.350	Silicone Rubber	90	100–1200	85HF, IRKH/L41–56 IRKD/E56–71, T40HF, T70HF
IR480DR-G	0.480	Silicone Rubber	120	100–1200	IRKD/E91, IRKH/L71–91 T85HF, T110HF
IR520DR-G	0.520	Silicone Rubber	150	100–1200	200HF
IR590DR-G	0.590	Silicone Rubber	200	100–1200	300HF

To specify voltage, add suffix to die part number as follows:

SUFFIX	01	02	04	06	08	10	12
V_{RRM}	100	200	400	600	800	1000	1200

(1) For die outline drawing see page 0-2.
(2) Types listed have standard gold metallization on both sides, (suffix G).
(3) Values strongly dependent on assembly details.

Diodes
Standard Recovery
750 mA–50 Amps

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ $\pi \times I_{F(AV)}$ (V)	R_{thJC} DC (°C/W)	Case Outline Number (8)	Notes	Case Style
SM4001TR SM4002TR SM4003TR SM4004TR SM4005TR SM4006TR SM4007TR	50 100 200 400 600 800 1000	1	75	28	30	1.10	30	R1	(6) (9)	SMB 
1N4001 1N4002 1N4003 1N4004 1N4005 1N4006 1N4007	50 100 200 400 600 800 1000	1	75	28	30	1.1	0.18	R2	(5) (6) (9)	DO-41 (DO-204AL) 
1N5401 1N5402 1N5404 1N5406 1N5407 1N5408	100 200 400 600 800 1000	3	105	191	200	1.2		R3	(6) (9)	DO-201AD 
21PT5 21PT10 21PT20 21PT40 21PT60	50 100 200 400 600	20	110	300	314	1.2	2	R4	(2) (3) (9)	B-46 
8AF05NPP 8AF1NPP 8AF2NPP 8AF4NPP	50 100 200 400	50	150	600	628	1.45	0.6	R5	(4) (7) (9)	B-47PP 

(1) Tj = Tj max, 100% V_{RRM} reapplied.
(2) For T_C column read Ttab.
(3) For R_{thJC} column read RthJ-tabs.
(4) Cathode to stud. For anode to stud change "N" to "R" in basic part number, e.g., 8AF4RPP etc.
(5) V_{FM} at rated $I_{F(AV)}$.
(6) Available on tape reel. See page 0-2.
(7) Additional packages available.
(8) For case outline drawing see page 0-2.
(9) V_{FM} measured at Tj = 25°C.

Diodes
Standard Recovery
6–40 Amps

International IOR Rectifier

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	T_C (°C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ $\pi \times I_{F(AV)}$ (V)	R_{thJC} DC (°C/W)	Case Outline Number (6)	Notes	Case Style
6F10 6F20 6F40 6F60 6F80 6F100 6F120	100 200 400 600 800 1000 1200	6	158	134	141	1.1	2.5	R6	(2) (3) (7)	DO-203AA (DO-4)
12F10 12F20 12F40 12F60 12F80 12F100 12F120	100 200 400 600 800 1000 1200	12	144	225	235	1.26	2			
1N1199A 1N1200A 1N1201A 1N1202A 1N1203A 1N1204A 1N1205A 1N1206A 1N3670A 1N3671A 1N3672A 1N3673A	50 100 150 200 300 400 500 600 700 800 900 1000	12	150	230	240	1.35	2		(2) (7)	
12F10B 12F20B 12F40B 12F60B 12F80B 12F100B 12F120B	100 200 400 600 800 1000 1200	12	146	285	300	1.2	2		(2) (3) (7)	
16F10 16F20 16F40 16F60 16F80 16F100 16F120	100 200 400 600 800 1000 1200	16	140	295	310	1.23	1.6			
25F10 25F20 25F40 25F60 25F80 25F100 25F120	100 200 400 600 800 1000 1200	25	120	300	314	0.9	1.5			
1N3208 1N3209 1N3210 1N3211 1N3212 1N3213 1N3214	50 100 200 300 400 500 600	15	150	239	250	1.5	0.65	R7	(2) (4)	DO-203AB (DO-5)
1N1183 1N1184 1N1185 1N1186 1N1187 1N1188 1N1189 1N1190 1N3765 1N3766 1N3767 1N3768	50 100 150 200 300 400 500 600 700 800 900 1000	35	140	480 380	500 400	1.7 1.8	1		(2) (7)	
40HF10 40HF20 40HF40 40HF60 40HF80 40HF100 40HF120 40HF140 40HF160	100 200 400 600 800 1000 1200 1400 1600	40	140 110	480	500	1.3	1		(2) (3) (5) (7)	

(1) T_j = T_j max, 100% V_{RRM} reapplied.
(2) Cathode to stud. For Anode to stud add "R" to Basic part number (e.g., 12FR10, 40FR10, 1N3208R).
(3) Available with metric stud; to specify add "M" to the end of part number (e.g., 6F10M, 40HF10M).
(4) V_{FM} for JEDEC type is registered value at max. T_j.
(5) Leaded version available – to specify add "1" to second digit on part number (e.g., 41HF120. Leaded and sleeved version available – to specify add "2" to second digit on part number (e.g., 42HF120).
(6) For case outline drawing see page 0-2.
(7) V_{FM} measured at T_j = 25°C.

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ $\pi \times I_{F(AV)}$ (V)	R_{thJC} DC (°C/W)	Case Outline Number (5)	Notes	Case Style
1N1183A 1N1184A 1N1185A 1N1186A 1N1187A 1N1188A 1N1189A 1N1190A	50 100 150 200 300 400 500 600	40	150	765	800	1.3	1.1	**R7**	(2) (6)	**DO-203AB** (DO-5)
1N2128A 1N2129A 1N2130A 1N2131A 1N2133A 1N2135A 1N2137A 1N2138A	50 100 150 200 300 400 500 600	60	140	860	900	1.3	0.65			
70HF10 70HF20 70HF40 70HF60 70HF80 70HF100 70HF120 70HF140 70HF160	100 200 400 600 800 1000 1200 1400 1600	70	140 110	1000	1050	1.35	0.45		(2) (3) (4) (6)	
73HF10 73HF20 73HF40 73HF60 73HF80 73HF100 73HF120	100 200 400 600 800 1000 1200	70	140	1000	1050	1.35	0.45	**R8**	(2) (6)	
85HF10 85HF20 85HF40 85HF60 85HF80 85HF100 85HF120 85HF140 85HF160	100 200 400 600 800 1000 1200 1400 1600	85	140 110	1450	1500	1.2	0.35	**R7**	(2) (3) (4) (6)	
88HF10 88HF20 88HF40 88HF60 88HF80 88HF100 88HF120	100 200 400 600 800 1000 1200	85	140	1450	1500	1.2	0.35	**R8**	(2) (6)	

(1) 100% V_{RRM} reapplied.

(2) Cathode to stud. For anode to stud add "R" to basic part number (e.g., 1N1183RA, 73HFR10, 85HFR10).

(3) Leaded version available; to specify add "1" to second digit on part number (e.g., 71HF120, 86HF120).
Leaded and sleeved version available – to specify add "2" to second digit on part number (e.g., 72HFR120).

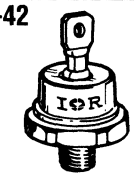
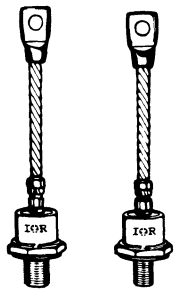
(4) Available with metric stud: to specify add "M" to the end of part number (e.g., 70HF10M).

(5) For case outline drawing see page 0-2.

(6) V_{FM} measured at Tj = 25°C.

Diodes
Standard Recovery
100–150 Amps

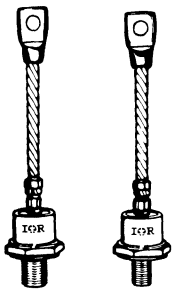
International
IOR Rectifier

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ I_{FM} (V)	V_{FM} @ I_{FM} (A)	R_{thJC} (°C/W)	Case Outline Number (19)	Notes	Case Style
1N3288A 1N3289A 1N3290A 1N3291A 1N3292B 1N3293A 1N3294A 1N3295A 1N3296A	100 200 300 400 500 600 800 1000 1200	100	130	2200	2300	1.50	314	0.4	**R9**	(2) (3) (4)	**DO-205AA** (DO-8)
150K5A 150K10A 150K20A 150K30A 150K40A 150K60A 150K80A 150K100A	50 100 200 300 400 600 800 1000	150	150	3000	3140	1.33	470	0.25		(2) (5) (6) (7) (17)	
150KS5 150KS10 150KS20 150KS40 150KS60 150KS80A 150KS100A	50 100 200 400 600 800 1000	150	150	3000	3140	1.33	470	0.25	**R10**	(2) (17)	**B-42** 
100HF20PV 100HF40PV 100HF60PV 100HF80PV 100HF100PV 100HF120PV 100HF140PV 100HF160PV	200 400 600 800 1000 1200 1400 1600	100	125	1500	1570	1.70	500	0.4	**R16** **(R13)**	(2) (7) (8) (9) (17)	**DO-205AC** (DO-30) **DO-205AA** (DO-8)
130HF20PV 130HF40PV 130HF60PV 130HF80PV 130HF100PV 130HF120PV 130HF140PV 130HF160PV	200 400 600 800 1000 1200 1400 1600	130	125	1680	1760	1.50	500	0.3			
150HF20PV 150HF40PV 150HF60PV 150HF80PV 150HF100PV 150HF120PV 150HF140PV 150HF160PV	200 400 600 800 1000 1200 1400 1600	150	125	2900	3040	1.53	470	0.22			

(1) Tj = Tj max, 100% V_{RRM} reapplied.
(2) Cathode to stud. For anode to stud add "R" to basic part number (e.g., 1N3291RA, 150KR10A, 100HFR20PV).
(3) V_{FM} for JEDEC types is registered value at max Tj.
(4) 1N3288 series also available.
(5) Available with stud top case (152K...A, 152L...A).
(6) Available with flag terminal (154K...A, 154L...A).
(7) Available with metric stud: To specify add "M" to part number (e.g., 150K10AM, 100HF20MV, SD150N02MV).
(8) Available with flat base: To specify add "F" to part number (e.g., 100HF20FV, 45LF20, SD150N02FV).
(9) DO-30 standard, for DO-8 case change "P" to "W" (e.g., 100HF20WV, SD150N02WV).
(17) V_{FM} measured at Tj = 25°C.
(19) For case outline drawing see page 0-2.

B

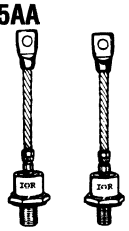
Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ I_{FM} (V)	V_{FM} @ I_{FM} (A)	R_{thJC} (°C/W)	Case Outline Number (19)	Notes	Case Style
1N3111 1N3085 1N3086 1N3087 1N3088 1N3089 1N3090 1N3091 1N3092 1N5162	50 100 200 300 400 500 600 800 1000 1200	150	150	2850	3000	1.20	470	0.25	**R17**	(2) (3)	**DO-205AA** (DO-30)
150L5A 150L10A 150L20A 150L40A 150L60A 150L80A 150L100A	50 100 200 400 600 800 1000	150	150	3000	3140	1.33	470	0.25		(2) (5) (6) (7) (17)	
45L10 45L20 45L40 45L60 45L80 45L100 45L120 45L140 45L160	100 200 400 600 800 1000 1200 1400 1600	150	150	3000	3140	1.33	470	0.25	**R17** **R18**	(2) (7) (8) (17)	
SD150N02PV SD150N04PV SD150N06PV SD150N08PV SD150N10PV SD150N12PV SD150N14PV SD150N16PV SD150N18PC SD150N20PC SD150N22PC SD150N24PC SD150N25PC	200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2500	150	125	3000	3170	1.50	470	0.23	**R11 (R14)** **R12 (R15)**	(3) (7) (8) (9) (10)	**DO-205AC** (DO-30) **DO-205AA** (DO-8)
200HF20PV 200HF40PV 200HF60PV 200HF80PV 200HF100PV 200HF120PV 200HF140PV 200HF160PV	200 400 600 800 1000 1200 1400 1600	200	125	3700	3870	1.45	628	0.17	**R16 (R13)**	(2) (3) (7) (8) (9)	



(1) Tj = Tj max, 100% V_{RRM} reapplied.
(2) Cathode to stud. For anode to stud add "R" to basic part number (e.g., 200HFR20PV).
(3) V_{FM} measured at Tj = Tj max.
(5) Available with stud top case (152K...A, 152L...A).
(6) Available with flag terminal (154K...A, 154L...A).
(7) Available with metric stud: To specify add "M" to part number (e.g., SD150N02MV).
(8) Available with flat base: To specify add "F" to part number (e.g., 45LF20, SD150N02FV).
(9) DO-30 standard, for DO-8 case change "P" to "W" (e.g., SD150N02WV).
(10) Cathode to stud, for anode change "N" to "R" (SD150R02PV).
(17) V_{FM} measured at Tj = 25°C.
(19) For case outline drawing see page 0-2.

Diodes
Standard Recovery
200–275 Amps

International IOR Rectifier

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (1) 50 Hz (A)	60 Hz (A)	V_{FM} @ I_{FM} (V)	(A)	R_{thJC} (°C/W)	Case Outline Number (19)	Notes	Case Style
SD200N02PV	200	200	110	3950	4140	1.40	630	0.23	**R11 (R14)**	(3) (7) (8) (9) (10)	**DO-205AC** (DO-30) **DO-205AA** (DO-8) 
SD200N04PV	400										
SD200N06PV	600										
SD200N08PV	800										
SD200N10PV	1000										
SD200N12PV	1200										
SD200N14PV	1400										
SD200N16PV	1600										
SD200N18PC	1800								**R12 (R15)**		
SD200N20PC	2000										
SD200N22PC	2200										
SD200N24PC	2400										
1N3735	100	250	130	4300	4500	1.30	785	0.18	**R19**	(2) (3)	**DO-205AB** (DO-9)
1N3736	200										
1N3737	300										
1N3738	400										
1N3739	500										
1N3740	600										
1N3741	800										
1N3742	1000										
1N3743	1200										
1N2054	50	250	135	4300	4500	1.25	785	0.18			
1N2055	100										
1N2057	200										
1N2059	300										
1N2061	400										
1N2064	600										
1N2066	800										
1N2067	300										
1N2068	1000										
70U10	100	250	145	5500	5750	1.30	785	0.18	**R19**	(2) (8) (17)	
70U20	200										
70U40	400										
70U60	600										
70U80	800										
70U100	1000										
70U120	1200								**R20**		
70U140	1400										
70U160	1600										
1N4044	50	275	120	4800	5000	1.35	865	0.18	**R19**	(2) (3) (17)	
1N4045	100										
1N4046	150										
1N4047	200										
1N4048	250										
1N4049	300										
1N4050	400										
1N4051	500										
1N4052	600										
1N4053	700										
1N4054	800										
1N4055	900										
1N4056	1000										

(1) Tj = Tj max, 100% V_{RRM} reapplied.
(2) Cathode to stud. For anode to stud add "R" to basic part number (e.g., 1N3735R).
(3) V_{FM} measured at Tj = Tj max.
(7) Available with metric stud: To specify add "M" to part number (e.g., SD200N02MV).
(8) Available with flat base: To specify add "F" to part number (e.g., SD200N02FV).
(9) DO-30 standard, for DO-8 case change "P" to "W" (e.g., SD200N02WV).
(10) Cathode to stud, for anode change "N" to "R" (SD200R02PV).
(17) V_{FM} measured at Tj = 25°C.
(19) For case outline drawing see page 0-2.

Diodes
Standard Recovery
300–400 Amps

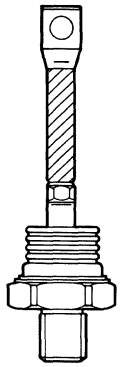
Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ I_{FM} (V)	V_{FM} @ I_{FM} (A)	R_{thJC} (°C/W)	Case Outline Number (19)	Notes	Case Style
300HF20 300HF40 300HF60 300HF80 300HF100 300HF120 300HF140 300HF160	200 400 600 800 1000 1200 1400 1600	300	125	3800	4000	1.38	942	0.115	R21	(2) (7) (8) (20)	DO-205AB (DO-9)
300U10A 300U20A 300U40A 300U60A 300U80A 300U100A	100 200 400 600 800 1000	300	130	5500	5750	1.40	942	0.18	R19	(2) (7) (8) (20)	
301U80 301U100 301U120 301U140 301U160 301U180 301U200 301U220 301U240 301U250	800 1000 1200 1400 1600 1800 2000 2200 2400 2500	300	120	5950	6250	1.62	942	0.15	R22	(2) (12) (17)	
SD300N02PV SD300N04PV SD300N06PV SD300N08PV SD300N10PV SD300N12PV SD300N14PV SD300N16PV SD300N18PC SD300N20PC SD300N22PC SD300N24PC	200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400	380	100	5090	5330	1.83	1180	0.11	R23 R24	(7) (8) (10) (17)	
SD300N25PC SD300N26PC SD300N28PC SD300N30PC SD300N32PC	2500 2600 2800 3000 3200	380	70	5090	5330	1.83	1180	0.11			
SD400N02PV SD400N04PV SD400N06PV SD400N08PV SD400N10PV SD400N12PV SD400N14PV SD400N16PV SD400N18PC SD400N20PC SD400N22PC SD400N24PC	200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400	400	120	6940	7270	1.62	1500	0.11	R23 R24		

(1) Tj = Tj max, 100% V_{RRM} reapplied.
(2) Cathode to stud. For anode to stud add "R" to basic part number (e.g., 300HFR20PV).
(7) Available with metric stud: To specify add "M" to part number (e.g., 300U10AM).
(8) Available with flat base: To specify add "F" to part number (e.g., SD300N02FV).
(10) Cathode to stud, for anode change "N" to "R" (SD300R02PV).
(12) Available with strengthening cone for high g applications, to specify change "301" to "305" in part number.
(17) V_{FM} measured at Tj = Tj max.
(19) For case outline drawing see page 0-2.
(20) V_{FM} measured at Tj = 25°C.

Diodes
Standard Recovery
475–650 Amps

International IOR Rectifier

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ I_{FM} (V)	V_{FM} @ I_{FM} (A)	R_{thJC} (°C/W)	Case Outline Number (19)	Notes	Case Style
SD500N30PC	3000	475	55	6310	6600	1.66	1000	0.1	R25	(7) (8) (10) (17)	B-8
SD500N32PC	3200										
SD500N34PC	3400										
SD500N36PC	3600										
SD500N38PC	3800										
SD500N40PC	4000										
SD500N42PC	4200										
SD500N44PC	4400										
SD500N45PC	4500										
SD600N02PC	200	600	92	10900	11450	1.31	1500	0.1			
SD600N04PC	400										
SD600N06PC	600										
SD600N08PC	800										
SD600N10PC	1000										
SD600N12PC	1200										
SD600N14PC	1400										
SD600N16PC	1600										
SD600N18PC	1800										
SD600N20PC	2000										
SD600N22PC	2200										
SD600N24PC	2400										
SD600N25PC	2500	600	54	8830	9250	1.44	1500	0.1			
SD600N26PC	2600										
SD600N28PC	2800										
SD600N30PC	3000										
SD600N32PC	3200										
470PDA10	100	470	103	5550	5760	1.60	1480	0.1	R26	(14) (15) (18)	DO-200AA (A-PUK)
470PDA20	200										
470PDA40	400										
470PDA60	600										
470PDAR10	100	470	103	5550	5760	1.60	1480	0.1		(14) (16) (18)	
470PDAR20	200										
470PDAR40	400										
470PDAR60	600										
SD300C02C	200	650	55	5090	5330	2.08	1500	0.073		(14) (17) (20)	
SD300C04C	400										
SD300C06C	600										
SD300C08C	800										
SD300C10C	1000										
SD300C12C	1200										
SD300C14C	1400										
SD300C16C	1600										
SD300C18C	1800										
SD300C20C	2000										
SD300C22C	2200										
SD300C24C	2400										
SD300C25C	2500	540	55	5090	5330	2.08	1500	0.073			
SD300C26C	2600										
SD300C28C	2800										
SD300C30C	3000										
SD300C32C	3200										



(1) Tj = Tj max, 100% V_{RRM} reapplied.
(7) Available with metric stud: To specify add "M" to part number (e.g., SD500N30MC).
(8) Available with flat base: To specify add "F" to part number (e.g., SD500N30FC).
(10) Cathode to stud. For anode change "N" to "R" (SD500R30PC).
(14) DC operation, double side cooled.
(15) Cathode to flange, standard in Europe.
(16) Anode to flange, standard in USA.
(17) V_{FM} measured at Tj = Tj max.
(18) V_{FM} measured at Tj = 25°C.
(19) For case outline drawing see page 0-2.
(20) $I_{F(AV)}$ and R_{th} measured to heat sink.

Diodes
Standard Recovery
700–1180 Amps

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_{HS} (A)	(°C)	I_{FSM} (1) 50 Hz (A)	60 Hz (A)	V_{FM} @ I_{FM} (V)	(A)	$R_{thJ\text{-}HS}$ (°C/W)	Case Outline Number (19)	Notes	Case Style
SD400C02C SD400C04C SD400C06C SD400C08C SD400C10C SD400C12C SD400C14C SD400C16C SD400C18C SD400C20C SD400C22C SD400C24C	200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400	800	55	6940	7265	1.86	1930	0.073	**R26**	(14) (20)	**DO-200AA** (A-PUK) 
SD1100C02C SD1100C04C SD1100C06C SD1100C08C SD1100C10C SD1100C12C SD1100C14C SD1100C16C SD1100C18C SD1100C20C SD1100C22C SD1100C24C	200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400	1400	55	10930	11450	1.31	1500	0.038	**R27**		**B-43** (E-PUK) 
SD1100C25C SD1100C26C SD1100C28C SD1100C30C SD1100C32C	2500 2600 2800 3000 3200	1100	55	8830	9250	1.44	1500	0.038			
SD700C30L SD700C32L SD700C34L SD700C36L SD700C38L SD700C40L SD700C42L SD700C44L SD700C45L	3000 3200 3400 3600 3800 4000 4200 4400 4500	700	55	6310	6600	1.66	1000	0.05	**R28**	(14) (18) (20)	**DO-200AB** (B-PUK) 
SD800C24L SD800C25L SD800C26L SD800C28L SD800C30L SD800C32L SD800C34L SD800C36L	2400 2500 2600 2800 3000 3200 3400 3600	1180	55	11440	11980	1.66	2000	0.031			
SD800C38L SD800C40L SD800C42L SD800C44L SD800C45L	3800 4000 4200 4400 4500	1065	55	10250	10750	1.95	2000	0.031			

(1) Tj = Tj max, 100% V_{RRM} reapplied.
(14) DC operation, double side cooled.
(18) I_{FSM} measured at 50% V_{RRM} reapplied.
(19) For case outline drawing see page 0-2.
(20) V_{FM} measured at Tj = Tj max.

Diodes
Standard Recovery
910–2330 Amps

International
IOR Rectifier

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_{HS} (A)	(°C)	I_{FSM} (1) 50 Hz (A)	60 Hz (A)	V_{FM} @ I_{FM} (V)	(A)	R_{thJ-HS} (°C/W)	Case Outline Number (19)	Notes	Case Style
SD1100C02L	200								R28	(14) (20)	DO-200AB (B-PUK)
SD1100C04L	400										
SD1100C06L	600										
SD1100C08L	800										
SD1100C10L	1000										
SD1100C12L	1200	1170	55	10930	11450	1.31	1500	0.05			
SD1100C14L	1400										
SD1100C16L	1600										
SD1100C18L	1800										
SD1100C20L	2000										
SD1100C22L	2200										
SD1100C24L	2400										
SD1100C25L	2500										
SD1100C26L	2600										
SD1100C28L	2800	910	55	8830	9250	1.44	1500	0.05			
SD1100C30L	3000										
SD1100C32L	3200										
SD1500C02L	200										
SD1500C04L	400										
SD1500C06L	600										
SD1500C08L	800										
SD1500C10L	1000										
SD1500C12L	1200										
SD1500C14L	1400										
SD1500C16L	1600	1600	55	14000	14700	1.64	3000	0.031			
SD1500C18L	1800										
SD1500C20L	2000										
SD1500C22L	2200										
SD1500C24L	2400										
SD1500C25L	2500										
SD1500C26L	2600										
SD1500C28L	2800										
SD1500C30L	3000										
SD2000C02L	200										
SD2000C04L	400										
SD2000C06L	600	2330	55	20100	21000	1.55	6000	0.031			
SD2000C08L	800										
SD2000C10L	1000										
SD1700C24K	2400								R29	(14) (18) (20)	DO-200AC (K-PUK)
SD1700C25K	2500										
SD1700C26K	2600										
SD1700C28K	2800	2080	55	20200	21150	1.81	4000	0.02			
SD1700C30K	3000										
SD1700C32K	3200										
SD1700C34K	3400										
SD1700C36K	3600										
SD1700C38K	3800										
SD1700C40K	4000										
SD1700C42K	4200	1875	55	16800	17600	2.11	4000	0.02			
SD1700C44K	4400										
SD1700C45K	4500										

(1) Tj = Tj max, 100% V_{RRM} reapplied.
(14) DC operation, double side cooled.
(18) I_{FSM} measured at 50% V_{RRM} reapplied.
(19) For case outline drawing see page 0-2.
(20) V_{FM} measured at Tj = Tj max.

Diodes
Standard Recovery
2450–9570 Amps

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_{HS} (A)	(T_{HS} °C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ I_{FM} (V)	V_{FM} @ I_{FM} (A)	R_{thJ-HS} (°C/W)	Case Outline Number (19)	Notes	Case Style
SD2500C12K SD2500C14K SD2500C16K SD2500C18K SD2500C20K SD2500C22K SD2500C24K SD2500C25K	1200 1400 1600 1800 2000 2200 2400 2500	2950	55	26050	27300	1.41	4000	0.020	**R29**	(14) (20)	**DO-200AC** (K-PUK) 
SD3000C02K SD3000C04K SD3000C06K SD3000C08K SD3000C10K	200 400 600 800 1000	3800	55	30100	31500	1.22	6000	0.020			
SD4000C30R SD4000C32R SD4000C34R SD4000C36R SD4000C38R SD4000C40R	3000 3200 3400 3600 3800 4000	4450	55	48200	50470	1.44	6000	0.01	**R30**		**B-44** (R-PUK)
SD5000C20R SD5000C22R SD5000C24R SD5000C25R SD5000C26R SD5000C28R SD5000C30R	2000 2200 2400 2500 2600 2800 3000	5570	55	57000	59700	1.32	8000	0.01			
SD6000C12R SD6000C14R SD6000C16R SD6000C18R SD6000C20R SD6000C22R SD6000C24R SD6000C25R	1200 1400 1600 1800 2000 2200 2400 2500	6690	55	64250	67280	1.22	9000	0.01			
SD8500C02R SD8500C04R SD8500C06R	200 400 600	9570	55	80300	84100	0.97	10000	0.01			

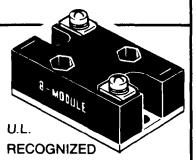
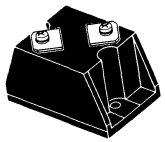
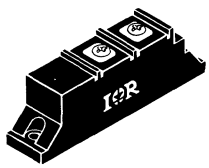
(1) Tj = Tj max, 100% V_{RRM} reapplied.
(14) DC operation, double side cooled.
(19) For case outline drawing see page 0-2.
(20) V_{FM} measured at Tj = Tj max.

Diodes
Avalanche
6–70 Amps

International
IOR Rectifier

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ π x $I_{F(AV)}$ (V)	R_{thJC} DC (°C/W)	P_R (2) (°C/W)	Case Outline Number (5)	Notes	Case Style
A6F40 A6F60 A6F80 A6F100 A6F120	400 600 800 1000 1200	6	158	134	141	1.10	2.50	4	**R6**	(3) (4)	**DO-203AB** (DO-4) 
A12F40 A12F60 A12F80 A12F100 A12F120	400 600 800 1000 1200	12	144	225	235	1.26	2.00	7			
A16F40 A16F60 A16F80 A16F100 A16F120	400 600 800 1000 1200	16	140	295	310	1.23	1.60	15			
A25F40 A25F60 A25F80 A25F100 A25F120	400 600 800 1000 1200	25	120	300	314	0.90	1.5	10			
40HA40 40HA80 40HA100 40HA120 40HA140 40HA160	400 800 1000 1200 1400 1600	40	140 110	480	500	1.30	1.00	11	**R7**		**DO-203AB** (DO-5) 
70HA40 70HA60 70HA80 70HA100 70HA120 70HA140 70HA160	400 600 800 1000 1200 1400 1600	70	140 110	1000	1050	1.35	0.45	20			

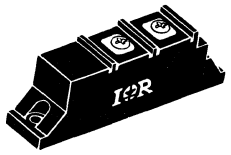
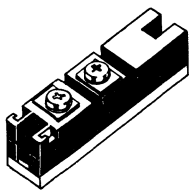
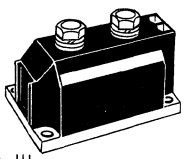
(1) 100% V_{RRM} reapplied.
(2) 10 µs square pulse, Tj = Tj max.
(3) Cathode to stud. For anode to stud, add "R" to basic part number (e.g., A12FR100).
(4) Available with metric stud; to specify add "M" to the end of part number (e.g., 40HA140M, A12F100M).
(5) For case outline drawing see page 0-2.

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (5) 50 Hz (A)	I_{FSM} (5) 60 Hz (A)	(3) V_{FM} (V)	R_{thJC} DC (1) (K/W)	Case Outline Number (6)	Notes	Case Style
B40HF10 B40HF20 B40HF40 B40HF60 B40HF80 B40HF100 B40HF120	100 200 400 600 800 1000 1200	40	85	550	575	1.31	1.20	M2	(2)	 U.L. RECOGNIZED File no: E78996
T40HF10 T40HF20 T40HF40 T40HF60 T40HF80 T40HF100 T40HF120 T40HF140 T40HF160	100 200 400 600 800 1000 1200 1400 1600	40	85	480	500	1.30	1.36	M3	(2)	
T70HF10 T70HF20 T70HF40 T70HF60 T70HF80 T70HF100 T70HF120 T70HF140 T70HF160	100 200 400 600 800 1000 1200 1400 1600	70	85	1000	1050	1.35	0.69			
T85HF10 T85HF20 T85HF40 T85HF60 T85HF80 T85HF100 T85HF120 T85HF140 T85HF160	100 200 400 600 800 1000 1200 1400 1600	85	85	1450	1500	1.27	0.62			
T110HF10 T110HF20 T110HF40 T110HF60 T110HF80 T110HF100 T110HF120 T110HF140 T110HF160	100 200 400 600 800 1000 1200 1400 1600	110	85	1700	1780	1.35	0.47			U.L. RECOGNIZED File no: E78996
IRKE56/04 IRKE56/06 IRKE56/08 IRKE56/10 IRKE56/12	400 600 800 1000 1200	55	100	1350	1420	1.35	0.65	M4	(2) (4) (7)	
IRKE61/14 IRKE61/16 IRKE61/18 IRKE61/20	1400 1600 1800 2000	60	90	1220	1270	1.35	0.65			
IRKE71/04 IRKE71/06 IRKE71/08 IRKE71/10 IRKE71/12	400 600 800 1000 1200	70	100	1500	1570	1.30	0.57			
IRKE81/14 IRKE81/16 IRKE81/18 IRKE81/20	1400 1600 1800 2000	80	88	1350	1410	1.36	0.50			U L RECOGNIZED File no: E78996

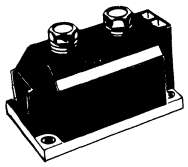
(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3500V-50 Hz.
(3) V_{FM} at $I_{FM} = I_{F(AV)} \times \pi$, T_j = 25°C.
(4) RMS isolation voltage: 3000V-50 Hz.
(5) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 150°C.
(6) For case outline drawing see page 0-2.
(7) New generation of ADD-A-Pak modules are identified by a "/" (slash) in the part number instead of the "-" of the old part number. Consult factory for new type availability.

Power Modules
Diode

International IOR Rectifier

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (5) 50 Hz (A)	I_{FSM} (5) 60 Hz (A)	(3) V_{FM} (V)	R_{thJC} DC (1) (K/W)	Case Outline Number (6)	Notes	Case Style
IRKE91/04 IRKE91/06 IRKE91/08 IRKE91/10 IRKE91/12	400 600 800 1000 1200	90	100	1700	1780	1.30	0.44	M4	(2) (7)	 U.L. RECOGNIZED File no: E78996
IRKE101/14 IRKE101/16 IRKE101/18 IRKE101/20	1400 1600 1800 2000	100	87	1700	1780	1.34	0.44			
IRKE166-04 IRKE166-06 IRKE166-08 IRKE166-10 IRKE166-12 IRKE166-14 IRKE166-16 IRKE166-18 IRKE166-20	400 600 800 1000 1200 1400 1600 1800 2000	165	100	3350	3500	1.69	0.20	M5	(4) (8)	
IRKE196-04 IRKE196-06 IRKE196-08 IRKE196-10 IRKE196-12 IRKE196-14 IRKE196-16 IRKE196-18 IRKE196-20	400 600 800 1000 1200 1400 1600 1800 2000	195	100	4000	4200	1.38	0.20			
IRKE236-04 IRKE236-06 IRKE236-08 IRKE236-10 IRKE236-12 IRKE236-14 IRKE236-16 IRKE236-18 IRKE236-20 IRKE236-22 IRKE236-24	400 600 800 1000 1200 1400 1600 1800 2000 2200 2400	230	100	5500	5700	1.27	0.17			U.L. RECOGNIZED File no: E78996
IRKE250-04 IRKE250-06 IRKE250-08 IRKE250-10 IRKE250-12 IRKE250-14 IRKE250-16 IRKE250-18 IRKE250-20	400 600 800 1000 1200 1400 1600 1800 2000	250	100	5900	6180	1.29	0.16	M6		 U.L. RECOGNIZED File no: E78996

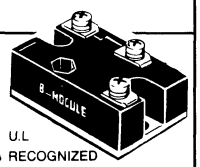
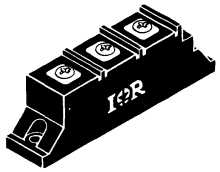
(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3500V-50 Hz.
(3) V_{FM} at $I_{FM} = I_{F(AV)} \times \pi$, T_j = 25°C.
(4) RMS isolation voltage: 3000V-50 Hz.
(5) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 150°C.
(6) For case outline drawing see page 0-2.
(7) New generation of ADD-A-Pak modules are identified by a "/" (slash) in the part number instead of the "-" of the old part number. Consult factory for new type availability.
(8) All devices can be supplied with non toxic material. Add suffix N to part number.

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	T_C (°C)	I_{FSM} (5) 50 Hz (A)	I_{FSM} (5) 60 Hz (A)	(3) V_{FM} (V)	R_{thJC} DC (1) (K/W)	Case Outline Number (6)	Notes	Case Style
IRKE270-04	400	270	100	7500	7850	1.48	0.125	M6	(4) (7)	
IRKE270-06	600									
IRKE270-08	800									
IRKE270-10	1000									
IRKE270-12	1200									
IRKE270-14	1400									
IRKE270-16	1600									
IRKE270-18	1800									
IRKE270-20	2000									
IRKE270-22	2200									
IRKE270-24	2400									
IRKE270-26	2400									
IRKE270-28	2600									
IRKE270-30	3000									
IRKE320-04	400	320	100	8500	8900	1.28	0.125			UL RECOGNIZED File no E78996
IRKE320-06	600									
IRKE320-08	800									
IRKE320-10	1000									
IRKE320-12	1200									
IRKE320-14	1400									
IRKE320-16	1600									
IRKE320-18	1800									
IRKE320-20	2000									

(1) Value given for R_{thJC} is per module.
(3) V_{FM} at $I_{FM} = I_{F(AV)} \times \pi$, T_j = 25°C.
(4) RMS isolation voltage: 3000V–50 Hz.
(5) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 150°C.
(6) For case outline drawing see page .
(7) All devices can be supplied with non-toxic material. Add suffix "N" to part number.

B

Diode/Diode

Part Number (3)	Part Number (4)	Part Number (5)	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	T_C (°C)	I_{FSM} (7) 50 Hz (A)	I_{FSM} (7) 60 Hz (A)	(9) V_{FM} (V)	R_{thJC} DC (1) (K/W)	Case Outline Number (8)	Notes	Case Style
B40D10	—	B40J10	100	40	85	550	575	1.31	0.60	M2	(2)	
B40D20	—	B40J20	200									
B40D40	—	B40J40	400									
B40D60	—	B40J60	600									
B40D80	—	B40J80	800									
B40D100	—	B40J100	1000									
B40D120	—	B40J120	1200									UL RECOGNIZED File no. E78996
IRKD56/04	IRKC56/04	IRKJ56/04	400	55	100	1350	1420	1.35	0.325	M4	(2) (11)	
IRKD56/06	IRKC56/06	IRKJ56/06	600									
IRKD56/08	IRKC56/08	IRKJ56/08	800									
IRKD56/10	IRKC56/10	IRKJ56/10	1000									
IRKD56/12	IRKC56/12	IRKJ56/12	1200									
IRKD61/14	IRKC61/14	IRKJ61/14	1400	60	90	1220	1270	1.35	0.325			
IRKD61/16	IRKC61/16	IRKJ61/16	1600									
IRKD61/18	IRKC61/18	IRKJ61/18	1800									
IRKD61/20	IRKC61/20	IRKJ61/20	2000									
IRKD71/04	IRKC71/04	IRKJ71/04	400	70	100	1500	1570	1.30	0.285			
IRKD71/06	IRKC71/06	IRKJ71/06	600									
IRKD71/08	IRKC71/08	IRKJ71/08	800									
IRKD71/10	IRKC71/10	IRKJ71/10	1000									
IRKD71/12	IRKC71/12	IRKJ71/12	1200									
IRKD81/14	IRKC81/14	IRKJ81/14	1400	80	88	1350	1410	1.36	0.25			
IRKD81/16	IRKC81/16	IRKJ81/16	1600									
IRKD81/18	IRKC81/18	IRKJ81/18	1800									
IRKD81/20	IRKC81/20	IRKJ81/20	2000									
IRKD91/04	IRKC91/04	IRKJ91/04	400	90	100	1700	1780	1.30	0.22			UL RECOGNIZED File no: E78996
IRKD91/06	IRKC91/06	IRKJ91/06	600									
IRKD91/08	IRKC91/08	IRKJ91/08	800									
IRKD91/10	IRKC91/10	IRKJ91/10	1000									
IRKD91/12	IRKC91/12	IRKJ91/12	1200									
IRKD101/14	IRKC101/14	IRKJ101/14	1400	100	87	1700	1780	1.34	0.22			
IRKD101/16	IRKC101/16	IRKJ101/16	1600									
IRKD101/18	IRKC101/18	IRKJ101/18	1800									
IRKD101/20	IRKC101/20	IRKJ101/20	2000									

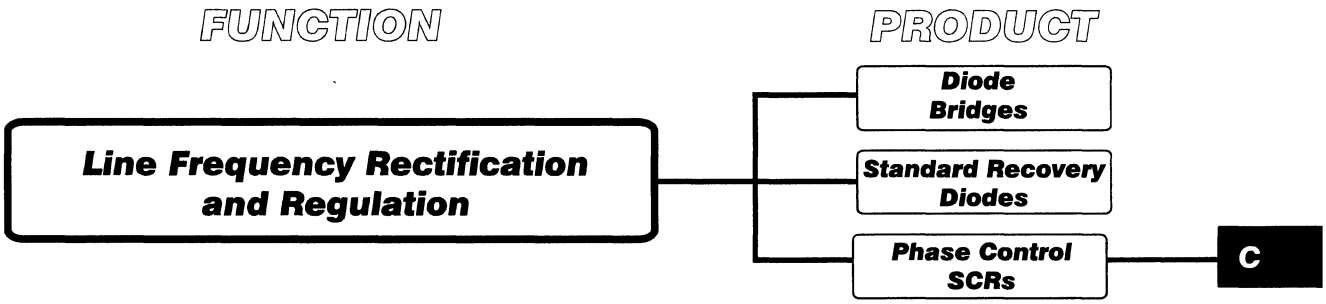
(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3500V–50 Hz.
(3) Doubler circuit.
(4) Center tap, circuit common cathode. Contact factory.
(5) Center tap, circuit common anode. Contact factory.
(7) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 150°C.
(8) For case outline drawing see page 0-2.
(9) V_{FM} at $I_{FM} = I_{F(AV)} \times \pi$, T_j = 25°C.
(11) New generation of ADD-A-Pak modules are identified by a "/" (slash) in the part number instead of the "–" of the old part number. Consult factory for new type availability.

Power Modules
Diode/Diode

International
IOR Rectifier

Part Number (3)	Part Number (4)	Part Number (5)	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	$I_{F(AV)}$ @ T_C (°C)	I_{FSM} (7) 50 Hz (A)	I_{FSM} (7) 60 Hz (A)	(9) V_{FM} (V)	R_{thJC} DC (1) (K/W)	Case Outline Number (8)	Notes	Case Style
IRKD166-04	IRKC166-04	IRKJ166-04	400							M5	(6) (10)	
IRKD166-06	IRKC166-06	IRKJ166-06	600									
IRKD166-08	IRKC166-08	IRKJ166-08	800									
IRKD166-10	IRKC166-10	IRKJ166-10	1000									
IRKD166-12	IRKC166-12	IRKJ166-12	1200	165	100	3350	3500	1.69	0.10			
IRKD166-14	IRKC166-14	IRKJ166-14	1400									
IRKD166-16	IRKC166-16	IRKJ166-16	1600									
IRKD166-18	IRKC166-18	IRKJ166-18	1800									
IRKD166-20	IRKC166-20	IRKJ166-20	2000									
IRKD196-04	IRKC196-04	IRKJ196-04	400									
IRKD196-06	IRKC196-06	IRKJ196-06	600									
IRKD196-08	IRKC196-08	IRKJ196-08	800									
IRKD196-10	IRKC196-10	IRKJ196-10	1000									
IRKD196-12	IRKC196-12	IRKJ196-12	1200									
IRKD196-14	IRKC196-14	IRKJ196-14	1400	195	100	4000	4200	1.38	0.10			
IRKD196-16	IRKC196-16	IRKJ196-16	1600									
IRKD196-18	IRKC196-18	IRKJ196-18	1800									
IRKD196-20	IRKC196-20	IRKJ196-20	2000									
IRKD196-22	IRKC196-22	IRKJ196-22	2200									
IRKD196-24	IRKC196-24	IRKJ196-24	2400									
IRKD236-04	IRKC236-04	IRKJ236-04	400									
IRKD236-06	IRKC236-06	IRKJ236-06	600									
IRKD236-08	IRKC236-08	IRKJ236-08	800									
IRKD236-10	IRKC236-10	IRKJ236-10	1000									
IRKD236-12	IRKC236-12	IRKJ236-12	1200	230	100	5500	5750	1.27	0.085			
IRKD236-14	IRKC236-14	IRKJ236-14	1400									
IRKD236-16	IRKC236-16	IRKJ236-16	1600									
IRKD236-18	IRKC236-18	IRKJ236-18	1800									
IRKD236-20	IRKC236-20	IRKJ236-20	2000									U.L. RECOGNIZED File no: E78996
IRKD250-04	IRKC250-04	IRKJ250-04	400							M6		
IRKD250-06	IRKC250-06	IRKJ250-06	600									
IRKD250-08	IRKC250-08	IRKJ250-08	800									
IRKD250-10	IRKC250-10	IRKJ250-10	1000									
IRKD250-12	IRKC250-12	IRKJ250-12	1200	250	100	5900	6180	1.29	0.08			
IRKD250-14	IRKC250-14	IRKJ250-14	1400									
IRKD250-16	IRKC250-16	IRKJ250-16	1600									
IRKD250-18	IRKC250-18	IRKJ250-18	1800									
IRKD250-20	IRKC250-20	IRKJ250-20	2000									
IRKD270-04	IRKC270-04	IRKJ270-04	400									
IRKD270-06	IRKC270-06	IRKJ270-06	600									
IRKD270-08	IRKC270-08	IRKJ270-08	800									
IRKD270-10	IRKC270-10	IRKJ270-10	1000									
IRKD270-12	IRKC270-12	IRKJ270-12	1200									
IRKD270-14	IRKC270-14	IRKJ270-14	1400									
IRKD270-16	IRKC270-16	IRKJ270-16	1600	270	100	7500	7850	1.48	0.063			
IRKD270-18	IRKC270-18	IRKJ270-18	1800									
IRKD270-20	IRKC270-20	IRKJ270-20	2000									
IRKD270-22	IRKC270-22	IRKJ270-22	2200									
IRKD270-24	IRKC270-24	IRKJ270-24	2400									
IRKD270-26	IRKC270-26	IRKJ270-26	2600									
IRKD270-28	IRKC270-28	IRKJ270-28	2800									
IRKD270-30	IRKC270-30	IRKJ270-30	3000									
IRKD320-04	IRKC320-04	IRKJ320-04	400									
IRKD320-06	IRKC320-06	IRKJ320-06	600									
IRKD320-08	IRKC320-08	IRKJ320-08	800									
IRKD320-10	IRKC320-10	IRKJ320-10	1000									
IRKD320-12	IRKC320-12	IRKJ320-12	1200	320	100	8500	8900	1.28	0.063			
IRKD320-14	IRKC320-14	IRKJ320-14	1400									
IRKD320-16	IRKC320-16	IRKJ320-16	1600									
IRKD320-18	IRKC320-18	IRKJ320-18	1800									
IRKD320-20	IRKC320-20	IRKJ320-20	2000									U.L. RECOGNIZED File no: E78996

(1) Value given for R_{thJC} is per module.
(3) Doubler circuit.
(4) Center tap, circuit common cathode. Contact factory.
(5) Center tap, circuit common anode. Contact factory.
(6) RMS isolation voltage: 3000V-50 Hz.
(7) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 150°C.
(8) For case outline drawing see page 0-2.
(9) V_{FM} at $I_{FM} = I_{F(AV)} \times \pi$, $T_j = 25°C$.
(10) All devices can be supplied with non toxic material. Add suffix N to part number.


FUNCTION
PRODUCT
Line Frequency Rectification and Regulation
Diode Bridges
Standard Recovery Diodes
Phase Control SCRs

Phase Control SCRs

Thyristors
Phase Control Type
25–80 Amps

Part Number	V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ (A)	$I_{T(AV)}$ @ T_C (A)	(T_C °C)	I_{TSM} (1) 50 Hz (A)	I_{TSM} (1) 60 Hz (A)	V_{GT} (2) (V)	I_{GT} (2) (mA)	V_{TM} (3) (V)	dv/dt (4) (V/µs)	R_{thJC} DC (°C/W)	Case Outline Number (6)	Notes	Case Style
10RIA10	100	25	10	85	190	200	2.0	60	1.75	300	1.85	T1	(5)	TO-208AA (TO-48)
10RIA20	200													
10RIA40	400													
10RIA60	600													
10RIA80	800													
10RIA100	100													
10RIA120	1200													
2N681	25	25	16	65	145	150	2.0	40	2.00	250	1.50			
2N682	50													
2N683	100													
2N684	150													
2N685	200													
2N686	250													
2N687	300													
2N688	400													
2N689	500													
2N690	600													
2N691	700													
2N692	800													
16RIA10	100	35	16	85	285	300	2.0	60	1.75	300	1.15			
16RIA20	200													
16RIA40	400													
16RIA60	600													
16RIA80	800													
16RIA100	1000													
16RIA120	1200													
16RIA140	1400			80	190	200			1.80					
16RIA160	1600			80	190	200			1.80					
2N5204	600	35	22	40	285	300	2.0	40	2.30	250	1.50		(6)	
2N5205	800													
2N5206	1000													
2N5207	1200													
22RIA10	100	35	22	85	335	355	2.0	60	1.70	300	0.86			
22RIA20	200													
22RIA40	400													
22RIA60	600													
22RIA80	800													
22RIA100	1000													
2NRIA120	1200													
22RIA140	1400			80	285	300			1.80					
22RIA160	1600			80	285	300			1.80					
25RIA10	100	40	25	85	350	370	2.0	60	1.70	300	0.75			
25RIA20	200													
25RIA40	400													
25RIA60	600													
25RIA80	800													
25RIA100	1000													
25RIA120	1200													
25RIA140	1400			80	335	355			1.80					
25RIA160	1600			80	335	355			1.80					
50RIA10	100	80	50	94	1200	1255	2.5	100	1.60	500	0.35	T2	(5)	TO-208AC (TO-65) 
50RIA20	200													
50RIA40	400													
50RIA60	600													
50RIA80	800													
50RIA100	1000													
50RIA120	1200													
50RIA140	1400				900	942								
50RIA160	1600				900	942								

(1) 100% V_{RRM} reapplied @ $T_j = T_j$ max. 125°C.
(2) T_j = 25°C.
(3) $\pi \times I_{T(AV)}$ @ T_j = 25°C.
(4) Exponential to 0.67 V_{DRM}, T_j = 125°C.
(5) Available with metric stud; to specify add "M" to the end of the part number (e.g., 25RIA120M, 50RIA120M).
(6) For case outline drawing see page 0-2.

Thyristors
Phase Control Type
110–125 Amps

International
IOR Rectifier

Part Number	V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ (A)	$I_{T(AV)}$ @ T_C (A)	(T_C °C)	I_{TSM} (1) 50 Hz (A)	60 Hz (A)	V_{GT} (2) (V)	I_{GT} (2) (mA)	V_{TM} @ I_{TM} (V)	(A)	dv/dt (4) (V/µs)	R_{thJC} DC (°C/W)	Case Outline Number (15)	Notes	Case Style
2N1792	50												T3	(8) (16)	TO-208AD (TO-83)
2N1793	100														
2N1794	150														
2N1795	200														
2N1795	250														
2N1797	300														
2N1798	400	110	70	65	955	1000	2.5	70	1.85	220	200	0.4			
2N1799	500														
2N1800	600														
2N1801	700														
2N1802	800														
2N1803	900							110	2.00						
2N1804	1000														
2N3091	600												T4		TO-209AC (TO-94)
2N3092	700														
2N3093	800														
2N3094	900	110	70	62	955	1000	2.5	110	1.85	220	200	0.4			
2N3095	1000														
2N3096	1100														
2N3097	1200														
2N3098	1300														
2N1909	25												T4		
2N1910	50														
2N1911	100														
2N1912	150														
2N1913	200														
2N1914	250	110	70	62	955	1000	2.5	70	1.85	220	200	0.4			
2N1915	300														
2N1916	400														
2N1805	500														
2N1806	600														
2N1807	700														
70RIA10	100													(6) (7) (9) (16)	
70RIA20	200														
70RIA40	400														
70RIA60	600	110	70	80	1200	1255	2.5	100	1.80	220	500	0.35			
70RIA80	800														
70RIA100	1000														
70RIA120	1200														
2N2023	25													(8) (16)	
2N2024	50														
2N2025	100														
2N2026	150	110	70	85	955	1000	2.0	70	1.90	220	50	0.4			
2N2027	200														
2N2028	250														
2N2029	300														
2N2030	400														
80RIA10	100													(6) (7) (9) (16)	
80RIA20	200														
80RIA40	400														
80RIA60	600	125	80	91	1600	1700	2.5	120	1.40	250	500	0.35			
80RIA80	800														
80RIA100	1000														
80RIA120	1200														

(1) @ $T_j = T_j$ max. 125°C and 100% V_{RRM} reapplied.
(2) T_j = 25°C.
(4) Linear to 0.8 V_{DRM}, T_j = 125°C.
(6) For faston terminals add "1" to the second or third digit in part number (e.g., 71RIA40).
(7) Flag terminal available, to specify add "2" to second or third digit in part number (e.g., 72RIA10).
(8) dV/dt: exponential to 100% V_{DRM}, T_j = 125°C.
(9) dV/dt: exponential to 0.67 V_{DRM}, T_j = 125°C.
(15) For case outline drawing see page 0-2.
(16) V_{TM} measured at Tj = 25°C.

Thyristors
Phase Control Type
125–440 Amps

Part Number	V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ (A)	$I_{T(AV)}$ @ T_C (A)	@ T_C (°C)	I_{TSM} (1) 50 Hz (A)	I_{TSM} (1) 60 Hz (A)	V_{GT} (2) (V)	I_{GT} (2) (mA)	V_{TM} @ I_{TM} (V)	@ I_{TM} (A)	dv/dt (4) (V/µs)	R_{thJC} DC (°C/W)	Case Outline Number (15)	Notes	Case Style
80RKI10 80RKI20 80RKI40 80RKI60 80RKI80 80RKI100 80RKI120	100 200 400 600 800 1000 1200	125	80	90	1600	1700	2.0	100	1.60	250	500	0.35	T6	(5) (6) (7) (16)	TO-209AC (TO-94)
110RKI10 110RKI20 110RKI40 110RKI60 110RKI80 110RKI100 110RKI120	100 200 400 600 800 1000 1200	172	110	90	1750	1830	2.0	100	1.50	350	500	0.27			
ST110S02P0V ST110S04P0V ST110S06P0V ST110S08P0V ST110S10P0V ST110S12P0V ST110S14P0 ST110S16P0	200 400 600 800 1000 1200 1400 1600	175	110	90	2270	2380	3.0	150	1.52	350	500	0.195	T5 T7	(10) (12) (16)	
180RKI20 180RKI40 180RKI60 180RKI80 180RKI100	200 400 600 800 1000	285	180	80	3500	3660	2.5	150	1.35	570	500	0.15	T9	(5) (6) (7) (16)	TO-209AB (TO-93)
ST180S02P0V ST180S04P0V ST180S06P0V ST180S08P0V ST180S10P0V ST180S12P0V ST180S14P0 ST180S16P0 ST180S18P0 ST180S20P0	200 400 600 800 1000 1200 1400 1600 1800 2000	314	200	85	4200	4400	3.0	150	1.75	570	500	0.105	T8 T10	(10) (12) (16)	
ST230S02P0V ST230S04P0V ST230S06P0V ST230S08P0V ST230S10P0V ST230S12P0V ST230S14P0 ST230S16P0	200 400 600 800 1000 1200 1400 1600	361	230	85	4800	5000	3.0	150	1.55	720	500	0.1	T8 T10	(10) (11) (12) (16)	
ST280S02P0V ST280S04P0V ST280S06P0V	200 400 600	440	280	85	6600	6900	3.0	150	1.28	880	500	0.105	T8	(10) (11) (12) (16)	

(1) @ $T_j = T_j$ max. 125°C and 100% V_{RRM} reapplied.
(2) T_j = 25°C.
(4) Linear to 0.8 V_{DRM}, T_j = 125°C.
(5) Available with metric stud; to specify add "M" to the end of the part number (e.g., 80RKI20M).
(6) For faston terminals add "1" to the second or third digit in part number (e.g., 111RKI20).
(7) Flag terminal available, to specify add "2" to second or third digit in part number (e.g., 112RKI20).
(10) Available with metric stud; to specify change "P" to "M" in part number (e.g., ST110S10M0V).
(11) Available with flat base: to specify change "P" to "F" in part number (e.g., ST230S10F0V).
(12) For faston terminals change last "0" to "1" in part number (e.g., ST110S02P1V).
(15) For case outline drawing see page 0-2.
(16) V_{TM} measured at $T_j = T_j$ max.

Thyristors
Phase Control Type
470–1130 Amps

International IOR Rectifier

Part Number	V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ (A)	$I_{T(AV)}$ @ T_C (A)	(T_C °C)	I_{TSM} (1) 50 Hz (A)	I_{TSM} (1) 60 Hz (A)	V_{GT} (2) (V)	I_{GT} (2) (mA)	V_{TM} @ I_{TM} (V)	V_{TM} @ I_{TM} (A)	dv/dt (4) (V/µs)	R_{thJC} DC (°C/W)	Case Outline Number (15)	Notes	Case Style
ST300S02P0	200	470	300	75	6730	7040	3.0	200	1.66	940	500	0.1	T11	(10) (11) (12) (16)	TO-209AE (TO-118) 
ST300S04P0	400														
ST300S06P0	600														
ST300S08P0	800														
ST300S10P0	1000														
ST300S12P0	1200														
ST300S14P0	1400														
ST300S16P0	1600														
ST300S18P0	1800														
ST300S20P0	2000														
ST330S02P0	200	520	330	75	7570	7920	3.0	200	1.51	1040	500	0.1			
ST330S04P0	400														
ST330S06P0	600														
ST330S08P0	800														
ST330S10P0	1000														
ST330S12P0	1200														
ST330S14P0	1400														
ST330S16P0	1600														

Part Number	V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ (A)	$I_{T(AV)}$ @ T_{HS} (A)	(T_{HS} °C)	I_{TSM} (1) 50 Hz (A)	I_{TSM} (1) 60 Hz (A)	V_{GT} (2) (V)	I_{GT} (2) (mA)	V_{TM} @ I_{TM} (V)	V_{TM} @ I_{TM} (A)	dv/dt (4) (V/µs)	$R_{thJ\text{-}HS}$ DC (°C/W)	Case Outline Number (15)	Notes	Case Style
ST110C02C0	200	500	255	55	2270	2380	3.0	150	1.90	550	500	0.11	T12	(12) (14) (16)	TO-200AB (A-PUK) 
ST110C04C0	400														
ST110C06C0	600														
ST110C08C0	800														
ST110C10C0	1000														
ST110C12C0	1200														
ST110C14C0	1400														
ST110C16C0	1600														
ST180C02C0	200	660	350	55	4200	4400	3.0	150	1.96	750	500	0.08			
ST180C04C0	400														
ST180C06C0	600														
ST180C08C0	800														
ST180C10C0	1000														
ST180C12C0	1200														
ST180C14C0	1400														
ST180C16C0	1600														
ST180C18C0	1800														
ST180C20C0	2000														
ST230C02C0	200	780	410	55	4800	5000	3.0	150	1.69	880	500	0.08			
ST230C04C0	400														
ST230C06C0	600														
ST230C08C0	800														
ST230C10C0	1000														
ST230C12C0	1200														
ST230C14C0	1400														
ST230C16C0	1600														
ST280C02C0	200	960	500	55	6600	6900	3.0	150	1.36	1050	500	0.08			
ST280C04C0	400														
ST280C06C0	600														
ST280CH02C0	200	1130	500	80	6000	6300	3.0	150	1.35	1000	500	0.08		(12) (13) (14) (16)	
ST280CH04C0	400														
ST280CH06C0	600														

(1) @ $T_j = T_j$ max. 125°C and 100% V_{RRM} reapplied.
(2) T_j = 25°C.
(4) Linear to 0.8 V_{DRM}, T_j = 125°C.
(10) Available with metric stud; to specify change "P" to "M" in part number (e.g., ST300S10M0).
(11) Available with flat base: to specify change "P" to "F" in part number (e.g., ST330S10F0).
(12) For faston terminals change last "0" to "1" in part number (e.g., ST300S02P1).
(13) Max T_j = 150°C.
(14) DC operation, double sided cooled.
(15) For case outline drawing see page 0-2.
(16) V_{TM} measured at Tj = Tj max.

Thyristors
Phase Control Type
1290–1857 Amps

Part Number	V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ (A)	$I_{T(AV)}$ @ T_{HS} (A)	T_{HS} (°C)	I_{TSM} (1) 50 Hz (A)	I_{TSM} (1) 60 Hz (A)	V_{GT} (2) (V)	I_{GT} (2) (mA)	V_{TM} @ I_{TM} (V)	V_{TM} @ I_{TM} (A)	dv/dt (4) (V/µs)	R_{thJ-HS} DC (°C/W)	Case Outline Number (15)	Notes	Case Style
ST300C02C0 ST300C04C0 ST300C06C0 ST300C08C0 ST300C10C0 ST300C12C0 ST300C14C0 ST300C16C0 ST300C18C0 ST300C20C0	200 400 600 800 1000 1200 1400 1600 1800 2000	1290	650	55	6730	7040	3.0	200	2.18	1630	500	0.04	T13	(12) (14) (16)	TO-200AB (E-PUK)
ST330C02C0 ST330C04C0 ST330C06C0 ST330C08C0 ST330C10C0 ST330C12C0 ST330C14C0 ST330C16C0	200 400 600 800 1000 1200 1400 1600	1420	720	55	7570	7920	3.0	200	1.96	1800	500	0.04			
ST380C02C0 ST380C04C0 ST380C06C0	200 400 600	1900	960	55	12600	13200	3.0	200	1.60	3000	500	0.04			
ST380CH02C0 ST380CH04C0 ST380CH06C0	200 400 600	2220	960	80	10500	11000	3.0	200	1.58	2900	500	0.04		(12) (13) (14) (16)	
ST300C02L0 ST300C04L0 ST300C06L0 ST300C08L0 ST300C10L0 ST300C12L0 ST300C14L0 ST300C16L0 ST300C18L0 ST300C20L0	200 400 600 800 1000 1200 1400 1600 1800 2000	1115	560	55	6730	7040	3.0	200	2.18	1635	500	0.05	T14	(12) (14) (16)	TO-200AC (B-PUK)
ST330C02L0 ST330C04L0 ST330C06L0 ST330C08L0 ST330C10L0 ST330C12L0 ST330C14L0 ST330C16L0	200 400 600 800 1000 1200 1400 1600	1230	650	55	7570	7925	3.0	200	1.90	1730	500	0.05			
ST700C04L0 ST700C06L0 ST700C08L0 ST700C10L0 ST700C12L0 ST700C14L0 ST700C16L0 ST700C18L0 ST700C20L0 ST700C22L0	400 600 800 1000 1200 1400 1600 1800 2000 2200	1857	910	55	13200	13800	3.0	200	1.80	2000	500	0.031			

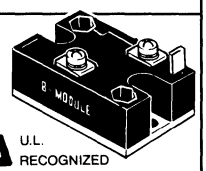
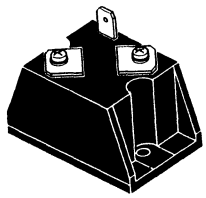
(1) @ $T_j = T_j$ max. 125°C and 100% V_{RRM} reapplied.
(2) T_j = 25°C.
(4) Linear to 0.8 V_{DRM}, T_j = 125°C.
(12) For faston terminals change last "0" to "1" in part number (e.g., ST300C02C1).
(13) Max T_j = 150°C.
(14) DC operation, double sided cooled.
(15) For case outline drawing see page 0-2.
(16) V_{TM} measured at Tj = Tj max.

Thyristors
Phase Control Type
2000–5950 Amps

International
IOR Rectifier

Part Number	V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ (A)	$I_{T(AV)}$ @ T_{HS} (A)	(T_{HS} °C)	I_{TSM} (1) 50 Hz (A)	I_{TSM} (1) 60 Hz (A)	V_{GT} (2) (V)	I_{GT} (2) (mA)	V_{TM} @ I_{TM} (V)	V_{TM} @ I_{TM} (A)	dv/dt (4) (V/µs)	$R_{thJ\text{-}HS}$ DC (°C/W)	Case Outline Number (15)	Notes	Case Style
ST730C04L0 ST730C06L0 ST730C08L0 ST730C10L0 ST730C12L0 ST730C14L0 ST730C16L0 ST730C18L0	400 600 800 1000 1200 1400 1600 1800	2000	990	55	15000	15700	3.0	200	1.62	2000	500	0.031	T14	(12) (14) (16)	TO-200AC (B-PUK)
ST780C02L0 ST780C04L0 ST780C06L0	200 400 600	2700	1350	55	20550	21500	3.0	200	1.31	3600	500	0.031			
ST1200C04K0 ST1200C06K0 ST1200C08K0 ST1200C10K0 ST1200C12K0 ST1200C14K0 ST1200C16K0 ST1200C18K0 ST1200C20K0	400 600 800 1000 1200 1400 1600 1800 2000	3080	1650	55	25700	26900	3.0	200	1.73	4000	500	0.021	T15	(12) (14) (16)	A-24 (K-PUK)
ST1230C04K0 ST1230C06K0 ST1230C08K0 ST1230C10K0 ST1230C12K0 ST1230C14K0 ST1230C16K0	400 600 800 1000 1200 1400 1600	2310	1470	70	28000	29500	3.0	200	1.62	4000	500	0.021			
ST1280C02K0 ST1280C04K0 ST1280C06K0	200 400 600	2300	2300	55	35700	37400	3.0	200	1.44	8000	500	0.021			
ST1900C45R0 ST1900C46R0 ST1900C48R0 ST1900C50R0 ST1900C52R0	4500 4600 4800 5000 5200	3500	1625	80	22000	23500	4.0	400	2.10	2900	500	0.0115	T16	(12) (14) (16)	A-36 (R-PUK)
ST2100C35R0 ST2100C36R0 ST2100C38R0 ST2100C40R0 ST2100C42R0 ST2100C44R0 ST2100C45R0	3500 3600 3800 4000 4200 4400 4500	3850	1770	80	29000	30350	4.0	400	1.88	2900	500	0.0115			
ST2600C20R0 ST2600C22R0 ST2600C24R0 ST2600C26R0 ST2600C28R0 ST2600C30R0	2000 2200 2400 2600 2800 3000	4800	2220	80	36800	38500	4.0	400	1.45	2900	500	0.0115			
ST3230C10R0 ST3230C12R0 ST3230C14R0 ST3230C16R0 ST3230C18R0	1000 1200 1400 1600 1800	5950	2785	80	49000	51300	4.0	400	1.30	2900	500	0.0115			

(1) @ $T_j = T_j$ max. 125°C and 100% V_{RRM} reapplied (50% for ST1900, ST2100, and ST3230 series).
(2) T_j = 25°C.
(4) Linear to 0.8 V_{DRM}, T_j = 125°C.
(12) For faston terminals change last "0" to "1" in part number (e.g., ST730C04L1).
(14) DC operation, double sided cooled.
(15) For case outline drawing see page 0-2.
(16) V_{TM} measured at Tj = Tj max.

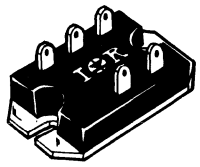
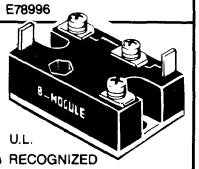
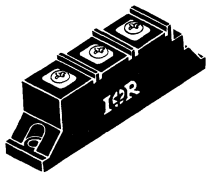
Part Number	V_{RRM} V_{DRM} (V)	$I_{T(AV)}$ @ T_C (A)	(T_C °C)	I_{TSM} (4) 50 Hz (A)	I_{TSM} (4) 60 Hz (A)	(3) V_{TM} (V)	R_{thJC} DC (1) (K/W)	Case Outline Number (5)	Notes	Case Style
B25RIA10 B25RIA20 B25RIA40 B25RIA60 B25RIA80 B25RIA100 B25RIA120	100 200 400 600 800 1000 1200	25	70	330	345	1.60	1.05	M2	(2)	 U.L. RECOGNIZED File no: E78996
T50RIA10 T50RIA20 T50RIA40 T50RIA60 T50RIA80 T50RIA100 T50RIA120	100 200 400 600 800 1000 1200	50	70	1100	1150	1.60	0.65	M3	(2)	
T70RIA10 T70RIA20 T70RIA40 T70RIA60 T70RIA80 T70RIA100 T70RIA120	100 200 400 600 800 1000 1200	70	70	1400	1460	1.55	0.50			
T90RIA10 T90RIA20 T90RIA40 T90RIA60 T90RIA80 T90RIA100 T90RIA120	100 200 400 600 800 1000 1200	90	70	1500	1570	1.55	0.38			U.L. RECOGNIZED File no: E78996

(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3500V–50 Hz.
(3) $I_{TM} = I_{T(AV)} \times \pi$, $T_j = 25°C$.
(4) 100% V_{RRM} reapplied. $T_j = 125°C$.
(5) For case outline drawing see page 0-2.

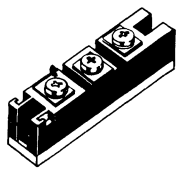
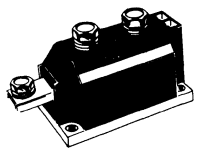
C

Power Modules
Thyristor/Thyristor

International
IOR Rectifier

Part Number (3)	Part Number (4)	V_{RRM} V_{DRM} (V)	$I_{T(AV)}$ @ T_C (A)	T_C (°C)	I_{TSM} (7) 50 Hz (A)	I_{TSM} (7) 60 Hz (A)	R_{thJC} DC (1) (K/W)	Case Outline Number (8)	Notes	Case Style
P171	—	400	12.5	85	300	315	1.12	M1	(6)	 U.L. RECOGNIZED File no: E78996
P172	—	600								
P173	—	800								
P174	—	1000								
P175	—	1200								
P471	—	400	20	85	325	340	0.525			
P472	—	600								
P473	—	800								
P474	—	1000								
P475	—	1200								
B25DS10	B25CS10	100	25	70	330	345	0.525	M2	(2)	 U.L. RECOGNIZED File no: E78996
B25DS20	B25CS20	200								
B25DS40	B25CS40	400								
B25DS60	B25CS60	600								
B25DS80	B25CS80	800								
B25DS100	B25CS100	1000								
B25DS120	B25CS120	1200								
IRKT26/04	—	400	25	85	385	400	0.400	M4	(10) (2)	 U.L. RECOGNIZED File no: E78996
IRKT26/06	—	600								
IRKT26/08	—	800								
IRKT26/10	—	1000								
IRKT26/12	—	1200								
IRKT26/14	—	1400	25	80	450	470	0.400			
IRKT26/16	—	1600								
IRKT41/04	—	400	40	85	715	750	0.300			
IRKT41/06	—	600								
IRKT41/08	—	800								
IRKT41/10	—	1000								
IRKT41/12	—	1200								
IRKT41/14	—	1400	40	80	650	680	0.300			
IRKT41/16	—	1600								
IRKT41/18	—	1800								
IRKT56/04	—	400	55	85	1100	1150	0.250			
IRKT56/06	—	600								
IRKT56/08	—	800								
IRKT56/10	—	1000								
IRKT56/12	—	1200								
IRKT56/14	—	1400	55	80	1050	1100	0.250			
IRKT56/16	—	1600								
IRKT56/18	—	1800								
IRKT71/04	—	400	70	85	1400	1470	0.195			
IRKT71/06	—	600								
IRKT71/08	—	800								
IRKT71/10	—	1000								
IRKT71/12	—	1200								
IRKT71/14	—	1400	70	80	1300	1360	0.195			
IRKT71/16	—	1600								
IRKT71/18	—	1800								
IRKT91/04	—	400	90	85	1400	1470	0.145			
IRKT91/06	—	600								
IRKT91/08	—	800								
IRKT91/10	—	1000								
IRKT91/12	—	1200								
IRKT91/14	—	1400	90	80	1300	1360	0.145			
IRKT91/16	—	1600								
IRKT91/18	—	1800								

(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3500V-50 Hz.
(3) Doubler circuit, positive control.
(4) Center tap, circuit common cathode - contact factory.
(6) RMS isolation voltage: 2500V-50 Hz.
(7) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 125°C.
(8) For case outline drawing see page 0-2.
(10) New generation of ADD-A-Pak modules are identified by a "/" (slash) in the part number instead of the "-" of the old part number. Contact factory for new type availability.

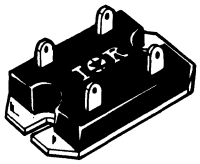
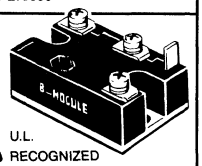
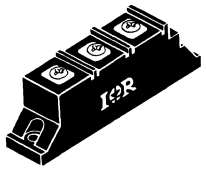
Part Number (3)	Part Number (4)	Part Number (5)	V_{RRM} V_{DRM} (V)	$I_{T(AV)}$ @ T_C (A)	T_C (°C)	I_{TSM} (7) 50 Hz (A)	I_{TSM} (7) 60 Hz (A)	R_{thJC} DC (1) (K/W)	Case Outline Number (8)	Notes	Case Style
IRKT136-04	IRKU136-04	IRKV136-04	400	135	85	2700	2800	0.10	M5	(2) (9)	
IRKT136-06	IRKU136-06	IRKV136-06	600								
IRKT136-08	IRKU136-08	IRKV136-08	800								
IRKT136-10	IRKU136-10	IRKV136-10	1000								
IRKT136-12	IRKU136-12	IRKV136-12	1200								
IRKT136-14	IRKU136-14	IRKV136-14	1400								
IRKT136-16	IRKU136-16	IRKV136-16	1600								
IRKT142-04	IRKU142-04	IRKV142-04	400	140	85	4000	4200	0.085			
IRKT142-06	IRKU142-06	IRKV142-06	600								
IRKT142-08	IRKU142-08	IRKV142-08	800								
IRKT142-10	IRKU142-10	IRKV142-10	1000								
IRKT142-12	IRKU142-12	IRKV142-12	1200								
IRKT142-14	IRKU142-14	IRKV142-14	1400								
IRKT142-16	IRKU142-16	IRKV142-16	1600								
IRKT142-18	IRKU142-18	IRKV142-18	1800								
IRKT142-20	IRKU142-20	IRKV142-20	2000								
IRKT162-04	IRKU162-04	IRKV162-04	400	160	85	4300	4500	0.085			U.L. RECOGNIZED File no: E78996
IRKT162-06	IRKU162-06	IRKV162-06	600								
IRKT162-08	IRKU162-08	IRKV162-08	800								
IRKT162-10	IRKU162-10	IRKV162-10	1000								
IRKT162-12	IRKU162-12	IRKV162-12	1200								
IRKT162-14	IRKU162-14	IRKV162-14	1400								
IRKT162-16	IRKU162-16	IRKV162-16	1600								
IRKT170-04	IRKU170-04	IRKV170-04	400	170	85	4300	4500	0.085	M6		
IRKT170-06	IRKU170-06	IRKV170-06	600								
IRKT170-08	IRKU170-08	IRKV170-08	800								
IRKT170-10	IRKU170-10	IRKV170-10	1000								
IRKT170-12	IRKU170-12	IRKV170-12	1200								
IRKT170-14	IRKU170-14	IRKV170-14	1400								
IRKT170-16	IRKU170-16	IRKV170-16	1600								
IRKT230-04	IRKU230-04	IRKV230-04	400	230	85	6300	6600	0.063			
IRKT230-06	IRKU230-06	IRKV230-06	600								
IRKT230-08	IRKU230-08	IRKV230-08	800								
IRKT230-10	IRKU230-10	IRKV230-10	1000								
IRKT230-12	IRKU230-12	IRKV230-12	1200								
IRKT230-14	IRKU230-14	IRKV230-14	1400								
IRKT230-16	IRKU230-16	IRKV230-16	1600								
IRKT230-18	IRKU230-18	IRKV230-18	1800								
IRKT230-20	IRKU230-20	IRKV230-20	2000								
IRKT250-04	IRKU250-04	IRKV250-04	400	250	85	7150	7500	0.063			U.L. RECOGNIZED File no: E78996
IRKT250-06	IRKU250-06	IRKV250-06	600								
IRKT250-08	IRKU250-08	IRKV250-08	800								
IRKT250-10	IRKU250-10	IRKV250-10	1000								
IRKT250-12	IRKU250-12	IRKV250-12	1200								
IRKT250-14	IRKU250-14	IRKV250-14	1400								
IRKT250-16	IRKU250-16	IRKV250-16	1600								

C

(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3000V-50 Hz.
(3) Doubler circuit, positive control.
(4) Center tap, circuit common cathode. Contact factory
(5) Center tap, circuit common anode. Contact factory
(7) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 125°C.
(8) For case outline drawing see page 0-2.
(9) All devices can be supplied with non toxic material. Add suffix N to part number.

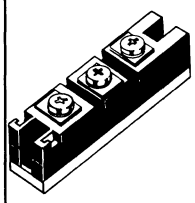
Power Modules
Thyristor/Diode

International
IOR Rectifier

Part Number (3)	Part Number (5)	V_{RRM} V_{DRM} (V)	$I_{T(AV)}$ @ T_C $I_{F(AV)}$ (A)	(T_C) (°C)	I_{TSM}, I_{FSM} (9) 50 Hz (A)	I_{TSM}, I_{FSM} (9) 60 Hz (A)	R_{thJC} DC (1) (K/W)	Case Outline Number (10)	Notes	Case Style
P161	—	400	12.5	85	300	315	1.12	M1	(7)	 U.L. RECOGNIZED File no: E78996
P162	—	600								
P163	—	800								
P164	—	1000								
P165	—	1200								
P461	—	400	20	85	325	340	0.525			
P462	—	600								
P463	—	800								
P464	—	1000								
P465	—	1200								
B25DA10	—	100	25	70	330	345	0.525	M2	(2)	 U.L. RECOGNIZED File no: E78996
B25DA20	—	200								
B25DA40	—	400								
B25DA60	—	600								
B25DA80	—	800								
B25DA100	—	1000								
B25DA120	—	1200								
IRKH26/04	IRKL26/04	400	25	85	500	525	0.400	M4	(2) (11)	
IRKH26/06	IRKL26/06	600								
IRKH26/08	IRKL26/08	800								
IRKH26/10	IRKL26/10	1000								
IRKH26/12	IRKL26/12	1200								
IRKH26/14	IRKL26/14	1400	25	85	450	470	0.400			
IRKH26/16	IRKL26/16	1600								
IRKH41/04	IRKL41/04	400	40	85	715	750	0.300			
IRKH41/06	IRKL41/06	600								
IRKH41/08	IRKL41/08	800								
IRKH41/10	IRKL41/10	1000								
IRKH41/12	IRKL41/12	1200								
IRKH41/14	IRKL41/14	1400	40	80	650	680	0.300			
IRKH41/16	IRKL41/16	1600								
IRKH41/18	IRKL41/18	1800								
IRKH56/04	IRKL56/04	400	55	85	1100	1150	0.250			 U.L. RECOGNIZED File no: E78996
IRKH56/06	IRKL56/06	600								
IRKH56/08	IRKL56/08	800								
IRKH56/10	IRKL56/10	1000								
IRKH56/12	IRKL56/12	1200								
IRKH56/14	IRKL56/14	1400	55	80	1050	1100	0.250			
IRKH56/16	IRKL56/16	1600								
IRKH56/18	IRKL56/18	1800								
IRKH71/04	IRKL71/04	400	70	85	1400	1470	0.195			
IRKH71/06	IRKL71/06	600								
IRKH71/08	IRKL71/08	800								
IRKH71/10	IRKL71/10	1000								
IRKH71/12	IRKL71/12	1200								
IRKH71/14	IRKL71/14	1400	70	85	1300	1360	0.195			
IRKH71/16	IRKL71/16	1600								
IRKH71/18	IRKL71/18	1800								
IRKH91/04	IRKL91/04	400	90	85	1500	1570	0.145			
IRKH91/06	IRKL91/06	600								
IRKH91/08	IRKL91/08	800								
IRKH91/10	IRKL91/10	1000								
IRKH91/12	IRKL91/12	1200								
IRKH91/14	IRKL91/14	1400	90	80	1435	1500	0.145			
IRKH91/16	IRKL91/16	1600								
IRKH91/18	IRKL91/18	1800								

(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3500V–50 Hz.
(3) Doubler circuit, positive control.
(5) Doubler circuit, negative control.
(7) RMS isolation voltage: 2500V–50 Hz.
(9) 100% V_{RRM} reapplied. T_j = T_j max. = 125°C.
(10) For case outline drawing see page 0-2.
(11) New generation of ADD-A-Pak modules are identified by a "/" (slash) in the part number instead of the "–" of the old part number. Consult factory for new type availability.

Part Number (3)	(4)	(5)	(6)	V_{RRM} V_{DRM} (V)	$I_{T(AV)}$ @ T_C $I_{F(AV)}$ (A)	(°C)	I_{TSM}, I_{FSM} (9) 50 Hz (A)	60 Hz (A)	R_{thJC} DC (1) (K/W)	Case Outline Number (10)	Notes	Case Style
IRKH136-04	IRKK136-04	IRKL136-04	IRKN136-04	400						M5	(8) (11)	
IRKH136-06	IRKK136-06	IRKL136-06	IRKN136-06	600								
IRKH136-08	IRKK136-08	IRKL136-08	IRKN136-08	800								
IRKH136-10	IRKK136-10	IRKL136-10	IRKN136-10	1000	135	85	2700	2800	0.100			
IRKH136-12	IRKK136-12	IRKL136-12	IRKN136-12	1200								
IRKH136-14	IRKK136-14	IRKL136-14	IRKN136-14	1400								
IRKH136-16	IRKK136-16	IRKL136-16	IRKN136-16	1600								
IRKH142-04	IRKK142-04	IRKL142-04	IRKN142-04	400								
IRKH142-06	IRKK142-06	IRKL142-06	IRKN142-06	600								
IRKH142-08	IRKK142-08	IRKL142-08	IRKN142-08	800								
IRKH142-10	IRKK142-10	IRKL142-10	IRKN142-10	1000								
IRKH142-12	IRKK142-12	IRKL142-12	IRKN142-12	1200	140	85	4000	4200	0.085			
IRKH142-14	IRKK142-14	IRKL142-14	IRKN142-14	1400								
IRKH142-16	IRKK142-16	IRKL142-16	IRKN142-16	1600								
IRKH142-18	IRKK142-18	IRKL142-18	IRKN142-18	1800								
IRKH142-20	IRKK142-20	IRKL142-20	IRKN142-20	2000								
IRKH162-04	IRKK162-04	IRKL162-04	IRKN162-04	400								
IRKH162-06	IRKK162-06	IRKL162-06	IRKN162-06	600								
IRKH162-08	IRKK162-08	IRKL162-08	IRKN162-08	800								
IRKH162-10	IRKK162-10	IRKL162-10	IRKN162-10	1000	160	85	4300	4500	0.085			
IRKH162-12	IRKK162-12	IRKL162-12	IRKN162-12	1200								
IRKH162-14	IRKK162-14	IRKL162-14	IRKN162-14	1400								
IRKH162-16	IRKK162-16	IRKL162-16	IRKN162-16	1600								
IRKH170-04	IRKK170-04	IRKL170-04	IRKN170-04	400						M6		
IRKH170-06	IRKK170-06	IRKL170-06	IRKN170-06	600								
IRKH170-08	IRKK170-08	IRKL170-08	IRKN170-08	800								
IRKH170-10	IRKK170-10	IRKL170-10	IRKK170-10	1000	170	85	4300	4500	0.085			
IRKH170-12	IRKK170-12	IRKL170-12	IRKN170-12	1200								
IRKH170-14	IRKK170-14	IRKL170-14	IRKN170-14	1400								
IRKH170-16	IRKK170-16	IRKL170-16	IRKN170-16	1600								
IRKH230-04	IRKK230-04	IRKL230-04	IRKN230-04	400								
IRKH230-06	IRKK230-06	IRKL230-06	IRKN230-06	600								
IRKH230-08	IRKK230-08	IRKL230-08	IRKN230-08	800								
IRKH230-10	IRKK230-10	IRKL230-10	IRKN230-10	1000								
IRKH230-12	IRKK230-12	IRKL230-12	IRKN230-12	1200	230	85	6300	6600	0.063			
IRKH230-14	IRKK230-14	IRKL230-14	IRKN230-14	1400								
IRKH230-16	IRKK230-16	IRKL230-16	IRKN230-16	1600								
IRKH230-18	IRKK230-18	IRKL230-18	IRKN230-18	1800								
IRKH230-20	IRKK230-20	IRKL230-20	IRKN230-20	2000								
IRKH250-04	IRKK250-04	IRKL250-04	IRKN250-04	400								
IRKH250-06	IRKK250-06	IRKL250-06	IRKN250-06	600								
IRKH250-08	IRKK250-08	IRKL250-08	IRKN250-08	800								
IRKH250-10	IRKK250-10	IRKL250-10	IRKN250-10	1000	250	85	7150	7500	0.063			
IRKH250-12	IRKK250-12	IRKL250-12	IRKN250-12	1200								
IRKH250-14	IRKK250-14	IRKL250-14	IRKN250-14	1400								
IRKH250-16	IRKK250-16	IRKL250-16	IRKN250-16	1600								



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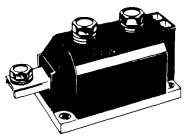

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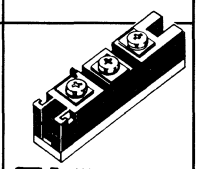
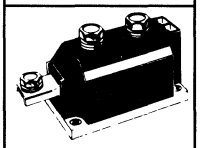
File no. E78996

(1) Value given for R_{thJC} is per module.
(3) Doubler circuit, positive control.
(4) Center tap, circuit common cathode - contact factory.
(5) Doubler circuit, negative control.
(6) Center tap, circuit common anode - contact factory.
(8) RMS isolation voltage: 3000V-50 Hz.
(9) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 125°C.
(10) For case outline drawing see page 0-2.
(11) All devices can be supplied with non toxic material. Add suffix N to part number.

Power Modules

Thyristor with high voltage diode

International
IOR Rectifier

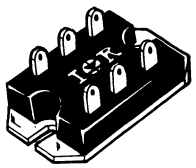
Part Number (3)	Part Number (4)	Voltage Range Thyristor (V)	Voltage Range Diode (V)	$I_{T(AV)}$ @ T_C $I_{F(AV)}$ (A)	$I_{T(AV)}$ @ T_C $I_{F(AV)}$ (°C)	I_{TSM}, I_{FSM} (5) 50 Hz (A)	I_{TSM}, I_{FSM} (5) 60 Hz (A)	R_{thJC} DC (1) (K/W)	Case Outline Number (6)	Notes	Case Style
IRKH136-14D20 IRKH136-16D25	IRKL136-14D20 IRKL136-16D25	1400 1600	2000 2500	135	85	2700	2800	0.100	M5	(2) (7)	 UL RECOGNIZED File no E78996
IRKH142-14D20 IRKH142-16D25 IRKH142-18D28 IRKH142-20D32	IRKL142-14D20 IRKL142-16D25 IRKL142-18D28 IRKL142-20D32	1400 1600 1800 2000	2000 2500 2800 3200	140	85	4000	4200	0.085			
IRKH162-14D20 IRKH162-16D25	IRKL162-14D20 IRKL162-16D25	1400 1600	2000 2500	160	85	4300	4500	0.085			
IRKH170-14D20 IRKH170-16D25	IRKL170-14D20 IRKL170-16D25	1400 1600	2000 2500	170	85	4300	4500	0.085	M6		 UL. RECOGNIZED File no: E78996
IRKH230-14D20 IRKH230-16D25 IRKH230-18D28 IRKH230-20D32	IRKL230-14D20 IRKL230-16D25 IRKL230-18D28 IRKL230-20D32	1400 1600 1800 2000	2000 2500 2800 3200	230	85	6300	6600	0.063			
IRKH250-14D20 IRKH250-16D25	IRKL250-14D20 IRKL250-16D25	1400 1600	2000 2500	250	85	7150	7500	0.063			

(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3000V–50 Hz.
(3) Doubler circuit, positive control.
(4) Doubler circuit, negative control.
(5) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 125°C.
(6) For case outline drawing see page 0-2.
(7) All devices can be supplied with non toxic material. Add suffix N to part number.

Power Modules

Single Phase Controlled Bridges

Part Number (3)	(4)	(5)	V_{RRM} (V)	I_O T_C $I_{(RMS)}$ (A)	(°C)	(A)	$I_{T(AV)}$ $I_{F(AV)}$ (A)	I_{TSM}, I_{FSM} (7) 50 Hz (A)	60 Hz (A)	R_{thJC} DC (1) (K/W)	Circuit Number	Case Outline Number (8)	Notes	Case style
P101	P101K	P101W	P101KW	400								M1	(2)	
P102	P102K	P102W	P102KW	600										
P103	P103K	P103W	P103KW	800	25	85	28	12.5	300	315	0.56	0		
P104	P104K	P104W	P104KW	1000										
P105	P105K	P105W	P105KW	1200										
P111	P111K	P111W	P111KW	400										
P112	P112K	P112W	P112KW	600										
P113	P113K	P113W	P113KW	800	25	85	28	12.5	300	315	0.56	1		
P114	P114K	P114W	P114KW	1000										
P115	P115K	P115W	P115KW	1200										
P121	P121K	—	—	400										
P122	P122K	—	—	600										
P123	P123K	—	—	800	25	85	28	12.5	300	315	0.56	2		
P124	P124K	—	—	1000										
P125	P125K	—	—	1200										
P131	P131K	—	—	400										
P132	P132K	—	—	600										
P133	P133K	—	—	800	25	85	28	12.5	300	315	0.56	3		
P134	P134K	—	—	1000										
P135	P135K	—	—	1200										
P401	P401K	P401W	P401KW	400										
P402	P402K	P402W	P402KW	600										
P403	P403K	P403W	P403KW	800	40	85	44	20	325	340	0.263	0		
P404	P404K	P404W	P404KW	1000										
P405	P405K	P405W	P405KW	1200										
P411	P411K	P411W	P411KW	400										
P412	P412K	P412W	P412KW	600										
P413	P413K	P413W	P413KW	800	40	85	44	20	325	340	0.263	1		
P414	P414K	P414W	P414KW	1000										
P415	P415K	P415W	P415KW	1200										
P421	P421K	—	—	400										
P422	P422K	—	—	600										
P423	P423K	—	—	800	40	85	44	20	325	340	0.263	2		
P424	P424K	—	—	1000										
P425	P425K	—	—	1200										
P431	P431K	—	—	400										
P432	P432K	—	—	600										
P433	P433K	—	—	800	40	85	44	20	325	340	0.263	3		
P434	P434K	—	—	1000										
P435	P435K	—	—	1200										



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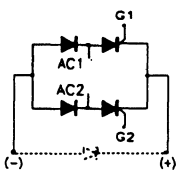
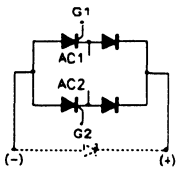
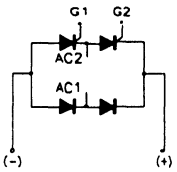
Circuit "0"



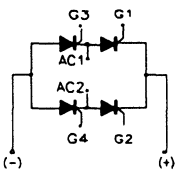
Circuit "1"



Circuit "2"



Circuit "3"

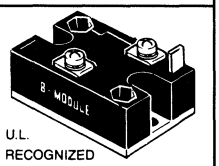
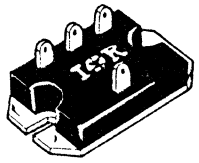


(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 2500V-50 Hz.
(3) This series offers voltage suppression.
(4) This series offers free wheeling diode.
(5) This series offers both voltage suppression and free wheeling diode.
(7) $T_j = T_j$ max. = 125°C, 100% V_{RRM} reapplied.
(8) For case outline drawing see page 0-2.

Power Modules
AC Controllers

International IOR Rectifier

Single Phase (Back to Back SCRs)

Part Number		V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ @ T_C		I_{TSM} (5)		V_{TM} @ I_{TM}		R_{thJC} (6) (K/W)	Case Outline Number (4)	Notes	Case Style
	(1)		(A)	(°C)	50 Hz (A)	60 Hz (A)	(V)	(A)				
B40A10 B40A20 B40A40 B40A60 B40A80 B40A100 B40A120	— — — — — — —	100 200 400 600 800 1000 1200	40	97	330	345	1.6	75	0.525	M2	(2)	 U.L. RECOGNIZED File no: E78996
P141 P142 P143 P144 P145	P141K P142K P143K P144K P145K	400 600 800 1000 1200	28	85	300	315	1.35	40	1.12	M1	(3)	 U.L. RECOGNIZED File no: E78996
P441 P442 P443 P444 P445	P441K P442K P443K P444K P445K	400 600 800 1000 1200	44	85	325	340	1.35	65	0.58			

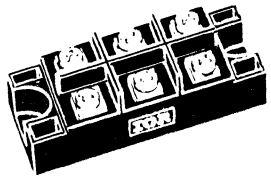
Three Phase (3 Back to Back SCRs)

Part Number	V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ @ T_C		I_{TSM} (5)		V_{TM} @ I_{TM}		R_{thJC} DC (6) (K/W)	Case Outline Number (4)	Notes	Case Style
		(A)	(°C)	50 Hz (A)	60 Hz (A)	(V)	(A)				
54MT80K 54MT100K 54MT120K 54MT140K 54MT160K	800 1000 1200 1400 1600	50	80	330	345	2.68	150	0.187	B5	(7)	
94MT80K 94MT100K 94MT120K 94MT140K 94MT160K	800 1000 1200 1400 1600	90	80	800	840	1.55	150	0.137			
104MT80K 104MT100K 104MT120K 104MT140K 104MT160K	800 1000 1200 1400 1600	100	80	950	1000	1.53	150	0.119			U.L. RECOGNIZED File no: E78996

(1) This series offers voltage suppression.
(2) RMS Isolation voltage 3500V-50 Hz.
(3) RMS Isolation voltage 2500V-50 Hz.
(4) For case outline drawing see page 0-2.
(5) 100% V_{RRM} applied T_j = 125°C.
(6) Per module.
(7) RMS Isolation voltage 4000V-50 Hz.

Power Modules
Three Phase Controlled Bridges

Part Number (4)	(5)	(6)	V_{RRM} V_{DRM} (V)	$I_{O(DC)}$ @ T_C (A)	(°C)	I_{TSM} (8) 50 Hz (A)	60 Hz (A)	V_{TM} (1) (V)	R_{thJC} DC (2) (K/W)	CASE Outline Number (9)	Notes	Case Style
51MT80K	52MT80K	53MT80K	800							B4	(3)	
51MT100K	52MT100K	53MT100K	1000									
51MT120K	52MT120K	53MT120K	1200	55	85	330	345	2.68	0.179			
51MT140K	52MT140K	53MT140K	1000									
51MT160K	52MT160K	53MT160K	1600									
91MT80K	92MT80K	93MT80K	800									
91MT100K	92MT100K	93MT100K	1000									
91MT120K	92MT120K	93MT120K	1200	90	85	800	840	1.65	0.144			
91MT140K	92MT140K	93MT140K	1400									
91MT160K	92MT160K	93MT160K	1600									
111MT80K	112MT80K	113MT80K	800									
111MT100K	112MT100K	113MT100K	1000									
111MT120K	112MT120K	113MT120K	1200	110	85	950	1000	1.57	0.117			
111MT140K	112MT140K	113MT140K	1400									
111MT160K	112MT160K	113MT160K	1600									



U.L RECOGNIZED
File no E78996

(1) I Peak = 150A, T_j = 25°C.
(2) Value given for R_{thJC} is per module DC operation.
(3) RMS Isolation voltage: 4000V-50 Hz.
(4) Three phase negative controlled bridge.
(5) Three phase positive controlled bridge.
(6) Three phase fully controlled bridge.
(8) 100% V_{RRM} reapplied. T_j = T_j max. = 125°C
(9) For case outline drawing see page 0-2.

Thyristor Die Characteristics

International IOR Rectifier

Center Gate Thyristors (6)

Die Part No.	Side Dimension (Inches)	Passivation	Current ($I_{T(RMS)}$) (A) (8)	Voltage Range (V)	Equiv. Device Series
IR210SG-G (7)	0.210	Glass	35	100–1600	P100, P400 10, 16, 22, 25RIA B25RIA, B25DS/CS, B40A
IR350SG-G (7)	0.350	Glass	80	100–1600	50RIA, T50RIA, T70RIA IRKT/H/L41-56

Corner Gate Thyristors (6)

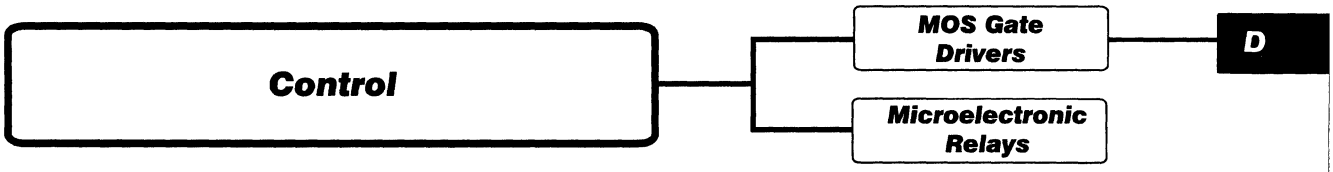
IR230SG-G (7)	0.230	Glass	35	100–1200	IRKT/H/L26
IR480SG-G (7)	0.480	Glass	140	100–1600	IRKT/H/L71-91, T90RIA

To specify voltage, add suffix to die part number as follows:

SUFFIX	01	02	04	06	08	10	12	14	16
V_{DRM}/V_{RRM}	100	200	400	600	800	1000	1200	1400	1600

(6) For die outline drawing see page 0-2.
(7) Types listed have standard gold metallization on both sides (suffix G).
(8) Values strongly dependent on assembly details.

FUNCTION PRODUCT



MOS Gate Drivers

International Rectifier has expanded its power integrated circuit (PIC) product line to address additional applications which require both power and control.

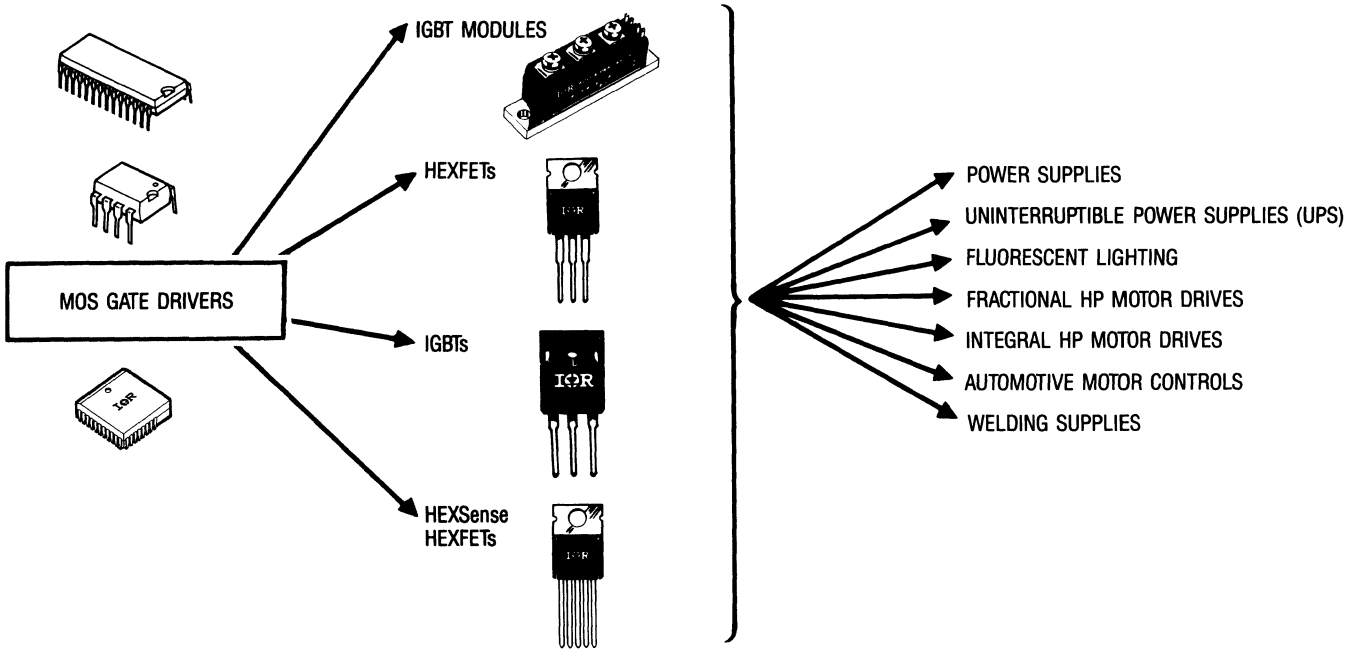
High Voltage Control IC (HV PIC)

With a voltage range to 600 volts, IR's unique high voltage junction isolated BCDMOS technology makes it possible to combine the power MOSFET with analog and digital control circuitry on a single silicon chip, producing a new family of off-line monolithic functions for power converters and motor control applications.

Features (HVPIC)

- Drivers for use with power MOSFETs and IGBTs
- Up to 600V rating
- Floating High Side Driver
- High Noise Immunity
- Low Power Consumption
- Undervoltage Shutdown

Use MOS gate drivers to drive power components for these applications.



Power Integrated Circuits
Application Selection Guide

International
IOR Rectifier

Application	BALLAST				MOTOR DRIVE
	Half-Bridge			Full-Bridge	
	Self-Oscillating Fluorescent	Synchronized Oscillating Fluorescent	High Intensity Discharge	High Voltage Fluorescent	Six-Step Control
IR2110	▒	▒	▒	▒	▒
IR2111	▒	▒	▒	■	▒
IR2112	▒	▒	▒	▒	▒
IR2113	▒	▒	▒	▒	▒
IR2121					
IR2125					
IR2130					■
IR2132					▒
IR2155	■	■	■	■	

■ Preferred

▒ Applicable

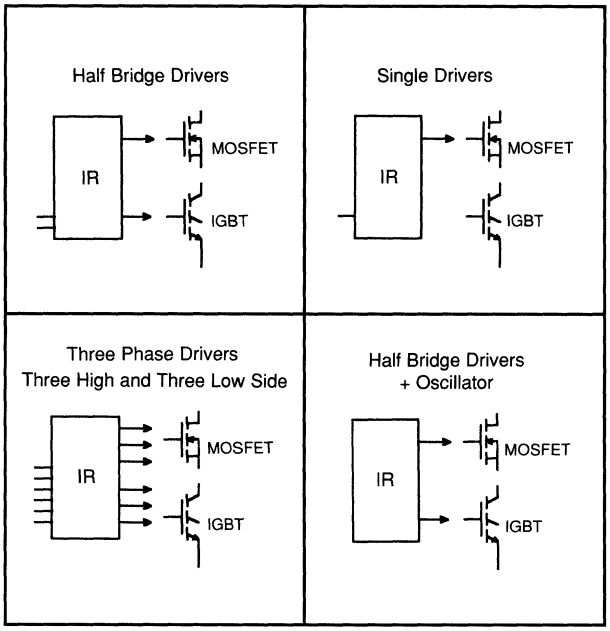
MOTOR DRIVE	POWER SUPPLY				Application
	High Side Switch	Half-Bridge	Full-Bridge		
PWM Control	Buck & Boost Converter	Resonant Mode Control	Square Wave Control	Phased Shifted PWM	
▒	▒	▒	▒	▒	IR2110
▒	■	▒	■	▒	IR2111
▒	▒	■	▒	■	IR2112
▒	▒	■	▒	■	IR2113
					IR2121
	▒				IR2125
▒					IR2130
■					IR2132
		▒	■		IR2155

Preferred ■

Applicable ▒

D

High Voltage Power MOSFET/IGBT Gate Drivers

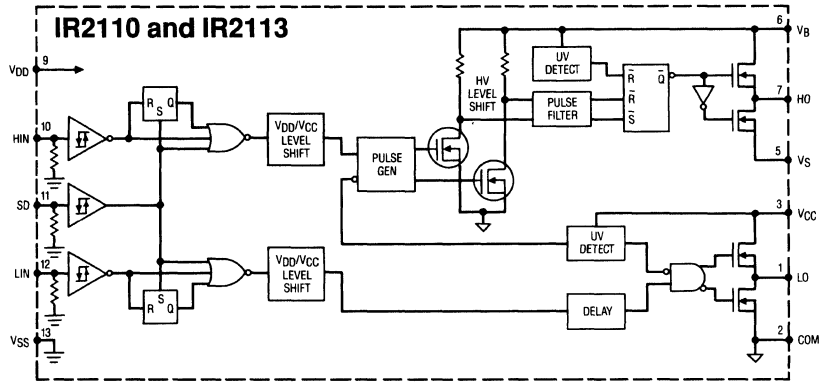


Features

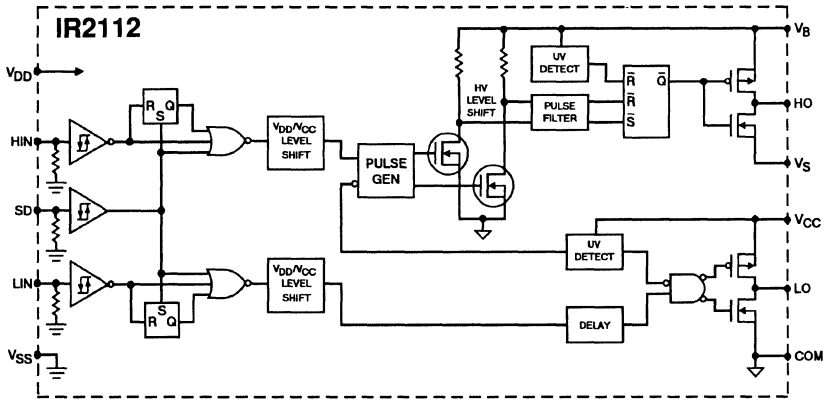
- Drives single, pair, and six HEXFETs or IGBTs
- Floating High Side Driver
- Ground Referenced Low Side Driver
- Operates to either 500V or 600V
- High dv/dt and negative transient immunity
- CMOS Compatible Schmitt Trigger Inputs
- Low Quiescent Power Dissipation
- Undervoltage lockout with hysteresis – all channels
- Matched delay times for High and Low channels
- Latch immune CMOS

Part Number	Configuration	Maximum Floating Supply Offset Voltage	Io Source, Sink	Schematic	(1) Case Outline	Notes	Case Style
IR2110	High Side and Low Side	500V	2A / 2A	S1	P1		14 Pin DIP
IR2110-1					P2		14 Pin DIP w/o Pin 4
IR2110-2					P3		16 Pin DIP w/o Pins 4 & 5
IR2110S					P4		16 Pin SOIC Wide Body
IR2111	Half Bridge	600V	200 / 420 mA	S3	P5		8 Pin DIP
IR2112	High Side and Low Side	600V	200 / 420 mA	S2	P1		14 Pin DIP
IR2112-1					P2		14 Pin DIP w/o Pin 4
IR2112-2					P3		16 Pin DIP w/o Pins 4 & 5
IR2112S					P4		16 Pin SOIC Wide Body
IR2113	High Side and Low Side	600V	2A / 2A	S1	P1		14 Pin DIP
IR2113-1					P2		14 Pin DIP w/o Pin 4
IR2113-2					P3		16 Pin DIP w/o Pins 4 & 5
IR2113S					P4		16 Pin SOIC Wide Body
IR2121	Low Side Current Limit	—	1A / 2A	S5	P5		8 Pin DIP
IR2125	High Side Current Limit	500V	1A / 2A	S6	P5		8 Pin DIP
IR2130	3 High Side and 3 Low Side	600V	200 / 420 mA	S7	P6	2.5 µs Dead-time	28 Pin DIP
IR2130J					P7		44 Pin PLCC w/o 12 leads
IR2130S					P8		28 Pin SOIC Wide Body
IR2132	3 High Side and 3 Low Side	600V	200 / 420 mA	S7	P6	0.8 µs Dead-time	28 Pin DIP
IR2132J					P7		44 Pin PLCC w/o 12 leads
IR2132S					P8		28 Pin SOIC Wide Body
IR2155	1/2 Bridge Self oscillating	600V	200 / 420 mA	S4	P5	555 Type timer	8 Pin DIP

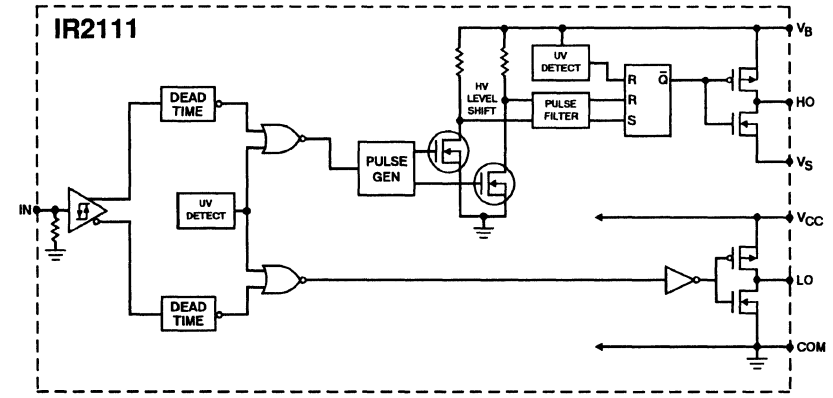
(1) For case outline drawing see page 0-2.



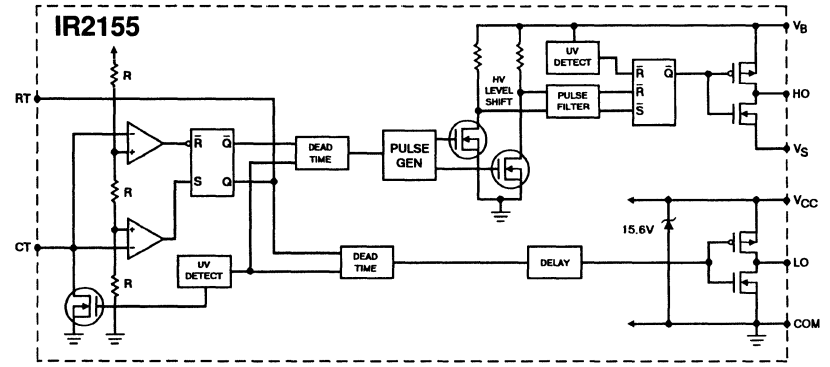
S1 – IR2110 and IR2113 Schematic



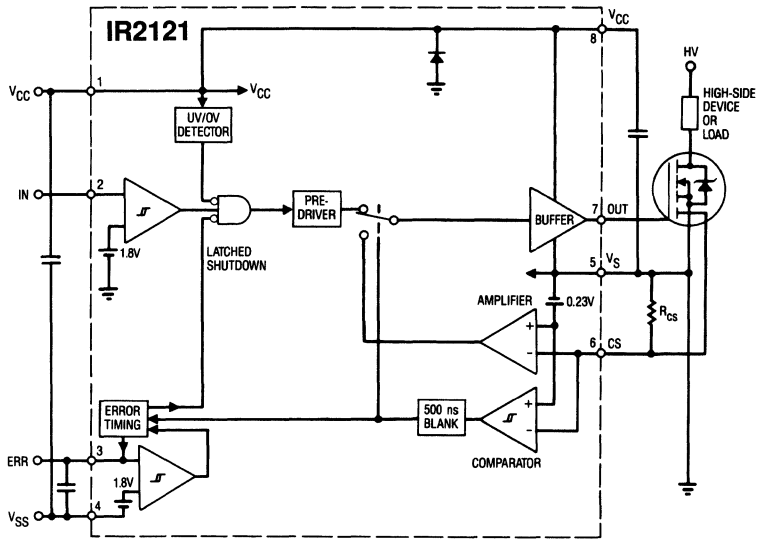
S2 – IR2112 Schematic



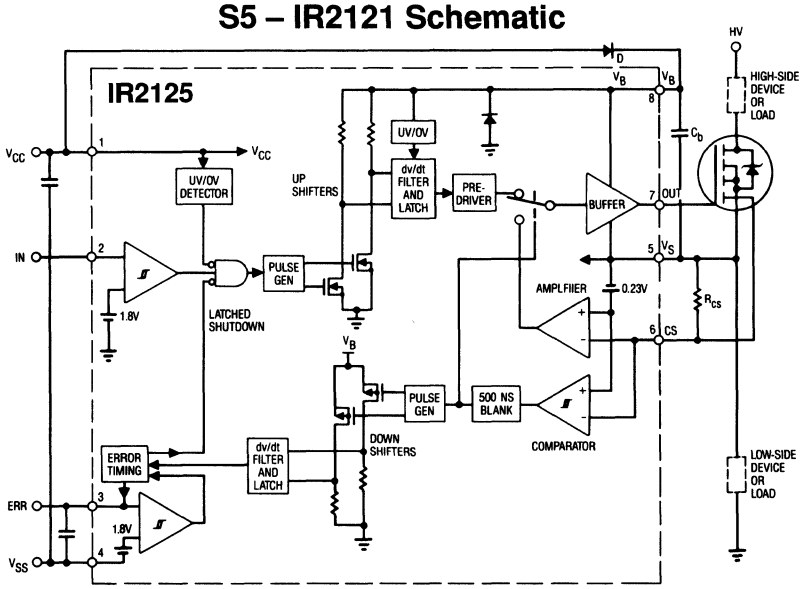
S3 – IR2111 Schematic



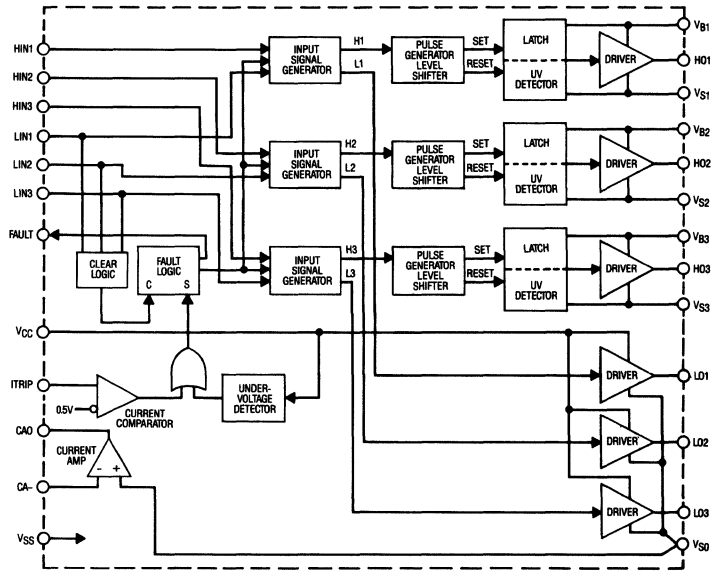
S4 – IR2155 Schematic



S5 – IR2121 Schematic



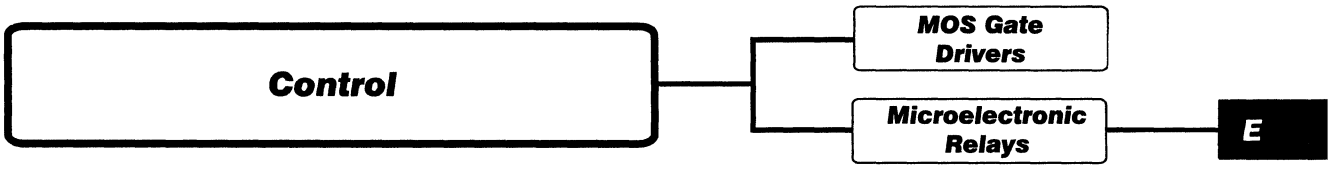
S6 – IR2125 Schematic

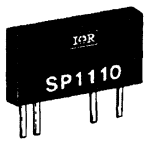
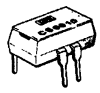


S7 – IR2130 Schematic

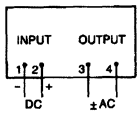
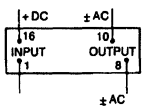
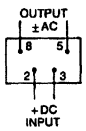
FUNCTION

PRODUCT



Part Number	Operating Voltage Range (V)RMS	Maximum Load Current @ 40°C A(RMS)	Trans. Overvolt V(Pk)	Turn-On Signal (DC)	Dielectric Strength Input/Output V(RMS)	Minimum Off-State dv/dt @ Rated V 25°C V/μs	Maximum Off State Leakage μA	Case Outline Number (1)	Series
SP1210	20-140	1.0 Free Standing	300	10mA				MR4	SP  1 Form A
SP2210	20-280	3.0 With Heat Sink	450	10mA	4000	600	10		
SP6210	20-280		600	10mA					
DP1210	20-140		300	10mA				MR2	DP  1 Form A
DP1610	20-140		300	3.5V					
DP2210	20-280	1.0	450	10mA	4000	600	10		
DP2610	20-280		450	3.5V					
DP6210	20-280		600	10mA					
DP6610	20-280		600	3.5V					
CS5005	20-280		500	5mA				MR1	CS  1 Form A
CS5010	20-280	0.3	500	10mA					
CS6005	20-280		600	5mA	4000	1200	10		
CS6010	20-280		600	10mA					

Wiring Diagram

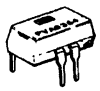
			
Series	**SP**	**DP**	**CS**

(1) For case outline drawing see page O-2

Microelectronic Relays

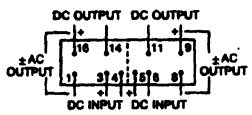
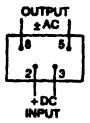
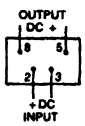
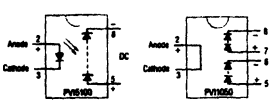
PhotoVoltaic Relay

International IOR Rectifier

Part Number (1)	Operating Voltage Range V(Pk)	Max. On-State Res. @ 25°C Ohms AC/DC	Max. On-State Res. @ 25°C Ohms DC	Max Load Current @ 40°C (DC) mA	Nom. Control Current (DC) mA	Min. Off-State Res. Ohms	Dielectric Strength Input/Output V(RMS)	Max. Response Time On/Off µsec	Maximum Thermal Offset Voltage @ 5mA Control µV	Case Outline Number (2)	Series
PVR1300	±100	5.0	1.5	700		10^8		300/50		MR3	PVR
PVR1301	±100	5.0	1.5	700		10^{10}		300/50			
PVR2300	±200	24	6.0	260	10	10^8	1500	100/50	0.2		
PVR3300	±300	24	6.0	260		10^8		100/50			
PVR3301	±300	24	6.0	260		10^{10}		100/50			2 Form A
PVA1052	±100	35		70	5.0	10^8		25/15		MR1	PVA
PVA1054	±100	35		70	5.0	10^{10}		25/15			
PVA1352	±100	5.0		315	5.0	10^8		300/50			
PVA1354	±100	5.0		315	5.0	10^{10}		300/50			
PVA2352	±200	24		130	5.0	10^8	2500	100/50	0.2		
PVA3054	±300	160		40	5.0	10^{10}		25/15			
PVA3055	±300	160		40	5.0	10^{11}		25/15			
PVA3324	±300	24		130	2.0	10^{10}		100/50			
PVA3354	±300	24		130	5.0	10^{10}		100/50			1 Form A
PVAZ172	±60	0.5		1200	10	10^8	1500	500/8000			
PVD1052	±100		8.0	160	5.0	10^8		25/15		MR1	PVD
PVD1054	±100		8.0	160	5.0	10^{10}		25/15			
PVD1354	+100		1.5	500	5.0	10^8	2500	300/50	0.2		
PVD2352	+200		6.0	220	5.0	10^{10}		100/50			
PVD3354	+300		6.0	220	5.0	10^{10}		100/50			
PVDZ172	+60		0.25	1400	10	10^8	1500				1 Form A

Part Number	Number Outputs	Output Voltage V(DC)	Short Circuit Current µA	Nom. Control Current (DC) mA	Dielectric Strength Input/Output V(RMS)	Case Outline Number (1)	Series
PVI5050	1	5.0	5.0	10	2500	MR1	PVI
PVI5100	1	5.0	10.0	10	2500		
PVI1050	2	5.0/10	10/5	10	2500		

Wiring Diagram

			
PVR	PVA	PVD	PVI

(1) Output for PVD and PVI Series is DC only. All others are AC or DC.

(2) For case outline drawing see page O-2.

Part Number	Underwriters Labs Recognition		Canadian Standards Certification	
	Standard	File	Standard	File
SP1110	UL508	E50015	C22.2	LR32053
SP1210		E50015		LR32053
SP2110		E50015		LR32053
SP2210		E50015		LR32053
SP6110		E50015		LR32053
SP6210		E50015		LR32053
DP1110	UL508	E50015	C22.2	LR32053
DP1210		E50015		LR32053
DP1610		E50015		LR32053
DP2110		E50015		LR32053
DP2210		E50015		LR32053
DP2610		E50015		LR32053
DP6110		E50015		LR32053
DP6210		E50015		LR32053
DP6610		E50015		LR32053
CS5005	UL508	E50015	C22.2	LR56615
CS5010		E50015		LR56615
CS6005		E50015		LR56615
CS6101		E50015		LR56615
PVA2352	UL508	E88583	—	—
PVA3324		E88583		
PVA3354		E88583		
PVA3055	UL508	E88583	—	—
PVA3054		E88583		
PVA1354		E88583		
PVA1352		E88583		
PVA1052		E88583		
PVD3354		E88583		
PVD2352		E88583		
PVD1354		E88583		
PVD1352		E88583		
PVD1054		E88583		
PVD1052		E88583		
PVA2172		E88583		
PVD2172		E88583		

International
IOR Rectifier

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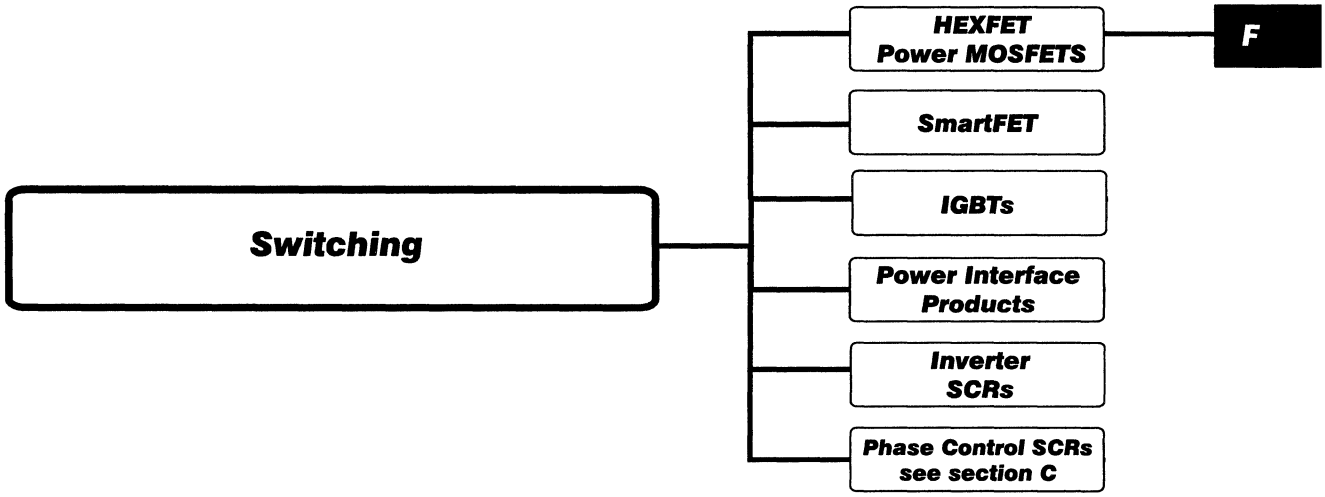
FUNCTION

PRODUCT



HEXFET
Power MOSFETS

SOT-89 N-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJA} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFS1Z0	100	2.4	0.82	0.52	35	3.6	H1	SOT-89 

Logic level HEXFETs are fully enhanced with 4 or 5V applied to the gate.

SOT-89 Logic Level N-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJA} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRLS0Z0	50	0.3	2.6	1.6	35	3.6	H1	SOT-89 

F

SO-8

The new SO-8 can accommodate a dual-die configuration allowing multiple devices to be used in an application with greatly reduced board space. Power dissipation of more than 1W is possible in a typical printed circuit board application. The SO-8 is designed for all soldering techniques.

SO-8 Logic Level N-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 70°C (Amps)	R_{thJA} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRF7201	30	0.03	7.0	5.8	50	2.5	H2	SO-8 

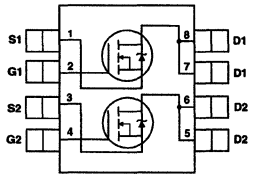
SO-8 Logic Level P-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 70°C (Amps)	R_{thJA} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRF7202	-20	0.25	-2.5	-2.0	50	2.5	H2	SO-8
IRF7203	-20	0.1	-4.3	-3.3	50	2.5		
IRF7204	-20	0.06	-5.3	-4.2	50	2.5		
IRF7205	-30	0.07	-5.3	-4.1	50	2.5		

Part Number in bold indicates new product.
(1) For case outline drawing see page O-2.

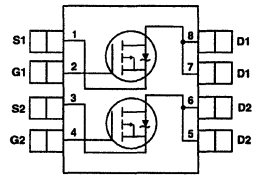
SO-8

The new SO-8 can accommodate a dual-die configuation, allowing multiple devices to be used in an application with greatly reduced board space. Power dissipation of more than 1W is possible in a typical printed circuit board application. The SO-8 is designed for all soldering techniques.



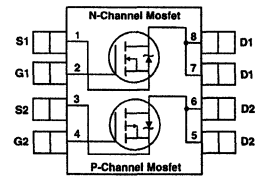
SO-8 Logic-Level Dual N-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 70°C (Amps)	R_{thJA} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRF7101	20	0.1	3.5	2.8	62	2.0	**H2**	**SO-8** 
IRF7102	50	0.3	2.0	1.6	62	2.0		
IRF7103	50	0.13	3.0	2.3	62	2.0		



SO-8 Logic Level Dual P-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 70°C (Amps)	R_{thJA} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRF7104	-20	0.25	-2.3	-1.8	62	2.0	**H2**	**SO-8** 



SO-8 Logic Level Dual N/P-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 70°C (Amps)	R_{thJA} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRF7105	25	0.1	3.5	2.8	62	2.0	**H2**	**SO-8**
	-25	0.25	-2.3	-1.9				
IRF7106	20	0.125	3.0	2.5	62	2.0		
	-20	0.25	-2.5	-2.0				
IRF7107	20	0.125	3.0	2.5	62	2.0		
	-20	0.160	-2.8	-2.3				

Part Number in bold indicates new product.
(1) For case outline drawing see page O-2.

SOT-223

The new SOT-223 is capable of dissipating more than 1W in a typical printed circuit board application. Its unique package design allows for maximum die size, optimum thermal performance and ease of surface-mount manufacturing; suitable for use with all soldering techniques.

SOT-223 N-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJA} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFL014	60	0.20	2.7	1.7	40	3.1	**H3**	**SOT-223** (TO-261AA) 
IRFL110	100	0.54	1.5	0.96	40	3.1		
IRFL210	200	1.5	0.96	0.60	40	3.1		
IRFL214	250	2.0	0.79	0.50	40	3.1		

Logic-level HEXFETs are fully enhanced with 4 or 5V applied to the gate.

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SOT-223 Logic Level N-Channel

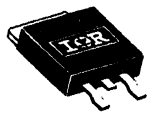
Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJA} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRLL014	60	0.20	2.7	1.7	40	3.1	**H3**	**SOT-223** (TO-261AA) 
IRLL110	100	0.54	1.5	0.93	40	3.1		

SOT-223 P-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJA} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFL9014	-60	0.50	-1.8	-1.1	40	3.1	**H3**	**SOT-223** (TO-261AA) 
IRFL9110	-100	1.2	-1.1	-0.69	40	3.1		

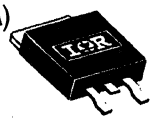
Part Number in bold indicates new product.
(1) For case outline drawing see page 0-2.

D-Pak (TO-252AA) N-Channel

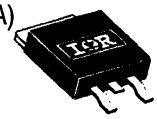
Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFR014	60	0.20	7.7	4.9	5.0	25	H4	**D-Pak** (TO-252AA) 
IRFR024	60	0.10	14	9.0	3.0	42		
IRFR110	100	0.54	4.3	2.7	5.0	25		
IRFR120	100	0.27	7.7	4.9	3.0	42		
IRFR210	200	1.5	2.6	1.7	5.0	25		
IRFR220	200	0.80	4.8	3.0	3.0	42		
IRFR214	250	2.0	2.2	1.4	5.0	25		
IRFR224	250	1.1	3.8	2.4	3.0	42		
IRFR310	400	3.6	1.7	1.1	5.0	25		
IRFR320	400	1.8	3.1	2.0	3.0	42		
IRFR420	500	3.0	2.4	1.5	3.0	42		
IRFRC20	600	4.4	2.0	1.3	3.0	42		

Logic level HEXFETs are fully enhanced with 4 or 5V applied to the gate.

D-Pak (TO-252AA) Logic Level N-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRLR014	60	0.20	7.7	4.9	5.0	24	H4	**D-Pak** (TO-252AA) 
IRLR024	60	0.10	14	9.2	3.0	42		
IRLR110	100	1.54	4.3	2.7	5.0	25		
IRLR120	100	0.27	7.7	4.9	3.0	42		

D-Pak (TO-252AA) P-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFR9014	-60	0.50	-5.1	-3.2	5.0	25	H4	**D-Pak** (TO-252AA) 
IRFR9024	-60	0.28	-8.8	-5.6	3.0	42		
IRFR9110	-100	1.2	-3.1	-2.0	5.0	25		
IRFR9120	-100	0.60	-5.6	-3.6	3.0	42		
IRFR9210	-200	3.0	-1.9	-1.2	5.0	25		
IRFR9220	-200	1.5	-3.6	-2.3	3.0	42		

Part Number in bold indicates new product.
(1) For case outline drawing see page O-2.

SMD-220

These devices provide the highest power capability and lowest possible on-resistance in a surface mount package. They can dissipate up to 2W in a typical surface mount application and are available in tape and reel.

SMD-220 N-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	P_d @ T_C = 25°C Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFZ46S	50	0.024	50	38	1.0	150	**H5**	**SMD-220**
IRF1010S	55	0.014	75	53	1.0	150		
IRFZ14S	60	0.20	10	7.2	3.5	43		
IRFZ24S	60	0.10	17	12	2.5	60		
IRFZ34S	60	0.050	30	21	1.7	88		
IRFZ44S	60	0.028	50	36	1.0	150		
IRFZ48S	60	0.018	50	50	0.80	190		
IRF1310S	100	0.04	43	25	1.0	150		
IRF510S	100	0.54	5.6	4.0	3.5	43		
IRF520S	100	0.27	9.2	6.5	2.5	60		
IRF530S	100	0.16	14	10	1.7	88		
IRF540S	100	0.077	28	20	1.0	150		
IRF610S	200	1.5	3.3	2.1	3.5	36		
IRF620S	200	0.80	5.2	3.3	2.5	50		
IRF630S	200	0.40	9.0	5.7	1.7	74		
IRF640S	200	0.18	18	11	2.0	125		
IRF614S	250	2	2.7	1.7	3.5	36		
IRF624S	250	1.1	4.4	2.8	2.5	50		
IRF634S	250	0.45	8.1	5.1	1.7	74		
IRF644S	250	0.28	14	8.5	1.0	125		
IRF710S	400	3.6	2	1.2	3.5	36		
IRF720S	400	1.8	3.3	2.1	2.5	50		
IRF730S	400	1	5.5	3.3	1.7	74		
IRF740S	400	0.55	10	6.3	1.0	125		
IRF820S	500	3	2.5	1.6	2.5	50		
IRF830S	500	1.5	4.5	2.9	1.7	74		
IRF840S	500	0.85	8	5.1	1.0	125		

F

Part Number in bold indicates new product.
(1) For case outline drawing see page 0-2.

SMD-220

These devices provide the highest power capacity and lowest possible on-resistance in a surface mount package. They can dissipate up to 2W in a typical surface mount application and are available in tape and reel.

Logic level HEXFETs are fully enhanced with 4 or 5V applied to the gate.

SMD-220 Logic Level N-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRL2203S	30	0.010 (2)	92	65	1.0	150	**H5**	**SMD-220**
IRL3705S	50	0.012 (2)	80	57	1.0	150		
IRLZ14S	60	0.20	10	7.2	3.5	43		
IRLZ24S	60	0.10	17	12	2.5	60		
IRLZ34S	60	0.05	30	21	1.7	88		
IRLZ44S	60	0.28	50	36	1.0	150		
IRL520S	100	0.27	9.2	6.5	2.5	60		
IRL510S	100	0.54	5.6	4.0	3.5	43		
IRL530S	100	0.16	15	11	1.7	88		
IRL540S	100	0.077	28	20	1.0	150		
IRL620S	200	0.8	5.2	3.3	2.5	50		
IRL630S	200	0.4	9.0	5.7	1.7	74		
IRL640S	200	0.18	18	11	1.0	125		

SMD-220 P-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRF9Z14S	-60	0.5	-6.7	-4.7	3.5	43	**H5**	**SMD-220**
IRF9Z24S	-60	0.28	-11	-7.7	2.5	60		
IRF9Z34S	-60	0.14	-18	-13	1.7	88		
IRF9510S	-100	1.2	-4	-2.8	3.5	43		
IRF9520S	-100	0.6	-6.8	-4.8	2.5	60		
IRF9530S	-100	0.3	-12	-8.2	1.7	88		
IRF9540S	-100	0.2	-19	-13	1.0	150		
IRF9610S	-200	3.0	-1.8	-1.0	6.4	20		
IRF9620S	-200	1.5	-3.5	-2.0	3.1	40		
IRF9630S	-200	0.8	-6.5	-4.0	1.7	74		
IRF9640S	-200	0.5	-11	-6.8	1.0	125		

Part Number in bold indicates new product.
(1) For case outline drawing see page O-2.

(2) $R_{DS(on)}$ specified at V_{GS} = 10V

TO-220 FullPack

The FullPak outline is "overmolded" to provide a built-in isolation barrier from the external heatsink. The molding compound and package design provides a high isolation capability and low thermal impedance between the tab and external heatsink along with excellent creepage and clearance distances to meet safety requirements. Consequently, the FullPak requires no further external isolation barrier saving a significant amount of additional labor and reducing component count and cost.

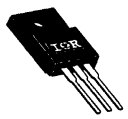
Low charge HEXFETs reduce gate charge by 40% or more and capacitances by up to 85% without any added device cost.

TO-220 FullPak N-Channel - "Low Charge"

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	Q_g Total Gate Charge (nC)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFI740GLC	400	0.55	6.0	39	3.1	40	**H6**	**TO-220 FullPak**
IRFI840GLC	500	0.85	4.8	39	3.1	40		
IRFIBC40GLC	600	1.2	4.0	39	3.1	40		

TO-220 FullPak N-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFI1010G	55	0.14	43	30	3.0	50	**H6**	**TO-220 FullPak**
IRFIZ14G	60	0.20	8.0	5.7	5.5	27		
IRFIZ24G	60	0.10	14	10	4.1	37		
IRFIZ34G	60	0.050	20	14	3.6	38		
IRFIZ44G	60	0.028	30	21	3.1	48		
IRFIZ48G	60	0.018	37	26	3.0	50		
IRFI510G	100	0.54	4.5	3.2	5.5	27		
IRFI520G	100	0.27	7.2	5.1	4.1	37		
IRFI530G	100	0.16	9.7	6.9	3.6	39		
IRFI540G	100	0.077	17	12	3.1	48		
IRFI1310G	100	0.040	21	15	3.0	50		
IRFI620G	200	0.80	4.1	2.6	4.1	30		
IRFI630G	200	0.40	5.9	3.7	3.6	32		
IRFI640G	200	0.18	9.8	6.2	3.1	40		
IRFI614G	250	2.0	2.1	1.3	5.5	23		
IRFI624G	250	1.1	3.4	2.2	4.1	30		
IRFI634G	250	0.45	5.6	3.5	3.6	32		
IRFI644G	250	0.28	7.9	5.0	3.1	40		
IRFI720G	400	1.8	2.6	1.7	4.1	30		
IRFI730G	400	1.0	3.7	2.3	3.6	32		
IRFI740G	400	0.55	5.4	3.4	3.1	40		
IRFI734G	450	1.2	3.4	2.1	3.6	35		
IRFI744G	450	0.63	4.9	3.1	3.1	40		
IRFI820G	500	3.0	2.1	1.3	4.1	30		
IRFI830G	500	1.5	3.1	2.0	3.6	32		
IRFI840G	500	0.85	4.6	2.9	3.1	40		
IRFIBC20G	600	4.4	1.7	1.1	4.1	30		
IRFIBC30G	600	2.2	2.5	1.6	3.6	35		
IRFIBC40G	600	1.2	3.5	2.2	3.1	40		
IRFIBE20G	800	6.5	1.4	0.86	4.1	30		
IRFIBE30G	800	3.0	2.1	1.4	3.6	35		
IRFIBF20G	900	8.0	1.2	0.79	4.1	30		
IRFIBF30G	900	3.7	1.9	1.2	3.6	35		



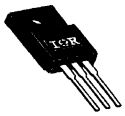
F

Part Number in bold indicates new product.
(1) For case outline drawing see page O-2.

Logic-level HEXFETs are fully-enhanced with 4 or 5V applied to the gate.

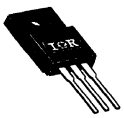
TO-220 FullPak Logic Level N-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	P_d @ T_c = 25°C Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRLI2203G	30	0.010 (2)	49	35	3.1	48	**H6**	**TO-220 FullPak**
IRLI3705G	50	0.012 (2)	45	32	3.1	48		
IRLIZ14G	60	0.20	8.0	5.7	5.5	27		
IRLIZ24G	60	0.10	14	10	4.1	37		
IRLIZ34G	60	0.050	20	14	3.6	42		
IRLIZ44G	60	0.028	30	21	3.1	48		
IRLI520G	100	0.27	7.2	5.1	4.1	37		
IRLI530G	100	0.16	9.7	6.9	3.6	42		
IRLI540G	100	0.077	12	12	3.1	48		
IRLI620G	200	0.80	4.1	2.6	4.1	30		
IRLI630G	200	0.40	5.9	3.7	3.6	32		
IRLI640G	200	0.18	9.8	6.2	3.1	40		



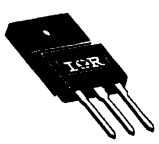
TO-220 FullPak P-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	P_d @ T_c = 25°C Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFI9Z14G	-60	0.50	-5.3	-3.8	5.5	27	**H6**	**TO-220 FullPak**
IRFI9Z24G	-60	0.28	-8.5	-6.0	4.1	37		
IRFI9Z34G	-60	0.14	-12	8.5	3.6	38		
IRFI9520G	-100	0.60	-5.2	-3.6	4.1	37		
IRFI9530G	-100	0.30	-7.7	-5.4	3.6	38		
IRFI9540G	-100	0.20	-11	-7.6	3.1	48		
IRFI9620G	-200	1.5	-3.0	-1.9	4.1	30		
IRFI9630G	-200	0.80	-4.3	-2.7	3.6	40		
IRFI9640G	-200	0.50	-6.1	-3.9	3.1	40		



TO-3P FullPak N-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	P_d @ T_c = 25°C Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFIP044	60	0.028	43	30	1.5	100	**H7**	**TO-247AC FullPak**
IRFIP054	60	0.014	64	45	1.3	120		
IRFIP140	100	0.077	23	16	1.5	100		
IRFIP150	100	0.055	31	22	1.3	120		
IRFIP240	200	0.18	14	8.9	1.5	83		
IRFIP250	200	0.085	22	14	1.3	96		
IRFIP244	250	0.28	11	6.9	1.5	44		
IRFIP254	250	0.14	17	11	1.3	96		
IRFIP340	400	0.55	8.0	5.1	1.5	83		
IRFIP350	400	0.30	11	7.0	1.3	96		
IRFIP440	500	0.85	6.4	4.0	1.5	83		
IRFIP448	500	0.60	7.4	4.7	1.4	89		
IRFIP450	500	0.40	10	6.5	1.3	96		

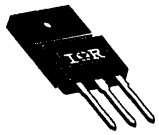


Part Number in bold indicates new product.
(1) For case outline drawing see page O-2.

(2) $R_{DS(on)}$ specified at V_{GS} = 10V

TO-3P FullPak P-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	P_d @ T_c = 25°C Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFIP9140	-100	0.20	-15	-11	1.5	100	H7	TO-247AC FullPak
IRFIP9240	-200	0.50	-8.9	-5.6	1.5	83		



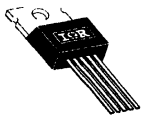
F

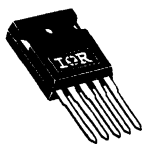
HEXSense

HEXSense Power MOSFETs provide the user with the ability to sense the current through the device by measuring a small proportion of the total drain current. The current-sensing is accomplished through the addition of the kelvin and current-sense connections providing for greater accuracy, wider bandwidths and cost-savings in current-mode applications.

HEXSENSE N-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	P_d @ T_c = 25°C Max Power Dissipation (Watts)	Nominal Sense Number	Case Outline Number (1)	Case Style
IRCZ24	60	0.10	17	12	2.5	60	820	H8	TO-220 Hexsense
IRCZ34	60	0.050	30	21	1.7	88	1480		
IRCZ44	60	0.028	50	37	1.0	150	2720		
IRC530	100	0.16	14	10	1.7	88	1540		
IRC540	100	0.077	28	20	1.0	150	2810		
IRC630	200	0.40	9.0	5.7	1.7	74	1570		
IRC640	200	0.18	18	11	1.0	125	2880		
IRC634	250	0.45	8.1	5.1	1.7	74	1580		
IRC644	250	0.28	14	8.5	1.0	125	2900		
IRC730	400	1.0	5.5	3.5	1.0	74	1600		
IRC740	400	0.55	10	6.3	1.0	125	2940		
IRC830	500	1.5	4.5	3.0	1.7	74	1600		
IRC840	500	0.85	8.0	5.1	1.0	125	2970		
IRCP054	60	0.014	70	64	0.65	230	2430	H9	TO-247 Hexsense





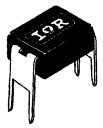
Part Number in bold indicates new product.
(1) For case outline drawing see page O-2.

Low charge HEXFETs reduce gate charge by 40% or more and capacitances by up to 85% without any added device cost.

HEXDIPS N-Channel "Low Charge"

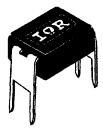
Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	Q_g Total Gate Charge (nC)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFDC10LC	600	10	0.25	12	120	1.3	**H10**	**HEXDIPS** (HD-1)

HEXDIPS N-Channel

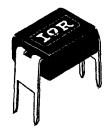
Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFD014	60	0.20	1.7	1.2	120	1.3	**H10**	**HEXDIPS** (HD-1) 
IRFD024	60	0.10	2.5	1.8	120	1.3		
IRFD1Z0	100	2.4	0.50	0.36	120	1.3		
IRFD110	100	1.0	1.0	0.71	120	1.3		
IRFD120	100	0.27	1.3	0.94	120	1.3		
IRFD210	200	1.5	0.60	0.38	120	1.3		
IRFD220	200	0.80	0.80	0.50	120	1.3		
IRFD214	250	2.0	0.57	0.32	120	1.3		
IRFD224	250	1.1	0.76	0.43	120	1.3		
IRFD310	400	3.6	0.42	0.23	120	1.3		
IRFD320	400	1.8	0.60	0.33	120	1.3		
IRFD420	500	3.0	0.46	0.26	120	1.3		
IRFD620	600	4.4	0.32	0.21	120	1.3		

Logic-level HEXFETs are fully-enhanced with 4 or 5V applied to the gate.

HEXDIPS Logic Level N-Channel

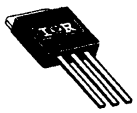
Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRLD014	60	0.20	1.7	1.2	120	1.3	**H10**	**HEXDIPS** (HD-1) 
IRLD024	60	0.10	2.5	1.8	120	1.3		
IRLD110	100	0.54	1.0	0.70	120	1.3		
IRLD120	100	0.27	1.3	0.94	120	1.3		

HEXDIPS P-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFD9014	-60	0.50	-1.1	-0.80	120	1.3	**H10**	**HEXDIPS** (HD-1) 
IRFD9024	-60	0.28	-1.6	-1.1	120	1.3		
IRFD9110	-100	1.2	-0.70	-0.49	120	1.3		
IRFD9120	-100	0.60	-1.0	-0.70	120	1.3		
IRFD9210	-200	3.0	-0.40	-0.25	120	1.3		
IRFD9220	-200	1.5	-0.56	-0.36	120	1.3		

Part Number in bold indicates new product.
(1) For case outline drawing see page O-2.

I-Pak (TO-251AA) N-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFU014	60	0.20	7.7	4.9	5.0	25	H11	I-Pak (TO-251AA) 
IRFU024	60	0.10	14	9.0	3.0	42		
IRFU110	100	0.54	4.3	2.7	5.0	25		
IRFU120	100	0.27	7.7	4.9	3.0	42		
IRFU210	200	1.5	2.6	1.7	5.0	25		
IRFU220	200	0.80	4.8	3.0	3.0	42		
IRFU214	250	2.0	2.2	1.4	5.0	25		
IRFU224	250	1.1	3.8	2.4	3.0	42		
IRFU310	400	3.6	1.7	1.1	5.0	25		
IRFU320	400	1.8	3.1	2.0	3.0	42		
IRFU420	500	3.0	2.4	1.5	3.0	42		
IRFUC20	600	4.4	2.0	1.3	3.0	42		

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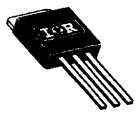
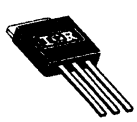
Logic-level HEXFETs are fully-enhanced with 4 or 5V applied to the gate.

I-Pak (TO-251AA) Logic Level N-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRLU014	60	0.20	7.7	4.9	5.0	25	H11	I-Pak (TO-251AA) 
IRLU024	60	0.10	14	9.2	3.0	42		
IRLU110	100	0.54	4.3	2.7	5.0	25		
IRLU120	100	0.27	7.7	4.9	3.0	42		

I-Pak (TO-251AA) P-Channel

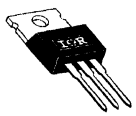
Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFU9014	-60	0.50	-5.1	-3.2	5.0	25	H11	I-Pak (TO-251AA) 
IRFU9024	-60	0.28	-8.8	-5.6	3.0	42		
IRFU9110	-100	1.2	-3.1	-2.0	5.0	25		
IRFU9120	-100	0.60	-5.6	-3.6	3.0	42		
IRFU9210	-200	3.0	-1.9	-1.2	5.0	25		
IRFU9220	-200	1.5	-3.6	-2.3	3.0	42		

Part number in bold indicates new product.
(1) For case outline drawing see page O-2.

Logic-level HEXFETs are fully-enhanced with 4 or 5V applied to the gate.

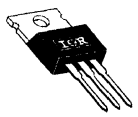
TO-220AB Logic Level N-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRL2203	30	0.010 (2)	92	65	1.0	150	**H12**	**TO-220AB**
IRL3705	50	0.012 (2)	80	57	1.0	150		
IRLZ14	60	0.20	10	7.2	3.5	43		
IRLZ24	60	0.10	17	12	2.5	60		
IRLZ34	60	0.050	30	21	1.7	88		
IRLZ44	60	0.028	50	36	1.01	150		
IRL510	100	0.54	5.6	4.0	3.5	43		
IRL520	100	0.27	9.2	6.5	2.5	60		
IRL530	100	0.16	15	11	1.7	88		
IRL540	100	0.077	28	20	1.0	150		



TO-220AB P-Channel

Part Number	$V(BR)_{DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRF9Z14	-60	0.50	-6.7	-4.7	3.5	43	**H12**	**TO-220AB**
IRF9Z24	-60	0.28	-11	-7.7	2.5	60		
IRF9Z34	-60	0.14	-18	-13	1.7	88		
IRF9510	-100	1.2	-4.0	-2.8	3.5	43		
IRF9520	-100	0.60	-6.8	-4.8	2.5	60		
IRF9530	-100	0.30	-12	-8.2	1.7	88		
IRF9540	-100	0.20	-19	-13	1.0	150		
IRF9610	-200	3.0	-1.8	-1.0	6.4	20		
IRF9620	-200	1.5	-3.5	-2.0	3.1	40		
IRF9630	-200	0.80	-6.5	-4.0	1.7	74		
IRF9640	-200	0.50	-11	6.8	1.0	125		

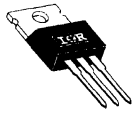


Part number in bold indicates new product.
(1) For case outline drawing see page O-2.

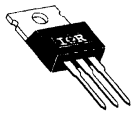
(2) $R_{DS\ (on)}$ specified at V_{GS} = 10V

Low charge HEXFETs reduce gate charge by 40% or more and capacitances by up to 85% without any added device cost.

TO-220AB N-Channel - "Low Charge"

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	Q_G Total Gate Charge (nC)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRF740LC	400	0.55	10	39	1.0	125	H12	TO-220AB 
IRF840LC	500	0.85	8.0	39	1.0	125		
IRFBC40LC	600	1.2	6.2	39	1.0	125		
IRFBC10LC	600	10	1.2	12	3.5	36		

TO-220AB N-Channel

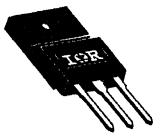
Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFZ46	50	0.024	50	38	1.0	150	H12	TO-220AB 
IRF1010	55	0.014	75	53	1.0	150		
IRFZ14	60	0.20	10	7.2	3.5	43		
IRFZ24	60	0.10	17	12	2.5	60		
IRFZ34	60	0.050	30	21	1.7	88		
IRFZ44	60	0.028	50	36	1.0	150		
IRFZ48	60	0.018	50	50	0.80	190		
IRF510	100	0.54	5.6	4.0	3.5	43		
IRF520	100	0.27	9.2	6.5	2.5	60		
IRF530	100	0.16	14	10	1.7	88		
IRF540	100	0.077	28	20	1.0	150		
IRF1310	100	0.040	43	25	1.0	150		
IRF610	200	1.5	3.3	2.1	3.5	36		
IRF620	200	0.80	5.2	3.3	2.5	50		
IRF630	200	0.40	9.0	5.7	1.7	74		
IRF640	200	0.18	18	11	1.0	125		
IRF614	250	2.0	2.7	1.7	3.5	36		
IRF624	250	1.1	4.4	2.8	2.5	50		
IRF634	250	0.45	8.1	5.1	1.7	74		
IRF644	250	0.28	14	8.5	1.0	125		
IRF710	400	3.6	2.0	1.2	3.5	36		
IRF720	400	1.8	3.3	2.1	2.5	50		
IRF730	400	1.0	5.5	3.3	1.7	74		
IRF740	400	0.55	10	6.3	1.0	125		
IRF820	500	3.0	2.5	1.6	2.5	50		
IRF734	450	1.2	4.9	3.1	1.7	74		
IRF744	450	0.63	8.8	5.6	1.0	125		
IRF830	500	1.5	4.5	2.9	1.7	74		
IRF840	500	0.85	8.0	5.1	1.0	125		
IRFBC20	600	4.4	2.2	1.4	2.5	50		
IRFBC30	600	2.2	3.6	2.3	1.7	74		
IRFBC40	600	1.2	6.2	3.9	1.0	125		
IRFBE20	800	6.5	1.8	1.2	2.3	54		
IRFBE30	800	3.0	4.1	2.6	2.0	125		
IRFBF20	900	8.0	1.7	1.1	2.3	54		
IRFBF30	900	3.7	3.6	2.3	1.0	125		
IRFBG20	1000	11	1.4	0.86	2.3	54		
IRFBG30	1000	5.0	3.1	2.0	1.0	125		

F

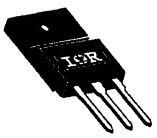
Part number in bold indicates new product.
(1) For case outline drawing see page 0-2.

Low charge HEXFETs reduce gate charge by 40% or more and capacitances by up to 85% without any added device cost.

TO-247AC N-Channel "Low Charge"

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	Q_g Total Gate Charge (nC)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFP350LC	400	0.30	18	70	0.65	190	**H13**	**TO-247AC** 
IRFP360LC	400	0.20	23	98	0.45	280		
IRFP450LC	500	0.40	16	70	0.65	190		
IRFP460LC	500	0.27	20	98	0.45	280		
IRFPC50LC	600	0.60	13	70	0.65	190		
IRFPC60LC	600	0.40	16	98	0.45	280		

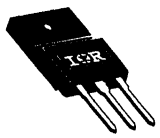
TO-247AC P-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d @ T_c = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFP9140	-100	0.20	-21	-15	0.83	180	**H13**	**TO-247AC** 
IRFP9240	-200	0.50	-12	-7.5	0.83	150		

Part number in bold indicates new product.
(1) For case outline drawing see page 0-2.

TO-247AC N-Channel

Part Number	$V_{(BR)DSS}$ Drain-to-Source Breakdown Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C (Amps)	I_D Continuous Drain Current 100°C (Amps)	R_{thJC} Max Thermal Resistance (°C/W)	$P_d@T_C = 25°C$ Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFP044	60	0.028	57	40	0.83	180	H13	TO-247AC
IRFP048	60	0.018	70	52	0.80	190		
IRFP054	60	0.014	70	64	0.65	230		
IRFP064	60	0.009	70	70	0.50	300		
IRFP140	100	0.077	31	22	0.83	180		
IRFP150	100	0.055	41	29	0.65	230		
IRFP240	200	0.18	20	12	0.83	150		
IRFP250	200	0.085	30	19	0.65	190		
IRFP260	200	0.055	46	29	0.45	280		
IRFP244	250	0.28	15	9.7	0.83	150		
IRFP254	250	0.14	23	15	0.65	190		
IRFP264	250	0.075	38	24	0.45	280		
IRFP340	400	0.55	11	6.9	0.83	150		
IRFP350	400	0.30	16	10	0.65	190		
IRFP360	400	0.20	23	14	0.45	280		
IRFP344	450	0.63	9.5	6.0	0.83	150		
IRFP354	450	0.35	14	9.1	0.65	190		
IRFP440	500	0.85	8.8	5.6	0.83	150		
IRFP448	500	0.60	11	6.6	0.70	180		
IRFP450	500	0.40	14	8.7	0.65	190		
IRFP460	500	0.27	20	13	0.45	280		
IRFPC30	600	2.2	4.3	2.7	1.2	100		
IRFPC40	600	1.2	6.8	4.3	0.83	150		
IRFPC50	600	0.60	11	7.0	0.65	180		
IRFPG60	600	0.40	16	10	0.45	280		
IRFPC48	600	0.82	8.9	5.6	0.73	170		
IRFPE30	800	3.0	4.1	2.6	1.0	125		
IRFPE40	800	2.0	5.4	3.4	0.83	150		
IRFPE50	800	1.2	7.8	4.9	0.65	190		
IRFPF30	900	3.7	3.6	2.3	1.0	125		
IRFPF40	900	2.5	4.7	2.9	0.83	150		
IRFPF50	900	1.6	6.7	4.2	0.65	190		
IRFPG30	1000	5.0	3.1	2.0	1.0	125		
IRFPG40	1000	3.5	4.3	2.7	0.83	150		
IRFPG50	1000	2.0	6.1	3.9	0.65	190		



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Part number in bold indicates new product.
(1) For case outline drawing see page O-2.

TO-240 N-Channel

Part Number	BV_{DSS} Drain Source Voltage (Volt)	$R_{DS(on)}$ On-State Resistance (Ohms)	I_D Continuous Drain Current 25°C Case (Amps)	I_{DM} Pulse Drain Current (Amps)	P_D Max Power Dissipation (Watts)	Case Outline Number (1)	Case Style
IRFK2D054	60	0.010	120	480	500	**H14**	**TO-240AA**
IRFK2D150	100	0.028	72	288			
IRFK2D250	200	0.043	54	216			
IRFK20350	400	0.150	25	100			
IRFK20450	500	0.200	22	88			
IRFK2DC50	600	0.350	18	72			
IRFK2DE50	800	0.600	12	48			
IRFK2F054	60	0.010	120	480			
IRFK2F150	100	0.028	72	288			
IRFK2F250	200	0.043	54	216			
IRFK2F350	400	0.150	25	100			
IRFK2F450	500	0.200	22	88			
IRFK2FC50	600	0.350	16	72			
IRFK2FE50	800	0.600	12	48			
IRFK3D150	100	0.020	125	435	625		
IRFK3D250	200	0.030	70	280			
IRFK3D350	400	0.100	37	148			
IRFK3D450	500	0.135	33	132			
IRFK3DC50	600	0.230	24	96			
IRFK3F150	100	0.020	125	435			
IRFK3F250	200	0.030	70	280			
IRFK3F350	400	0.100	37	148			
IRFK3F450	500	0.135	33	132			
IRFK3FC50	600	0.230	24	96			
IRFK4H054	60	0.005	150	960	500	**H15**	**TO-240AA**
IRFK4H150	100	0.014	145	580			
IRFK4H250	200	0.021	108	432			
IRFK4H350	400	0.075	50	200			
IRFK4H450	500	0.100	44	176			
IRFK4HC50	600	0.175	35	140			
IRFK4HE50	800	0.300	26	104			
IRFK4J054	60	0.005	150	960			
IRFK4J150	100	0.014	145	580			
IRFK4J250	200	0.021	108	432			
IRFK4J350	400	0.075	50	200			
IRFK4J450	500	0.100	44	176			
IRFK4JC50	600	0.175	35	140			
IRFK4JE50	800	0.300	26	104			
IRFK6H054	60	0.003	350	1400	625		
IRFK6H150	100	0.010	150	720			
IRFK6H250	200	0.015	140	560			
IRFK6H350	400	0.050	75	300			
IRFK6H450	500	0.067	66	264			
IRFK6HC50	600	0.100	48	192			
IRFK6J054	60	0.003	350	1400			
IRFK6J150	100	0.010	150	720			
IRFK6J250	200	0.015	140	560			
IRFK6J350	400	0.050	75	300			
IRFK6J450	500	0.067	66	264			
IRFK6JC50	600	0.100	48	192			

Part number in bold indicates new product.
(1) For case outline drawing see page O-2.

Table I. HEXFET III Die

HEX Size	Part Number	V_{DS}	$R_{DS(on)}$ Max	Die (1) Outline Figure	Recomm. Source Bonding Wire mils	Recomm. Source Bonding Wire mm	Equivalent Device Type
Z	IRFC1Z0	100	2.400	D1	3	0.08	IRFS1Z0
1	IRFC014	60	0.200	D2	5	0.13	IRFZ14
1	IRFC110	100	0.540	D3	5	0.13	IRF510
1	IRFC210	200	1.500	D4	5	0.13	IRF610
1	IRFC214	250	2.000	D4	5	0.13	IRF614
1	IRFC310	400	3.600	D5	5	0.13	IRF710
2	IRFC024	60	0.100	D6	10	0.25	IRFZ24
2	IRFC120	100	0.270	D7	8	0.20	IRF520
2	IRFC220	200	0.800	D8	8	0.20	IRF620
2	IRFC224	250	1.100	D8	8	0.20	IRF624
2	IRFC320	400	1.800	D9	8	0.20	IRF720
2	IRFC420	500	3.000	D9	8	0.20	IRF820
2	IRFCC20	600	4.400	D10	8	0.20	IRFBC20
2	IRFCE20	800	6.500	D11	5	0.13	IRFBE20
2	IRFCF20	900	8.000	D11	5	0.13	IRFBF20
2	IRFCG20	1000	11.500	D11	5	0.13	IRFBG20
3	IRFC034	60	0.050	D12	15	0.38	IRFZ34
3	IRFC130	100	0.160	D13	10	0.25	IRF530
3	IRFC230	200	0.400	D14	8	0.20	IRF630
3	IRFC234	250	0.450	D14	8	0.20	IRF634
3	IRFC330	400	1.000	D15	8	0.20	IRF730
3	IRFC430	500	1.500	D15	8	0.20	IRF830
3	IRFCC30	600	2.200	D16	8	0.20	IRFBC30
3	IRFCE30	800	3.200	D17	10	0.25	IRFBE30
3	IRFCF30	900	4.000	D17	10	0.25	IRFBF30
3	IRFCG30	1000	5.600	D17	10	0.25	IRFBG30
4	IRFC044	50/60	0.028	D19	20	0.15	IRFZ44
4.1	IRFC048	60	0.018	D24	20	0.15	IRFZ48
4	IRFC140	100	0.077	D20	15	0.38	IRF540
4	IRFC240	200	0.180	D21	15	0.38	IRF640
4	IRFC244	250	0.280	D21	15	0.38	IRF644
4	IRFC340	400	0.550	D22	12	0.30	IRF740
4	IRFC440	500	0.850	D22	12	0.30	IRF840
4.5	IRFC448	500/600	0.600	D25	12	0.30	IRFP448
4	IRFCC40	600	1.200	D22	12	0.30	IRFBC40
4	IRFCE40	800	2.000	D23	10	0.25	IRFPE40
4	IRFCF40	900	2.500	D23	10	0.25	IRFPF40
4	IRFCG40	1000	3.500	D23	10	0.25	IRFPG40
5	IRFC054	60	0.014	D26	25	0.64	IRFP054
5	IRFC150	100	0.055	D27	20	0.51	IRFP150
5	IRFC250	200	0.085	D27	20	0.51	IRFP250
5	IRFC254	250	0.140	D27	20	0.51	IRFP254
5	IRFC350	400	0.300	D27	20	0.51	IRFP350
5	IRFC450	500	0.400	D27	20	0.51	IRFP450
5	IRFCC50	600	0.600	D28	20	0.51	IRFPC50
5	IRFCE50	800	1.200	D29	10	0.25	IRFPE50
5	IRFCF50	900	1.600	D29	10	0.25	IRFPF50
5	IRFCG50	1000	2.000	D29	10	0.25	IRFPG50
6	IRFC060	60	-	D30	-	-	-
6	IRFC260	200	(.060)	D31	25	0.64	-
6	IRFC360	400	0.200	D32	25	0.64	IRFP360
6	IRFC460	600	0.270	D32	25	0.64	IRFP460

F

Part number in bold indicates new product.
(1) For case outline drawing see page O-2.

Table I. HEXFET III Die (Continued)

HEX Size	Part Number	V_{DS}	$R_{DS(on)}$ Max	Die (1) Outline Figure	Recomm. Source Bonding Wire mils	Recomm. Source Bonding Wire mm	Equivalent Device Type
P-Channel HEXFETs							
1	IRFC9014	-60	0.500	D33	5	0.13	IRFR9014
1	IRFC9110	-100	1.200	D34	5	0.13	IRF9510
1	IRFC9210*	-200	3.000	D35	5	0.13	IRF9610
2	IRFC9024	-60	0.280	D36	10	0.25	IRF9Z24
2	IRFC9120	-100	0.600	D37	8	0.20	IRF9520
2	IRFC9220*	-200	1.500	D38	8	0.20	IRF9620
3	IRFC9034	-60	0.140	D39	12	0.30	IRF9Z34
3	IRFC9130	-100	0.300	D40	10	0.25	IRF9530
3	IRFC9230	-200	0.800	D41	8	0.20	IRF9630
4	IRFC9044	-60	-	-	20	0.51	-
4	IRFC9140	-100	0.200	D42	15	0.38	IRF9540
4	IRFC9240	-200	0.500	D43	15	0.38	IRF9640
Logic Level Die							
1	IRLC014	60	0.200	D2	5	0.13	IRLZ14
1	IRLC110	100	0.540	D3	5	0.13	IRL510
2	IRLC024	60	0.100	D6	10	0.25	IRLZ24
2	IRLC120	100	0.270	D7	8	0.20	IRL520
3	IRLC034	60	0.050	D12	15	0.38	IRLZ34
3	IRLC130	100	0.160	D13	10	0.25	IRL530
4	IRLC044	60	0.028	D18	20	0.51	IRLZ44
4	IRLC140	100	0.077	D20	15	0.38	IRL540

HEX Size	Part Number	V_{DS}	$R_{DS(on)}$ Max	Nominal Sense Ratio	Die (1) Outline Figure	Recomm. Source Bonding Wire mils	Recomm. Source Bonding Wire mm	Equivalent Device Type
HEXSense Die								
2	IRCC024	60	0.100	780	D44	10	0.25	IRCZ24
3	IRCC034	60	0.050	1410	D45	15	0.38	IRCZ34
3	IRCC130	100	0.160	1430	D46	10	0.25	IRC530
3	IRCC230	200	0.400	1490	D46	8	0.20	IRC630
3	IRCC234	250	0.450	1490	D46	8	0.20	IRC634
3	IRCC330	400	1.000	1525	D46	8	0.20	IRC730
3	IRCC430	500	1.500	1520	D46	8	0.20	IRC830
4	IRCC044	60	0.028	2590	D47	20	0.51	IRCZ44
4	IRCC140	100	0.077	2680	D48	15	0.38	IRC540
4	IRCC240	200	0.180	2740	D48	15	0.38	IRC640
4	IRCC244	250	0.280	2770	D48	15	0.38	IRC644
4	IRCC340	400	0.550	2800	D48	12	0.30	IRC740
4	IRCC440	500	0.850	2780	D48	12	0.30	IRC840
5	IRCC054	60	0.014	2200	D49	25	0.64	IRCP054
5	IRCC150	100	0.055	(5440)	D50	20	0.51	-
5	IRCC250	200	0.085	(5680)	D50	20	0.51	-
5	IRCC254	250	0.140	(5440)	D50	20	0.51	-
5	IRCC350	400	0.300	(5440)	D50	20	0.51	-
5	IRCC450	500	0.400	(5440)	D50	20	0.51	-

*GEN I design

Numbers in parentheses are preliminary.

For more detailed information, please refer to the most current data sheet.

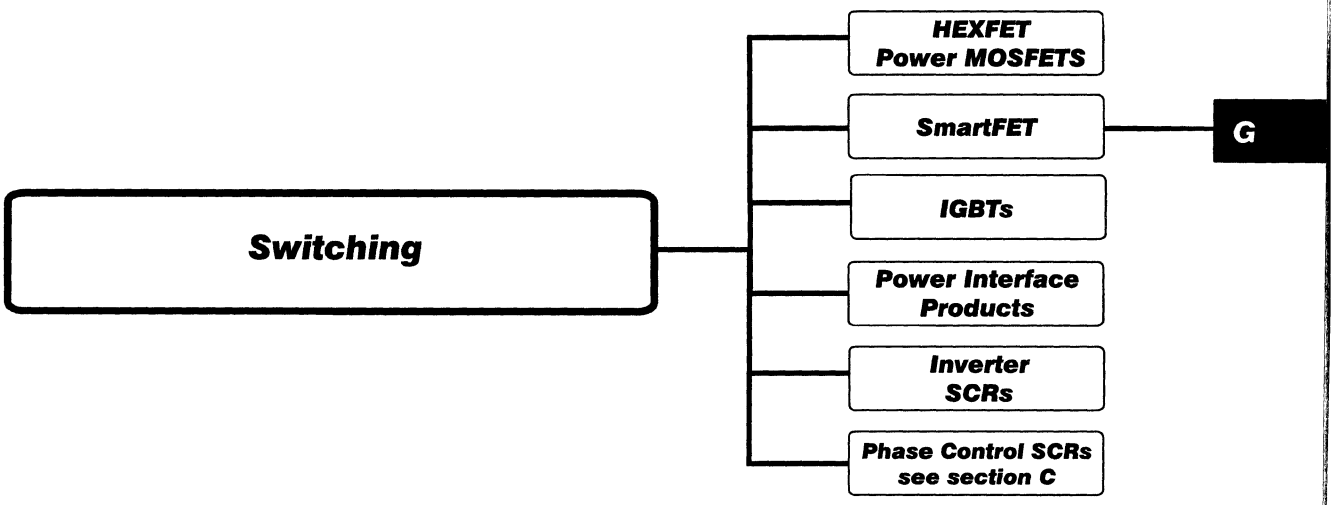
Recommended wire size for Gate, Kelvin and Current Sense connections:
3 to 5 mils (0.076 to 0.127 mm)

(1) For case outline drawing see page O-2.

Common characteristics:

I_{DSS} @ V_{DS} : 250 µA
I_{GSS} : 500 nA
$V_{GS(th)}$: Standard HEXFETs min 2V, max 4V with $V_{DS} = V_{GS}$, ID = 250 µA
$V_{GS(th)}$: Logic level HEXFETs min 1V, max 2V with $V_{DS} = V_{GS}$, ID = 250 µA
$R_{DS(on)}$: Measured with VGS = 10V on standard HEXFETs and 5V on logic level HEXFETs

FUNCTION PRODUCT



SmartFET

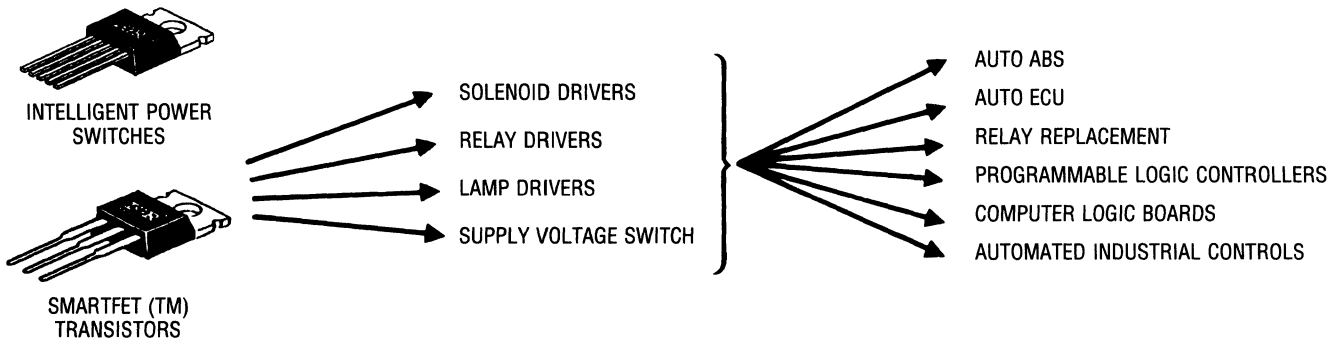
IPS & SmartFET™ (SIV-DCMOS)

For protected power MOSFET switches, International Rectifier employs a self isolated vertical DMOS/CMOS technology. This technology enables IR to provide low voltage (up to 60V) high side protected switches and up to 600V protected low side switches. These switches are used for high reliability systems in automotive, office equipment, industrial automation systems.

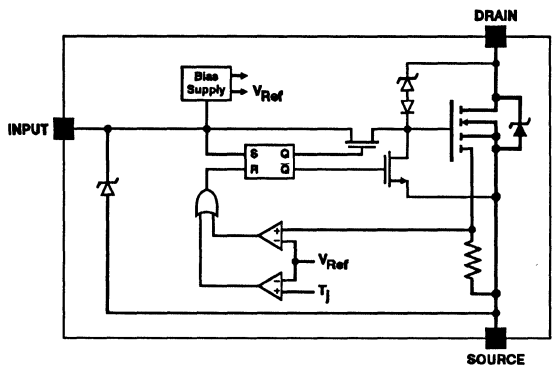
Features (SIVDCMOS)

- Power, control, and diagnostic on a Single Chip
- Overcurrent protection
- Overtemperature protection
- Overvoltage clamping
- Diagnostic
- High Avalanche/clamp energy rating

Use IPS and Smart FET transistors to drive power components for these applications



SmartFET™ Transistor

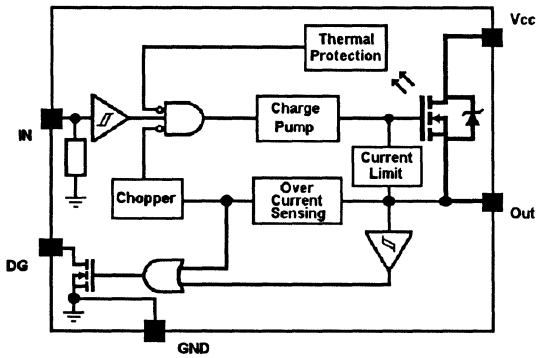


Features

- Extremely rugged for harsh operating environment
- Over-temperature protection
- Over-current protection
- Active drain to source clamp
- ESD protection
- Logic level input threshold
- Compatible with standard POWER MOSFET
- Monolithic construction

Part Number	Continuous Operating Voltage	Shutdown Current	Over Temperature Shutdown	Clamp Voltage (typ.)	On Resistance (max.)	Turn-On Time	Turn-Off Time	Case Outline P10*
	V_{ds}, max. (V)	$I_{ds(sd)}$, min. (A)	$T_{j(sd)}$, typ. (°C)	V_{ds}, clamp (V)	R_{ds} (on) (Ω)	typ. (μs)	typ. (μs)	TO-220
IRSF3010	50	11	165	55	0.080	2.4	1.2	
IRSF3011	50	5	165	55	0.200	0.8	0.5	

High Side Protected DMOS Switch



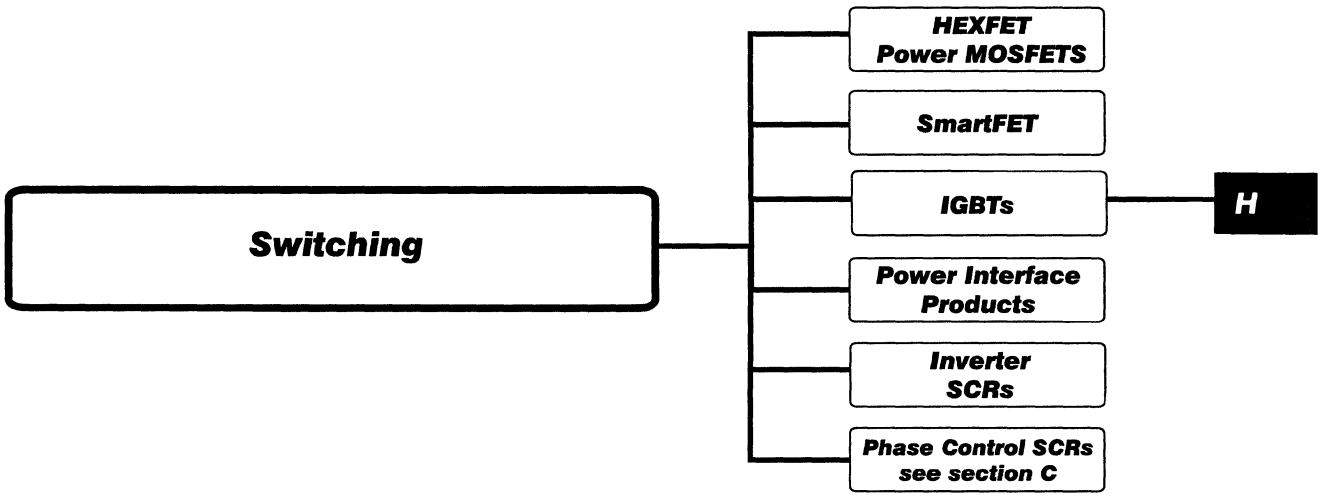
Features

- High negative output clamp voltage
- Avalanche rated output power DMOS
- Over-temperature protection
- PWM current limit for shirt circuit protection
- ESD protection
- Open circuit detection in off-state
- Diagnostic feedback
- LSTTL/CMOS compatible logic input

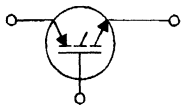
Part Number	Continuous Operating Voltage	Current Limit	Over Temperature Shutdown	Clamp Voltage (typ.)	On Resistance (max.)	Turn-On Time	Turn-Off Time	Case Outline P9*
	V_{ds}, max. (V)	I_{LIM}, min. (A)	$T_{j(sd)}$, typ. (°C)	V_{ds}, clamp (V)	R_{ds} (on) (Ω)	typ. (μs)	typ. (μs)	TO-220 5 lead
IR6000	35	4	175	72	0.100	100	140	
IR6001	35	12	175	72	0.100	100	140	

* Other packages available - consult factory.
For case outline drawings see page O-2.

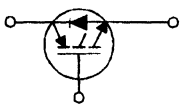
FUNCTION PRODUCT



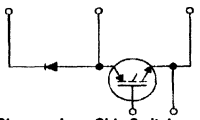
Insulated Gate BiPolar Transistors — IGBTs and IGBT / UltraFast™ Diodes — *CoPack* Discrete and Module Types



Single Switch (without Diode)



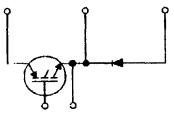
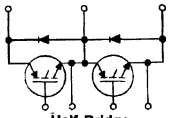
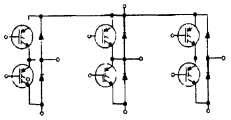
Single Switch (with Diode)



Chopper Low Side Switch

Current Rating A	Voltage Rating -V								
	500	600	900	1200	500	600	1200	600	1200
5-10			IRGBF20F IRGPF20F	*IRGPH20K* *IRGPH20M*		*IRGBC20KD2* *IRGBC20KD2-S* *IRGPC20KD2*	*IRGPH20KD2* *IRGPH20MD2*		
11-15	IRGB420U IRGP420U	*IRGBC20K* *IRGPC20K* *IRGBC20M* *IRGPC20M* IRGBC20U IRGPC20U		*IRGPH30K* *IRGPH30M*	IRGB420UD2	*IRGBC20MD2* *IRGBC20MD2-S* *IRGPC20MD2* IRGBC20UD2	*IRGPH30KD2* *IRGPH30MD2*		
16-20		IRGBC20F IRGPC20F IRGBC20S	IRGBF30F IRGPF30F	*IRGPH40K*		IRGBC20FD2	*IRGPH40KD2*		
21-25	IRGB430U IRGP430U	*IRGBC30K* *IRGPC30K* *IRGBC30M* *IRGPC30M* IRGBC30U IRGPC30U			IRGB430UD2 IRGP430UD2	*IRGBC30KD2* *IRGBC30KD2-S* *IRGPC30KD2* *IRGBC30MD2* *IRGBC30MD2-S* *IRGPC30MD2* IRGBC30UD2 IRGPC30UD2			
26-30				IRGPH40F *IRGPH40M*			IRGPH40FD2 *IRGPH40MD2*		
31-40	IRGB440U IRGP440U	IRGBC30F IRGPC30F *IRGBC40K* *IRGPC40K* *IRGBC40M* *IRGPC40M* IRGBC30S IRGBC40U IRGPC40U	IRGPF40F	*IRGPH50K*	IRGP440UD2	IRGBC30FD2 IRGPC30FD2 *IRGPC40KD2* *IRGPC40MD2* IRGPC40UD2	*IRGPH50KD2*		
41-50	IRGP450U	IRGBC40F IRGPC40F IRGBC40S		IRGPH50F *IRGPH50M*	IRGPC450FD2	IRGPC40FD2	IRGPH50FD2 *IRGPH50MD2*	IRGNI050U06	
51-60		*IRGPC50K* *IRGPC50M* IRGPC40S IRGPC50U	IRGPF50F			*IRGPC50KD2* *IRGPC50MD2* IRGPC50UD2		*IRGNIN050K06* *IRGNIN050M06*	*IRGNIN025M12*
61-70		IRGPC50F				IRGPC50FD2			
71-100								IRGNI090U06 *IRGNIN075K06*	*IRGNIN050M12*
101-125								IRGNI120F06 *IRGNIN075M06* IRGNI115U06	
126-150								*IRGNIN100K06* *IRGNIN100M06* IRGNI140U06	*IRGNIN075M12*
151-175								IRGNI165F06 *IRGNIN150K06*	
176-200								*IRGNIN150M06* IRGNI200F06	
201-300								*IRGNIN150M06* IRGNI200F06	
301-400						*IRGDDN300K06* *IRGRDN300K06* *IRGDDN300M06* *IRGDN300M06*			
401-600						*IRGDDN400K06* *IRGRDN400K06* *IRGDDN400M06* *IRGRDN400M06*	*IRGDDN200M12* *IRGRDN300M12*		
601-1000						*IRGDDN600K06* *IRGRDN600K06* *IRGDDN600M06* *IRGRDN600M06*			

Part Numbers in italics are Short Circuit Protected

Current Rating A	 Chopper High Side Switch		 Half Bridge		 Three Phase Bridge
	Voltage Rating -V				
	600	1200	600	1200	600
5-10					CPV362MF *CPV362MK* *CPV362MM*
11-15					*CPV363MK* CPV363MU
16-20					CPV363MF *CPV363MM* *CPV364MK*
21-25					
26-30					CPV364MF
31-40			CPU165MU		
41-50	IRGKI050U06		CPU165MF IRGTI050U06		
51-60	IRGKIN050K06 *IRGKIN050M06*	*IRGKIN025M12*	*IRGTIN050K06* *IRGTIN050M06*	*IRGTIN025M12*	
61-70					
71-100	IRGKI090U06 *IRGKIN075K06*	*IRGKIN050M12*	IRGTI090U06 *IRGTIN075K06*	*IRGTIN050M12*	
101-125	IRGKI120F06 *IRGKIN075M06* IRGKI115U06		IRGTA120F06 *IRGTIN075M06* IRGTI115U06		
126-150	*IRGKIN100K06* *IRGKIN100M06* IRGKI140U06	*IRGKIN075M12*	*IRGTIN100K06* *IRGTIN100M06* IRGTI140U06	*IRGTIN075M12*	
151-175	IRGKI165K06 *IRGKIN150K06*		IRGTI165F06 *IRGTIN150K06* *IRGTDN150K06*		
176-200	*IRGNIN150M06* IRGKI200F06		*IRGTIN150M06* IRGTI200F06 *IRGTDN150M06*	*IRGTDN100M12*	
201-300	*IRGNIN150M06* IRGKI200F06		*IRGTIN150M06* IRGTI200F06 *IRGTDN150M06*	*IRGTDN100M12*	
301-400			*IRGTDN300K06* *IRGTDN300M06*		
401-600					
601-1000					

H

Low $V_{CE(on)}$ IGBTs for Low Frequency (DC~1kHz) Power Applications — STANDARD

Part Number	V_{CES} Collector to Emitter Voltage (V)	Max $V_{CE(on)}$ Collector to Emitter Voltage (V)	I_C Continuous Collector Current T_C = 25°C (A)	I_C Continuous Collector Current T_C = 100°C (A)	P_D Max. Power Dissipation (W)	Circuit	(1) Case Outline Number
Discretes - (IGBT only)							
IRGBC20S	600	2.0	19	10	60	Circuit A	IG1 TO-220AB
IRGBC30S		2.2	34	18	100		
IRGBC40S		1.8	50	31	160		
IRGPC40S		1.8	60	31	160		IG3 TO-247AC
IRGPC50S		1.6	70	41	200		

Fast IGBTs for Medium Frequency (3-10 kHz range) Power Applications
High Efficiency — Optimized for Power Conversion — FAST

Part Number	V_{CES} Collector to Emitter Voltage (V)	Max $V_{CE(on)}$ Collector to Emitter Voltage (V)	I_C Continuous Collector Current T_C = 25°C (A)	I_C Continuous Collector Current T_C = 100°C (A)	P_D Max. Power Dissipation (W)	Circuit	(1) Case Outline Number
Discretes - (IGBT only)							IG1
IRGBC20F	600	2.8	16	9	60	Circuit A	IG3 TO-220AB
IRGBC30F		2.1	31	17	100		
IRGBC40F		2.0	49	27	160		
IRGPC20F		2.8	16	9	60		TO-247AC
IRGPC30F		2.1	31	17	100		
IRGPC40F		2.0	49	47	160		
IRGPC50F		1.7	70	39	200		
Co-PACKS - (IGBT + HEXFRED™ Diode)							
IRGBC20FD2	600	2.8	16	9	60	Circuit B	IG3 TO-220AB
IRGBC30FD2		2.1	31	17	100		
IRGPC30FD2		2.1	33	17	100		TO247AC
IRGPC40FD2		2.0	49	27	160		
IRGPC50FD2		1.7	70	39	200		
Modules							
CPU165MF	600	1.5	42	23	83	Circuit E	IG4 IMS-1
CPV362MF		1.8	8.8	4.8	23	Circuit H	IG5 IMS-2
CPV363MF		1.5	15.9	8.7	36		
CPV364MF		1.6	27	15	62.5		
IRGKI065F06		2.3	65	35	179	Circuit F	IG7 INT-A-Pak
IRGKI120F06		2.3	120	65	298		
IRGKI165F06		2.3	165	90	379		
IRGKI1200F06		2.3	200	110	500		
IRGNI065F06		2.3	65	35	179	Circuit G	
IRGNI120F06		2.3	120	65	298		
IRGNI165F06		2.3	165	90	379		
IRGNI200F06		2.3	200	110	500		
IRGTI065F06		2.3	65	35	179	Circuit E	
IRGTI120F06		2.3	120	65	298		
IRGTI165F06		2.3	165	90	379		
IRGTI200F06		2.3	200	110	500		

(1) For case outline drawing see page O-2

Fast IGBTs for Medium Frequency (3-10 kHz range) Power Applications
Short-Circuit Rated - Optimized for Motor Control Applications

FAST (cont.)

	Part Number	V_{CES} Collector to Emitter Voltage (V)	Max $V_{CE(on)}$ Collector to Emitter Voltage (V)	I_C Continuous Collector Current T_C = 25°C (A)	I_C Continuous Collector Current T_C = 100°C (A)	P_D Max. Power Dissipation (W)	Circuit	(1) Case Outline Number
	Modules							
**	IRGDDN300M06	600	2.0	400	160	1563	Circuit C	IG9
**	IRGDDN400M06		2.0	600	240	1984		
**	IRGDDN600M06		2.0	800	320	2604		
**	IRGRDN300M06		2.0	400	160	1563	Circuit D	Double INT-A-Pak
**	IRGRDN400M06		2.0	600	240	1984		
**	IRGRDN600M06		2.0	800	320	2604		
**	IRGTDN150M06		2.0	200	80	781	Circuit E	IG10
**	IRGTDN200M06		2.0	300	120	1000		
**	IRGTDN300M06		2.0	400	160	1316		
	Discretes - (IGBT only)							
**	IRGPH20M	1200	2.9	7.9	4.9	60	Circuit A	IG3
**	IRGPH30M		3.1	15	9	100		TO-247AC
**	IRGPH40M		2.9	28	16	160		
	IRGPH50M		2.9	42	23	200		
	CoPacks - (IGBT + HEXFRED™ Diode)							
**	IRGPH30MD2	1200	3.1	15	9	100	Circuit B	IG3
**	IRGPH40MD2		2.9	28	16	160		TO-247AC
	IRGPH50MD2		2.9	42	23	200		
	Modules							
	IRGKIN025M12	1200	2.7	50	35	355	Circuit F	IG8
	IRGKIN050M12		2.7	100	45	455		
	IRGKIN075M12		2.7	150	65	600		
	IRGNIN025M12		2.7	50	35	355	Circuit G	INT-A-Pak
	IRGNIN050M12		2.7	100	45	455		
	IRGNIN075M12		2.7	150	65	600		
	IRGTIN025M12		2.7	50	35	355	Circuit E	
	IRGTIN050M12		2.7	100	45	455		
	IRGTIN075M12		2.7	150	65	600		
	IRGDDN200M12		2.7	420	180	1800	Circuit C	IG9
	IRGDDN300M12		2.7	560	290	2400		
	IRGRDN200M12		2.7	420	180	1800	Circuit D	Double INT-A-Pak
	IRGRDN300M12		2.7	560	290	2400		
	IRGTDN100M12		2.5	200	90	900	Circuit E	IG10
	IRGTDN150M12		2.5	280	120	1200		

H

** Provisional data - contact factory for availability.

(1) For case outline drawing see page O-2

Fast IGBTs for Medium Frequency (3-10 kHz range) Power Applications
High Efficiency — Optimized for Power Conversion

FAST (cont.)

	Part Number	V_{CES} Collector to Emitter Voltage (V)	Max $V_{CE(on)}$ Collector to Emitter Voltage (V)	I_C Continuous Collector Current T_C = 25°C (A)	I_C Continuous Collector Current T_C = 100°C (A)	P_D Max. Power Dissipation (W)	Circuit	(1) Case Outline Number
	Discretes - (IGBT only)							
	IRGBF20F	900	4.3	9	5.3	60	Circuit A	IG1 TO-220AB
	IRGBF30F		3.7	20	11	100		
	IRGPF30F		3.7	20	11	100		IG3 TO-247AC
	IRGPF40F		3.3	31	17	160		
	IRGPF50F		2.7	51	28	200		
	IRGPH40F	1200	3.3	29	17	160		
	IRGPH50F		2.9	45	25	200		
	CoPacks - (IGBT + HEXFRED™ Diode)							
	IRGPH40FD2	1200	3.3	29	17	160	Circuit B	IG3 TO-247AC
	IRGPH50FD2		2.9	45	25	200		

Short-Circuit-Rated — Optimized for Motor Control Applications

	Discretes - (IGBT only)							
**	IRGBC20M	600	2.5	13	8	60	Circuit A	IG1 TO-220AB
**	IRGBC30M		2.1*	23	14	100		
**	IRGBC40M		2.0*	40	24	160		
**	IRGPC20M		2.5	13	8	60	Circuit B	IG3 TO-247AC
**	IRGPC30M		2.1*	23	14	100		
**	IRGPC40M		2.0*	40	24	160		
	IRGPC50M		2.3	60	35	200		
	CoPacks - (IGBT + HEXFRED™ Diode)							
	IRGBC20MD2	600	2.5	13	8	60	Circuit B	IG1 TO-220AB
**	IRGBC30MD2		2.1*	23	14	100		
	IRGBC20MD2-S		2.5	13	8	60		IG2 SMD-220
**	IRGBC30MD2-S		2.1*	23	14	100		
	IRGPC20MD2		2.5	13	8	60		IG3 TO-247AC
**	IRGPC30MD2		2.1*	23	14	100		
**	IRGPC40MD2		2.0*	40	24	160		
	IRGPC50MD2		2.0*	60	35	200		
	Modules							
	CPV362MM	600	2.8	7.9	4.6	23	Circuit H	IG5 IMS-2
	CPV363MM		2.0	13	7.0	36		
	CPV364MM		2.0	22	12	62.5		
**	IRGKIN050M06		2.0	60	23	240	Circuit F	IG7 INT-A-Pak
**	IRGKIN075M06		2.0	110	40	391		
**	IRGKIN100M06		2.0	150	60	500		
**	IRGKIN150M06		2.0	200	80	658		
**	IRGNIN050M06		2.0	60	23	240	Circuit G	
**	IRGNIN075M06		2.0	110	40	391		
**	IRGNIN100M06		2.0	150	60	500		
**	IRGNIN150M06		2.0	200	80	658		
**	IRGTIN050M06		2.0	60	23	240	Circuit E	
**	IRGTIN075M06		2.0	110	40	391		
**	IRGTIN100M06		2.0	150	60	500		
**	IRGTIN150M06		2.0	200	80	658		

For case outline drawing see page 0-2.

*Typical

** Provisional data - contact factory for availability.

UltraFast™ IGBTs for Higher Frequency (10-30 kHz) Power Applications
High Efficiency—Optimized for Power Conversion

UltraFast

Part Number	V_{CES} Collector to Emitter Voltage (V)	Max $V_{CE(on)}$ Collector to Emitter Voltage (V)	I_C Continuous Collector Current T_C = 25°C (A)	I_C Continuous Collector Current T_C = 100°C (A)	P_D Max. Power Dissipation (W)	Circuit	(1) Case Outline Number
Discretes (IGBT only)							
IRGB420U	500	3.0	14	7.5	60	Circuit A	IG1 TO-220AB
IRGB430U		3.0	25	15	100		
IRGB440U		3.0	40	22	160		
IRGP420U		3.0	14	7.5	60		IG3 TO247AC
IRGP430U		3.0	25	15	100		
IRGP440U		3.0	40	22	160		
IRGP450U		3.2	59	33	160		
CoPack (IGBT + HEXFRED™ Diode)							
IRGB420UD2	500	2.9	14	7.5	60	Circuit B	IG1 TO-220AB
IRGB430UD2		3.0	25	15	100		
IRGP430UD2		3.0	25	15	100		IG3 TO-247AC
IRGP440UD2		3.0	40	22	160		
IRGP450UD2		3.2	59	33	160		
Discretes (IGBT only)							
IRGBC20U	600	3.0	13	6.5	60	Circuit A	IG1 TO-220-AB
IRGBC30U		3.0	23	12	100		
IRGBC40U		3.0	40	20	160		
IRGPC20U		3.0	13	6.5	60		IG3 TO-247AC
IRGPC30U		2.2	34	18	100		
IRGPC40U		3.0	40	20	160		
IRGPC50U		3.0	55	27	200		
CoPack (IGBT + HEXFRED™ Diode)							
IRGBC20UD2	600	3.0	13	6.5	60	Circuit B	IG1 TO-220AB
IRGBC30UD2		3.0	23	12	100		
IRGPC30UD2		3.0	23	12	100		IG3 TO-247AC
IRGPC40UD2		3.0	40	20	160		
IRGPC50UD2		3.0	55	27	200		
Modules							
CPU165MU	600	2.3	33	17	83	Circuit E	IG4 IMS-1
CPV362MU		2.6	7.2	3.9	23	Circuit H	IG5 IMS-2
CPV363MU		2.4	13	6.9	36		
CPV364MU		2.6	20	10	62.5		
IRGKI050U06		3.1	50	28	179	Circuit F	IG7 INT-A-Pak
IRGKI090U06		3.0	90	50	298		
IRGKI115U06		2.8	115	60	379		
IRGKI140U06		2.7	140	70	500		
IRGNI050U06		3.1	50	28	179	Circuit G	
IRGNI090U06		3.0	90	50	298		
IRGNI115U06		2.8	115	60	379		
IRGNI140U06		2.7	140	70	500		
IRGTI050U06		3.1	50	28	179	Circuit E	
IRGTI090U06		3.0	90	50	298		
IRGTI115U06		2.8	115	60	379		
IRGTI140U06		2.7	140	70	500		

(1) For case outline drawing see page O-2

H

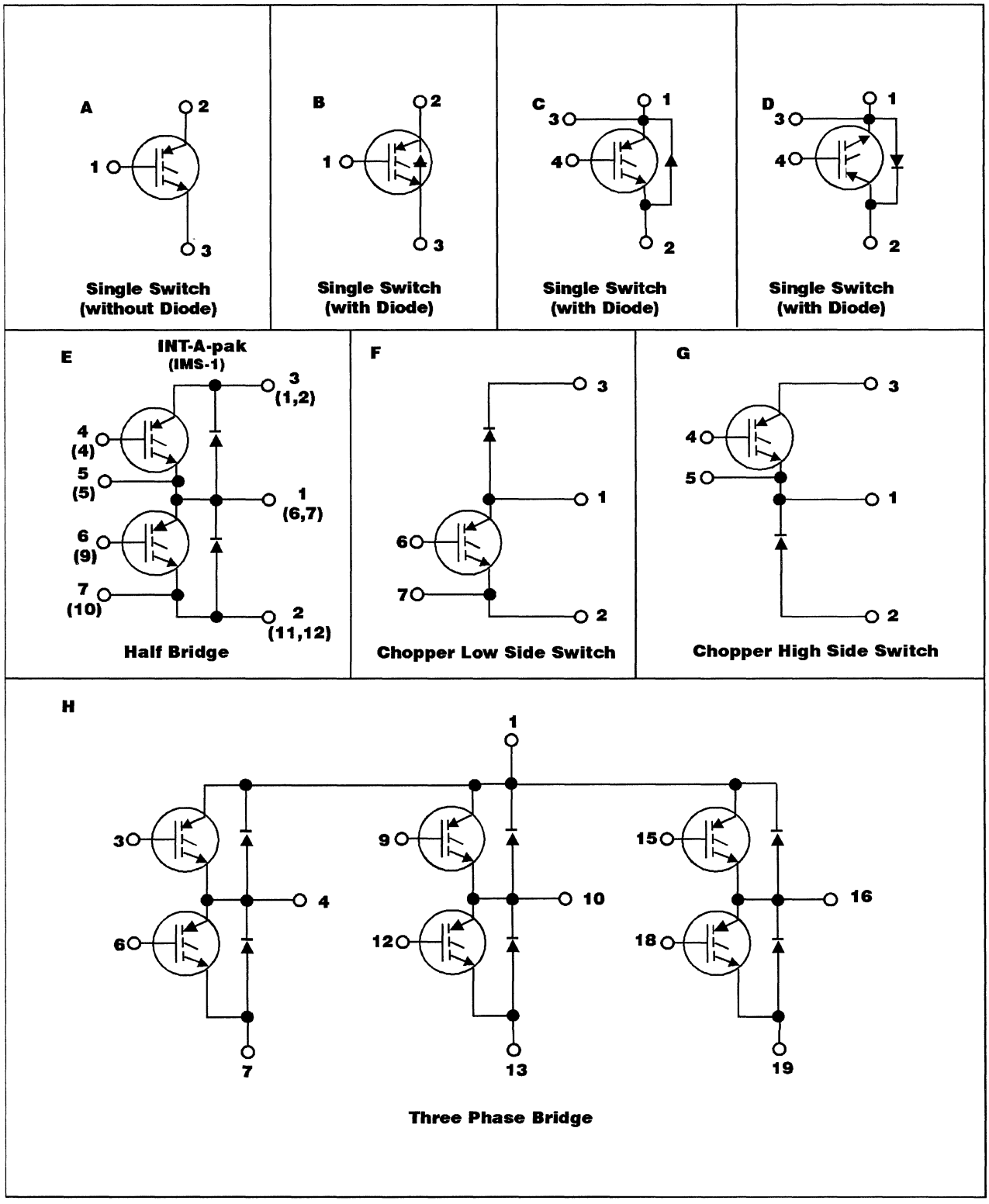
UltraFast™ IGBTs for HIgher Frequency (10-30 kHz) Power Applications
High Efficiency—Optimized for Power Conversion

	Part Number	V_{CES} Collector to Emitter Voltage (V)	Max $V_{CE(on)}$ Collector to Emitter Saturation Voltage (V)	I_C Continuous Collector Current T_C = 25°C (A)	I_C Continuous Collector Current T_C = 100°C (A)	P_D Max. Power Dissipation (W)	Circuit	Case Outline Number
	Discretes (IGBT only)							
	IRGBC20K	600	3.5	10	6	60	Circuit A	IG1 TO-220AB
**	IRGBC30K		3.5	21	12	100		
**	IRGBC40K		2.2*	33	20	160		
	IRGPC20K		3.5	10	6	60		IG3 TO-247AC
**	IRGPC30K		3.3	21	12	100		
**	IRGPC40K		2.2*	33	20	160		
	IRGPC50K		2.7	52	30	200		
	CoPack (IGBT + HEXFRED™ Diode - Circuit B)							
	IRGBC20KD2	600	3.5	10	6	60	Circuit B	IG1 TO-220AB
**	IRGBC30KD2		3.5	21	12	100		
	IRGBC20KD2-S		3.5	10	6	60		IG2 SMD-220
**	IRGBC30KD2-S		3.5	21	12	100		
	IRGPC20KD2		3.5	10	6	60		IG3 TO-247AC
**	IRGPC30KD2**		3.5	21	12	100		
**	IRGPC40KD2**		2.2*	33	20	160		
	IRGPC50KD2		2.7	52	30	200		
	Modules							
	CPV362MK	600	2.7	6	3.4	23	Circuit H	IG5 IMS-2
	CPV363MK		2.5	10	6	36		
	CPV364MK		2.6	20	10	62.5		
**	IRGKIN050K06		2.7	55	20	240	Circuit F	IG7 INT-A-Pak
**	IRGKIN075K06		2.7	95	40	391		
**	IRGKIN100K06		2.7	130	50	500		
**	IRGKIN150K06		2.7	170	70	658		
**	IRGNIN050K06		2.7	55	20	240	Circuit G	
**	IRGNIN075K06		2.7	95	40	391		
**	IRGNIN100K06		2.7	130	50	500		
**	IRGNIN150K06		2.7	170	70	658		
**	IRGTIN050K06		2.7	55	20	240	Circuit E	
**	IRGTIN075K06		2.7	95	40	391		
**	IRGTIN100K06		2.7	130	50	500		
**	IRGTIN150K06		2.7	170	70	658		
**	IRGDDN300K06		2.7	340	140	1563	Circuit C	IG9 Double INT-A-Pak
**	IRGDDN400K06		2.7	520	200	1984		
**	IRGDDN600K06		2.7	680	280	2604		
**	IRGRDN300K06		2.7	340	140	1563	Circuit D	
**	IRGRDN400K06		2.7	520	200	1984		
**	IRGRDN600K06		2.7	680	280	2604		
**	IRGTDN300K06		2.7	170	90	781	Circuit E	IG10
**	IRGTDN400K06		2.7	260	100	1000		
**	IRGTDN600K06		2.7	340	140	1316		
	Discretes (IGBT only)							
**	IRGPH20K	1200	3.5	6	4	60	Circuit A	IG3 TO-247AC
**	IRGPH30K		3.5	11	6.5	100		
**	IRGPH40K		3.5	19	11	160		
	IRGPH50K		3.5	36	20	200		
	CoPack (IGBT + HEXFRED™ Diode)							
**	IRGPH20KD2	1200	3.5	6	20	60	Circuit B	IG3 TO-247AC
**	IRGPH30KD2		3.5	11	20	100		
**	IRGPH40KD2		3.5	19	20	160		
	IRGPH50KD2		3.5	36	20	200		

(1) For case outline drawing see page O-2

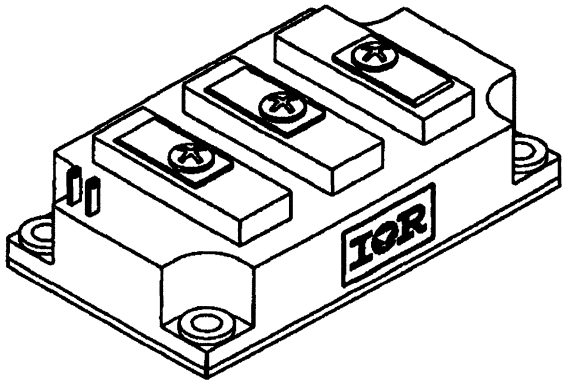
*Typical ** Provisional data - contact factory for availability.

IGBT Circuit Configurations

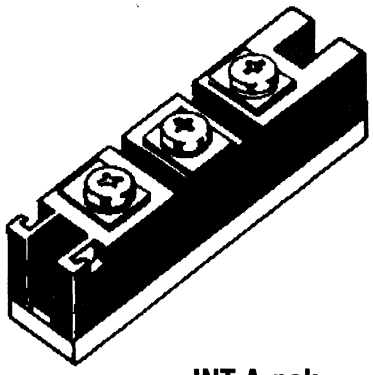


H

IGBT Case Styles

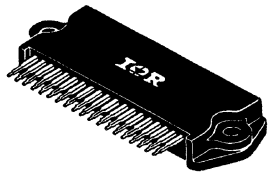


Double INT-A-pak

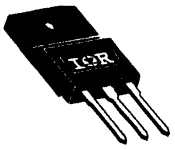


INT-A-pak

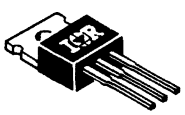
IMS-1



IMS-2



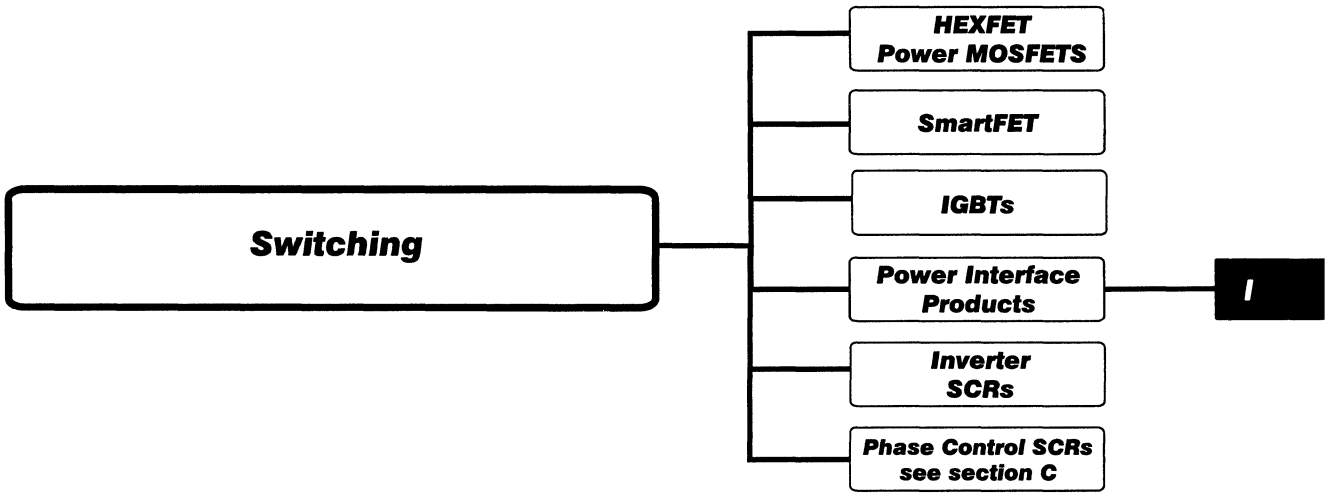
TO-247AC



TO-220AB

SMD-220

FUNCTION PRODUCT



Power Interface Products

The Powerline and IMS Packages

The Power Interface Products family are available in three different package outlines. All three are Single-In-Line Packages (SIP) printed circuit board compatible modules. The packages are the Powerline 1, IMS-1 and IMS-2 shown below. These packages are available with standard configurations as described on page and are also available for semi-custom design to meet your specific circuit requirements. They may include HEXFET's, IGBT's, Logic Level HEXFET's, IC's, resistors, capacitors, Diodes, (Schottky, Zener or FRED's) chips as well as surface mount components. Customer specified lead forming and terminations are also available.

Powerline Packages for standard or semi-custom designs.

Max No. of Pins: 11 on 0.1" centers	**Powerline 1**
Maximum Current: 10 Amps	
Power Range: 20 Watts to 100 Watts	
Circuit and Component Capability	
3ϕ Bridge with HEX-2 Die and Diodes	
H Bridge with HEX-3 Die and Diodes	
1/2 Bridge with HEX-5 Die, Diodes, and Logic	
Typical Applications	
FHP Motors; Actuators; Power Amplifiers	1.5" x 0.5" x 0.13" power SIP

Max No. of Pins: 13	**IMS-1**
Power Range: 20 Watts to 80 Watts	
Circuit and Component Capability	
3ϕ Bridge with IGBT-2 Die and Diodes	
H-Bridge HEX-4 Die and Diodes	
Single Phase Leg with IGBT-5 Die and Diodes	
Typical Applications	
Power Supplies and Motor controls	

Max No. of Pins: 19	**IMS-2**
Power Range: 30 Watts to 125 Watts	
Circuit and Component Capability	
3ϕ Bridge with IGBT-4 Die and Diodes	
H-Bridge HEX-6 Die and Diodes	
Single Phase Leg with IR2110, IGBT-4 Die and Diodes	
Typical Applications	
Power Supplies and Motor controls	

For case outline drawing see page

HEXFET POWER MODULES

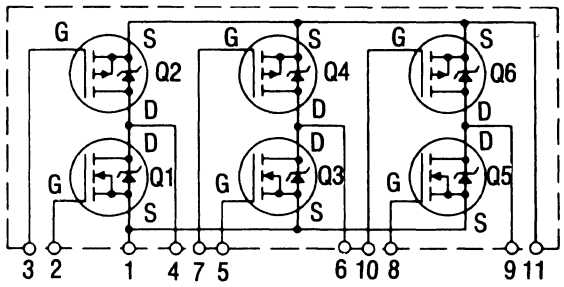
PART NUMBER	V_{DS} (V)	I_D MAX. (1) @ T_C = 45°C (AMPS)	MAX. $R_{DS(ON)}$ PER SWITCH		V_{SD} (2) PER SWITCH		TYPICAL R_{THJC} (K/W)	CIRCUIT	CASE OUTLINE NUMBER (7)	NOTES	CASE STYLE
			LOW SIDE (OHMS)	HIGH SIDE (OHMS)	LOW SIDE (VOLTS)	HIGH SIDE (VOLTS)					
3ϕ BRIDGES for brushless DC motors											
IRFT002	60	6.1	0.10	0.28	1.25	-6.3	5.6	A	**CP1**	—	POWERLINE 1
CPY302F	60	6.1	0.10	0.28	1.25	1.5	5.6	B	**CP1**	(4)(6)	POWERLINE 1
IRFT001	100	3.6	0.30	0.60	2.5	-6.3	7.5	A	**CP1**	—	POWERLINE 1
FULL BRIDGES for stepper motors, brush DC motors, servo amplifiers, power supplies											
CPY203E	60	10.1	0.05	0.14	1.6	1.5	5.6	C	**CP1**	(3)(4)(6)	POWERLINE 1
IRFT003	60	6.1	0.10	0.28	1.25	-6.3	3.8	G	**CP1**	—	POWERLINE 1
UNIPOLAR DRIVE for stepper motors, solenoid drives											
CPY400H	100	7.8	0.18	—	2.5	1.5	5.3	F	**CP1**	(4)(6)	POWERLINE 1

IGBT POWER MODULES

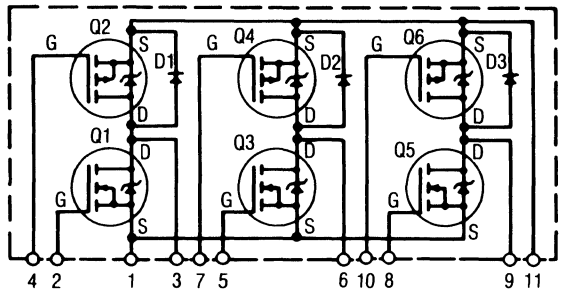
PART NUMBER	V_{DS} (V)	P_D MAX. @ 25°C (W)	V_{CE} (V) @ (A)	CIRCUIT	CASE OUTLINE	NOTES	CASE STYLE
3ϕ BRIDGES FOR AC MOTOR CONTROLS							
CPU362MF	600	23	2.3 8.8	H	**CP4**	8	IMS-2
CPU362MU	600	23	2.5 7.2	H	**CP4**	9	IMS-2
CPV363MF	600	35.9	2.0 15.9	H	**CP4**	8	IMS-2
CPV363MU	600	35.9	2.8 13	H	**CP4**	9	IMS-2
CPV364MF	600	62.5	2.0 27	H	**CP4**	8	IMS-2
CPV364MU	600	62.5	3.1 28	H	**CP4**	9	IMS-2
HALF BRIDGES FOR AC MOTOR CONTROLS							
CPU165MF	600	83	1.9 42	I	**CP3**	8	IMS-1
CPU165MU	600	83	2.7 83	I	**CP3**	9	IMS-1

(1) Complementary pair; p-channel limited where applicable. (2) Typical; consult the data sheet for conditions. (3) Contains HEXSense© current-sensing die. (4) Includes freewheeling diodes across the p-channel die. (5) Employs gate-source zener diodes for ESD protection. (6) V_{SD} value given for reverse conduction through freewheeling diode. (7) For case outline drawing see page 0-2. (8) Using Fast IGBT. (9) Using UltraFast IGBT.

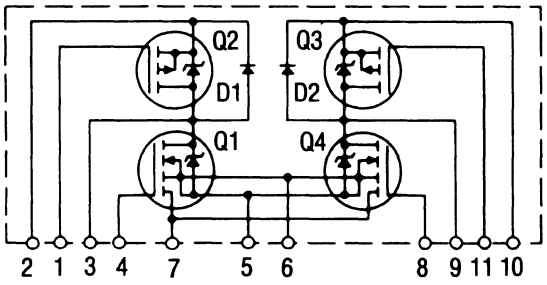
A


G
S
Q2
D
Q4
Q6
Q1
Q3
Q5
3 2 1 4 7 5 6 10 8 9 11

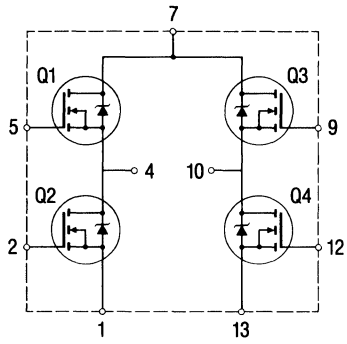
B


Q2
Q4
Q6
D1
D2
D3
Q1
Q3
Q5
4 2 1 3 7 5 6 10 8 9 11

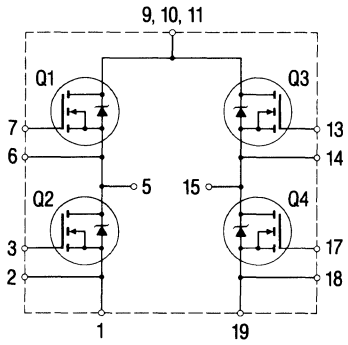
C


Q2
Q3
D1
D2
Q1
Q4
2 1 3 4 7 5 6 8 9 11 10

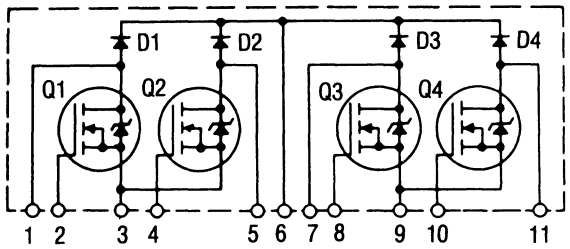
D


7
Q1
Q3
5
9
4
10
Q2
Q4
2
12
1
13

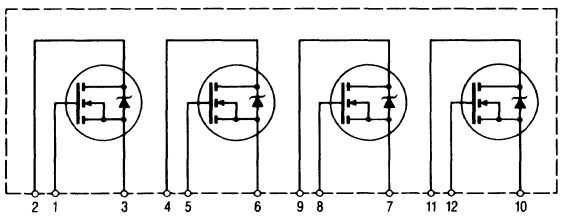
E


9, 10, 11
Q1
Q3
7
13
6
14
5
15
Q2
Q4
3
17
2
18
1
19

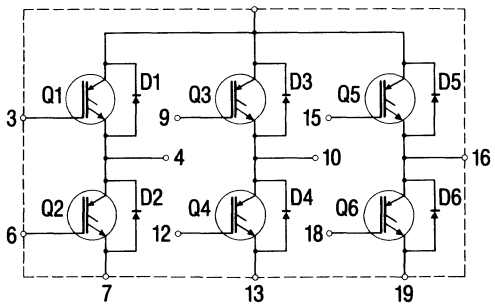
F


D1
D2
D3
D4
Q1
Q2
Q3
Q4
1 2 3 4 5 6 7 8 9 10 11

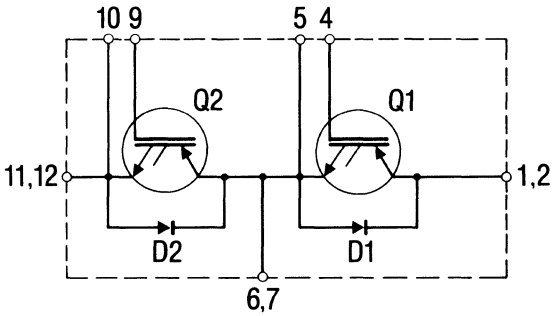
G


2 1 3 4 5 6 9 8 7 11 12 10

H


Q1
D1
Q3
D3
Q5
D5
3
9
15
4
10
16
Q2
D2
Q4
D4
Q6
D6
6
12
18
7
13
19

I


10 9
5 4
Q2
Q1
11,12
1,2
D2
D1
6,7

I

Custom Power Packaging

International IOR Rectifier

Custom solutions are readily available if the POWERLINE and IMS packages or standard circuit configurations do not meet your specific application needs. IR has years of experience designing and manufacturing custom products and can provide the flexibility and expertise necessary to meet your unique power packaging requirement.

Design Experience

The Power Interface Products Group is dedicated to meeting the design needs of the customer. Computer-aided design and thermal analysis capabilities are utilized to minimize the time and cost of achieving the most complex and demanding design requirements. The combined experience of our development team offers design support and customer responsiveness second to none.

Advanced Manufacturing

Our manufacturing facility houses a full compliment of automatic assembly and test equipment necessary to develop and manufacture power modules to meet virtually any application specific power packaging requirement. This facility offers flexibility to provide hybrid prototype quantities in a short cycle time and high volume capacity to meet your production requirements with delivery you can rely upon. Dedicated thick film or direct bond processing, design capability, automatic testing and lead forming capabilities provide the foundation for a total and immediate responsiveness to product quality, reliability, performance and delivery.

Technology Leadership

International Rectifier's established position as a technology leader in power semiconductors has allowed the Power Interface Products Group to establish itself as a leader in semiconductor power packaging. At the forefront of power hybrid technology, both screen printing thick film and direct bond lead-frame technologies are available. Ceramic Substrate or Insulated Metal Substrate technologies with integrated heat-sink systems are offered. Whatever your specific needs, the power packaging technologies are available to provide advanced integration for optimized performance in the minimal space required.

Contact Us Today

To find out more about the custom packaging capabilities at International Rectifier, contact your local sales office or the Power Interface Products Business Management Group.

PIP NOMENCLATURE

CPY203E

CO-PACKAGED POWER MODULES

PACKAGE
- T: PL-10
- U: IMS-1
- V: IMS-2
- W: Powerline 3
- X: Powerline 2
- Y: Powerline 1

CONFIGURATION
- 1: Half-Bridge
- 2: Full Bridge
- 3: 3-Phase Bridge
- 4: Quad Switch

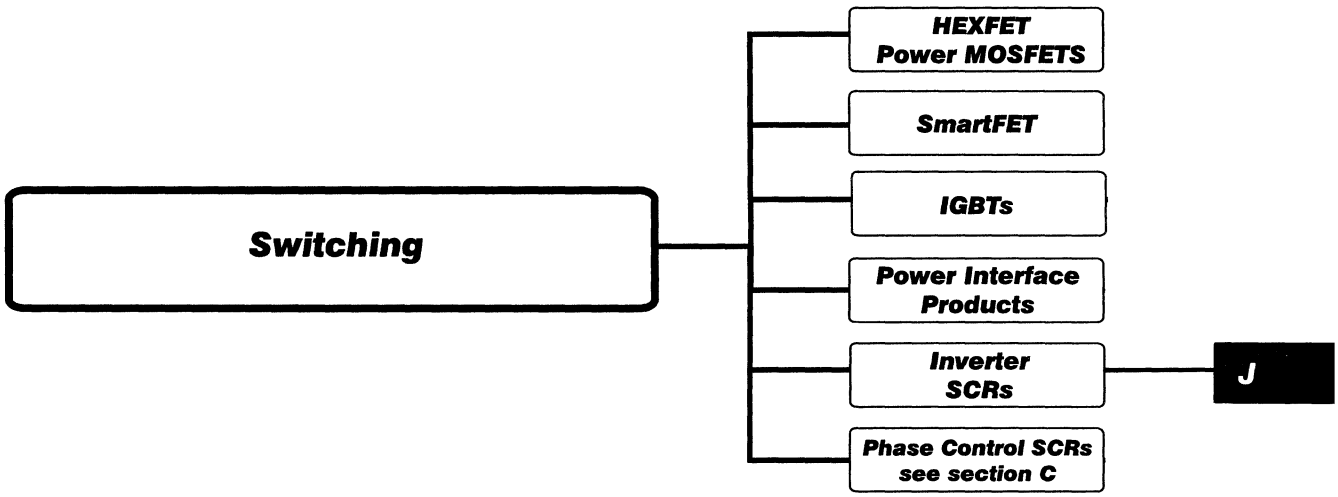
VOLTAGE

HEXFET or IGBT DIE SIZE

PACKAGE CONTENTS
- A: HEXFETs Only
- B: HEXFETs & Blocking Diodes
- C: HEXFETs & Gate Zener Diodes
- D: HEXSense only
- E: HEXSense & Free-Wheeling Diodes (P-Channel Devices Only)
- F: HEXFETs & Free-Wheeling Diodes (P-Channel Devices Only)
- G: HEXSense & Gate Zener Diodes
- H: All N-Channel HEXFETs with FreeWheeling Diodes
- I: IGBTs & FREDS
- J: Driver & IGBTS & FREDS
- K: HEXFETs & Kelvin Connections
- M: IGBT's only
- P: HEXFETs & Kelvin Connections & Gate Zener Diodes
- Q: Complimentary Pair N & P HEXFETs
- S: IGBT's & FREDs with Sense

NOTE: NOT ALL PACKAGES ARE AVAILABLE IN ALL CONFIGURATIONS

FUNCTION PRODUCT



Inverter SCRs

Thyristors
Inverter Type
135-518 Amps

Part Number (1)	V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ (A)	$I_{T(AV)}$ @ T_C (A)	(°C)	I_{TSM} (2) 50 Hz (A)	60 Hz (A)	V_{GT} (3) (V)	I_{GT} (3) (mA)	V_{TM} @ I_{TM} (V)	(A)	T_Q (1) (µs)	R_{thJC} DC (°C/W)	Case Outline Number (7)	Notes	Case Style
ST083S02PF..0 ST083S04PF..0 ST083S06PF..0 ST083S08PF..0 ST083S10PF..0 ST083S12PF..0	200 400 600 800 1000 1200	135	85	85	2060	2160	3.0	200	2.15	300	10 to 20 18 to 30	0.195	T7	(5) (6) (8)	TO-209AC (TO-94) 
ST103S02PF..0 ST103S04PF..0 ST103S06PF..0 ST103S08PF..0	200 400 600 800	165	105	85	2530	2650	3.0	200	1.73	300	10 to 20	0.195			
ST173S06PF..0 ST173S08PF..0 ST173S10PF..0 ST173S12PF..0	600 800 1000 1200	275	175	85	3940	4120	3.0	200	2.07	600	18 to 30	0.105	T10	(5) (6) (8)	TO-209AB (TO-93)
ST183S02PF..0 ST183S04PF..0 ST183S06PF..0 ST183S08PF..0	200 400 600 800	306	195	85	4120	4310	3.0	200	1.80	600	10 to 20	0.105			
ST203S06PF..0 ST203S08PF..0 ST203S10PF..0 ST203S12PF..0	600 800 1000 1200	320	205	85	4420	4630	3.0	200	1.72	600	25 to 30	0.105			
ST223S02PF..0 ST223S04PF..0 ST223S06PF..0 ST223S08PF..0	200 400 600 800	345	220	85	4920	5150	3.0	200	1.58	600	10 to 20	0.105			
ST303S02PF..0 ST303S04PF..0 ST303S06PF..0 ST303S08PF..0 ST303S10PF..0 ST303S12PF..0	200 400 600 800 1000 1200	471	300	65	6690	7000	3.0	200	2.16	1255	10 to 20 20 to 30	0.1	T11	(5) (6) (8)	TO-209AE (TO-118) 
ST333S02PF..0 ST333S04PF..0 ST333S06PF..0 ST333S08PF..0	200 400 600 800	518	330	75	9520	9700	3.0	200	1.51	1040	12 to 25	0.1			

J

(1) Insert the appropriate tq code (e.g., ST083S02PFN0), reapplied dV/dt = 200 V/µs.

Code	N	M	L	P	K	J	H
t_q (µs)	10	12	15	18	20	25	30

(2) 100% V_{RRM} reapplied @ Tj = Tj max. 125°C.
(3) Tj = 25°C.
(5) Available with metric stud: to specify change "P" to "M" in part number (e.g., ST083S02MF..0).
(6) For faston terminals change "0" to "1" at the end of part number (e.g., ST083S02PF..1).
(7) For case outline drawing see page 0-2.
(8) V_{TM} measured at Tj = Tj max.

Thyristors
Inverter Type
410-1875 Amps

International
IOR Rectifier

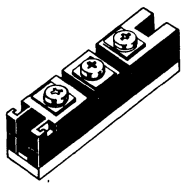
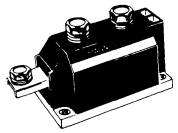
Part Number (1)	V_{RRM} V_{DRM} (V)	$I_{T(RMS)}$ (A)	$I_{T(AV)}$ @ T_{HS} (A)	(°C)	I_{TSM} (2) 50 Hz (A)	60 Hz (A)	V_{GT} (3) (V)	I_{GT} (3) (mA)	V_{TM} @ I_{TM} (V)	(A)	T_Q (1) (µs)	R_{thJ-HS} DC (°C/W)	Case Outline Number (7)	Notes	Case Style
ST083C02CF..0 ST083C04CF..0 ST083C06CF..0 ST083C08CF..0 ST083C10CF..0 ST083C12CF..0	200 400 600 800 1000 1200	410	200	55	2060	2160	3.0	200	2.15	300	10 to 20 18 to 30	0.1	T12	(5) (6) (8)	TO-200AB (A-PUK)
ST103C02CF..0 ST103C04CF..0 ST103C06CF..0 ST103C08CF..0	200 400 600 800	500	240	55	2530	2650	3.0	200	1.73	300	10 to 20	0.1			
ST173C02CF..0 ST173C04CF..0 ST173C06CF..0 ST173C08CF..0 ST173C10CF..0 ST173C12CF..0	200 400 600 800 1000 1200	610	330	55	3940	4120	3.0	200	2.07	600	18 to 30	0.08			
ST183C02CF..0 ST183C04CF..0 ST183C06CF..0 ST183C08CF..0	200 400 600 800	690	370	55	4120	4310	3.0	200	1.80	600	10 to 20	0.08			
ST203C04CF..0 ST203C06CF..0 ST203C08CF..0 ST203C10CF..0 ST203C12CF..0	400 600 800 1000 1200	700	370	55	4420	4630	3.0	200	1.72	600	25 to 30	0.08			
ST223C02CF..0 ST223C04CF..0 ST223C06CF..0 ST223C08CF..0	200 400 600 800	745	390	55	4920	5150	3.0	200	1.58	600	10 to 20	0.08			
ST303C02CF..0 ST303C04CF..0 ST303C06CF..0 ST303C08CF..0 ST303C10CF..0 ST303C12CF..0	200 400 600 800 1000 1200	1180	620	55	6690	7000	3.0	200	2.16	1255	10 to 20 20 to 30	0.04	T13	(5) (6) (8)	TO-200AB (E-PUK) 
ST333C02CF..0 ST333C04CF..0 ST333C06CF..0 ST333C08CF..0	200 400 600 800	1435	720	55	9250	9700	3.0	200	1.96	1810	12 to 25	0.04			
ST303C02LF..0 ST303C04LF..0 ST303C06LF..0 ST303C08LF..0 ST303C10LF..0 ST303C12LF..0	200 400 600 800 1000 1200	995	515	55	6690	7000	3.0	200	2.16	1255	10 to 20 20 to 30	0.05	T14	(5) (6) (8)	TO-200AC (B-PUK) 
ST333C02LF..0 ST333C04LF..0 ST333C06LF..0 ST333C08LF..0	200 400 600 800	1230	620	55	9250	9700	3.0	200	1.96	1810	12 to 25	0.05			
ST733C02LF..0 ST733C04LF..0 ST733C06LF..0	200 400 600	1875	930	55	1350	1400	3.0	200	1.68	1600	15 to 20	0.04			

(1) Insert the appropriate tq code (e.g., ST173C02CFK0), reapplied dV/dt = 200 V/µs.

Code	N	M	L	P	K	J	H
t_q (µs)	10	12	15	18	20	25	30

(2) 100% V_{RRM} reapplied @ Tj = Tj max. 125°C.
(3) Tj = 25°C.
(5) DC operation double sided cooled.
(6) For faston terminals change "0" to "1" at the end of part number (e.g., ST173C02CF..1)
(7) For case outline drawing see page 0-2.
(8) V_{TM} measured at Tj = Tj max.

Power Modules
Thyristor/Thyristor, Fast

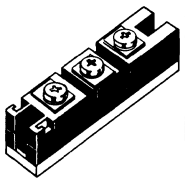
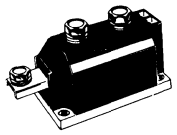
Part Number (3)	Part Number (4)	Part Number (5)	V_{RRM} V_{DRM} (V)	$I_{T(AV)}$ @ T_C (A)	$I_{T(AV)}$ @ T_C (°C)	I_{TSM} (6) 50 Hz (A)	I_{TSM} (6) 60 Hz (A)	R_{thJC} DC (1) (K/W)	t_q Range (μs)	Case Outline Number (10)	Notes	Case Style
IRKTF72-06	IRKUF72-06	IRKVF72-06	600	71	90	1750	1830	0.125	18 to 25	M5	(2) (11) (12)	 U.L. RECOGNIZED File no. E78996
IRKTF72-08	IRKUF72-08	IRKVF72-08	800									
IRKTF72-10	IRKUF72-10	IRKVF72-10	1000									
IRKTF72-12	IRKUF72-12	IRKVF72-12	1200									
IRKTF82-02	IRKUF82-02	IRKVF82-02	200	81	90	1850	1950	0.125	10 to 20			
IRKTF82-04	IRKUF82-04	IRKVF82-04	400									
IRKTF82-06	IRKUF82-06	IRKVF82-06	600									
IRKTF82-08	IRKUF82-08	IRKVF82-08	800									
IRKTF102-06	IRKUF102-06	IRKVF102-06	600	105	90	2400	2500	0.085	18 to 25			
IRKTF102-08	IRKUF102-08	IRKVF102-08	800									
IRKTF102-10	IRKUF102-10	IRKVF102-10	1000									
IRKTF102-12	IRKUF102-12	IRKVF102-12	1200									
IRKTF112-02	IRKUF112-02	IRKVF112-02	200	112	90	2600	2720	0.085	10 to 20			
IRKTF112-04	IRKUF112-04	IRKVF112-04	400									
IRKTF112-06	IRKUF112-06	IRKVF112-06	600									
IRKTF112-08	IRKUF112-08	IRKVF112-08	800									
IRKTF132-02	IRKUF132-02	IRKVF132-02	200	130	90	2700	2825	0.085	12 to 18			
IRKTF132-04	IRKUF132-04	IRKVF132-04	400									
IRKTF132-06	IRKUF132-06	IRKVF132-06	600									
IRKTF132-08	IRKUF132-08	IRKVF132-08	800									
IRKTF152-02	IRKUF152-02	IRKVF152-02	200	150	90	3700	3870	0.085	12 to 18			
IRKTF152-04	IRKUF152-04	IRKVF152-04	400									
IRKTF152-06	IRKUF152-06	IRKVF152-06	600									
IRKTF152-08	IRKUF152-08	IRKVF152-08	800									
IRKTF180-02	IRKUF180-02	IRKVF180-02	200	180	85	6000	6280	0.063	18 to 25	M6		 U.L. RECOGNIZED File no: E78996
IRKTF180-04	IRKUF180-04	IRKVF180-04	400									
IRKTF180-06	IRKUF180-06	IRKVF180-06	600									
IRKTF180-08	IRKUF180-08	IRKVF180-08	800									
IRKTF180-10	IRKUF180-10	IRKVF180-10	1000									
IRKTF180-12	IRKUF180-12	IRKVF180-12	1200									
IRKTF200-02	IRKUF200-02	IRKVF200-02	200	200	85	6400	6700	0.063	18 to 25			
IRKTF200-04	IRKUF200-04	IRKVF200-04	400									
IRKTF200-06	IRKUF200-06	IRKVF200-06	600									
IRKTF200-08	IRKUF200-08	IRKVF200-08	800									
IRKTF200-10	IRKUF200-10	IRKVF200-10	1000									
IRKTF200-12	IRKUF200-12	IRKVF200-12	1200									

(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3000V–50 Hz.
(3) Doubler circuit.
(4) Center tap, circuit common cathode. Contact factory.
(5) Center tap, circuit common anode. Contact factory.
(6) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 125°C.
(11) All devices can be supplied with non toxic materials. Add suffix N to part number.

J

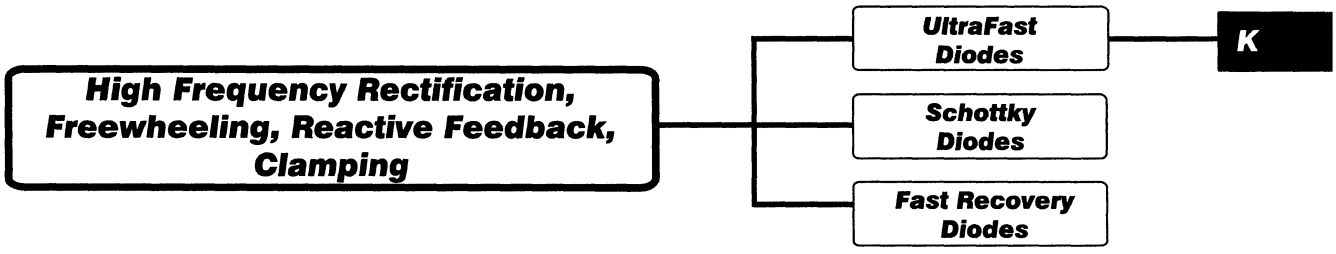
Power Modules
Thyristor/Diode, Fast

International IOR Rectifier

Part Number (3)	(4)	(5)	(6)	V_{RRM} V_{DRM} (V)	$I_{T(AV)}$ @ T_C (A)	(°C)	I_{TSM} (7) 50 Hz (A)	60 Hz (A)	R_{thJC} DC (1) (K/W)	t_q Range (μs)	Case Outline Number (8)	Notes	Case Style
IRKHF72-06	IRKKF72-06	IRKLF72-06	IRKNF72-06	600	71	90	1750	1830	0.125	18 to 25	M5	(2) (9)	
IRKHF72-08	IRKKF72-08	IRKLF72-08	IRKNF72-08	800									
IRKHF72-10	IRKKF72-10	IRKLF72-10	IRKNF72-10	1000									
IRKHF72-12	IRKKF72-12	IRKLF72-12	IRKNF72-12	1200									
IRKHF82-02	IRKKF82-02	IRKLF82-02	IRKNF82-02	200	81	90	1850	1950	0.125	10 to 20			
IRKHF82-04	IRKKF82-04	IRKLF82-04	IRKNF82-04	400									
IRKHF82-06	IRKKF82-06	IRKLF82-06	IRKNF82-06	600									
IRKHF82-08	IRKKF82-08	IRKLF82-08	IRKNF82-08	800									
IRKHF102-06	IRKKF102-06	IRKLF102-06	IRKNF102-06	600	105	90	2400	2500	0.085	18 to 25			
IRKHF102-08	IRKKF102-08	IRKLF102-08	IRKNF102-08	800									
IRKHF102-10	IRKKF102-10	IRKLF102-10	IRKNF102-10	1000									
IRKHF102-12	IRKKF102-12	IRKLF102-12	IRKNF102-12	1200									
IRKHF112-02	IRKKF112-02	IRKLF112-02	IRKNF112-02	200	112	90	2600	2700	0.085	10 to 20			
IRKHF112-04	IRKKF112-04	IRKLF112-04	IRKNF112-04	400									
IRKHF112-06	IRKKF112-06	IRKLF112-06	IRKNF112-06	600									
IRKHF112-08	IRKKF112-08	IRKLF112-08	IRKNF112-08	800									
IRKHF132-02	IRKKF132-02	IRKLF132-02	IRKNF132-02	200	130	90	2700	2825	0.085	12 to 18			
IRKHF132-04	IRKKF132-04	IRKLF132-04	IRKNF132-04	400									
IRKHF132-06	IRKKF132-06	IRKLF132-06	IRKNF132-06	600									
IRKHF132-08	IRKKF132-08	IRKLF132-08	IRKNF132-08	800									
IRKHF152-02	IRKKF152-02	IRKLF152-02	IRKNF152-02	200	150	90	3700	3870	0.085	12 to 18			
IRKHF152-04	IRKKF152-04	IRKLF152-04	IRKNF152-04	400									
IRKHF152-06	IRKKF152-06	IRKLF152-06	IRKNF152-06	600									
IRKHF152-08	IRKKF152-08	IRKLF152-08	IRKNF152-08	800									U.L. RECOGNIZED File no: E78996
IRKHF180-02	IRKKF180-02	IRKLF180-02	IRKNF180-02	200	180	85	6000	6280	0.063	18 to 25	M6		
IRKHF180-04	IRKKF180-04	IRKLF180-04	IRKNF180-04	400									
IRKHF180-06	IRKKF180-06	IRKLF180-06	IRKNF180-06	600									
IRKHF180-08	IRKKF180-08	IRKLF180-08	IRKNF180-08	800									
IRKHF180-10	IRKKF180-10	IRKLF180-10	IRKNF180-10	1000									
IRKHF180-12	IRKKF180-12	IRKLF180-12	IRKNF180-12	1200									
IRKHF200-02	IRKKF200-02	IRKLF200-02	IRKNF200-02	200	200	85	6400	6700	0.063	18 to 25			
IRKHF200-04	IRKKF200-04	IRKLF200-04	IRKNF200-04	400									
IRKHF200-06	IRKKF200-06	IRKLF200-06	IRKNF200-06	600									
IRKHF200-08	IRKKF200-08	IRKLF200-08	IRKNF200-08	800									
IRKHF200-10	IRKKF200-10	IRKLF200-10	IRKNF200-10	1000									
IRKHF200-12	IRKKF200-12	IRKLF200-12	IRKNF200-12	1200									U.L. RECOGNIZED File no: E78996

(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3000V-50 Hz.
(3) Doubler circuit, positive control.
(4) Center tap, circuit common cathode. Contact factory.
(5) Doubler circuit, negative control.
(6) Center tap, circuit common anode. Contact factory.
(7) 100% V_{RRM} reapplied. $T_j = T_j$ max. = 125°C.
(8) For case outline drawing see page 0-2.
(9) All devices can be supplied with non toxic material. Add suffix N to part number.

FUNCTION PRODUCT



UltraFast Diodes

Diodes
Ultra-Fast Recovery
1 to 6.6 Amps

Part Number	V_{RWM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C) (°C)	I_{FSM} (1) @ 60 Hz (A)	V_{FM} @ $I_{F(AV)}$ (V)	R_{thJC} DC (°C/W)	Max. t_{rr} (ns)	Case Outline Number (6)	Notes	Case Style
10DF1	100	1	25	34	1.05	115	100	J5	(2)	DO-204AL DO-41
10DF2	200	1	25	34	1.05	115	100			
10DF4	400	1	25	34	1.20	115	100			
10DF6	600	1	25	34	1.20	115	100			
10DF8	800	1	25	34	1.20	115	100			
11DF1	100	1	63	31.4	0.98	115	35			
11DF2	200	1	63	31.4	0.98	115	35			
11DF3	300	1	63	31.4	1.25	115	30			
11DF4	400	1	63	31.4	1.25	115	30			
30DF1	100	3	40	90	1.05	80	200	J6		D-201AD
30DF2	200	3	40	90	1.05	80	200			
30DF4	400	3	40	90	1.25	80	200			
30DF6	600	3	40	90	1.25	80	200			
31DF1	100	3	57	62.8	0.98	80	35			
31DF2	200	3	57	62.8	0.98	80	35			
31DF3	300	3	57	62.8	1.25	80	30			
31DF4	400	3	57	62.8	1.25	80	30			
10MF2	200	1	122	28	0.98	160	50	J1	(3)	D-64
10BF10	100	1	120	30	0.95	25	35	J2		SMB
10BF20	200	1	120	30	0.95	25	35			
10BF40	400	1	75	30	1.30	30	50			
10BF60	600	1	75	30	1.50	30	100			
10BF80	800	1	75	30	1.70	30	100			
10BF100	1000	1	75	30	1.70	30	100			
30BF10	100	3	120	60	0.95	12	35	J3		SMC
30BF20	200	3	120	60	0.95	12	35			
30BF40	400	3	75	60	1.40	15	50			
30BF60	600	3	75	60	1.50	15	100			
30BF80	800	3	75	60	1.70	15	100			
30BF100	1000	3	75	60	1.70	15	100			
30WF10F	100	3.3	104	31.4	1.35	8	30	J8	(3)	TO-252 D-PAK
30WF20F	200	3.3	104	31.4	1.35	8	30			
30WF30F	300	3.3	104	31.4	1.35	8	30			
30WF40F	400	3.3	104	31.4	1.35	8	30			
50WF10F	100	5.5	104	47	1.1	6	40			
50WF20F	200	5.5	104	47	1.1	6	40			
50WF30F	300	5.5	104	47	1.1	6	40			
50WF40F	400	5.5	104	47	1.1	6	40			
6CWF10F	100	6.6	117	47	0.98	80	30			
6CWF20F	200	6.6	117	47	0.98	80	30			

(1) Following any rated load condition and with rated V_{RWM} reapplied.
(2) Available on tape and reel. See page 0-2.
(3) For ordering information on tape and reel see page 0-2.
(4) Reverse polarity – common anode devices.
(5) For lead formed options see page 0-2.
(6) For case outline drawing see page 0-2.

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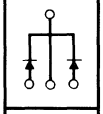
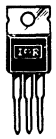
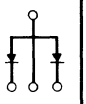
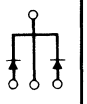
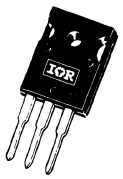
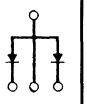
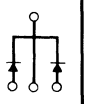
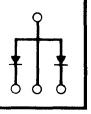
Diodes

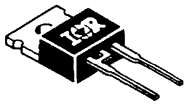
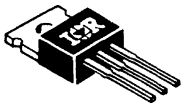
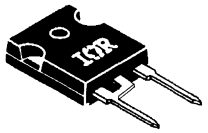
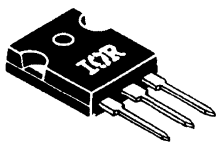
Ultra-Fast Recovery

10–25 Amps

International
IOR Rectifier

Part Number	V_{RWM} (V)	$I_{F(AV)}$ @ T_C (A)	$I_{F(AV)}$ @ T_C (°C)	I_{FSM} (1) @ 60 Hz (A)	V_{FM} @ $I_{F(AV)}$ (V)	R_{thJC} DC (°C/W)	Max. t_{rr} (ns)	Case Outline Number (6)	Notes	Case Style	
10CTF10	100	10	117	84	0.98	3	35	J9	(5)	TO-220AB	
10CTF20	200	10	117	84	0.98	3	35				
10CTF30	300	10	112	84	1.25	3	45				
10CTF40	400	10	112	84	1.25	3	45				
10JTF10	100	10	117	84	0.98	3	35				
10JTF20	200	10	117	84	0.98	3	35				
10JTF30	300	10	112	84	1.25	3	45				
10JTF40	400	10	112	84	1.25	3	45				
16CPF10	100	16	113	126	0.98	2	35	J11		TO-247AA	
16CPF20	200	16	113	126	0.98	2	35				
16CPF30	300	16	109	126	1.25	2	45				
16CPF40	400	16	109	126	1.25	2	45				
16JPF10	100	16	113	126	0.98	2	35		(4)		
16JPF20	200	16	113	126	0.98	2	35				
16JPF30	300	16	109	126	1.25	2	45				
16JPF40	400	16	109	126	1.25	2	45				
25CPF10	100	25	93	157	0.98	2	50				
25CPF20	200	25	93	157	0.98	2	50				
25CPF30	300	25	85	183	1.25	2	60				
25CPF40	400	25	85	183	1.25	2	60				
25JPF10	100	25	93	157	0.98	2	50		(4)		
25JPF20	200	25	93	157	0.98	2	50				
25JPF30	300	25	85	183	1.25	2	60				
25JPF40	400	25	85	183	1.25	2	60				

(1) Following any rated load condition and with rated V_{RWM} reapplied.
(2) Available on tape and reel. See page 0-2.
(3) For ordering information on tape and reel see page 0-2.
(4) Reverse polarity – common anode devices.
(5) For lead formed options see page 0-2.
(6) For case outline drawing see page 0-2.

Part Number	V_{RWM} (V)	$I_{F(AV)}$ @ T_C per Pkg. (A)	(T_C °C)	(3) V_{FM} @ $I_{F(AV)}$ (V)	IR @ V_{RWM} (μA)	R_{thJC} per Pkg. °C/W	(2) (3) Max I_{RRM} (A)	(2) (3) Max t_{rr} (ns)	(7) Case Outline Number	Notes	Case Style
HFA04TB60S	600	4	106	1.8	3	5	5.2	42	J4	(4)	SMD-220 
HFA08TB60S		8	90	1.7	5	3.5	5	55			
HFA15TB60S		15	100	1.7	10	1.7	6	60			
HFA25TB60S		25	100	1.7	20	0.83	10	75			
HFA08TA60CS	600	8	100	1.8	3	2.5	5.2	42		(4)	
HFA16TA60CS		16	90	1.7	5	1.75	5	55			
HFA30TA60CS		30	100	1.7	10	0.85	6	60			
HFA04TB60	600	4	106	1.8	3	5	5.2	42	J10		TO-220AC 
HFA08TB60		8	90	1.7	5	3.5	5	55			
HFA15TB60		15	100	1.7	10	1.7	6	60			
HFA25TB60		25	100	1.7	20	0.83	10	75			
HFA08TA60C	600	8	100	1.8	3	2.5	5.2	42	J9	(6)	TO-220AB 
HFA16TA60C		16	90	1.7	5	1.75	5	55		(4)	
HFA30TA60C		30	100	1.7	10	0.85	6	60			
HFA08PB60	600	8	90	1.7	5	3.5	5	55	J12		TO-247AC (MOD) 
HFA15PB60		15	100	1.7	10	1.7	6	60			
HFA25PB60		25	100	1.7	20	0.83	10	75			
HFA16PA60C	600	16	90	1.7	5	1.75	5	55	J11	(4)	TO-247AC 
HFA30PA60C		30	100	1.7	10	0.85	6	60			
HFA50PA60C		50	100	1.7	20	0.42	10	75			

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(1) Unless otherwise noted, all specifications are given per leg.
(2) Reverse recovery characteristics @ I_F =10A (per leg) DI_F/d_t = 200A/μS, V_R = 200V.
(3) Reverse recovery characteristics @ I_F =1A (per leg) DI_F/d_t = 200A/μS, V_R = 30V.
(4) For center tap devices, the $I_{F(AV)}$ per leg is ½ that shown in the $I_{F(AV)}$ column.
(5) Available on tape and reel, see page 0-2.
(6) For lead formed options see page 0-2.
(7) For case outline drawing see page 0-2.

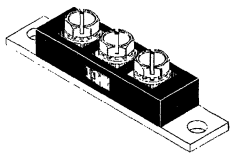
HEXFRED™
Modules
90-320 Amps

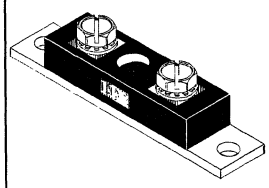
International IOR Rectifier

Part Number	V_{RWM} (V)	$I_{F(AV)}$ @ T_C per Pkg. (A)	(T_C °C)	V_{FM} @ I_{FM} (V)	IR @ V_{RWM} (µA)	R_{thJC} per Pkg. °C/W	(2) Typ I_{RRM} (A)	(3) Typ t_{rr} (ns)	Case Outline Number (7)	Notes	Case Style
HFA90NH40	400	90	89	1.60	20	0.40	5.5	32	J15		D-67 Half Pak
HFA90NH40R	400	90	77	1.60	20	0.48	5.5	32			
HFA135NH40	400	135	89	1.60	30	0.27	6.0	36			
HFA135NH40R	400	135	75	1.60	30	0.33	6.0	36			
HFA180NH40	400	180	90	1.60	40	0.20	6.5	40			
HFA180H40R	400	180	77	1.60	40	0.24	6.5	40			
HFA70NH60	600	70	100	1.43	40	0.40	5.6	32			
HFA70NH60R	600	70	90	1.43	40	0.48	5.6	32			
HFA105NH60	600	105	99	1.43	60	0.27	5.8	34			
HFA105NH60R	600	105	88	1.43	60	0.33	5.8	34			
HFA140NH60	600	140	99	1.43	80	0.20	6.0	36			
HFA140NH60R	600	140	90	1.43	80	0.24	6.0	36			

DOUBLER

Part Number	V_{RWM} (V)	$I_{F(AV)}$ @ T_C per Pkg. (A)	(T_C °C)	V_{FM} @ I_{FM} (V)	IR @ V_{RWM} (µA)	R_{thJC} per Pkg. Deg C/W	(2) Typ I_{RRM} (A)	(3) Typ t_{rr} (ns)	Case Outline Number (7)	Notes	Case Style
HFA120MD40D	400	120	86	1.43	20	0.35	5.5	32	J17		TO-244AB Isolated
HFA160MD40D	400	160	85	1.39	30	0.275	6.0	36			
HFA200MD40D	400	200	85	1.36	40	0.225	6.5	40			
HFA100MD60D	600	100	91	1.34	40	0.35	5.6	32			
HFA140MD60D	600	140	86	1.32	60	0.275	5.8	34			
HFA180MD60D	600	180	83	1.31	80	0.225	6.0	36			
HFA160NJ40D	400	160	98	1.55	20	0.20	5.5	32	J16		TO-244AB Non-Isolated
HFA240NJ40D	400	240	97	1.55	30	0.135	6.0	36			
HFA320NJ40D	400	320	98	1.55	40	0.10	6.5	40			
HFA140NJ60D	600	140	100	1.43	40	0.20	5.6	32			
HFA210NJ60D	600	210	100	1.43	60	0.135	5.8	34			
HFA280NJ60D	600	280	100	1.43	80	0.10	6.0	36			

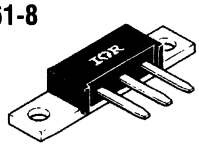
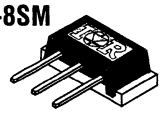
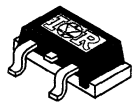
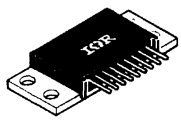




(1) Unless otherwise noted, all specifications are given per leg.
(2) Reverse recovery characteristics @ I_F =10A (per leg) DI_F/d_t = 200A/µS, V_R = 200V.
(3) Reverse recovery characteristics @ I_F =1A (per leg) DI_F/d_t = 200A/µS, V_R = 30V.
(4) For center tap devices, the $I_{F(AV)}$ per leg is ½ that shown in the $I_{F(AV)}$ column.

(7) For case outline drawing see page O-2.

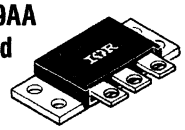
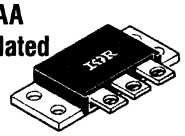
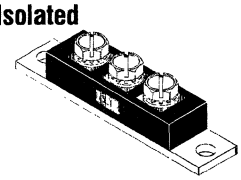
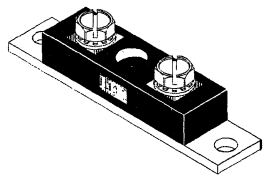
CENTER TAP (4)

Part Number	V_{RWM} (V)	$I_{F(AV)}$ @ T_C per Pkg. (A)	(T_C °C)	(4) V_{FM} @ I_{FM} (V)	IR @ V_{RWM} (μA)	R_{thJC} per Pkg. °C/W	(2) Typ I_{RRM} (A)	(3) Typ t_{rr} (ns)	Case Outline Number (7)	Notes	Case Style
HFA80NC40C	400	80	95	1.54	10	0.425	4.0	22	K10		D-61-8 
HFA70NC60C	600	70	97	1.43	20	0.425	5.3	30			
HFA80NC40CSM	400	80	92	1.54	10	0.45	4.0	22	K11		D-61-8SM 
HFA70NC60CSM	600	70	94	1.43	20	0.45	5.3	30			
HFA80NC40CSL	400	80	92	1.54	10	0.45	4.0	22	K12		D-61-8SL 
HFA70NC60CSL	600	70	94	1.43	20	0.45	5.3	30			
HFA75MB40C	400	75	90	1.49	10	0.50	4.0	22	K13		D-60 
HFA60MB60C	600	60	98	1.38	20	0.50	5.3	30			

K

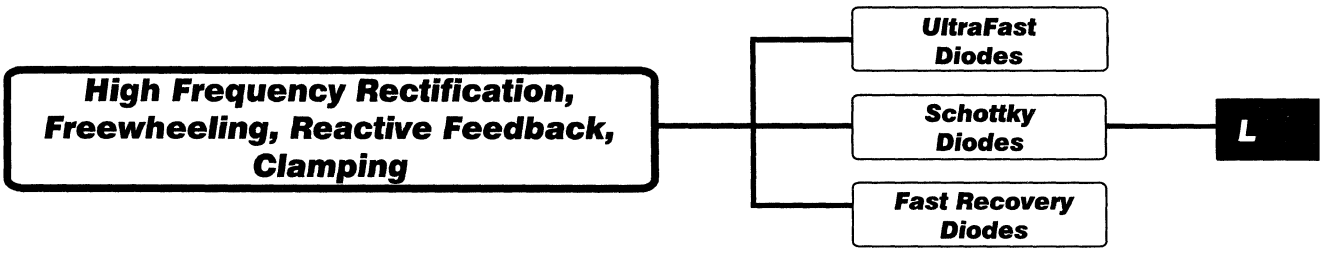
(1) Unless otherwise noted, all specifications are given per leg.
(2) Reverse recovery characteristics @ I_F =10A (per leg) D_{IF}/d_t = 200A/μS, V_R = 200V.
(3) Reverse recovery characteristics @ I_F =1A (per leg) D_{IF}/d_t = 200A/μS, V_R = 30V.
(4) For center tap devices, the $I_{F(AV)}$ per leg is ½ that shown in the $I_{F(AV)}$ column.
(7) For case outline drawing see page 0-2.

CENTER TAP (4)

Part Number	V_{RWM} (V)	$I_{F(AV)}$ @ T_C per Pkg. (A)	(T_C °C)	(4) V_{FM} @ I_{FM} (V)	IR @ V_{RWM} (μA)	R_{thJC} per Pkg. °C/W	(2) Typ I_{RRM} (A)	(3) Typ t_{rr} (ns)	Case Outline Number (7)	Notes	Case Style
HFA75MC40C	400	75	90	1.49	10	0.50	4.0	22	K16		TO-249AA Isolated 
HFA60MC60C	600	60	98	1.38	20	0.50	5.3	30			
HFA80NK40C	400	80	98	1.54	10	0.40	4.0	22	K15		TO-249AA Non-Isolated 
HFA70NK60C	600	70	100	1.43	20	0.40	5.3	30			
HFA120MD40C	400	120	86	1.43	20	0.35	5.5	32	J23		TO-244AB Isolated 
HFA160MD40C	400	160	85	1.39	30	0.275	6.0	36			
HFA200MD40C	400	200	85	1.36	40	0.225	6.5	40			
HFA100MD60C	600	100	91	1.34	40	0.35	5.6	32			
HFA140MD60C	600	140	86	1.32	60	0.275	5.8	34			
HFA180MD60C	600	180	83	1.31	80	0.225	6.0	36			
HFA160NJ40C	400	160	98	1.55	20	0.20	5.5	32	J22		TO-244AB Non-Isolated 
HFA240NJ40C	400	240	97	1.55	30	0.135	6.0	36			
HFA320NJ40C	400	320	98	1.55	40	0.10	6.5	40			
HFA140NJ60C	600	140	100	1.43	40	0.20	5.6	32			
HFA210NJ60C	600	210	100	1.43	60	0.135	5.8	34			
HFA280NJ60C	600	280	100	1.43	80	0.10	6.0	36			

(1) Unless otherwise noted, all specifications are given per leg.
(2) Reverse recovery characteristics @ I_F =10A (per leg) DI_F/d_t = 200A/μS, V_R = 200V.
(3) Reverse recovery characteristics @ I_F =1A (per leg) DI_F/d_t = 200A/μS, V_R = 30V.
(4) For center tap devices, the $I_{F(AV)}$ per leg is ½ that shown in the $I_{F(AV)}$ column.
(7) For case outline drawing see page O-2.

FUNCTION PRODUCT



Schottky Diodes

International
IOR Rectifier

Schottky Diode
Surface Mount - Discrete
0.77 - 20 Amps

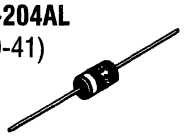
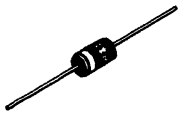
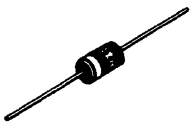
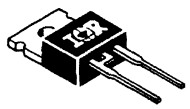
(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
10MQ040	40	1.1	92	0.51			50		J1		D-64 (5)
10MQ060	60	0.77	110	0.57	—	—	7.5	125			
10MQ090	90	0.77	110	0.65			5.0				
15MQ040	40	1.7		0.55	—	—	50			(1A)	
10BQ015	15	1	78	0.34	5.0	0.2	12	100	J2	(1K)	SMB (5)
10BQ040	40	1	112	0.53	18	0.2	4.0	150		(1A)	
10BQ060	60	1	103	0.57	11	1.0	5.0	150		(1A)	
10BQ100	100	1	152	0.78	9.7	1.0	1.0	175		(1A)	
30BQ015	15	3	75	0.35	10	0.6	50	100	J3	(1B)	SMC (5)
30BQ040	40	3	123	0.45	35	0.6	20	150		(1M)	
30BQ060	60	3	122	0.52	35	3.4	20	150		(1M)	
30BQ100	100	3	148	0.62	50	2.8	5	175		(1M)	
30WQ03F	30	3.3	105	0.56			12		J8		TO-252AA (D-Pak) (5)
30WQ04F	40	3.3	105	0.56			12				
30WQ05F	50	3.3	104	0.60	—	—	20	125			
30WQ06F	60	3.3	104	0.60			20				
30WQ09F	90	3.3	103	0.74			2				
30WQ10F	100	3.3	103	0.74			2				
50WQ03F	30	5.5	92	0.60			20				
50WQ04F	40	5.5	92	0.60			20				
50W005F	50	5.5	89	0.66	—	—	30	125			
50WQ06F	60	5.5	89	0.66			30				
50WQ09F	90	5.5	90	0.77			3				
50WQ10F	100	5.5	90	0.77			3				
6TQ035S	35	6	163	0.51	8	1.2	7	175	J4		SMD-220 (5)
6TQ045S	45										
8TQ080S	80	8	157	0.58	7.5	0.5	7	175			
8TQ100S	100										
10TQ035S	35	10	151	0.49	13	2	15	175			
10TQ045S	45										
12TQ035S	35	15	120	0.50	16	2.4	70	150			
12TQ045S	45										
18TQ035S	35	18	149	0.53	24	3.6	25	175			
18T0045S	45										
19TQ015S	15	19	80	0.32	6.75	1.5	522	100		(1B)(3A)	
20TQ035S	35	20	116	0.51	27	4	105	150			
20TQ045S	45										

(1) T_J = 125°C unless otherwise specified (see Notes column).
(2) T_J = 25°C, $I_{AS} = I_{AR}$.
(3) Current decaying linearly to zero in 1μsec. Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical unless otherwise specified (see Notes column).
(3A) Current decaying linearly to zero in 1μsec. Frequency limited by T_J max. $V_A = 3 \times V_R$ typical.
(3B) Current decaying linearly to zero in 2 μsec. Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical.
(4) For case outline drawing see page O-2.
(5) For tape and reel specifications see page O-2.
(6) For optional lead forms see page O-2.
(1A) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1B) For V_{FM}: T_J = 75°C; for I_{RM}: T_J = 100°C.
(1C) For V_{FM}: T_J = 70°C; for I_{RM}: T_J = 125°C.
(1D) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1E) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1G) V_{FM} rated at 50A.
(1H) V_{FM} rated at 80A.
(1J) V_{FM} rated at 160A.
(1K) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 100°C.
(1M) For V_{FM}: T_J = 125°C; for I_{RM}: T_J = 125°C.

L

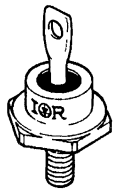
Schottky Diode
Discrete
1.1 - 20 Amps

International
IOR Rectifier

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	$I_{F(AV)}$ @ T_C (°C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
11DQ03	30	1.1	58	0.50			6		J5	(5)	DO-204AL (DO-41) 
11DQ04	40	1.1	58	0.50			6				
11DQ05	50	1.1	40	0.53	—	—	11	125			
11DQ06	60	1.1	40	0.53			11				
11D009	90	1.1	48	0.68			1				
11DQ10	100	1.1	48	0.68			1				
31DQ03	30	3.3	35	0.51			25		J6	(5)	DO-201AD 
31DQ04	40	3.3	35	0.51			25				
31DQ05	50	3.3	19	0.53	—	—	30	125			
31DQ06	60	3.3	19	0.53			30				
31DQ09	90	3.3	25	0.69			4				
31DQ10	100	3.3	25	0.69			4				
50SQ080	80	5	119	0.52	15	1	7	175	J7		DO-204AR 
50SQ100	100										
80SQ035	35										
80SQ040	40	8	119	0.44	10	1.6	15	175			
80SQ045	45										
90SQ035	35										
90SQ040	40	9	69	0.42	12	1.8	70	150			
90SQ045	45										
95SQ015	15	9	55	0.25	4.5	1	348	100		(1B)(3A)	
6TQ035	35								J10		TO-220AC 
6TQ040	40	6	163	0.51	8	1.2	7	175			
6TQ045	45										
MBR735	35	7.5	120	0.57	—	1.0	15	150		(3B)	
MBR745	45										
8TQ080	80	8	157	0.58	7.5	0.5	7	175			
8TQ100	100										
MBR1035	35	10	120	0.57	—	1.0	15	150		(3B)	
MBR1045	45										
10TQ035	35										
10TQ040	40	10	151	0.49	13	2	15	175			
10TQ045	45										
12TQ035	35										
12TQ040	40	15	120	0.50	16	2.4	70	150			
12TQ045	45										
MBR1635	35	16	125	0.57	—	1.0	40	150		(38)	
MBR1645	45										
18TQ035	35										
18TQ040	40	18	149	0.53	24	3.6	25	175			
18TQ045	45										
19TQ015	15	19	80	0.32	6.75	1.5	522	100		(1B)(3A)	
20TQ035	35										
20TQ040	40	20	116	0.51	27	4	105	150			
20TQ045	45										

Schottky Diode
Discrete
25 - 95 Amps

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
1N6391	45	25	115	0.78	40	6	40	175	J13	(1E)(1G)	D0-203AA (D0-4)
1N6095 1N6096	30 40	25	105	0.86	40	6	250	125		(1D)(1H)	
SD41	35	30	96	0.58	—	—	125	150		(1E)	
20FQ035 20F0040 20F0045	35 40 45	30	111	0.47	40	6	150	150			
21FQ035 21FQ040 21FQ045	35 40 45	30	107	0.51	40	6	150	150			
30F0035 30FQ040 30FQ045	35 40 45	30	144	0.54	40	6	35	175			
1N6097 1N6098	30 40	50	70	0.86	81	12	250	125	J14	(1D)(1J)	D0-203AB (D0-5)
SD51	35	60	90	0.66	—	—	200	150		(1E)	
1N6392	45	60	115	0.68	101	15	60	175		(1E)	
50HQ035 50HQ040 50HQ045	35 40 45	60	101	0.53	81	12	200	150			
51HQ035 51HQ040 51HQ045	35 40 45	60	96	0.58	81	12	200	150			
55HQ030	30	60	110	0.41	54	12	280	150			
60HQ080 60HQ100	80 100	60	118	0.70	15	1	20	175			
75HQ035 75HQ040 75HQ045	35 40 45	75	117	0.63	101	15	45	175			
MBR7535 MBR7545	35 45	75	90	0.60	— —	— —	150	150			
85HQ035 85HQ040 85HQ045	35 40 45	85	112	0.62	114	17	45	175			
95HQ015	15	95	44	0.39	9	2	1000	100			



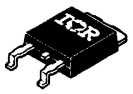
(1) T_J = 125°C unless otherwise specified (see Notes column).
(2) T_J = 25°C, $I_{AS} = I_{AR}$.
(3) Current decaying linearly to zero in 1µsec. Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical unless otherwise specified (see Notes column).
(3A) Current decaying linearly to zero in 1µsec. Frequency limited by T_J max. $V_A = 3 \times V_R$ typical.
(3B) Current decaying linearly to zero in 2 µsec. Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical.
(4) For case outline drawing see page 0-2.
(5) For tape and reel specifications see page 0-2.
(6) For optional lead forms see page 0-2.
(1A) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1B) For V_{FM}: T_J = 75°C; for I_{RM}: T_J = 100°C.
(1C) For V_{FM}: T_J = 70°C; for I_{RM}: T_J = 125°C.
(1D) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1E) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1G) V_{FM} rated at 50A.
(1H) V_{FM} rated at 80A.
(1J) V_{FM} rated at 160A.
(1K) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 100°C.
(1M) For V_{FM}: T_J = 125°C; for I_{RM}: T_J = 125°C.

Schottky Diode

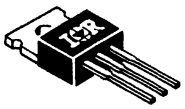
Center Tap - Surface Mount

6.6-30 Amps

International IOR Rectifier

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	$I_{F(AV)}$ @ T_C (°C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
6CWQ03F	30	6.6	97	0.63			20				**TO-252AA (D-Pak)** 
6CWQ04F	40	6.6	97	0.63			20				
6CWQ05F	50	6.6	92	0.67	—	—	30	125	**K1**		
6CWQ06F	60	6.6	92	0.67			30				
6CWQ09F	90	6.6	94	0.79			3				
6CWQ10F	100	6.6	94	0.79			3				
10CTQ150S	150	10	145	0.86	6.75	0.30	7	175	**K2**		**SMD-220** (5) 
12CTQ035S 12CTQ045S	35 45	12	157	0.63	8	1.2	7	175			
15CTQ035S 15CTQ045S	35 45	15	123	0.65	10	1.5	32	150			
MBRB1535CT MBRB1545CT	35 45	15	105	0.72	—	1.0	15	150		(3B)	
16CTQ080S 16CTQ100S	80 100	16	145	0.69	7.5	0.5	7	175			
20CTQ035S 20CTQ045S	35 45	20	145	0.68	13	2	15	175			
MBRB2080CTS MBRB2090CTS MBRB2100CTS	80 90 100	10	133	0.70	—	0.5	150	150			
25CTQ035S 25CTQ045S	35 45	30	102	0.64	20	3	70	150			
30CTQ035S 30CTQ045S	35 45	30	127	0.70	20	3	15	175			
30CTQ050S 30CTQ060S	50 60	30	97	0.71	13	1.5	45	150			
32CTQ030S	30	30	109	0.53	13	3	97	150			

Schottky Diode
Center Tap - Discretes
10-30 Amps

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
10CTQ150	150	10	145	0.86	6.75	0.30	7	175	K3		TO-220AB (7)
12CTQ035 12CTQ040 12CTQ045	35 40 45	12	157	0.63	8	1.2	7	175			
15CTQ035 15CTQ040 15CTQ045	35 40 45	15	123	0.65	10	1.5	32	150			
MBR1535CT MBR1545CT	35 45	15	105	0.72	—	1.0	15	150		(3B)	
16CTQ080 16CTQ100	80 100	16	145	0.69	7.5	0.57	175				
20CTQ035 20CTQ040 20CTQ045	35 40 45	20	145	0.68	13	2	15	175			
MBR2035CT MBR2045CT	35 45	20	135	0.72	—	1.0	15	150		(3B)	
MBR2080CT MBR2090CT MBR2100CT	80 90 100	10	133	0.70	—	0.5	150	150			
MBR2535CT MBR2545CT	35 45	30 30	130	0.73	—	1.0	40	150			
25CTQ035 25CTQ040 25CTQ045	35 40 45	30	102	0.64	20	3	70	150			
30CTQ035 30CTQ040 30CTQ045	35 40 45	30	127	0.70	20	3	15	175			
30CTQ050 30CTQ060	50 60	30	97	0.71	13	1.5	45	150			
32CTQ030	30	30	109	0.53	13	3	97	150			

L

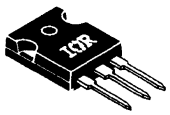
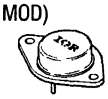
(1) T_J = 125°C unless otherwise specified (see Notes column).
(2) T_J = 25°C, I_{AS} = I_{AR}.
(3) Current decaying linearly to zero in 1µsec. Frequency limited by T_J max. V_A = 1.5 x V_R typical unless otherwise specified (see Notes column).
(3A) Current decaying linearly to zero in 1µsec. Frequency limited by T_J max. V_A = 3 x V_R typical.
(3B) Current decaying linearly to zero in 2 µsec. Frequency limited by T_J max. V_A = 1.5 x V_R typical.
(4) For case outline drawing see page 0-2.
(5) For tape and reel specifications see page 0-2.
(6) For optional lead forms see page 0-2.
(1A) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1B) For V_{FM}: T_J = 75°C; for I_{RM}: T_J = 100°C.
(1C) For V_{FM}: T_J = 70°C; for I_{RM}: T_J = 125°C.
(1D) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1E) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1G) V_{FM} rated at 50A.
(1H) V_{FM} rated at 80A.
(1J) V_{FM} rated at 160A.
(1K) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 100°C.
(1M) For V_{FM}: T_J = 125°C; for I_{RM}: T_J = 125°C.

Schottky Diode

Center Tap - Discrete

30-60 Amps

International IOR Rectifier

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	$I_{F(AV)}$ @ T_C (°C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
30CPQ035 30CPQ040 30CPQ045	35 40 45	30	124	0.64	20	3	70	150	K4		**TO-247AC** (TO-3P) 
30CPQ050 30CPQ060	50 60	30	112	0.70	13	1.5	45	150			
30CPQ080 30CPQ100	80 100	30	140	0.81	7.5	0.5	7	175			
30CPQ150	150	30	131	0.93	11.25	0.5	15	175			
MBR3035PT MBR3045PT	35 45	30	105	0.72	—	2.0	100	150		(3B)	
40CPQ035 40CPQ040 40CPQ045	35 40 45	40	120	0.56	27	4	150	150			
40CPQ050 40CPQ060	50 60	40	120	0.64	18	2	96	150			
40CPQ080 40CPQ100	80 100	40	145	0.75	11.25	0.75	15	175			
MBR4045PT	45	40	103	0.72	20	3	70	150		(3A)	
MBR4060PT	60	40	101	0.77	13	1.5	45	150		(3A)	
MBR6045WT	45	60	100	0.69	—	2	150	150		(3B)	
MBR3035CT MBR3045CT	35 45	30	105	0.72	—	2.0	60	150	K5	(3B)	**TO-204AA** (TO-3) 
40CDQ035 40CDQ040 40CDQ045	35 40 45	40	135	0.71	27	4	25	175			
SD241	35	60	120	0.92	—	—	20	175	K6	(1C)	**TO-204AE** (TO-3 MOD) 
60CDQ035 60CDQ040 60CDQ045	35 40 45	60	112	0.80	40	6	25	175			

Schottky Diode
Modules
120-180 Amps

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	(°C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	R_{thCS} /Leg (°C/W)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
120NQ035	35											
120NQ040	40	120	99	0.52	81	12	400	0.40	150	J15		D-67 Half Pak
120NQ045	45											
120NQ045R	45											
121NQ035	35											
121NQ040	40	120	133	0.56	81	12	90	0.40	175		(1C)	
121NQ045	45											
121NQ045R	45											
122NQ030	30	120	110	0.41	54	12	560	0.40	150			
122NQ030R	30											
123NQ080	80											
123NQ100	100	120	121	0.74	15	1	70	0.40	175		(1C)	
123NQ100R	100											
124NQ035	35											
124NQ040	40	120	76	0.52	135	20	1200	0.40	125		(1G)	
124NQ045	45											
124NQ045R	45											
125NQ015	15	120	71	0.33	9	2	1780	0.40	100		(1B) (3A)	
125NQ015R	15											
128NQ060	60	120	120	0.61	75	1.0	480	0.40	150			
128NQ060R	60											
129NQ150	150	120	139	0.74	290	1.0	45	0.40	175			
129NQ150R	150											
180NQ035	35											
180NQ040	40	180	90	0.56	243	36	600	0.30	150			
180NQ045	45											
180NQ045R	45											
181NQ035	35											
181NQ040	40	180	125	0.56	243	36	135	0.30	175		(1C)	
181NQ045	45											
181NQ045R	45											
182NQ030	30	180	107	0.41	162	36	840	0.30	150			
182NQ030R	30											
183NQ080	80											
183NQ100	100	180	116	0.74	15	1	105	0.30	175			
183NQ100R	100											
185NQ015	15	180	66	0.34	9	2	2670	0.30	100		(1B) (3A)	
185NQ015R	15											
188NQ060	60	180	120	0.61	75	1.0	720	0.30	150			
188NQ060R	60											
189NQ150	150	180	134	0.74	290	1.0	65	0.30	175			
189NQ150R	150											

Standard Configuration

'R' Configuration
Reverse Polarity

(1) T_J = 125°C unless otherwise specified (see Notes column).
(2) T_J = 25°C, $I_{AS} = I_{AR}$.
(3) Current decaying linearly to zero in 1µsec. Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical unless otherwise specified (see Notes column).
(3A) Current decaying linearly to zero in 1µsec. Frequency limited by T_J max. $V_A = 3 \times V_R$ typical.
(3B) Current decaying linearly to zero in 2 µsec. Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical.
(4) For case outline drawing see page O-2.
(5) For tape and reel specifications see page O-2.
(6) For optional lead forms see page O-2.
(1A) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1B) For V_{FM}: T_J = 75°C; for I_{RM}: T_J = 100°C.
(1C) For V_{FM}: T_J = 70°C; for I_{RM}: T_J = 125°C.
(1D) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1E) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1G) V_{FM} rated at 50A.
(1H) V_{FM} rated at 80A.
(1J) V_{FM} rated at 160A.
(1K) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 100°C.
(1M) For V_{FM}: T_J = 125°C; for I_{RM}: T_J = 125°C.

L

Schottky Diode
Modules
200-400 Amps

International
IOR Rectifier

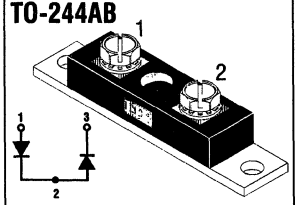
(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	(°C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	R_{thCS} /Leg (°C/W)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
240NQ035	35											D-67 Half Pak
240NQ040	40	240	96	0.55	324	48	800	0.20	150	J15		
240NQ045	45											
240NQ045R	45											
241NQ035	35											
241NQ040	40	240	130	0.59	324	48	180	0.20	175		(1C)	
241NQ045	45											
241NQ045R	45											
242NQ030	30	240	111	0.42	216	48	1120	0.20	150			
242NQ030R	30											
243NQ080	80											
243NQ100	100	240	120	0.74	15	1.0	140	0.20	175		(1C)	
243NQ100R	100											
244NQ035	35											
244NQ040	40	240	75	0.52	270	40	2400	0.20	125		(1G)	
244NQ045	45											
244NQ045R	45											
245NQ015	15	240	70	0.34	9.0	2.0	3560	0.20	100		(1B) (3A)	
245NQ015R	15											
248NQ060	60	240	120	0.61	75	1.0	960	0.20	150			
248NQ060R	60											
249NQ150	150	240	139	0.74	290	1.0	85	0.20	175			
249NQ150R	150											

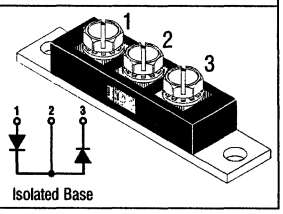
Standard Configuration

'R' Configuration
Reverse Polarity

DOUBLER

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	(°C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	R_{thCS} /Leg (°C/W)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
203DNQ100	100	200	120	0.72	15	1.0	0.70	0.40	175	K17		TO-244AB
209DNQ150	150	200	100	0.80	32	1.0	50	0.40	175			
203DMQ100	100	200	100	0.72	15	1.0	0.70	0.70	175	K18		
209DMQ150	150	200	97	0.80	32	1.0	50	0.70	175			
400DMQ045	45	400	60	0.62	180	40	800	0.50	150			



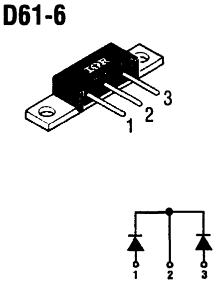
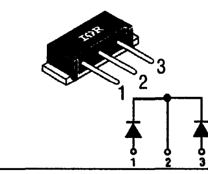
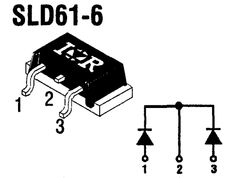
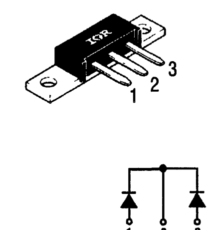


Isolated Base

International Rectifier

Schottky Diode

Center Tap — Modules
60-80 Amps

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	(°C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	R_{thCS} /Leg (°C/W)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
60CNQ035	35											D61-6 
60CNQ040	40	60	116	0.44	40	6.0	200	0.85	150	K7		
60CNQ045	45											
61CNQ035	35											
61CNQ040	40	60	149	0.49	40	6.0	45	0.85	175			
61CNQ045	45											
62CNQ030	30	60	135	0.35	27	6.0	280	0.85	150			
63CNQ080	80	60	155	0.64	15	1.0	35	0.85	175			
63CNQ100	100											
60CNQ045SM	45	60	116	0.44	40	6.0	200	0.85	150	K8		SMD61-6 
61CNQ045SM	45	60	149	0.49	40	6.0	45	0.85	175			
62CNQ030SM	30	60	135	0.35	27	6.0	280	0.85	150			
63CNQ100SM	100	60	155	0.64	15	1.0	35	0.85	175			
60CNQ045SL	45	60	116	0.44	40	6.0	200	0.85	150	K9		SLD61-6 
61CNQ045SL	45	60	149	0.49	40	6.0	45	0.85	175			
62CNQ030SL	30	60	135	0.35	27	6.0	280	0.85	150			
63CNQ100SL	100	60	155	0.64	15	1.0	35	0.85	175			
80CNQ035	35											D61-8 
80CNQ040	40	80	109	0.47	54	8.0	200	0.85	150	K10		
80CNQ045	45											
81CNQ035	35											
81CNQ040	40	80	141	0.54	54	8.0	45	0.85	175		(1C)	
81CNQ045	45											
81CNQ050	50											
82CNQ030	30	80	119	0.35	36	8.0	280	0.85	150			
83CNQ080	80	80	132	0.67	15	1.0	35	0.85	175		(1C)	
83CNQ100	100											
84CNQ035	35											
84CNQ040	40	80	91	0.44	54	8.0	600	0.85	125		(1G)	
84CNQ045	45											
85CNQ015	15	80	78	0.32	9.0	2.0	890	0.85	100		(1B)(3A)	
88CNQ060	60	80	95	0.56	75	1.0	240	0.85	150			
89CNQ150	150	80	117	0.69	190	1.0	21	0.85	175			

(1) T_J = 125°C unless otherwise specified (see Notes column).
(2) T_J = 25°C, $I_{AS} = I_{AR}$.
(3) Current decaying linearly to zero in 1μsec. Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical unless otherwise specified (see Notes column).
(3A) Current decaying linearly to zero in 1μsec. Frequency limited by T_J max. $V_A = 3 \times V_R$ typical.
(3B) Current decaying linearly to zero in 2 μsec. Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical.
(4) For case outline drawing see page O-2.
(5) For tape and reel specifications see page O-2.
(6) For optional lead forms see page O-2.
(1A) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1B) For V_{FM}: T_J = 75°C; for I_{RM}: T_J = 100°C.
(1C) For V_{FM}: T_J = 70°C; for I_{RM}: T_J = 125°C.
(1D) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1E) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1G) V_{FM} rated at 50A.
(1H) V_{FM} rated at 80A.
(1J) V_{FM} rated at 160A.
(1K) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 100°C.
(1M) For V_{FM}: T_J = 125°C; for I_{RM}: T_J = 125°C.

L

Schottky Diode

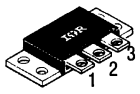
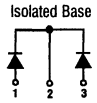
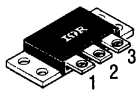
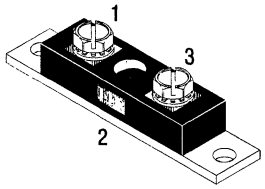
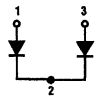
Center Tap — Modules

80-150 Amps

International
IOR Rectifier

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	$I_{F(AV)}$ @ T_C (°C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	R_{thCS} /Leg (°C/W)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
80CNQ045SM	45	80	109	0.47	54	8.0	200	0.85	150	K11		SMD61-8
81CNQ045SM 81CNQ050SM	45 50	80	141	0.54	54	8.0	45	0.85	175			
82CNQ030SM	30	80	119	0.35	36	8.0	280	0.85	150			
83CNQ100SM	100	80	132	0.67	15	1.0	35	0.85	175			
84CNQ045SM	45	80	91	0.44	54	8.0	600	0.85	125			
85CNQ015SM	15	80	78	0.32	9.0	2.0	890	0.85	100			
80CNQ045SL	45	80	109	0.47	54	8.0	200	0.85	150	K12		SLD61-8
81CNQ045SL 81CNQ050SL	45 50	80	141	0.54	54	8.0	45	0.85	175			
82CNQ030SL	30	80	119	0.35	36	8.0	280	0.85	150			
83CNQ100SL	100	80	132	0.67	15	1.0	35	0.85	175			
84CNQ045SL	45	80	91	0.44	54	8.0	600	0.85	125			
85CNQ015SL	15	80	78	0.32	9.0	2.0	890	0.85	100			
150CMQ035 150CMQ040 150CMQ045	35 40 45	150	71	0.60	101	15	200	1.00	150	K13		D-60 Isolated
151CMQ035 151CMQ040 151CMQ045	35 40 45	150	104	0.65	101	15	45	1.00	175			Isolated Base
152CMQ030	30	150	85	0.47	68	15	280	1.00	150			
153CMQ080 153CMQ100	80 100	150	90	0.80	15	1.0	35	1.00	175			
150CNQ045	45	150	86	0.60	101	15	200	0.80	150	K14		D-60 Non-Isolated
151CNQ045	45	150	118	0.65	101	15	45	0.80	175			
153CNQ100	100	150	107	0.80	15	1.0	35	0.80	175			

Schottky Diode
Center Tap — Modules
130-220 Amps

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	R_{thCS} /Leg (°C/W)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
160CMQ035 160CMQ040 160CMQ045	35 40 45	160	69	0.60	108	16	200	1.00	150	K15		TO-249AA Isolated  
161CMQ035 161CMQ040 161CMQ045	35 40 45	160	101	0.63	108	16	45	1.00	175			
162CMQ030	30	160	83	0.46	72	16	280	1.00	150			
163CMQ080 163CMQ100	80 100	160	87	0.82	15	1.0	35	1.00	175			
168CMQ060	60	160	96	0.67	75	1.0	240	1.00	150			
160CNQ045	45	160	100	0.60	108	16	200	0.80	150	K16		TO-249AA Non-Isolated  
161CNQ045	45	160	120	0.63	108	16	45	0.80	175			
162CNQ030	30	160	107	0.46	72	16	280	0.80	150			
163CNQ100	100	160	112	0.82	15	1.0	35	0.80	175			
200CNQ035 200CNQ040 200CNQ045	35 40 45	200	108	0.49	135	20	400	0.40	150	K17		TO-244AB Non-Isolated 
201CNQ035 201CNQ040 201CNQ045 201CNQ050	35 40 45 50	200	138	0.58	135	20	90	0.40	175		(1C)	
203CNQ080 203CNQ100	80 100	200	130	0.72	15	1.0	70	0.40	175			
208CNQ060	60	200	106	0.75	75	1.0	480	0.40	150			
209CNQ150	150	200	131	0.80	32	1.0	50	0.40	175			
220CNQ025 220CNQ030	25 30	220	114	0.40	99	22	560	0.40	150			
224CNQ035 224CNQ040 224CNQ045	35 40 45	220	81	0.50	135	20	1200	0.40	125		(1G)	

(1) T_J = 125°C unless otherwise specified (see Notes column).
(2) T_J = 25°C, I_{AS} = I_{AR}.
(3) Current decaying linearly to zero in 1µsec. Frequency limited by T_J max. V_A = 1.5 x V_R typical unless otherwise specified (see Notes column).
(3A) Current decaying linearly to zero in 1µsec. Frequency limited by T_J max. V_A = 3 x V_R typical.
(3B) Current decaying linearly to zero in 2 µsec. Frequency limited by T_J max. V_A = 1.5 x V_R typical.
(4) For case outline drawing see page O-2.
(5) For tape and reel specifications see page O-2.
(6) For optional lead forms see page O-2.
(1A) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1B) For V_{FM}: T_J = 75°C; for I_{RM}: T_J = 100°C.
(1C) For V_{FM}: T_J = 70°C; for I_{RM}: T_J = 125°C.
(1D) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1E) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1G) V_{FM} rated at 50A.
(1H) V_{FM} rated at 80A.
(1J) V_{FM} rated at 160A.
(1K) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 100°C.
(1M) For V_{FM}: T_J = 125°C; for I_{RM}: T_J = 125°C.

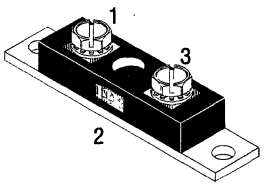
Schottky Diode

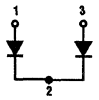
Center Tap — Modules

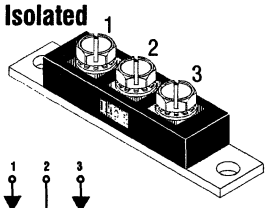
200-440 Amps

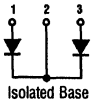
International IOR Rectifier

(6) Part Number	VRRM (V)	$I_{F(AV)}$ @ T_C (A)	(T_C) (°C)	V_{FM} @ I_{FM} (1) (V)	(2) E_{AS} (mJ)	(3) I_{AR} (A)	I_{RM}@ Rated V_{RWM} (1) (mA)	R_{thCS} /Leg (°C/W)	Max. T_J (°C)	Case Outline Number (4)	Notes	Case Style
225CNQ015	15	220	74	0.32	9.0	2.0	2000	0.40	100	K17	(1B)(3A)	TO-244AB Non-Isolated
300CNQ035	35	300	100	0.62	160	30	600	0.40	150			
300CNQ040	40	300	98	0.62	160	30	600	0.40	150			
300CNQ045	45	300	96	0.62	160	30	600	0.40	150			
301CNQ035	35											
301CNQ040	40	300	120	0.59	202	30	90	0.40	175		(1C)	
301CNQ045	45											
301CNQ050	50											
303CNQ080	80	300	126	0.72	15	1.0	105	0.30	175			
303CNQ100	100											
309CNQ150	150	300	125	0.85	190	1.0	75	0.30	175			
400CNQ035	35											
400CNQ040	40	400	105	0.52	180	40	800	0.20	150			
400CNQ045	45											
401CNQ035	35											
401CNQ040	40	400	138	0.56	270	40	180	0.20	175		(1C)	
401CNQ045	45											
403CNQ080	80	400	105	0.72	15	1.0	140	0.20	175			
403CNQ100	100											
408CNQ060	60	400	49	0.88	75	1.0	960	0.20	150			
409CNQ150	150	400	128	0.85	190	1.0	90	0.20	175			
440CNQ030	30	440	115	0.41	198	44	1120	0.20	150			
444CNQ035	35											
444CNQ040	40	440	81	0.51	270	40	2400	0.20	125		(1G)	
444CNQ045	45											
445CNQ015	15	440	75	0.47	18	4.0	4000	0.20	100			
201CMQ045	45	200	110	0.58	135	20	90	0.70	175	K18		TO-244 AB Isolated
203CMQ100	100	200	100	0.72	15	1.0	70	0.70	175			
208CMQ060	60	200	95	0.75	75	1.0	480	0.50	150			
209CMQ150	150	200	97	0.80	32	1.0	50	0.70	175			
220CMQ030	30	220	95	0.40	99	22	560	0.70	150			
401CMQ045	45	400	120	0.56	270	40	180	0.50	175			
403CMQ100	100	400	85	0.72	15	1.0	140	0.50	175			
408CMQ060	60	400	109	0.88	75	1.0	960	0.50	150			
440CMQ030	30	440	63	0.41	198	44	1120	0.50	150			



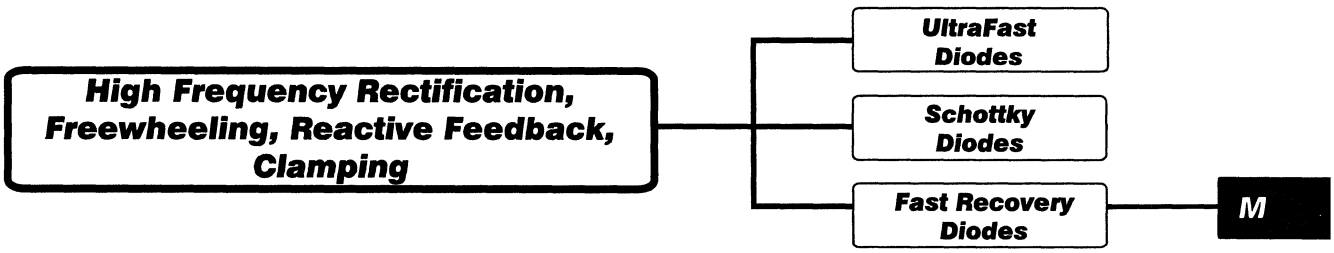






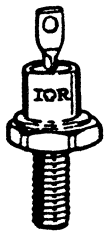
(1) T_J = 125°C unless otherwise specified (see Notes column).
(2) T_J = 25°C, I_{AS} = I_{AR}.
(3) Current decaying linearly to zero in 1µsec. Frequency limited by T_J max. V_A = 1.5 x V_R typical unless otherwise specified (see Notes column).
(3A) Current decaying linearly to zero in 1µsec. Frequency limited by T_J max. V_A = 3 x V_R typical.
(3B) Current decaying linearly to zero in 2 µsec. Frequency limited by T_J max. V_A = 1.5 x V_R typical.
(4) For case outline drawing see page O-2.
(5) For tape and reel specifications see page O-2.
(6) For optional lead forms see page O-2.
(1A) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1B) For V_{FM}: T_J = 75°C; for I_{RM}: T_J = 100°C.
(1C) For V_{FM}: T_J = 70°C; for I_{RM}: T_J = 125°C.
(1D) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1E) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 125°C.
(1G) V_{FM} rated at 50A.
(1H) V_{FM} rated at 80A.
(1J) V_{FM} rated at 160A.
(1K) For V_{FM}: T_J = 25°C; for I_{RM}: T_J = 100°C.
(1M) For V_{FM}: T_J = 125°C; for I_{RM}: T_J = 125°C.

FUNCTION PRODUCT



Fast Recovery Diodes

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ π x $I_{F(AV)}$ (V)	R_{thJC} (°C/W)	t_{rr} (2) (ns)	Case Outline Number (6)	Notes	Case Style
6FL10S02 6FL20S02 6FL40S02 6FL60S02	100 200 400 600	6	100	110	115	1.40	2.50	200	R6	(3) (5) (7)	DO-203AA (DO-4)
6FL10S05 6FL20S05 6FL40S05 6FL60S05 6FL80S05 6FL100S05	100 200 400 600 800 1000	6	100	110	115	1.40	2.50	500			
6FL10S10 6FL20S10 6FL40S10 6FL60S10 6FL80S10 6FL100S10	100 200 400 600 800 1000	6	100	110	115	1.40	2.50	1000			
1N3879 1N3880 1N3881 1N3882 1N3883	50 100 200 300 400	6	100	72	75	1.40	2.50	300			
1N3889 1N3890 1N3891 1N3892 1N3893	50 100 200 300 400	12	100	145	150	1.40	2.00	300			
12FL10S02 12FL20S02 12FL40S02 12FL60S02	100 200 400 600	12	100	145	150	1.40	2.00	200			
12FL10S05 12FL20S05 12FL40S05 12FL60S05 12FL80S05 12FL100S05	100 200 400 600 800 1000	12	100	145	150	1.40	2.00	500			
12FL10S10 12FL20S10 12FL40S10 12FL50S10 12FL80S10 12FL100S10	100 200 400 600 800 1000	12	100	145	150	1.40	2.00	1000			
16FL10S02 16FL20S02 16FL40S02 16FL60S02	100 200 400 600	16	100	180	190	1.40	1.60	200			
16FL10S05 16FL20S05 16FL40S05 16FL60S05 16FL80S05 16FL100S05	100 200 400 600 800 1000	16	100	180	190	1.40	1.60	500			
16FL10S10 16FL20S10 16FL40S10 16FL60S10 16FL80S10 16FL100S10	100 200 400 600 800 1000	16	100	180	190	1.40	1.60	1000			



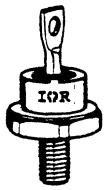
(1) 100% V_{RRM} reapplied @ T_j = T_j max = 150°C.
(2) t_{rr} conditions: T_j = 25°C, I_{FM} = π x rated $I_{F(AV)}$, di_F/dt = 25 A/µs.
(3) Cathode to stud. For anode to stud, add "R" to basic part number (e.g., 12FLR10S02, 1N3879R).
(5) Available with metric stud on request; to specify add "M" to the end of part number (e.g., 6FL100S10M).
(6) For case outline drawing see page 0-2.
(7) V_{FM} measured at T_j = 25°C.

M

Diodes
Fast Recovery
20–60 Amps

International IOR Rectifier

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	T_C (°C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ π x $I_{F(AV)}$ (V)	R_{thJC} (°C/W)	t_{rr} (ns)	Case Outline Number (6)	Notes	Case Style
IRD3899 IRD3900 IRD3901 IRD3902 IRD3903	50 100 200 300 400	20	100	240	250	1.65	0.60	350	R7	(2) (3) (5) (11)	DO-203AB (DO-5)
IRD3909 IRD3910 IRD3911 IRD3912 IRD3913	50 100 200 300 400	30	100	285	300	1.80	0.46	350			
30HFU-100 30HFU-200 30HFU-300 30HFU-400 30HFU-500 30HFU-600	100 200 300 400 500 600	30	91	400	420	1.45	0.60	60		(3) (5) (7) (8) (10)	
40HFL10S02 40HFL20S02 40HFL40S02 40HFL60S02	100 200 400 600	40	75	400	420	1.95	0.60	200		(2) (3) (5) (11)	
40HFL10S05 40HFL20S05 40HFL40S05 40HFL60S05 40HFL80S05 40HFL100S05	100 200 400 600 800 1000	40	75	400	420	1.95	0.60	500			
40HFL10S10 40HFL20S10 40HFL40S10 40HFL60S10 40HFL80S10 40HFL100S10	100 200 400 600 800 1000	40	75	400	420	1.95	0.60	1000			
60HFU-100 60HFU-200 60HFU-300 60HFU-400 60HFU-500 60HFU-600	100 200 300 400 500 600	60	82	700	730	1.50	0.36	60		(3) (5) (8) (9) (10)	



(1) 100% V_{RRM} reapplied @ T_j = T_j max = 125°C.
(2) t_{rr} conditions: T_j = 25°C, I_{FM} = π x rated $I_{F(AV)}$, di_F/dt = 25 A/µs.
(3) Cathode to stud. For anode to stud, add "R" to basic part number (e.g., 40HFLR10S02, IRD3909R).
(5) Available with metric stud on request; to specify add "M" to the end of number (e.g., 40HFL100S10M).
(6) For case outline drawing see page 0-2.
(7) V_{FM} conditions: I_{FM} = 30 A_{pk}, T_j = 25°C.
(8) $I_{F(AV)}$ conditions: 180°C conduction, half sine.
(9) V_{FM} conditions: I_{FM} = 60 A_{pk}, T_j = 25°C.
(10) T_j = 25°C, I_F = 1A, -di/dt = 100 A/µs, V_R = 30V.
(11) V_{FM} measured at T_j = 25°C.

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C) (°C)	I_{FSM} (1) 50 Hz (A)	I_{FSM} (1) 60 Hz (A)	V_{FM} @ π x $I_{F(AV)}$ (V)	R_{thJC} (°C/W)	t_{rr} (2) (ns)	Case Outline Number (6)	Notes	Case Style
70HFL10S02 70HFL20S02 70HFL40S02 70HFL60S02	100 200 400 600	70	75	700	730	1.85	0.36	200	R7	(3) (5) (7)	DO-203AB (DO-5)
70HFL10S05 70HFL20S05 70HFL40S05 70HFL60S05 70HFL80S05 70HFL100S05	100 200 400 600 800 1000	70	75	700	730	1.85	0.36	500			
70HFL10S10 70HFL20S10 70HFL40S10 70HFL60S10 70HFL80S10 70HFL100S10	100 200 400 600 800 1000	70	75	700	730	1.85	0.36	1000			
85HFL10S02 85HFL20S02 85HFL40S02 85HFL60S02	100 200 400 600	85	75	1100	1150	1.75	0.30	200			
85HFL10S05 85HFL20S05 85HFL40S05 85HFL60S05 85HFL80S05 85HFL100S05	100 200 400 600 800 1000	85	75	1100	1150	1.75	0.30	500			
85HFL10S10 85HFL20S10 85HFL40S10 85HFL60S10 85HFL80S10 85HFL100S10	100 200 400 600 800 1000	85	75	1100	1150	1.75	0.30	1000			

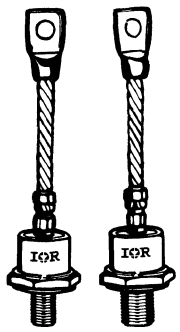
(1) 100% V_{RRM} reapplied @ $T_j = T_j$ max = 125°C.
(2) t_{rr} conditions: T_j = 25°C, $I_{FM} = \pi$ x rated $I_{F(AV)}$, di_F/dt = 25 A/µs.
(3) Cathode to stud. For anode to stud, add "R" to basic part number (e.g., 70HFLR10S02).
(5) Available with metric stud on request; to specify add "M" to the end of number (e.g., 70HFL100S10M).
(6) For case outline drawing see page 0-2.
(7) V_{FM} measured at Tj = 25°C.

M

Diodes
Fast Recovery
110–250 Amps

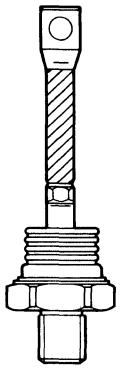
International
IOR Rectifier

Part Number (12)	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (1) 50 Hz (A)	60 Hz (A)	V_{FM} @ I_{FM} (V)	(A)	R_{thJC} (°C/W)	t_{rr} (7) (ns)	Case Outline Number (11)	Notes	Case Style
SD103N02...PV SD103N04...PV SD103N06...PV SD103N08...PV SD103N10...PV SD103N12...PV SD103N14...PV SD103N16...PV SD103N18...PC SD103N20...PC SD103N22...PC SD103N24...PC SD103N25...PC	200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2500	110	85	3000	3140	2.23	345	0.16	500 to 2000 1000 to 2000 2000	**R11 (R14)** **R12 (R15)**	(2) (3) (4) (5) (8) (13)	**DO-205AC** (DO-30) **DO-205AA** (DO-8)
SD153N02...PV SD153N04...PV SD153N06...PV SD153N08...PV SD153N10...PV SD153N12...PV SD153N14...PV SD153N16...PV	200 400 600 800 1000 1200 1400 1600	150	85	3600	3770	1.55	470	0.16	1000 to 2000 1500 to 2000	**R11 (R14)**		
251UL80... 251UL100... 251UL120... 251UL140... 251UL160... 251UL180... 251UL200... 251UL220... 251UL240... 251UL250...	800 1000 1200 1400 1600 1800 2000 2200 2400 2500	250	70	3350	3500	1.78	1000	0.15	1000 to 2000 2000	**R22**	(9) (13)	**DO-205AB** (DO-9)
SD203N02...PV SD203N04...PV SD203N06...PV SD203N08...PV SD203N10...PV SD203N12...PV SD203N14...PV SD203N16...PV SD203N18...PC SD203N20...PC SD203N22...PC SD203N24...PC SD203N25...PC	200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2500	200	85	4200	4400	1.65	628	0.115	1000 to 2000 2000	**R23** **R24**	(2) (4) (5) (8) (13)	
SD253N02...PV SD253N04...PV SD253N06...PV SD253N08...PV SD253N10...PV SD253N12...PV SD253N14...PV SD253N16...PV	200 400 600 800 1000 1200 1400 1600	250	85	4500	4710	1.38	785	0.115	1000 to 2000 2000	**R23**		



(1) 100% V_{RRM} reapplied @ $T_j = T_j$ max.
(2) Cathode to stud. For anode to stud change "N" to "R" (e.g., SD103R02S05PV).
(3) DO-30 standard, for DO-8 case change "P" to "W" (e.g., SD103N02S15WV).
(4) Available with metric stud: To specify change "P" to "M" in part number (e.g., SD103N02S10MV).
(5) Available with flat base. To specify change "P" to "F" in part number (e.g., SD103N02S20FV).
(7) $T_j = 25°C$.
(8) Available with flag lead: To specify add "B" to part number (e.g., SD203N02S10PBV).
(9) Cathode to stud. For anode to stud add "R" to part number (e.g., 251ULR80S20).
(11) For case outline drawing see page O-2.
(12) To complete the part number refer to Table 1, t_{rr} code table, see page M-10.
(13) V_{FM} measured at $T_j = 25°C$.

Part Number (12)	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(°C)	I_{FSM} (1) 50 Hz (A)	60 Hz (A)	V_{FM} @ I_{FM} (V)	(A)	R_{thJC} (°C/W)	t_{rr} (7) (ns)	Case Outline Number (11)	Notes	Case Style
SD233N30S50PC SD233N32S50PC SD233N34S50PC SD233N36S50PC SD233N38S50PC SD233N40S50PC SD233N42S50PC SD233N44S50PC SD233N45S50PC	3000 3200 3400 3600 3800 4000 4200 4400 4500	235	60	4630	4840	3.20	1000	0.1	5000	R25	(2) (4) (5) (10) (13)	B-8
SD453N12S20PC SD453N14S20PC SD453N16S20PC SD453N18S20PC SD453N20S20PC SD453N22S20PC SD453N24S20PC SD453N25S20PC	1200 1400 1600 1800 2000 2200 2400 2500	400	70	7820	8190	2.20	1000	0.1	2000		(2) (4) (5) (13)	
SD453N12S30PC SD453N14S30PC SD453N16S30PC SD453N18S30PC SD453N20S30PC SD453N22S30PC SD453N24S30PC SD453N25S30PC	1200 1400 1600 1800 2000 2200 2400 2500	450	70	8070	8450	1.85	1000	0.1	3000			



Part Number (12)	V_{RRM} (V)	$I_{F(AV)}$ @ T_{HS} (A)	(°C)	I_{FSM} (1) 50 Hz (A)	60 Hz (A)	V_{FM} @ I_{FM} (V)	(A)	R_{thJ-HS} (°C/W)	t_{rr} (7) (ns)	Case Outline Number (11)	Notes	Case Style
SD303C02...C SD303C04...C SD303C06...C SD303C08...C SD303C10...C	200 400 600 800 1000	350	55	4850	5080	2.26	1100	0.08	500 to 2000	R26	(6) (14)	DO-200AA (A-PUK)
SD303C12...C SD303C14...C SD303C16...C	1200 1400 1600								1000 to 2000			
SD303C18...C SD303C20...C SD303C22...C SD303C24...C SD303C25...C	1800 2000 2200 2400 2500								1500 to 2000			
SD403C02...C SD403C04...C SD403C06...C SD403C08...C SD403C10...C	200 400 600 800 1000	430	55	5200	5445	1.83	1350	0.08	1000 to 2000			
SD403C12...C SD403C14...C SD403C16...C	1200 1400 1600								1500 to 2000			

(1) 100% V_{RRM} reapplied @ $T_j = T_j$ max.
(2) Cathode to stud. For anode to stud change "N" to "R" (e.g., SD233R30S50PC).
(4) Available with metric stud: To specify change "P" to "M" in part number (e.g., SD233N30S50MC).
(5) Available with flat base. To specify change "P" to "F" in part number (e.g., SD233N30S50FC).
(6) DC operation, double side cooled.
(7) T_j = 25°C.
(10) I_{FSM} @ 50% V_{RRM} reapplied and Tj = Tj max.
(11) For case outline drawing see page 0-2.
(12) To complete the part number refer to Table 1, t_{rr} code table, see page M-10.
(13) V_{FM} measured at Tj = Tj max.
(14) V_{FM} measured at Tj = 25°C.

M

Diodes
Fast Recovery
600–910 Amps

International IOR Rectifier

Part Number (12)	V_{RRM} (V)	$I_{F(AV)}$ @ T_{HS} (A)	(°C)	I_{FSM} (1) 50 Hz (A)	60 Hz (A)	V_{FM} @ I_{FM} (V)	(A)	R_{thJ-HS} (°C/W)	t_{rr} (7) (ns)	Case Outline Number (11)	Notes	Case Style
SD603C02...C	200								500 to 2000	R27	(6) (13) (15)	B-43 (E-PUK)
SD603C04...C	400											
SD603C06...C	600											
SD603C08...C	800											
SD603C10...C	1000											
SD603C12...C	1200	600	55	7000	7330	2.97	1885	0.038	1000 to 2000			
SD603C14...C	1400											
SD603C16...C	1600								1500 to 2000			
SD603C18...C	1800											
SD603C20...C	2000											
SD603C22...C	2200											
SD803C02...C	200								1000 to 2000			
SD803C04...C	400											
SD803C06...C	600											
SD803C08...C	800	845	55	9500	9945	1.89	2650	0.038				
SD803C10...C	1000											
SD803C12...C	1200								1500 to 2000			
SD803C14...C	1400											
SD803C16...C	1600											
SD823C12S20C	1200								2000		(6) (14) (15)	
SD823C14S20C	1400											
SD823C16S20C	1600											
SD823C18S20C	1800	810	55	7820	8190	2.20	1500	0.038				
SD823C20S20C	2000											
SD823C22S20C	2200											
SD823C24S20C	2400											
SD823C25S20C	2500											
SD823C12S30C	1200								3000			
SD823C14S30C	1400											
SD823C16S30C	1600											
SD823C18S30C	1800	910	55	8070	8450	1.85	1500	0.038				
SD823C20S30C	2000											
SD823C22S30C	2200											
SD823C24S30C	2400											
SD823C25S30C	2500											

(1) 100% V_{RRM} reapplied @ $T_j = T_j$ max.
(6) DC operation, double side cooled.
(7) T_j = 25°C.
(12) To complete the part number refer to Table 1, t_{rr} code table, see page M-10.
(13) V_{FM} measured at T_j = 25°C.
(14) V_{FM} measured at $T_j = T_j$ max.
(15) For case outline drawing see page 0-2.

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_{HS} (A)	(°C)	I_{FSM} (1) 50 Hz (A)	60 Hz (A)	V_{FM} @ I_{FM} (V)	(A)	$R_{thJ\text{-}HS}$ (°C/W)	t_{rr} (7) (ns)	Case Outline Number (11)	Notes	Case Style
SD263C36S50L SD263C38S50L SD263C40S50L SD263C42S50L SD263C44S50L SD263C45S50L	3600 3800 4000 4200 4400 4500	375	55	4630	4850	3.20	1000	0.05	5000	**R28**	(6) (10) (12)	**DO-200AB** (B-PUK)
SD553C30S50L SD553C32S50L SD553C34S50L SD553C36S50L SD553C38S50L SD553C40S50L SD553C42S50L SD553C44S50L SD553C45S50L	3000 3200 3400 3600 3800 4000 4200 4400 4500	560	55	10100	10570	3.24	1500	0.031	5000			
SD703C12S20L SD703C14S20L SD703C16S20L SD703C18S20L SD703C20S20L SD703C20S20L SD703C24S20L SD703C25S20L	1200 1400 1600 1800 2000 2200 2400 2500	700	55	7820	8190	2.20	1500	0.046	2000		(6) (12)	
SD703C12S30L SD703C14S30L SD703C16S30L SD703C18S30L SD703C20S30L SD703C20S30L SD703C24S30L SD703C25S30L	1200 1400 1600 1800 2000 2200 2400 2500	790	55	8070	8450	1.85	1500	0.046	3000			
SD1053C18S20L SD1053C20S20L SD1053C22S20L SD1053C24S20L SD1053C25S20L	1800 2000 2200 2400 2500	1050	55	12620	13210	1.90	1500	0.031	2000			
SD1053C18S30L SD1053C20S30L SD1053C22S30L SD1053C24S30L SD1053C25S30L SD1053C26S30L SD1053C28S30L SD1053C30S30L	1800 2000 2200 2400 2500 2600 2800 3000	920	55	10930	11450	2.26	1500	0.031	3000			

(1) 100% V_{RRM} reapplied @ $T_j = T_j$ max.
(6) DC operation, double side cooled.
(7) $T_j = 25°C$.
(10) I_{FSM} @ 50% V_{RRM} reapplied and Tj = Tj max.
(11) For case outline drawing see page M-10.
(12) V_{FM} measured at Tj = Tj max.

M

Diodes
Fast Recovery
990–1650 Amps

International
IOR Rectifier

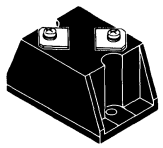
Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_{HS} (A)	(°C)	I_{FSM} (1) 50 Hz (A)	60 Hz (A)	V_{FM} @ I_{FM} (V)	(A)	R_{thJ-HS} (°C/W)	t_{rr} (7) (ns)	Case Outline Number (11)	Notes	Case Style
SD853C30S50K SD853C32S50K SD853C34S50K SD853C36S50K SD853C38S50K SD853C40S50K SD853C42S50K SD853C44S50K SD853C45S50K	3000 3200 3400 3600 3800 4000 4200 4400 4500	990	55	16000	16750	2.90	2000	0.02	5000	**R29**	(6) (10) (12)	**DO-200AC** (K-PUK)
SD1553C16S20K SD1553C18S20K SD1553C20S20K SD1553C22S20K SD1553C24S20K SD1553C25S20K	1600 1800 2000 2200 2400 2500	1825	55	21030	22010	2.23	4000	0.02	2000		(6) (12)	
SD1553C16S30K SD1553C18S30K SD1553C20S30K SD1553C22S30K SD1553C24S30K SD1553C25S30K SD1553C26S30K SD1553C28S30K SD1553C30S30K	1600 1800 2000 2200 2400 2500 2600 2800 2600	1650	55	18500	19370	2.60	4000	0.02	3000			

Table 1. t_{rr} Code Table

Code	S05	S10	S15	S20	S30	S50
t_{rr} (ns)	500	1000	1500	2000	2500	5000

To complete the part number, insert the appropriate t_{rr} code (e.g., SD103N02S05PV)

(1) 100% V_{RRM} reapplied @ $T_j = T_j$ max.
(6) DC operation, double side cooled.
(7) T_j = 25°C.
(10) I_{FSM} @ 50% V_{RRM} reapplied and Tj = Tj max.
(11) For case outline drawing see page 0-2.
(12) V_{FM} measured at Tj = Tj max.

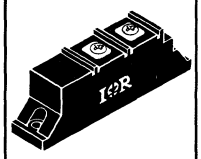
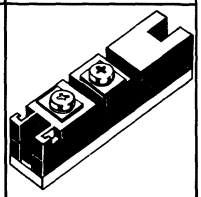
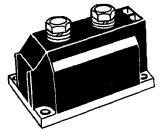
Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (8) 50 Hz (A)	I_{FSM} (8) 60 Hz (A)	(3) V_{FM} (V)	R_{thJC} DC (1) (K/W)	t_{rr} (ns)	Case Outline Number (9)	Notes	Case Style
T40HFL10S02 T40HFL20S02 T40HFL40S02 T40HFL60S02	100 200 400 600	40	70	400	420	1.60	0.85	200 (70)	M3	(2) (4) (7)	 U.L RECOGNIZED File no: E78996
T40HFL10S05 T40HFL20S05 T40HFL40S05 T40HFL60S05 T40HFL80S05 T40HFL100S05	100 200 400 600 800 1000	40	70	400	420	1.60	0.85	500 (110)			
T40HFL10S10 T40HFL20S10 T40HFL40S10 T40HFL60S10 T40HFL80S10 T40HFL100S10	100 200 400 600 800 1000	40	70	400	420	1.60	0.85	1000 (270)			
T70HFL10S02 T70HFL20S02 T70HFL40S02 T70HFL60S02	100 200 400 600	70	70	700	730	1.73	0.53	200 (70)			
T70HFL10S05 T70HFL20S05 T70HFL40S05 T70HFL60S05 T70HFL80S05 T70HFL100S05	100 200 400 600 800 1000	70	70	700	730	1.73	0.53	500 (110)			
T70HFL10S10 T70HFL20S10 T70HFL40S10 T70HFL60S10 T70HFL80S10 T70HFL100S10	100 200 400 600 800 1000	70	70	700	730	1.73	0.53	1000 (270)			
T85HFL10S02 T85HFL20S02 T85HFL40S02 T85HFL60S02	100 200 400 600	85	70	1100	1150	1.55	0.46	200 (80)			
T85HFL10S05 T85HFL20S05 T85HFL40S05 T85HFL60S05 T85HFL80S05 T85HFL100S05	100 200 400 600 800 1000	85	70	1100	1150	1.55	0.46	500 (120)			
T85HFL10S10 T85HFL20S10 T85HFL40S10 T85HFL60S10 T85HFL80S10 T85HFL100S10	100 200 400 600 800 1000	85	70	1100	1150	1.55	0.46	1000 (290)			

(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3500V-50Hz.
(3) V_{FM} at $I_{FM} = \pi$ x $I_{F(AV)}$, T_J = 25°C.
(4) t_{rr} conditions:T_j = 25°C, I_F = 1A to V_R = 30V -di$_F$/dt = 100A/μs values shown in parenthesis
(7) t_{rr} conditions: T_j = 25°C, $I_{FM} = \pi$ x rated $I_{F(AV)}$, -di$_F$/dt = 25A/μs.
(8) 100% V_{RRM} reapplied. $T_j = T_j$ max.
(9) For case outline drawing see page 0-2.

M

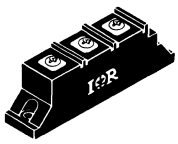
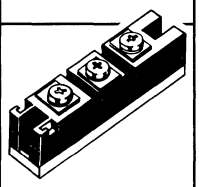
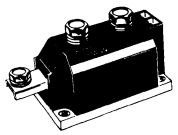
Power Modules
Diode, Fast

International IOR Rectifier

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (8) 50 Hz (A)	I_{FSM} (8) 60 Hz (A)	(3) V_{FM} (V)	R_{thJC} DC (1) (K/W)	t_{rr} (ns)	Case Outline Number (9)	Notes	Case Style
IRKEL56/04S02 IRKEL56/06S02	400 600	55	70	800	840	1.72	0.60	200 (70)	M4	(2) (4) (7) (10)	
IRKEL56/04S05 IRKEL56/06S05 IRKEL56/08S05 IRKEL56/10S05	400 600 800 1000	55	70	800	840	1.72	0.60	500 (110)			
IRKEL56/04S10 IRKEL56/06S10 IRKEL56/08S10 IRKEL56/10S10	400 600 800 1000	55	70	800	840	1.72	0.60	1000 (270)			
IRKEL71/04S02 IRKEL71/06S02	400 600	70	75	850	890	1.36	0.53	200 (70)			 U.L. RECOGNIZED File no: E78996
IRKEL71/04S05 IRKEL71/06S05 IRKEL71/08S05 IRKEL71/10S05	400 600 800 1000	70	75	850	890	1.36	0.53	500 (110)			
IRKEL71/04S10 IRKEL71/06S10 IRKEL71/08S10 IRKEL71/10S10	400 600 800 1000	70	75	850	890	1.36	0.53	1000 (270)			
IRKEL91/04S02 IRKEL91/06S02	400 600	90	75	1200	1256	1.45	0.38	200 (80)			
IRKEL91/04S05 IRKEL91/06S05 IRKEL91/08S05 IRKEL91/10S05	400 600 800 1000	90	75	1200	1256	1.45	0.38	500 (120)			
IRKEL91/04S10 IRKEL91/06S10 IRKEL91/08S10 IRKEL91/10S10	400 600 800 1000	90	75	1200	1256	1.45	0.38	1000 (290)			
IRKEL132-04S10 IRKEL132-06S10 IRKEL132-08S10 IRKEL132-10S10	400 600 800 1000	140	100	2500	2600	1.68	0.20	1000	M5	(5) (6) (11)	 U.L. RECOGNIZED File no: E78996
IRKEL132-04S20 IRKEL132-06S20 IRKEL132-08S20 IRKEL132-10S20 IRKEL132-12S20 IRKEL132-14S20	400 600 800 1000 1200 1400	140	100	2500	2600	1.68	0.20	2000			
IRKEL240-04S10 IRKEL240-06S10 IRKEL240-08S10 IRKEL240-10S10	400 600 800 1000	250	100	6750	7100	1.62	0.125	1000	M6	(5) (6) (11)	
IRKEL240-04S20 IRKEL240-06S20 IRKEL240-08S20 IRKEL240-10S20 IRKEL240-12S20 IRKEL240-14S20	400 600 800 1000 1200 1400	250	100	6750	7100	1.62	0.125	2000			
IRKEL240-16S30 IRKEL240-18S30 IRKEL240-20S30 IRKEL240-22S30 IRKEL240-24S30 IRKEL240-25S30	1600 1800 2000 2200 2400 2500	240	100	6300	6600	1.71	0.125	3000			U.L. RECOGNIZED File no: E78996

(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3500V-50Hz.
(3) V_{FM} at $I_{FM} = \pi \times I_{F(AV)}$, $T_j = 25°C$
(4) t_{rr} conditions: $T_j = 25°C$, I_F = 1A to V_R = 30V $-di_F/dt = 100A/\mu$ values shown in parenthesis.
(5) RMS isolation voltage: 3000V-50Hz.
(6) t_{rr} conditions: I_{FM} = 500A, di/dt = 100A/μs, $T_j = 150°C$, V_R = 50V.
(7) t_{rr} conditions: $T_j = 25°C$, $I_{FM} = \pi \times$ rated $I_{F(AV)}$, $-di_F/dt = 25A/\mu s$.
(8) 100% V_{RRM} reapplied. $T_j = T_j$ max.
(9) For case outline drawing see page 0-2.
(10) New generation of ADD-A-Pak modules are identified by a "/" (slash) in the part number instead of the "-" of the old part number. Consult factory for new type availability.
(11) All devices can be supplied with non toxic materials. Add suffix "N" to part number.

Power Modules
Diode/Diode, Fast

Part Number (3)	Part Number (4)	Part Number (5)	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	(T_C °C)	I_{FSM} (9) 50 Hz (A)	I_{FSM} (9) 60 Hz (A)	(8) V_{FM} (V)	R_{thJC} DC (1) (K/W)	t_{rr} (ns)	Case Outline Number (10)	Notes	Case Style
IRKDL56/04S02 IRKDL56/06S02	IRKCL56/04S02 IRKCL56/06S02	IRKJL56/04S02 IRKJL56/06S02	400 600	55	70	800	840	1.72	0.30	200 (70)	M4	(2) (7) (12) (15)	
IRKDL56/04S05 IRKDL56/06S05 IRKDL56/08S05 IRKDL56/10S05	IRKCL56/04S05 IRKCL56/06S05 IRKCL56/08S05 IRKCL56/10S05	IRKJL56/04S05 IRKJL56/06S05 IRKJL56/08S05 IRKJL56/10S05	400 600 800 1000	55	70	800	840	1.72	0.30	500 (110)			
IRKDL56/04S10 IRKDL56/06S10 IRKDL56/08S10 IRKDL56/10S10	IRKCL56/04S10 IRKCL56/06S10 IRKCL56/08S10 IRKCL56/10S10	IRKJL56/04S10 IRKJL56/06S10 IRKJL56/08S10 IRKJL56/10S10	400 600 800 1000	55	70	800	840	1.72	0.30	500 (270)			
IRKDL71/04S02 IRKDL71/06S02	IRKCL71/04S02 IRKCL71/06S02	IRKJL71/04S02 IRKJL71/06S02	400 600	70	75	850	890	1.36	0.265	200 (70)			
IRKDL71/04S05 IRKDL71/06S05 IRKDL71/08S05 IRKDL71/10S05	IRKCL71/04S05 IRKCL71/06S05 IRKCL71/08S05 IRKCL71/10S05	IRKJL71/04S05 IRKJL71/06S05 IRKJL71/08S05 IRKJL71/10S05	400 600 800 1000	70	75	850	890	1.36	0.265	500 (110)			
IRKDL71/04S10 IRKDL71/06S10 IRKDL71/08S10 IRKDL71/10S10	IRKCL71/04S10 IRKCL71/06S10 IRKCL71/08S10 IRKCL71/10S10	IRKJL71/04S10 IRKJL71/06S10 IRKJL71/08S10 IRKJL71/10S10	400 600 800 1000	70	75	850	890	1.36	0.265	1000 (270)			U.L. RECOGNIZED File no E78996
IRKDL91/04S02 IRKDL91/06S02	IRKCL91/04S02 IRKCL91/06S02	IRKJL91/04S02 IRKJL91/06S02	400 600	90	75	1200	1256	1.45	0.19	200 (80)			
IRKDL91/04S05 IRKDL91/06S05 IRKDL91/08S05 IRKDL91/10S05	IRKCL91/04S05 IRKCL91/06S05 IRKCL91/08S05 IRKCL91/10S05	IRKJL91/04S05 IRKJL91/06S05 IRKJL91/08S05 IRKJL91/10S05	400 600 800 1000	90	75	1200	1256	1.45	0.19	500 (120)			
IRKDL91/04S10 IRKDL91/06S10 IRKDL91/08S10 IRKDL91/10S10	IRKCL91/04S10 IRKCL91/06S10 IRKCL91/08S10 IRKCL91/10S10	IRKJL91/04S10 IRKJL91/06S10 IRKJL91/08S10 IRKJL91/10S10	400 600 800 1000	90	75	1200	1256	1.45	0.19	1000 (290)			
IRKDL132-04S10 IRKDL132-06S10 IRKDL132-08S10 IRKDL132-10S10	IRKCL132-04S10 IRKCL132-06S10 IRKCL132-08S10 IRKCL132-10S10	IRKJL132-04S10 IRKJL132-06S10 IRKJL132-08S10 IRKJL132-10S10	400 600 800 1000	140	100	2500	2600	1.68	0.10	1000	M5	(13) (14) (16)	
IRKDL132-04S20 IRKDL132-06S20 IRKDL132-08S20 IRKDL132-10S20 IRKDL132-12S20 IRKDL132-14S20	IRKCL132-04S20 IRKCL132-06S20 IRKCL132-08S20 IRKCL132-10S20 IRKCL132-12S20 IRKCL132-14S20	IRKJL132-04S20 IRKJL132-06S20 IRKJL132-08S20 IRKJL132-10S20 IRKJL132-12S20 IRKJL132-14S20	400 600 800 1000 1200 1400	140	100	2500	2600	1.68	0.10	2000			U.L. RECOGNIZED File no: E78996
IRKDL240-04S10 IRKDL240-06S10 IRKDL240-08S10 IRKDL240-10S10	IRKCL240-04S10 IRKCL240-06S10 IRKCL240-08S10 IRKCL240-10S10	IRKJL240-04S10 IRKJL240-06S10 IRKJL240-08S10 IRKJL240-10S10	400 600 800 1000	250	100	6750	7100	1.62	0.063	1000	M6		
IRKDL240-04S20 IRKDL240-06S20 IRKDL240-08S20 IRKDL240-10S20 IRKDL240-12S20 IRKDL240-14S20	IRKCL240-04S20 IRKCL240-06S20 IRKCL240-08S20 IRKCL240-10S20 IRKCL240-12S20 IRKCL240-14S20	IRKJL240-04S20 IRKJL240-06S20 IRKJL240-08S20 IRKJL240-10S20 IRKJL240-12S20 IRKJL240-14S20	400 600 800 1000 1200 1400	250	100	6750	7100	1.62	0.063	2000			
IRKDL240-16S30 IRKDL240-18S30 IRKDL240-20S30 IRKDL240-22S30 IRKDL240-24S30 IRKDL240-25S30	IRKCL240-16S30 IRKCL240-18S30 IRKCL240-20S30 IRKCL240-22S30 IRKCL240-24S30 IRKCL240-25S30	IRKJL240-16S30 IRKJL240-18S30 IRKJL240-20S30 IRKJL240-22S30 IRKJL240-24S30 IRKJL240-25S30	1600 1800 2000 2200 2400 2500	240	100	6300	6600	1.71	0.063	3000			U.L. RECOGNIZED File no: E78996

(1) Value given for R_{thJC} is per module.
(2) RMS isolation voltage: 3500V-50Hz.
(3) Doubler circuit.
(4) Center tap, circuit common cathode. Contact factory.
(5) Center tap, circuit common anode. Contact factory.
(7) t_{rr} conditions: T_j = 25°C, I_F = 1A, V_R = 30V, di_F/dt = 100A/μs values shown in parenthesis.
(8) V_{FM} at I_{FM} = π x $I_{F(AV)}$, T_j = 25°C.
(9) 100% V_{RRM} reapplied. T_j = T_j max.
(10) For case outline drawing see page 0-2.
(12) New generation of ADD-A-Pak modules are identified by a "/" (slash) in the part number instead of the "-" of the old part number. Consult factory for new type availability.
(13) All devices can be supplied with non toxic material. Add suffix N to part number.
(14) t_{rr} conditions: I_F = 500A, di_F/dt = 100 A/μs, T_j = 150°C, V_R = 50.
(15) t_{rr} conditions: T_j = 25°C, I_{FM} = π x rated $I_{F(AV)}$, -di_F/dt = 25A/μs.
(16) RMS isolation voltage: 3000V-50Hz.

M

Fast Recovery Diode Die (7)

Die Part No. (8)	Side Dimension (Inches)	Passivation	Current $I_{F(AV)}$ (A) (3)	Voltage Range (V)	Notes	Equiv. Device Series
IR150LR-G	0.150	Silicone Rubber	16	100–1000	(10) (11)	6FL, 12FL, 16FL
IR180LR-G	0.180	Silicone Rubber	25	100–1000		—
IR210LR-G	0.210	Silicone Rubber	40	100–1000		40HFL
IR280LR-G	0.280	Silicone Rubber	70	100–1000		70HFL
IR350LR-G	0.350	Silicone Rubber	85	100–1000		85HFL, IRKC/D/E/JL56-71 T40HFL, T70HFL
IR480LR-G	0.480	Silicone Rubber	90	100–1000		T85HFL, IRKC/D/E/JL91

To specify voltage, add suffix to die part number as follows:

SUFFIX	01	02	04	06	08	10
V_{RRM}	100	200	400	600	800	1000

(7) For die outline drawing see page 0-2.

(8) Type listed have standard gold metallization on both sides (suffix "G").

(9) Values strongly dependent on assembly details.

(10) For voltages 100–600 V, t_{rr} = 200 ns available
100–1000 V, t_{rr} 500 ns available
} t_{rr} test conditions: $I_{FM} = \pi \bullet$ rated $I_{F(AV)}$; $t_j = 25°C - d_{IF/dt} = 25A/\mu sec.$

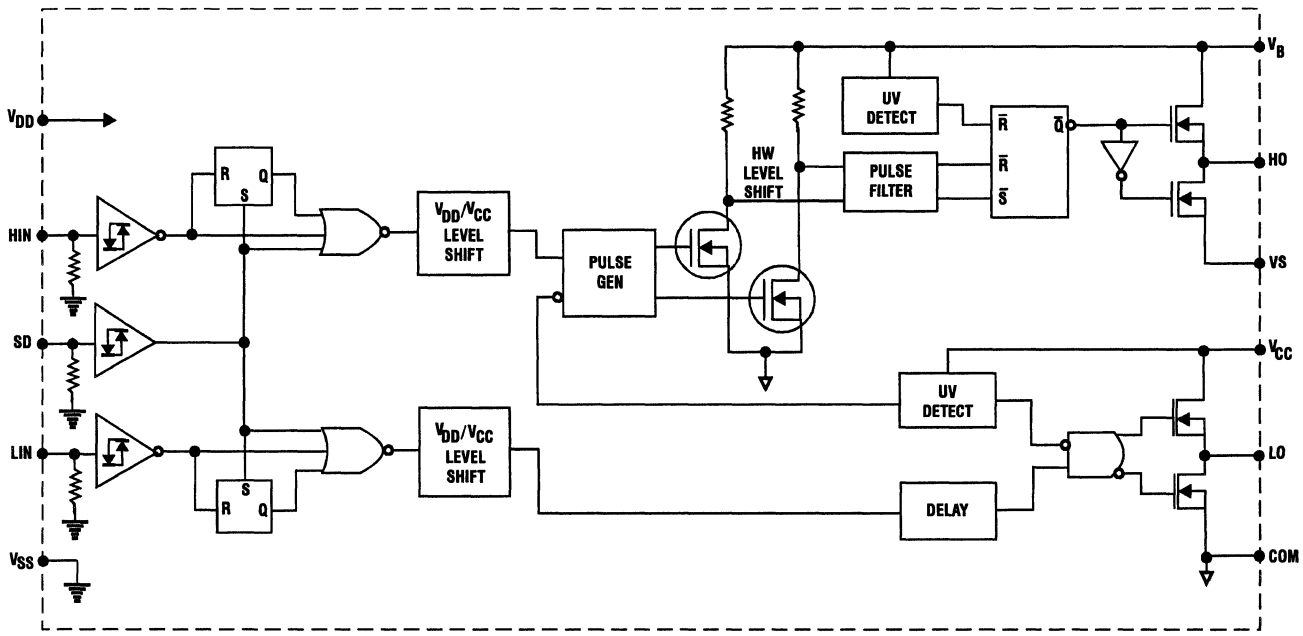
(11) For t_{rr} = 200 ns add S02 after -G ie IR150LR-GS02.
For t_{rr} = 500 ns add S05 after -G ie IR150LR-GS05.

FUNCTION PRODUCT

Government and Space

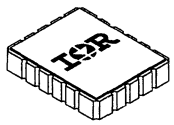
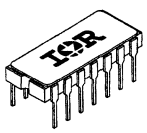
IR2110, IR2113

High Voltage MOS Gate Driver



FEATURES

- Drives a pair of HEXFETs or IGBTs
- Two Independent Channel Drivers
  - —One Floating High Side Driver
  - —One Ground Referenced Low Side Driver
- Operates to 500V
- 2 Amperes Peak Current Drive Capability
- Operates to 500 KHz
- High dv/dt (>±50V/ns) Immunity
- CMOS and LSTTL Compatible Schmitt Trigger Inputs
- Low Quiescent Power Dissipation
- Undervoltage Lockout with Hysteresis (both channels)
- 25 ns Typical Switching Time (into 1000 pf load)
- Matched Delay Times for Both Channels (within 10 ns)
  - —120 ns Turn-on Delay
  - —94 ns Turn-off Delay
- Cycle by Cycle Edged Triggered Latched Shutdown
- Logic Supply Return Can Swing ±5v from Power Ground
- Floating Supply Offset -5V from Power Ground
- Latch Immune CMOS (withstands >2A reverse current at I/0 pins)

Part Number (V)	V_S Offset Supply Voltage (V)	V_{BS}, V_{CC} Output Voltage (A)	I_{OUT} Sink, Source	Case Outline Number (1)	Case Style
IR2110E	10-500	10-20	2	P10	LCC 
IR2113E	10-600	10-20	2		
IR2110L	10-500	10-200	2	P12	MO-036AB 
IR2113L	10-600	10-20	2		

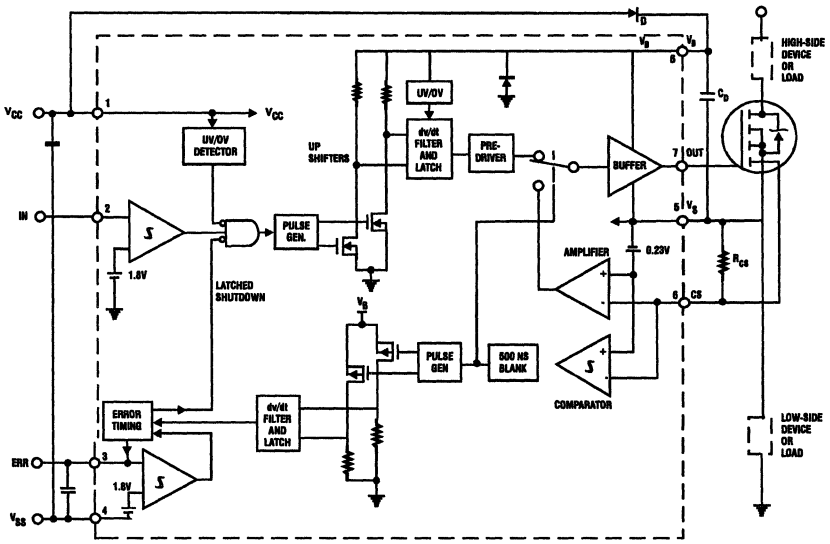
N

(1) For case outline drawing see page 0-2.

International
IOR Rectifier

IR2125Z

Current Limiting MOS Gate Drivers



FEATURES

- Current detection and limiting loop to limit driven power transistor current
  - —Trip point at 230mV with 30 mV hysteresis
  - —Leading edge blanking time of 500 ns
- Error pin indicates fault conditions and programs shutdown time
  - —Latched shutdown threshold at 1.8V
  - —Source current of 100 µA to charge timing capacitor
  - —Filter time of 1 µs for noise immunity
- Wide gate drive supply range from 10 to 20V
- Under and over-voltage lockout with hysteresis
- Output driver designed to drive MOS-gated power devices
  - —$R_{(on)}$ of pull-up driver typically at 9 ohm
  - —$R_{(on)}$ of pull-down driver typically at 3 ohm
  - —Switching time of 43/27 ns typcial t_r/t_f into 3300 pF load
- Propagation delay time of 140 ns typcial

IR2125Z

- High voltage (500V) operation
- Floating supply designed for bootstrap operation
  - —Operating offset range from -5 to +500V
  - —dv/dt immunity rated at ±50V/ns
  - —Quiescent power dissipation of 7.5 mW at 15V

Part Number	V_B Floating Supply	V_S Floating Supply Offset	V_{CC} Fixed Supply	V_O Output Voltage	Case Outline Number (1)	Case Style
IR2125Z	-0.5- (VS + 20)	-5- 500V	-0.5- 20V	(VS - 0.5) - (V_B + 0.5)	P11	MO-036AA

(1) For case outline drawing see page O-2.

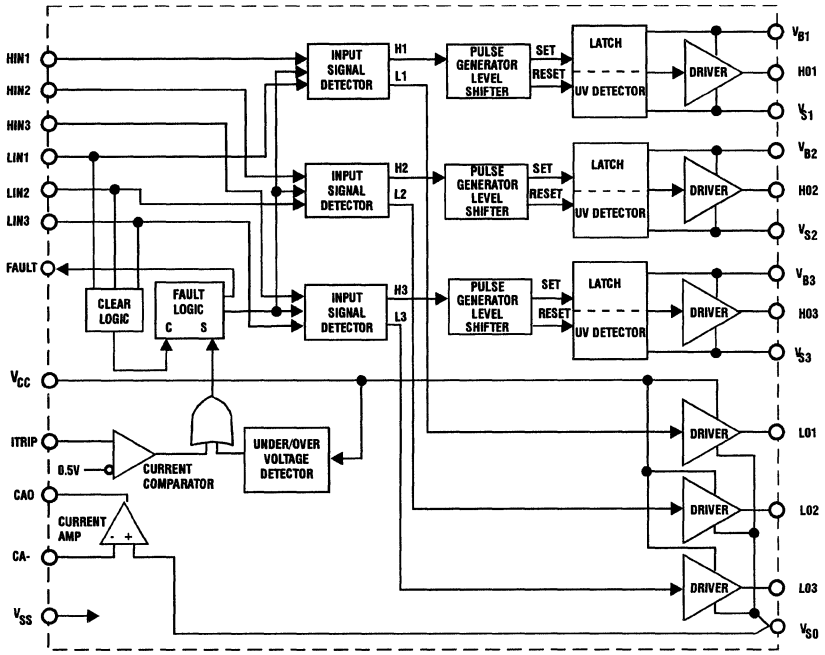
IR2130D

High Voltage Three Phase MOS Gate Driver

FEATURES

- High voltage (600V) operation
  Output driver designed to drive MOS-gated power devices
  —Output drive of 250mA/500mA typical source/sink
  —Switching time of 75/35ns typical t_r/t_f into 1000pF load
- Independent half bridge drivers
  —Three floating high voltage drivers
  —Three ground referenced drivers
- Floating supply designed for bootstrap operation
  —Operating offset range from -5 to +600V
  —dv/dt immunity rated at +/-50V/ns
  —Quiescent power dissipation of 30mW at 15V
- Over-current shut down turns off all six drive outputs
  —Trip point at 485mV with 100mV hysteresis
  —Leading edge blanking time with 100mV hysteresis
- Current amplifier provides linear voltage proportional to bridge current
- Input logic provides 2ms deadtime between high side and low side
  —250ns min input filter for noise immunity
- Fault pin indicates over-current shut down and undervoltage lockout
- Propagation delay time of 630 ns/400ns typical t_{on}/t_{off}
- Wide gate drive supply range from 10 to 20V
- Under-voltage lockout (8.65V typ) with hysteresis for all channels

FUNCTIONAL BLOCK DIAGRAM



Part Number	V_B	V_S Floating Supply Offset	V_{CC} Fixed Supply	Typical I_{Out} Source/Sink	(1) Case Outline Number	Case Style
IR2130D	($V_{S1,2,3}$ + 10) - ($V_{S1,2,3}$ + 20)	(V_{SO}-5) - (V_{SO} + 600)	- 10 - 20V	250mA/ 500mA	P14	MO-038AB

(1) For case outline drawing see page O-2.

N

Government and Space

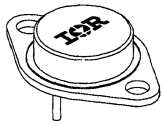
IGBT

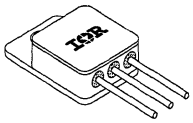
Hermetic Packages

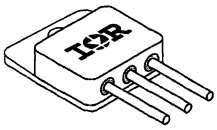
600-1200V

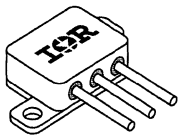
International IOR Rectifier

Part Number	$V_{(BR)CES}$ (V)	$V_{GE(th)}$ MIN (V)	$V_{GE(th)}$ MAX (V)	I_C @ T_C = 25°C	I_C @ T_C=100°C	E_{TS} TYP Loss @ T_J=125 (mJ)	(A)	P_D Max. Power Dissipation	Case Outline Number (1)	Case Style
IRGAC30F				23	12	3.5	12	75	IG20	TO-204AE
IRGAC30U				17	8	1.2	8	75		
IRGAC40F	600	3.0	5.5	38	20	9.0	20	125		
IRGAC40U				31	15	2.0	15	125		
IRGAC50F				45	30	10	30	150		
IRGAC50U				41	20	2.8	20	150		
IRGMC30F				23	12	3.5	12	75	IG21	TO-254AA
IRGMC30U				17	8	1.2	8	75		
IRGMC40F	600	3.0	5.5	35	20	9.0	20	125		
IRGMC40U				31	15	2.0	15	125		
IRGMC50F				35	30	10	30	150		
IRGMC50U				35	20	2.8	20	150		
IRGMVC50U*	600	3.0	5.5	45	27	2.8	27	200	IG22	TO-258AA
IRGVH50F	1200	3.0	5.5	45	25	8.2	25	200		
IRGMIC50U*	600	3.0	5.5	45	27	2.8	27	200	IG23	TO-259AA
IRGIH50F	1200	3.0	5.5	45	25	8.2	25	200		



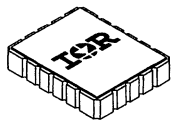
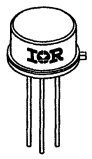




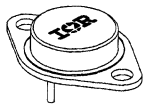
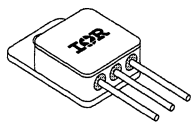
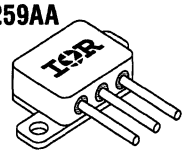


*IGBT co-packaged with Ultra Fast; soft recovery HEXFRED diode

(1) For case outline drawing see page O-2.

(2) Part Number	BV_{DSS} (V)	$R_{DS(on)}$ (Ohms)	I_D@ T_C= 25°C (A)	I_D@ T_C = 100°C (A)	R_{thJC} Max. (K/W)	P_D@ T_C= 25°C (W)	Case Outline Number (1)	Case Style
IRHE7110	100	0.60	3.1	2.0	11	11	**H20**	**LCC**
IRHE8110	100	0.60	3.1	2.0	11	11		
IRHE7130	100	0.18	8.0	5.0	5.8	22		
IRHE8130	100	0.18	8.0	5.0	5.8	22		
IRHE7230	200	0.40	4.5	2.5	5.8	22		
IRHE8230	200	0.40	4.5	2.5	5.8	22		
IRHE9130	-100	0.30	-6.0	-3.5	5.8	22		
IRHN7054	60	0.250	42	26	1.25	100	**H21**	**SMD-1**
IRHN8054	60	0.250	42	26	1.25	100		
IRHN7130	100	0.18	10	6.0	3.125	40		
IRHN8130	100	0.18	10	6.0	3.125	40		
IRHN7150	100	0.055	29	18	1.25	100		
IRHN8150	100	0.055	29	18	1.25	100		
IRHN7230	200	0.40	6.0	4.0	3.125	40		
IRHN8230	200	0.40	6.0	4.0	3.125	40		
IRHN7250	200	0.10	21	13	1.25	100		
IRHN8250	200	0.10	21	13	1.25	100		
IRHN7450	500	0.45	9.0	5.0	1.25	100		
IRHN8450	500	0.45	9.0	5.0	1.25	100		
IRHN9130	-100	0.30	-8.0	-5.0	3.125	40		
IRHN9150	-100	0.120	-18	-11	1.25	100		
IRHF7110	100	0.60	3.5	2.2	8.3	15	**H22**	**TO-205AF** (TO-39)
IRHF8110	100	0.60	3.5	2.2	8.3	15		
IRHF7130	100	0.18	8.0	5.0	5.0	25		
IRHF8130	100	0.18	8.0	5.0	5.0	25		
2N7261	100	0.18	8.0	5.0	5.0	25		
JANSH2N7261	100	0.18	8.0	5.0	5.0	25		
JANSR2N7261	100	0.18	8.0	5.0	5.0	25		
IRHF7230	200	0.40	5.5	3.5	5.0	25		
IRHF8230	200	0.40	5.5	3.5	5.0	25		
IRHF7234	250	0.48	4.8	3.0	5.0	25		
IRHF8234	250	0.48	4.8	3.0	5.0	25		
2N7262	200	0.40	5.5	3.5	5.0	25		
JANSH2N7262	200	0.40	5.5	3.5	5.0	25		
JANSR2N7262	200	0.40	5.5	3.5	5.0	25		
IRHF9130	-100	0.30	-6.5	-4.1	5.0	25		

(1) For case outline drawing see page O-2.

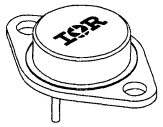
(2) (3) Part Number	BV_{DSS} (V)	$R_{DS(on)}$ (Ohms)	I_D@ T_C = 25°C (A)	I_D@ T_C = 100°C (A)	R_{thJC} Max. (K/W)	P_D@ T_C = 25°C (W)	Case Outline Number (1)	Case Style
IRH7250SE IRH7254SE IRH7450SE	200 250 500	0.10 0.120 0.45	26 23 11	17 15 7.0	0.83 0.83 0.83	150 150 150	H23	TO-204AA (TO-3) 
IRHM7250SE IRHM7254SE IRHM7360SE IRHM7450SE IRHM7460SE	200 250 400 500 500	0.100 0.120 0.22 0.45 0.315	26 23 22 11 19	16 15 14 7.0 12	0.83 0.83 0.5 0.83 0.5	150 150 250 150 250	H25	TO-254AA 
IRHI7460SE	500	0.315	21	13	0.42	300	H27	TO-259AA 
IRHN7250SE IRHN7254SE IRHN7450SE	200 250 500	0.10 0.120 0.45	21 20 9.0	13 11 5.0	1.25 1.25 1.25	100 100 100	H21	SMD-1 

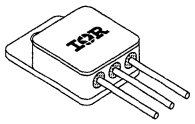
(1) For case outline drawing see page O-2.

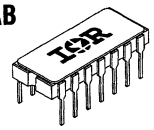
(2)V_{th}=2.5V-4.5V

(3) All Rad hard part numbers designated IRH "7" are devices irradiated to 1 X 10^5 Rads (Si), e.g. IRHN7450. All Rad hard part numbers designated IRH "8" are devices with a post radiation level of 1 X 10^6 Rads (Si), e.g. IRHN8450.

(3) Part Number	BV_{DSS} (V)	$R_{DS(on)}$ (Ohms)	I_D@ T_C = 25°C (A)	I_D@ T_C = 100°C (A)	R_{thJC} Max. (K/W)	P_D@ T_C = 25°C (W)	Case Outline Number (1)	Case Style
IRH7054	60	0.025	45	32	0.83	150	**H23**	**TO-204AA/AE**
IRH8054	60	0.025	45	32	0.83	150	**H24**	(TO-3)
IRH7130	100	0.18	14	9.0	1.67	75		
IRH8130	100	0.18	14	9.0	1.67	75		
IRH7150	100	0.055	38	24	0.83	150		
IRH8150	100	0.055	38	24	0.83	150		
IRH7230	200	0.40	9.0	6.0	1.67	75		
IRH8230	200	0.40	9.0	6.0	1.67	75		
IRH7250	200	0.10	26	17	0.83	150		
IRH8250	200	0.10	26	17	0.83	150		
IRH7450	500	0.45	11	7	0.83	150		
IRH8450	500	0.45	11	7	0.83	150		
IRH9130	-100	0.30	-11	-7.0	1.67	75		
IRH9150	-100	0.120	-21	-13	0.83	150		
IRHM7054	60	0.027	35	30	0.83	150	**H25**	**TO-254AA**
IRHM8054	60	0.027	35	30	0.83	150		
IRHM7130	100	0.18	14	9.0	1.67	75		
IRHM8130	100	0.18	14	9.0	1.67	75		
IRHM7150	100	0.065	34	21	0.83	150		
IRHM8150	100	0.065	34	21	0.83	150		
2N7268	100	0.065	34	21	0.83	150		
JANSH2N7268	100	0.065	34	21	0.83	150		
JANSR2N7268	100	0.065	34	21	0.83	150		
IRHM7230	200	0.40	9.0	6.0	1.67	75		
IRHM8230	200	0.40	9.0	6.0	1.67	75		
IRHM7250	200	0.100	26	16	0.83	150		
IRHM8250	200	0.100	26	16	0.83	150		
IRHM7254	250	0.120	23	15	0.83	150		
IRHM8254	250	0.120	23	15	0.83	150		
2N7269	200	0.100	26	16	0.83	150		
JANSH2N7269	200	0.100	26	16	0.83	150		
JANSR2N7269	200	0.100	26	16	0.83	150		
IRHM7360	400	0.22	22	14	0.5	250		
IRHM8360	400	0.22	22	14	0.5	250		
IRHM7450	500	0.45	11	7.0	0.83	150		
IRHN8450	500	0.45	11	7.0	0.83	150		
2N7270	500	0.45	11	7.0	0.83	150		
JANSH2N7270	500	0.45	11	7.0	0.83	150		
JANSR2N7270	500	0.45	11	7.0	0.83	150		
IRHM9130	-100	0.30	-11	-7.0	1.67	75		
IRHM9150	-100	0.120	-21	-13	0.83	150		
* IRHG6110	100	0.70	1.0	0.6	17	1.4	**H29**	**MO-036AB**
	-100	1.4	-0.75	17	1.4	1.4		
IRHG7110	100	0.70	1.0	0.60	17	1.4		







*N-channel/P-channel co-packaged

(1) For case outline drawing see page 0-2.

(3) All Rad hard part numbers designated IRH "7" are devices irradiated to 1 X 10^5 Rads (Si), e.g. IRHN7450. All Rad hard part numbers designated IRH "8" are devices with a post radiation level of 1 X 10^6 Rads (Si), e.g. IRHN8450.

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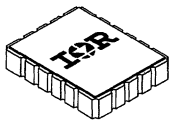
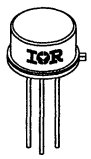
Part Number	BV_{DSS} (V)	$R_{DS(on)}$ (Ohms)	I_D@ T_C = 25°C (A)	I_D@ T_C = 100°C (A)	R_{thJC} Max. (K/W)	P_D@ T_C = 25°C (W)	Case Outline Number (1)	Case Style
IRFE024	60	0.15	6.7	4.2	9.1	14	H20	LCC 
IRFE110	100	0.60	3.1	2.0	11	11		
IRFE120	100	0.30	4.5	3.0	9.1	14		
IRFE130	100	0.18	7.4	4.7	5.8	22		
IRFE210	200	1.5	1.8	1.2	11	11		
IRFE220	200	0.80	2.8	1.8	9.1	14		
IRFE230	200	0.40	4.8	3.1	5.8	22		
IRFE310	400	3.6	1.2	0.74	11	11		
IRFE320	400	1.8	1.8	1.1	9.1	14		
IRFE330	400	1.0	3.0	1.9	5.8	22		
IRFE420	500	3.0	1.4	0.9	9.1	14		
IRFE430	500	1.5	2.5	1.6	5.8	22		
IRFE9024	-60	0.28	-5.4	-3.4	9.1	14		
IRFE9110	-100	1.2	-2.2	-1.4	11	11		
IRFE9120	-100	0.60	-3.5	-2.2	9.1	14		
IRFE9130	-100	0.30	-6.1	-3.8	5.8	22		
IRFE9210	-200	3.0	-1.3	-0.84	11	11		
IRFE9220	-200	1.5	-2.1	-1.5	9.1	14		
IRFE9230	-200	0.80	-3.6	-2.2	5.8	22		
IRFN044	60	0.040	34	21	1.67	75	H21	SMD-1 
IRFN054	60	0.027	45	28	1.25	100		
IRFN140	100	0.077	22	13.9	1.67	75		
IRFN150	100	0.070	27	19	1.25	100		
IRFN240	200	0.18	13.9	8.8	1.67	75		
IRFN250	200	0.100	22	14	1.25	100		
IRFN340	400	0.55	7.5	4.8	1.67	75		
IRFN350	400	0.315	11	7.0	1.25	100		
IRFN440	500	0.85	6.1	3.8	1.67	75		
IRFN450	500	0.415	10.4	6.6	1.25	100		
IRFNG40	1000	3.5	3.0	2.0	1.67	75		
IRFNG50	1000	2.0	4.5	2.8	1.25	100		
IRFN9140	-100	0.20	-14	-9.0	1.67	75		
IRFN9240	-200	0.51	-8.0	-5.0	1.67	75		

(1) For case outline drawing see page 0-2.

Part Number	BV_{DSS} (V)	$R_{DS(on)}$ (Ohms)	I_D@ T_C = 25°C (A)	I_D@ T_C = 100°C (A)	R_{thJC} Max. (K/W)	P_D@ T_C = 25°C (W)	Case Outline Number (1)	Case Style
IRFF024	60	0.15	8.0	5.7	6.25	20	H22	TO-205AF (TO-39)
IRFF110	100	0.60	3.5	2.25	8.3	15		
2N6782	100	0.60	3.5	2.25	8.3	15		
JANTX2N6782	100	0.60	3.5	2.25	8.3	15		
JANTXV2N6782	100	0.60	3.5	2.25	8.3	15		
IRFF120	100	0.30	6.0	3.5	6.25	20		
2N6788	100	0.30	6.0	3.5	6.25	20		
JANTX2N6788	100	0.30	6.0	3.5	6.25	20		
JANTXV2N6788	100	0.30	6.0	3.5	6.25	20		
IRFF130	100	0.18	8.0	5.0	5.0	25		
2N6796	100	0.18	8.0	5.0	5.0	25		
JANTX2N6796	100	0.18	8.0	5.0	5.0	25		
JANTXV2N6796	100	0.18	8.0	5.0	5.0	25		
IRFF210	200	1.5	2.25	1.50	8.3	15		
2N6784	200	1.5	2.25	1.50	8.3	15		
JANTX2N6784	200	1.5	2.25	1.50	8.3	15		
JANTXV2N6784	200	1.5	2.25	1.50	8.3	15		
IRFF220	200	0.80	3.5	2.25	6.25	20		
2N6790	200	0.80	3.5	2.25	6.25	20		
JANTX2N6790	200	0.80	3.5	2.25	6.25	20		
JANTXV2N6790	200	0.80	3.5	2.25	6.25	20		
IRFF230	200	0.40	5.5	3.5	5.0	25		
2N6798	200	0.40	5.5	3.5	5.0	25		
JANTX2N6798	200	0.40	5.5	3.5	5.0	25		
JANTXV2N6798	200	0.40	5.5	3.5	5.0	25		
IRFF310	400	3.6	1.25	0.80	8.3	15		
2N6786	400	3.6	1.25	0.80	8.3	15		
JANTX2N6786	400	3.6	1.25	0.80	8.3	15		
JANTXV2N6786	400	3.6	1.25	0.80	8.3	15		
IRFF320	400	1.8	2.0	1.25	6.25	20		
2N6792	400	1.8	2.0	1.25	6.25	20		
JANTX2N6792	400	1.8	2.0	1.25	6.25	20		
JANTXV2N6792	400	1.8	2.0	1.25	6.25	20		
IRFF330	400	1.0	3.0	2.0	5.0	25		
2N6800	400	1.0	3.0	2.0	5.0	25		
JANTX2N6800	400	1.0	3.0	2.0	5.0	25		
JANTXV2N6800	400	1.0	3.0	2.0	5.0	25		
IRFF420	500	3.0	1.5	1.0	6.25	20		
2N6794	500	3.0	1.5	1.0	6.25	20		
JANTX2N6794	500	3.0	1.5	1.0	6.25	20		
JANTXV2N6794	500	3.0	1.5	1.0	6.25	20		
IRFF430	500	1.5	2.5	1.5	5.0	25		
2N6802	500	1.5	2.5	1.5	5.0	25		
JANTX2N6802	500	1.5	2.5	1.5	5.0	25		
JANTXV2N6802	500	1.5	2.5	1.5	5.0	25		



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(1) For case outline drawing see page O-2.

Government and Space

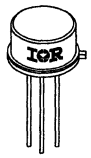
HEXFET Power MOSFETs

Hermetic Package

P-Channel

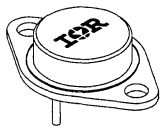
International IOR Rectifier

Part Number	BV_{DSS} (V)	$R_{DS(on)}$ (Ohms)	I_D@ T_C = 25°C (A)	I_D@ T_C = 100°C (A)	R_{thJC} Max. (K/W)	P_D@ T_C = 25°C (W)	Case Outline Number (1)	Case Style
IRFF9024	-60	0.28	-6.4	-4.1	6.25	20	H22	TO-205AF (TO-39)
IRFF9110	-100	1.2	-2.5	-1.6	8.3	15		
IRFF9120	-100	0.60	-4.0	-2.6	6.25	20		
2N6845	-100	1.2	-2.5	-1.6	8.3	15		
JANTX2N6845	-100	1.2	-2.5	-1.6	8.3	15		
JANTXV2N6845	-100	1.2	-2.5	-1.6	8.3	15		
IRFF9130	-100	0.30	-6.5	-4.1	5.0	25		
2N6849	-100	0.30	-6.5	-4.1	5.0	25		
JANTX2N6849	-100	0.30	-6.5	-4.1	5.0	25		
JANTXV2N6849	-100	0.30	-6.5	-4.1	5.0	25		
IRFF9210	-200	3.0	-1.5	-0.97	8.3	15		
IRFF9220	-200	1.5	-2.5	-1.6	6.25	20		
2N6847	-200	1.5	-2.5	-1.6	6.25	20		
JANTX2N6847	-200	1.5	-2.5	-1.6	6.25	20		
JANTXV2N6847	-200	1.5	-2.5	-1.6	6.25	20		
IRFF9230	-200	0.80	-4.0	-2.4	5.0	25		
2N6851	-200	0.80	-4.0	-2.4	5.0	25		
JANTX2N6851	-200	0.80	-4.0	-2.4	5.0	25		
JANTXV2N6851	-200	0.80	-4.0	-2.4	5.0	25		



(1) For case outline drawing see page 0-2.

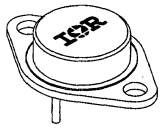
Part Number	BV_{DSS} (V)	$R_{DS(on)}$ (Ohms)	I_D@ T_C = 25°C (A)	I_D@ T_C = 100°C (A)	R_{thJC} Max. (K/W)	P_D@ T_C = 25°C (W)	Case Outline Number (1)	Case Style
IRF034	60	0.500	25	16	1.67	75	**H23**	**TO-204AA/AE**
IRF044	60	0.280	44	27	1.0	125	**H24**	(TO-3)
IRF054	60	0.220	45	31	0.83	150		
IRF130	100	0.18	14	9.0	1.67	75		
2N6756	100	0.18	14	9.0	1.67	75		
JANTX2N6756	100	0.18	14	9.0	1.67	75		
JANTXV2N6756	100	0.18	14	9.0	1.67	75		
IRF140	100	0.077	28	20	1.0	125		
IRF150	100	0.055	38	24	0.83	150		
2N6764	100	0.055	38	24	0.83	150		
JANTX2N6764	100	0.055	38	24	0.83	150		
JANTXV2N6764	100	0.055	38	24	0.83	150		
IRF230	200	0.40	9.0	6.0	1.67	75		
2N6758	200	0.40	9.0	6.0	1.67	75		
JANTX2N6758	200	0.40	9.0	6.0	1.67	75		
JANTXV2N6758	200	0.40	9.0	6.0	1.67	75		
IRF240	200	0.18	18	11	1.0	125		
IRF250	200	0.085	30	19	0.83	150		
2N6766	200	0.085	30	19	0.83	150		
JANTX2N6766	200	0.085	30	19	0.83	150		
JANTXV2N6766	200	0.085	30	19	0.83	150		
IRF330	400	1.00	5.5	3.5	1.67	75		
2N6760	400	1.00	5.5	3.5	1.67	75		
JANTX2N6760	400	1.00	5.5	3.5	1.67	75		
JANTXV2N6760	400	1.00	5.5	3.5	1.67	75		
IRF340	400	0.55	10	6.0	1.0	125		
IRF350	400	0.300	14	9.0	0.83	150		
2N6768	400	0.300	14	9.0	0.83	150		
JANTX2N6768	400	0.300	14	9.0	0.83	150		
JANTXV2N6768	400	0.300	14	9.0	0.83	150		
IRF360	400	0.20	25	16	0.42	300		
IRF430	500	1.50	4.5	3.0	1.67	75		
2N6762	500	1.50	4.5	3.0	1.67	75		
JANTX2N6762	500	1.50	4.5	3.0	1.67	75		
JANTXV2N6762	500	1.50	4.5	3.0	1.67	75		
IRF440	500	0.85	8.0	5.0	1.0	125		
IRF450	500	0.400	12	7.75	0.83	150		
2N6770	500	0.400	12	7.75	0.83	150		
JANTX2N6770	500	0.400	12	7.75	0.83	150		
JANTXV2N6770	500	0.400	12	7.75	0.83	150		
IRF460	500	0.27	21	14	0.42	300		
IRFAC30	600	2.2	3.6	2.3	1.67	75		
IRFAC40	600	1.2	6.2	3.9	1.0	125		
IRFAE30	800	3.2	3.1	2.0	1.67	75		
IRFAE40	800	2.0	4.8	3.0	1.0	125		
IRFAE50	800	1.2	7.1	4.5	0.83	150		
IRFAF30	900	4.0	2.0	1.7	1.67	75		
IRFAF40	900	2.5	4.3	2.7	1.0	125		
IRFAF50	900	1.6	6.2	4.0	0.83	150		
IRFAG30	1000	5.6	2.3	1.5	1.67	75		
IRFAG40	1000	3.5	3.9	2.5	1.0	125		
IRFAG50	1000	2.0	5.6	3.5	0.83	150		



(1) For case outline drawing see page 0-2.

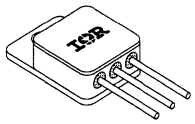
International
IOR Rectifier

Part Number	BV_{DSS} (V)	$R_{DS(on)}$ (Ohms)	I_D@ T_C = 25°C (A)	I_D@ T_C = 100°C (A)	R_{thJC} Max. (K/W)	P_D@ T_C = 25°C (W)	Case Outline Number (1)	Case Style
IRF9130	-100	0.3	-11	-7.0	1.67	75	**H24**	**TO-204AA/AE** (TO-3)
2N6804	-100	0.3	-11	-7.0	1.67	75	**H25**	
JANTX2N6804	-100	0.3	-11	-7.0	1.67	75		
JANTXV2N6804	-100	0.3	-11	-7.0	1.67	75		
IRF9140	-100	0.2	-18	-11	1.0	125		
IRF9230	-200	0.80	-6.5	-4.0	1.67	75		
2N6806	-200	0.80	-6.5	-4.0	1.67	75		
JANTX2N6806	-200	0.80	-6.5	-4.0	1.67	75		
JANTXV2N6806	-200	0.80	-6.5	-4.0	1.67	75		
IRF9240	-200	0.5	-11	-7.0	1.0	125		



(1) For case outline drawing see page O-2.

Part Number	BV_{DSS} (V)	$R_{DS(on)}$ (Ohms)	I_D@ T_C = 25°C (A)	I_D@ T_C = 100°C (A)	R_{thJC} Max. (K/W)	P_D@ T_C = 25°C (W)	Case Outline Number (1)	Case Style
IRFM044	60	0.04	35	28	1.0	125	H25	TO-254AA
IRFM054	60	0.027	35	35	0.83	150		
IRFM064	60	0.017	35	35	0.5	250		
IRFM140	100	0.077	28	20	1.0	125		
2N7218	100	0.077	28	20	1.0	125		
JANTX2N7218	100	0.077	28	20	1.0	125		
JANTXV2N7218	100	0.077	28	20	1.0	125		
IRFM150	100	0.070	34	21	0.83	150		
2N7224	100	0.070	34	21	0.83	150		
JANTX2N7224	100	0.070	34	21	0.83	150		
JANTXV2N7224	100	0.070	34	21	0.83	150		
IRFM240	200	0.18	18	11	1.0	125		
2N7219	200	0.18	18	11	1.0	125		
JANTX2N7219	200	0.18	18	11	1.0	125		
JANTXV2N7219	200	0.18	18	11	1.0	125		
IRFM250	200	0.100	27.4	17	0.83	150		
2N7225	200	0.100	27.4	17	0.83	150		
JANTX2N7225	200	0.100	27.4	17	0.83	150		
JANTXV2N7225	200	0.100	27.4	17	0.83	150		
IRFM340	400	0.55	10	6.0	1.0	125		
2N7221	400	0.55	10	6.0	1.0	125		
JANTX2N7221	400	0.55	10	6.0	1.0	125		
JANTXV2N7221	400	0.55	10	6.0	1.0	125		
IRFM350	400	0.315	14	9.0	0.83	150		
2N7227	400	0.315	14	9.0	0.83	150		
JANTX2N7227	400	0.315	14	9.0	0.83	150		
JANTXV2N7227	400	0.315	14	9.0	0.83	150		
iRFM360	400	0.20	23	14	0.50	250		
IRFM440	500	0.85	8.0	5.0	1.0	125		
2N7222	500	0.85	8.0	5.0	1.0	125		
JANTX2N7222	500	0.85	8.0	5.0	1.0	125		
JANTXV2N7222	500	0.85	8.0	5.0	1.0	125		
IRFM450	500	0.415	12	8.0	0.83	150		
2N7228	500	0.415	12	8.0	0.83	150		
JANTX2N7228	500	0.415	12	8.0	0.83	150		
JANTXV2N7228	500	0.415	12	8.0	0.83	150		
IRFM460	500	0.27	19	12	0.5	250		
IRFMG40	1000	3.5	3.9	2.5	1.0	125		
IRFMG50	1000	2.0	5.6	3.5	0.83	150		
IRFM9140	-100	0.20	-18	-11	1.0	125		
2N7236	-100	0.20	-18	-11	1.0	125		
JANS2N7236	-100	0.20	-18	-11	1.0	125		
JANTX2N7236	-100	0.20	-18	-11	1.0	125		
JANTXV2N7236	-100	0.20	-18	-11	1.0	125		
IRFM9240	-200	0.51	-11	-7.0	1.0	125		
2N7237	-200	0.51	-11	-7.0	1.0	125		
JANS2N7237	-200	0.51	-11	-7.0	1.0	125		
JANTX2N7237	-200	0.51	-11	-7.0	1.0	125		
JANTXV2N7237	-200	0.51	-11	-7.0	1.0	125		



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(1) For case outline drawing see page O-2.

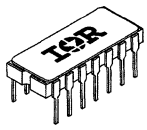
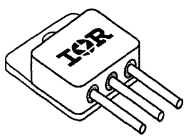
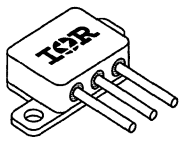
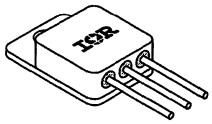
Government and Space

HEXFET Power MOSFETs

Hermetic Package

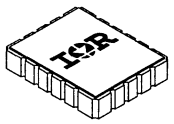
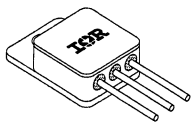
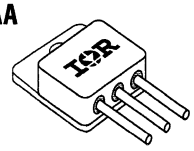
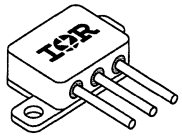
N & P Channel

International
IOR Rectifier

Part Number	BV_{DSS} (V)	$R_{DS(on)}$ (Ohms)	I_D@ T_C = 25°C (A)	I_D@ T_C = 100°C (A)	R_{thJC} Max. (K/W)	P_D@ T_C = 25°C (W)	Case Outline Number (1)	Case Style
IRFG110	100	0.70	1.0	0.6	17	1.4	H29	MO-036AB 
2N7334	100	0.70	1.0	0.6	17	1.4		
JANTX2N7334	100	0.70	1.0	0.6	17	1.4		
JANTXV2N7334	100	0.70	1.0	0.6	17	1.4		
IRFG5110*	100	0.70	1.0	0.6	17	1.4		
	-100	0.70	-1.0	-0.6	17	1.4		
IRFG6110*	100	0.70	1.0	0.6	17	1.4		
	-100	1.4	-0.75	-0.5	17	1.4		
2N7336*	100	0.7	1.0	0.6	17	1.4		
	-100	1.4	-0.75	-0.5	17	1.4		
JANTX2N7336*	100	0.7	1.0	0.6	17	1.4		
	-100	1.4	-0.75	-0.5	17	1.4		
JANTXV2N7336*	100	0.7	1.0	0.6	17	1.4		
	-100	1.4	-0.75	-0.5	17	1.4		
IRFG9110	-100	1.4	-0.75	-0.5	17	1.4		
2N7335	-100	1.4	-0.75	-0.5	17	1.4		
JANTX2N7335	-100	1.4	-0.75	-0.5	17	1.4		
JANTXV2N7335	-100	1.4	-0.75	-0.5	17	1.4		
IRFV064	60	0.017	45	45	0.42	300	H26	TO-258AA 
IRFV360	400	0.20	25	16	0.42	300		
IRFV460	500	0.27	21	13	0.42	300		
IRFI064	60	0.017	45	45	0.42	300	H27	TO-259AA 
IRFI360	400	0.20	25	16	0.42	300		
IRFI460	500	0.27	21	13	0.42	300		
IRFY044	60	0.035	20	20	2.1	60	H28	TO-257AB 
IRFY120	100	0.31	7.3	4.6	4.1	30		
IRFY130	100	0.19	11	7.0	2.8	45		
IRFY140	100	0.092	18	12	2.1	60		
IRFY240	200	0.19	12	7.8	2.1	60		
IRFY340	400	0.55	6.9	4.4	2.1	60		
IRFY430	500	1.6	3.7	2.4	2.8	45		
IRFY440	500	0.85	5.5	3.5	2.1	60		
IRFY9120	-100	0.6	-5.3	-3.4	4.1	30		
IRFY9130	-100	0.31	-9.3	-5.8	2.8	45		
IRFY9140	-100	0.21	-13	-8.2	2.1	60		
IRFY9240	-200	0.50	-7.7	-4.9	2.1	60		

(1) For case outline drawing see page 0-2.

*N-channel/P-channel co-packaged

Part Number	V_{RRM} (V)	$I_{F(AV)}$ @ T_C (A)	$I_{F(AV)}$ @ T_C (C)	V_{FM} @ I_{FM} 25°C(V)	I_{RM}@V_{RWM} 25°C(mA)	Max. T_J	Case Outline Number (1)	Case Style
5EQ100 8EQ045	100 45	8 10	100 100	0.80 0.65	5 5	150 150	J30	LCC 
15CLQ100 20CLQ045	100 45	15 20	100 100	0.90 0.69	5 5	150 150	K31	SMD-1 
30FQ045 1N6391 JAN1N6391 JANTX1N6391 JANTXV1N6391	45 45 45 45 45	25 25 25 25 25	115 115 115 115 115	0.50 0.50 0.50 0.50 0.50	15 15 15 15 15	175 175 175 175 175	J13	DO-203AA (DO-4) 
75HQ045 1N6392 JAN1N6392 JANTX1N6392 JANTXV1N6392 60HQ080 60HQ100	45 45 45 45 45 80 80	60 60 60 60 60 60 60	115 115 115 115 115 118 118	0.51 0.51 0.51 0.51 0.51 0.95 0.95	20 20 20 20 20 5 5	175 175 175 175 175 175 175	J14	DO-203AB (DO-5) 
60CDQ035 60CDQ040 60CD0045	35 40 45	60 60 60	112 112 112	0.87 0.87 0.87	5 5 5	175 175 175	K6	TO-204AE 
12CGQ150 15CGQ100 22CGQ045 22DGQ045 22GQ100 25GQ045	150 100 45 45 100 45	35 35 35 26 30 35	100 100 100 100 100 100	1.6 1.30 0.82 0.82 1.10 0.93	5 5 5 5 5 5	150 150 150 150 150 150	K32 J33 J34 J34	TO-254AA 
45CKQ100 60CKQ045	100 45	45 45	100 100	1.13 0.92	5 5	150 150	K33	TO-258AA 
45CIQ100 60CIQ045	100 45	45 45	100 100	1.13 0.92	5 5	150 150	K34	TO-259AA 

(1) For case outline drawing see page O-2.

N

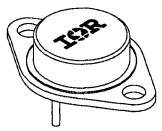
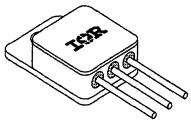
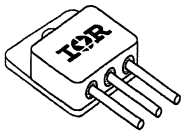
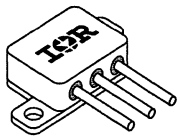
Government and Space

HEXFRED Diodes

Hermetic Packages

7-45 Amps

International
IOR Rectifier

Part Number	V_{RWM}	$I_{F(AV)}$ @ T_C (A)	$I_{F(AV)}$ @ T_C (C)	V_{FM} @ I_{FM} 25°C (V)	I_{RM} @ V_{RWM} 25°c(mA)	R_{thJC} (°K/W)	Typ I_{RRM} (A)	Typ T_{rr} (nS)	Case Outline Number (1)	Case Style
HFA40HF60 HFA40HF120	600 1200	12 7	100 100	1.7 3.0	10 20	2.50 2.50	10 10	75 135	J31	SMD-1 
HFA35HA60C HFA35HA120C	600 1200	30 15	100 100	2.0 4.3	10 20	2.00 2.00	6 8	60 95	K5	TO-204AA (TO-3) 
HFA35HB60 HFA35HB120	600 1200	22 11	100 100	1.7 3.0	10 20	1.50 1.50	10 10	75 135	J33	TO-254AA 
HFA35HB60C HFA35HB120C	600 1200	30 15	100 100	2.0 4.3	10 10	2.00 2.00	6 8	60 95	K32	
HFA45HC60C HFA45HC120C	600 1200	45 28	100 100	2.0 3.9	10 20	1.20 1.20	10 10	75 135	K33	TO-258AA 
HFA45HI60G HFA45HI120C	600 1200	45 28	100 100	2.0 3.9	10 20	1.20 1.20	10 10	75 135	K34	TO-259AA 
HFA40HE60 HFA40HE120	600 1200	25 15	100 100	1.7 3.0	10 20	1.25 1.25	10 10	75 135	J14	DO-203AB (DO-5) 

(1) For case outline drawing see page O-2.

FUNCTION PRODUCT

OTHER INFORMATION

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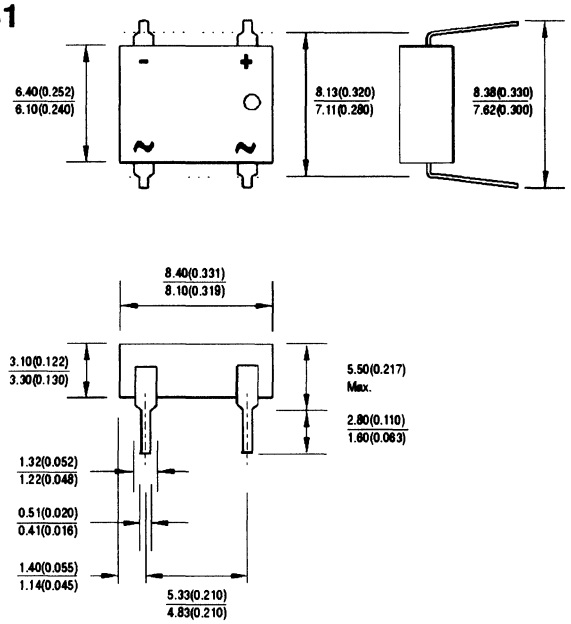
B1



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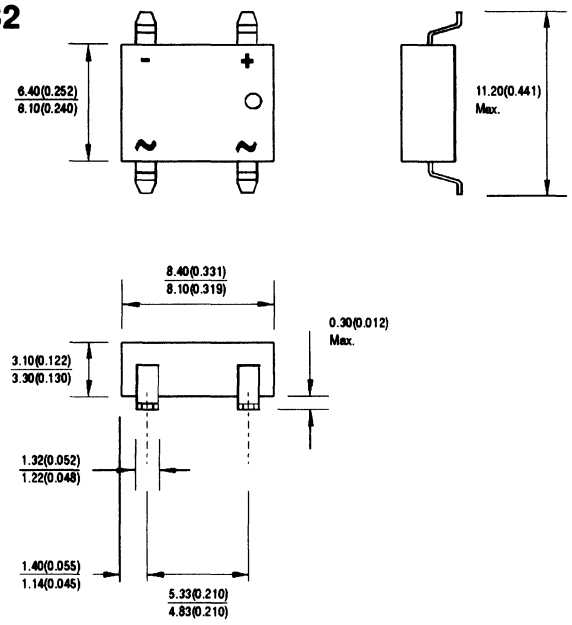
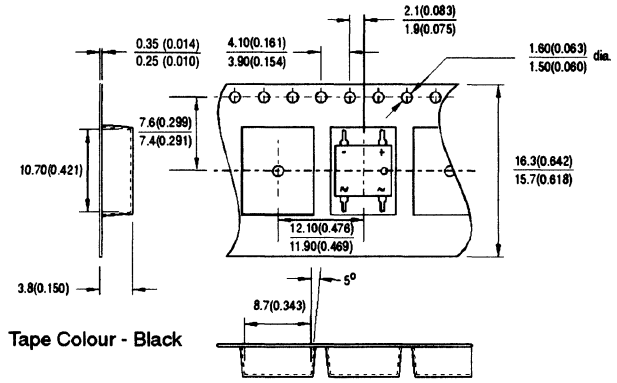


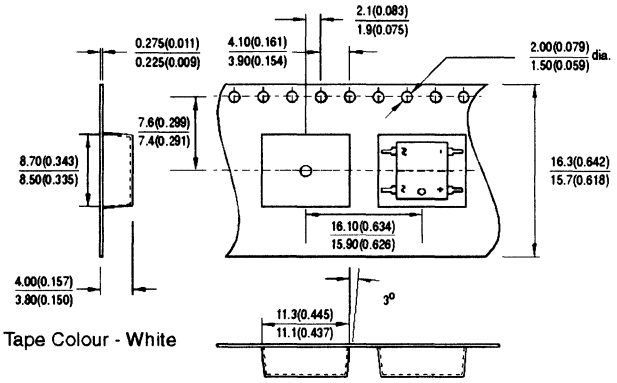
Tape Reel

Tape Reel Dimensions for 1B...TRR16 and DF...TRR16

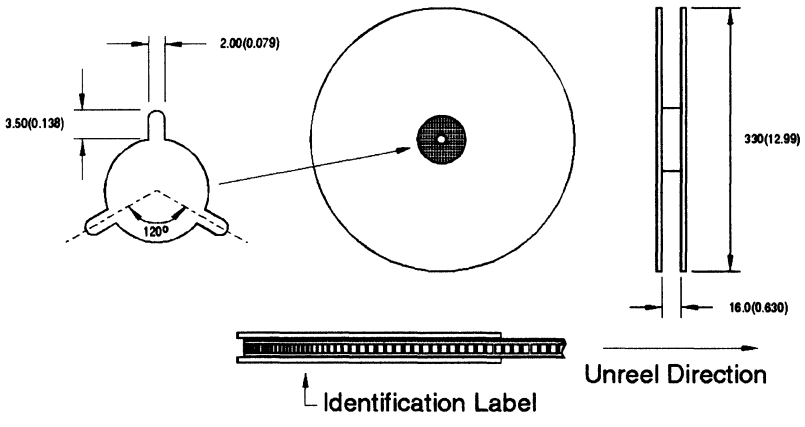


Tape Colour - Black

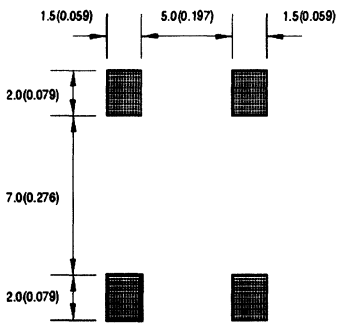
Tape Reel Dimensions for 1B...TR16 and DF...TR16



Tape Colour - White



Footprint and Pad Dimensions

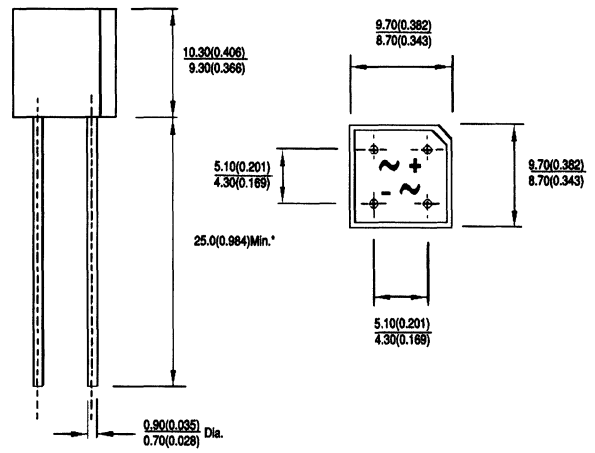


1000 pcs per Reel

Dimensions in millimeters and (inches)

O

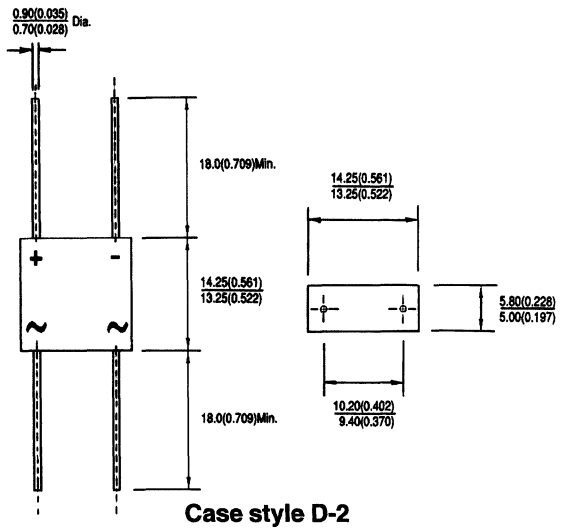
B3



* Available with 3mm or 5mm cropped leads.

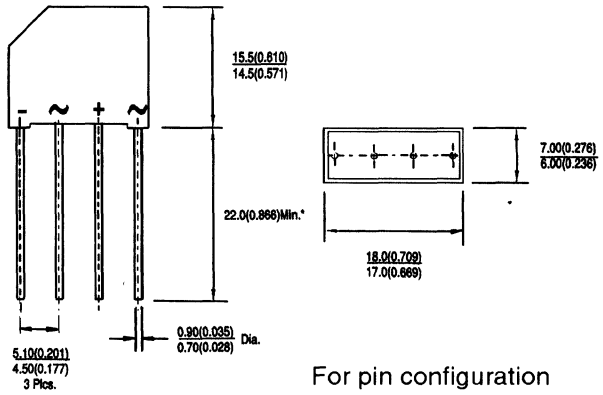
Case style D-38

B4



Case style D-2

B5

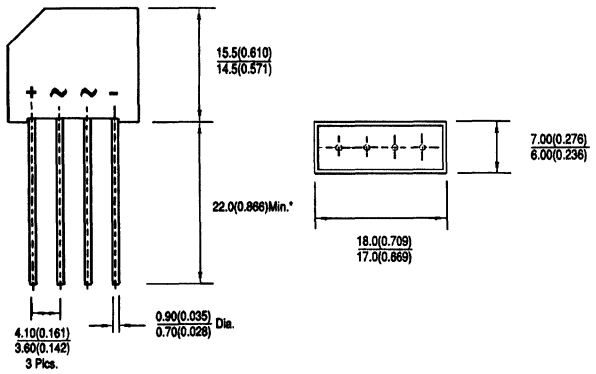


For pin configuration
- ~ ~ +
add 'R' to end of code

* Available with 3mm or 5mm cropped leads.

Case style D-37

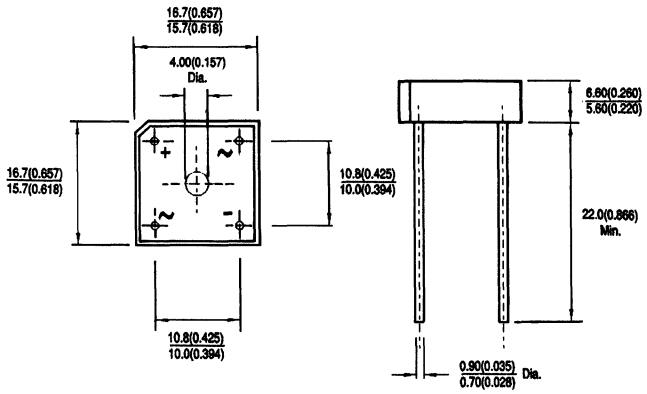
B6



* Available with 3mm or 5mm cropped leads.

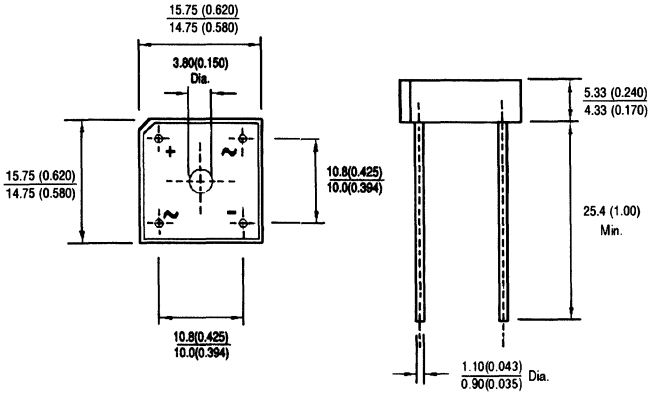
Case style D-44

B7



Case style D-46

B8

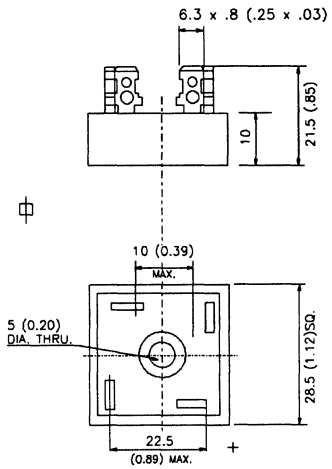


Case style D-72

Dimensions in millimeters and (inches)

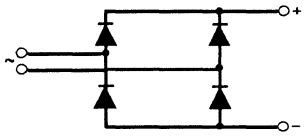
Case Outlines and Circuit Configurations

B11



Case style D-34

Single Phase Bridge
Circuit Configuration



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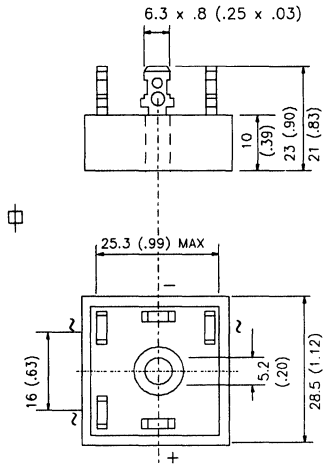
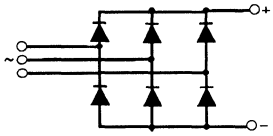


Case style D-63

Three Phase Bridge
Circuit Configuration



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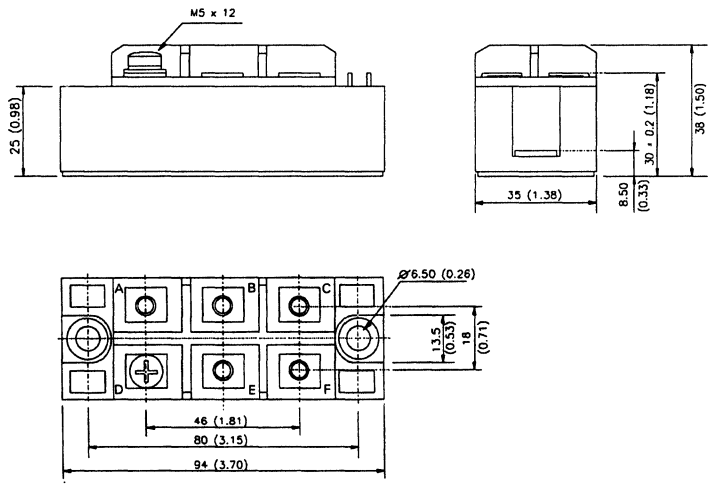
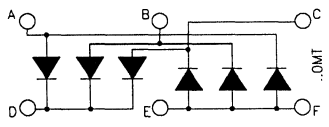


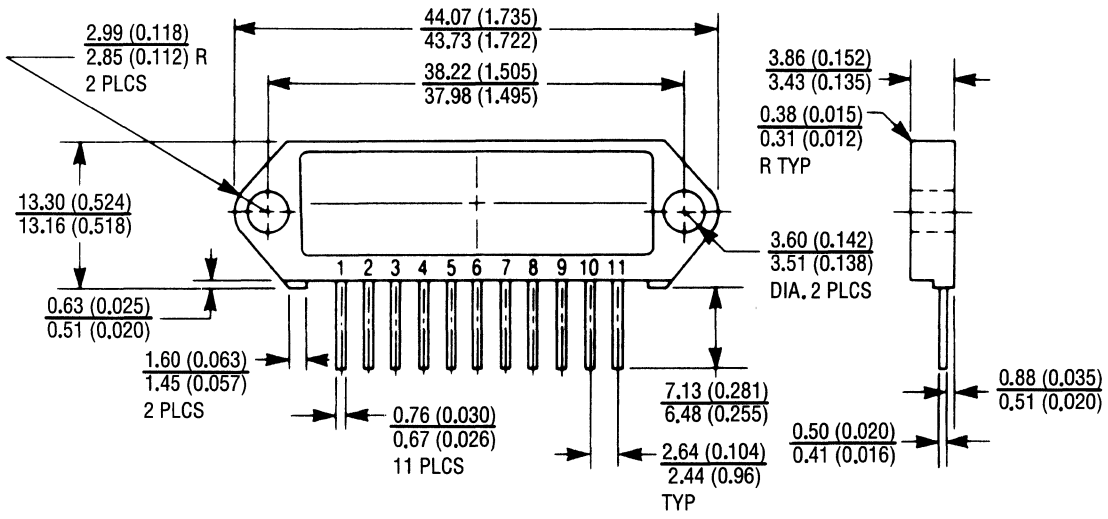
INT-A-pak

Three Phase Bridge
Circuit Configuration



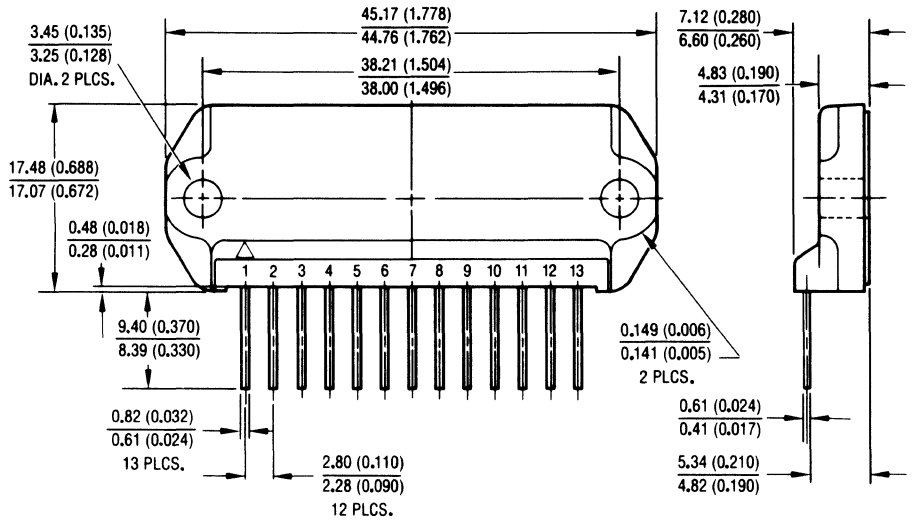
- All dimensions in millimetres (inches)
- Dimensions are nominal
- Full engineering drawings are available on request

CP1



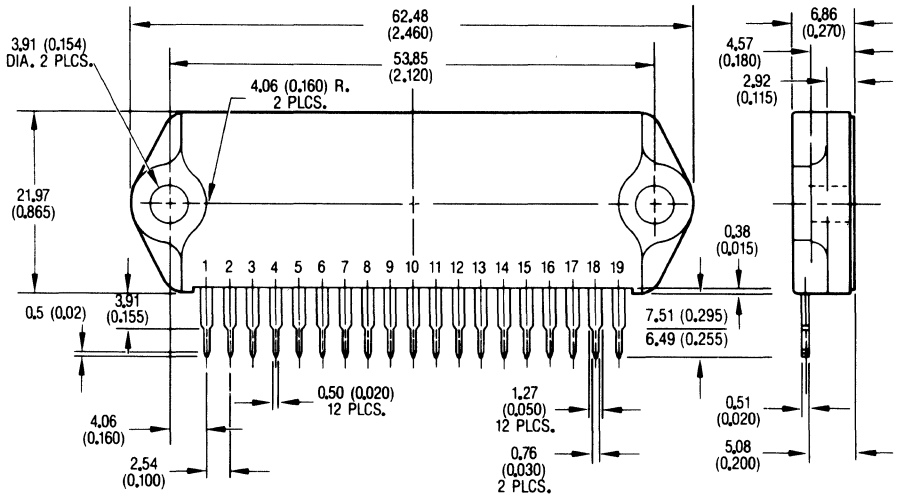
Powerline 1

CP2



IMS-1

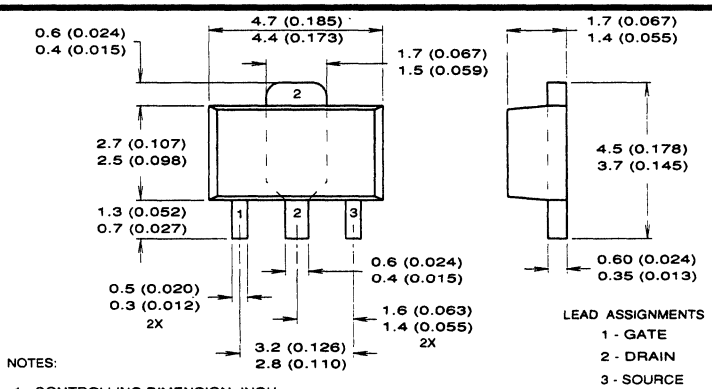
CP3



IMS-2

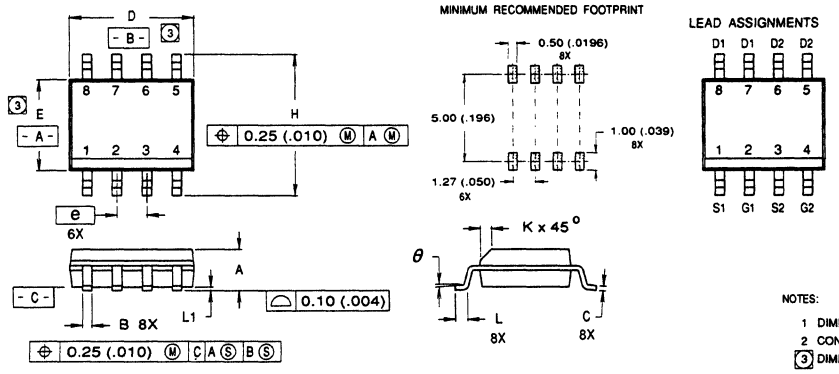
Dimensions in Millimeters and (Inches)

H1



Case Style SOT-89

H2

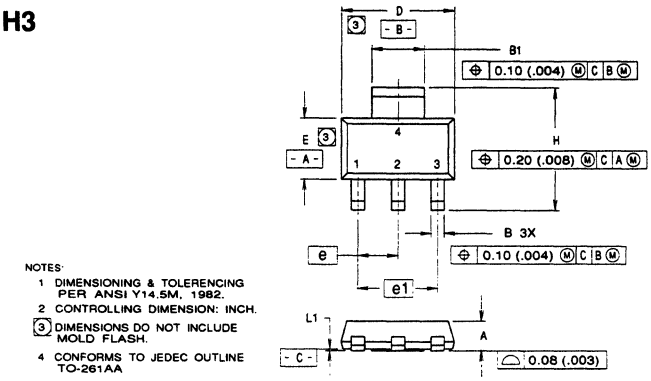


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.064	.075	1.63	1.90
B	.014	.018	0.36	0.45
D	.189	.196	4.81	4.97
C	.007	.009	0.18	0.22
E	.150	.157	3.81	3.98
e	.050 BASIC		1.27 BASIC	
H	.229	.244	5.82	6.19
K	.011	.019	0.28	0.48
L	.016	.050	0.41	1.27
L1	.004	.008	0.11	0.20
θ	0°	8°	0°	8°

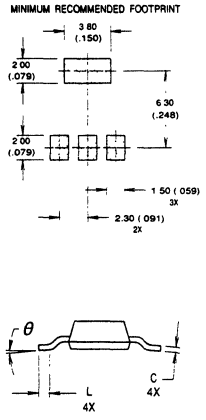
NOTES:
1 DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
2 CONTROLLING DIMENSION: INCH.
3 DIMENSIONS DO NOT INCLUDE MOLD FLASH.

Case Style SO-8 Narrow Body

H3

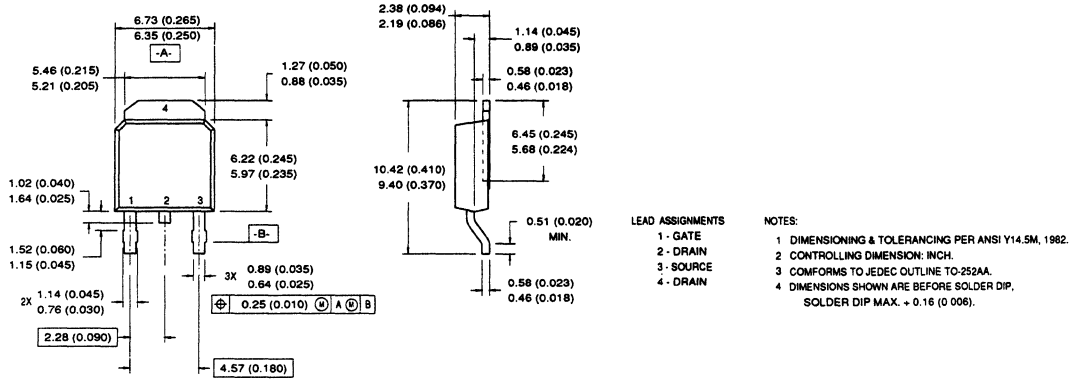


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.55	1.80	.061	.071
B	0.65	0.85	.026	.033
B1	2.95	3.15	.116	.124
C	0.25	0.35	.010	.014
D	6.30	6.70	.248	.264
E	3.30	3.70	.130	.146
e	2.30 BSC		.0905 BSC	
e1	4.60 BSC		.181 BSC	
H	6.71	7.29	.287	.264
L	—	0.91	—	.036
L1	0.02	0.10	.0008	.004
θ	10° MAX		10° MAX	



Case Style SOT-223 (TO-261AA)

H4

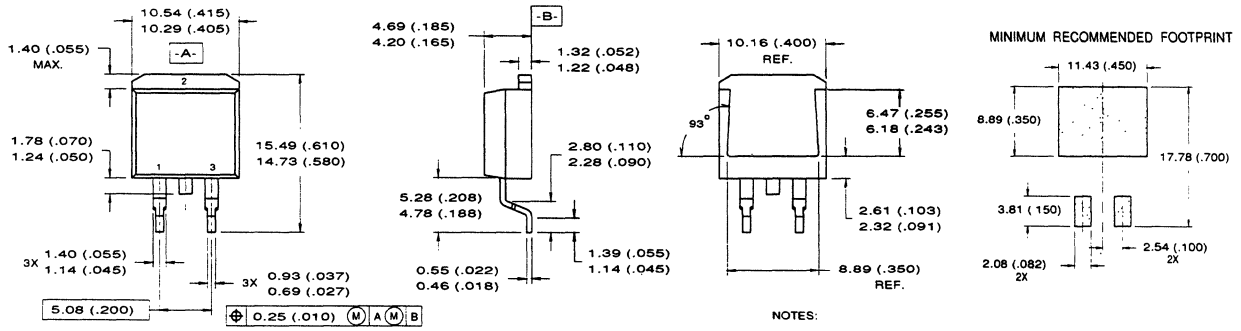


Case Style TO-252AA (D-Pak)

Dimensions in millimeters and (inches)

O

H5

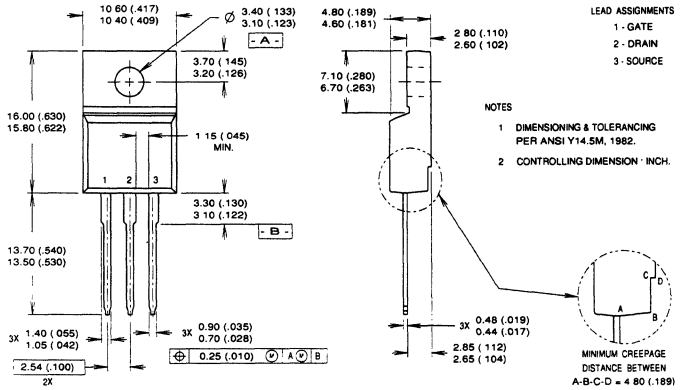


LEAD ASSIGNMENTS
1 - GATE
2 - DRAIN
3 - SOURCE

NOTES:
1 DIMENSIONS AFTER SOLDER DIP.
2 DIMENSIONING & TOLERANCING PER ANSI Y14.5M, 1982
3 CONTROLLING DIMENSION: INCH.
4 HEATSINK & LEAD DIMENSIONS DO NOT INCLUDE BURRS.

Case Style SMD-220

H6

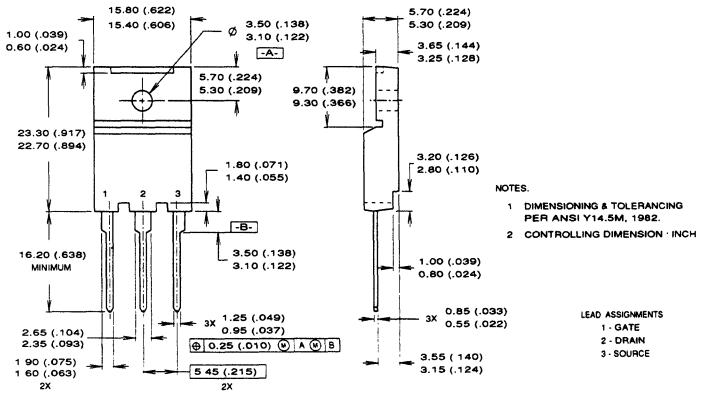


LEAD ASSIGNMENTS
1 - GATE
2 - DRAIN
3 - SOURCE

NOTES
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M, 1982.
2 CONTROLLING DIMENSION · INCH.

Case Style TO-220 FullPak

H7

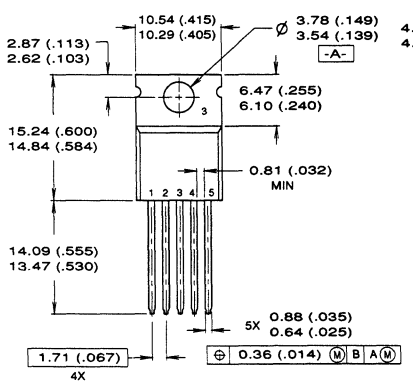


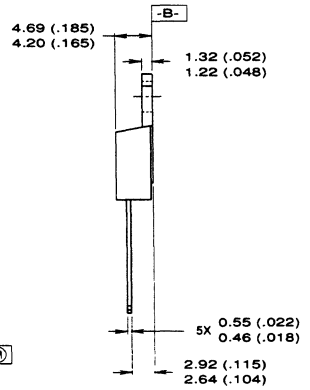
NOTES.
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M, 1982.
2 CONTROLLING DIMENSION · INCH

LEAD ASSIGNMENTS
1 - GATE
2 - DRAIN
3 - SOURCE

Case Style TO-247 FullPak

H8





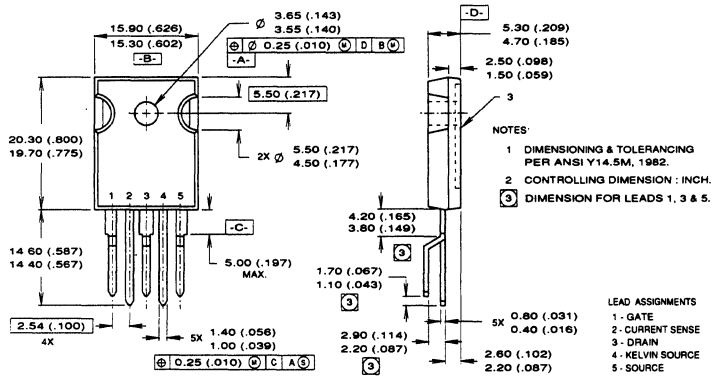
LEAD ASSIGNMENT
1 - GATE
2 - CURRENT SENSE
3 - DRAIN
4 - KELVIN SOURCE
5 - SOURCE

NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M, 1982.
2 CONTROLLING DIMENSION : INCH.
3 HEATSINK & LEAD MEASUREMENTS DO NOT INCLUDE BURRS.

Case Style TO-220, 5L, HEXSense

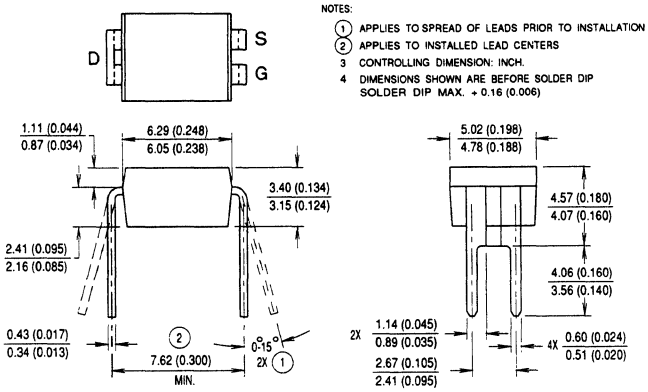
Dimensions in millimeters and (inches)

H9



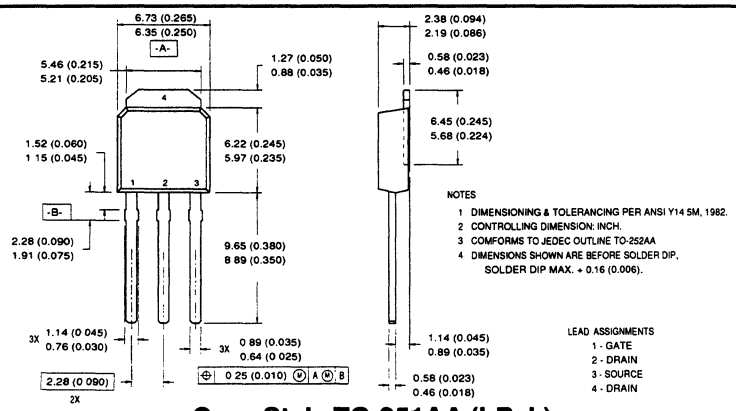
Case Style TO-247, 5L, HEXSense

H10



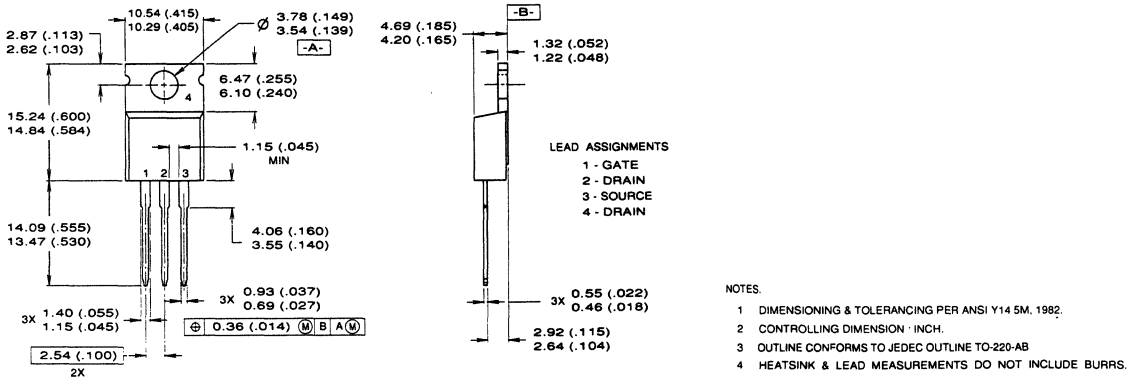
Case Style HD-1 Similar to JEDEC Outline MO-001AN

H11



Case Style TO-251AA (I-Pak)

H12

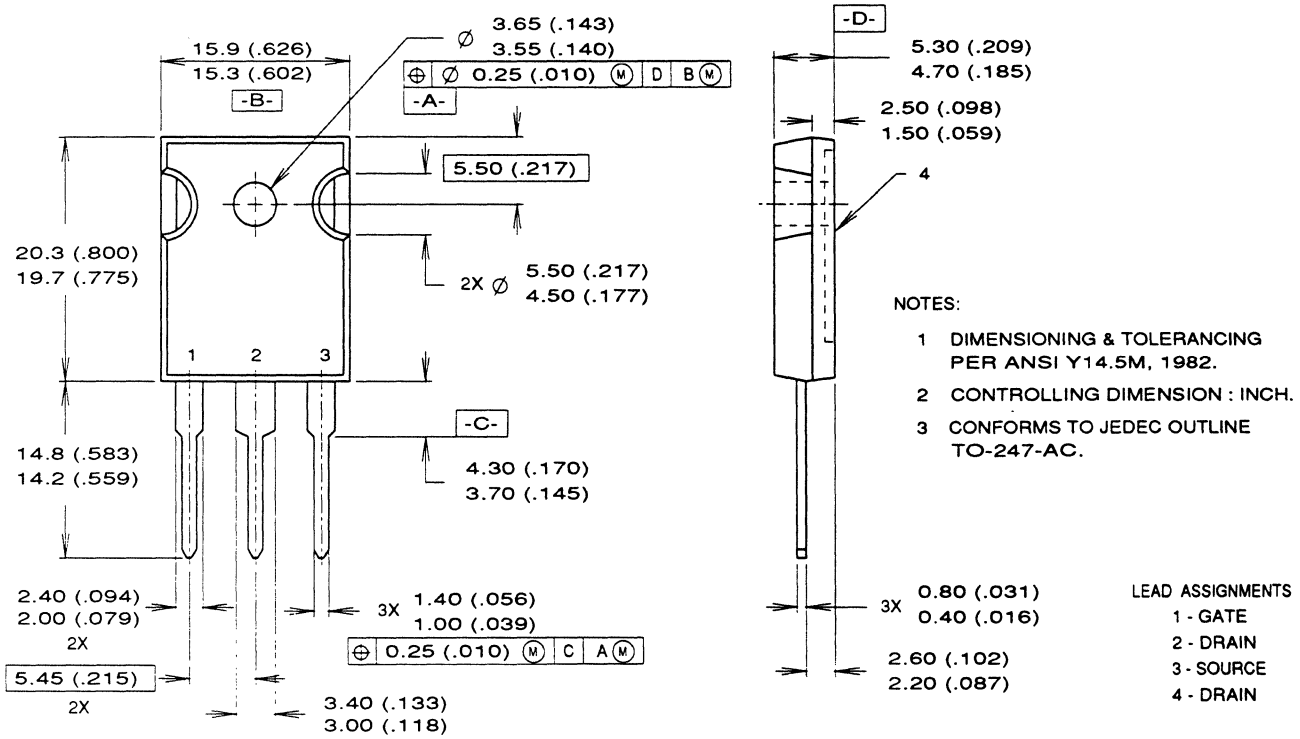


Case Style TO-220AB

Dimensions in millimeters and (inches)

O

H13



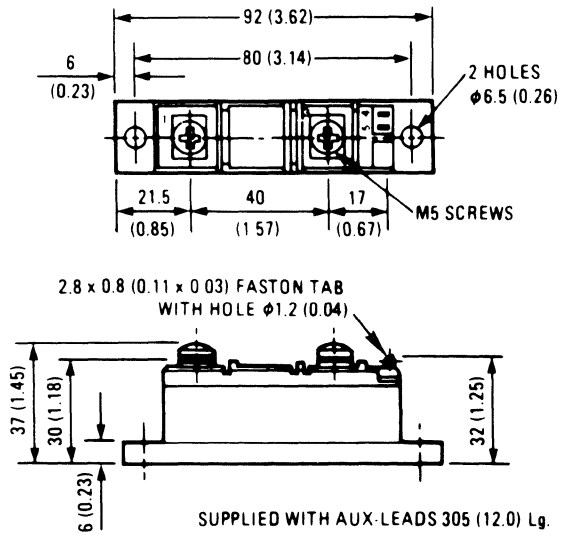
NOTES:

1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M, 1982.
2 CONTROLLING DIMENSION : INCH.
3 CONFORMS TO JEDEC OUTLINE TO-247-AC.

LEAD ASSIGNMENTS
1 - GATE
2 - DRAIN
3 - SOURCE
4 - DRAIN

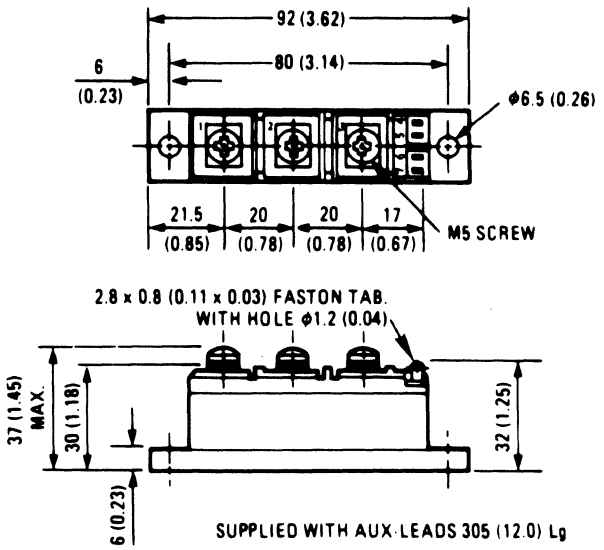
Case Style TO-247AC

H14



Case Style Similar to JEDEC Outline TO-240AA

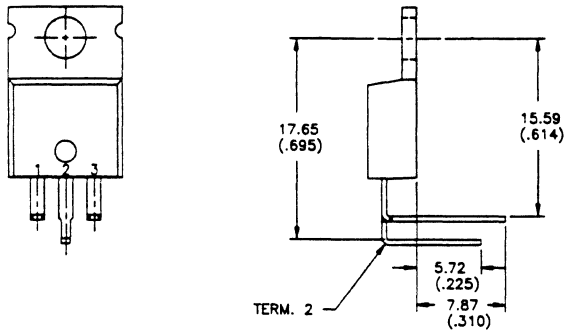
H15



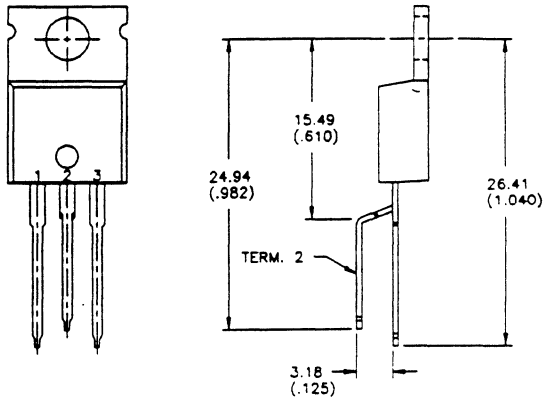
Case Style Similar to JEDEC Outline TO-240AA

Dimensions in millimeters and (inches)

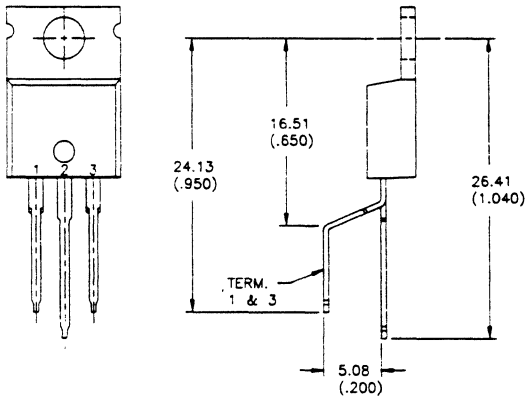
International Rectifier now offers standard leadform in various configurations to allow the flexibility to meet the variety of design requirements. Shown below are IR's standard leadform offerings. To order a device with leadforming, simply state the desired TO-220 HEXFET Part Number then indicate the leadform of your choice with the three digit suffix. For the correct suffix refer to the leadform options which are shown below. Example: IRF530-004 is an IRF530 HEXFET with an option –004 leadform.



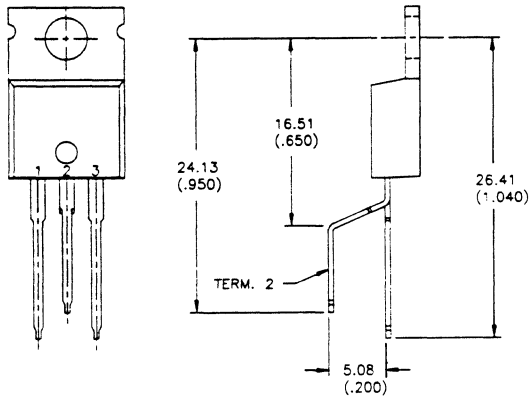
OPTION – 002



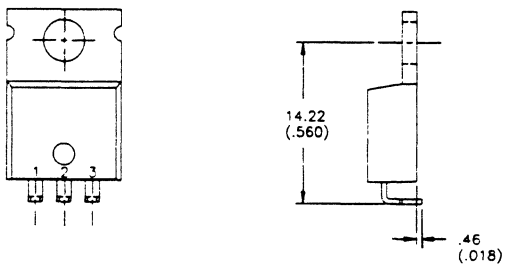
OPTION – 003



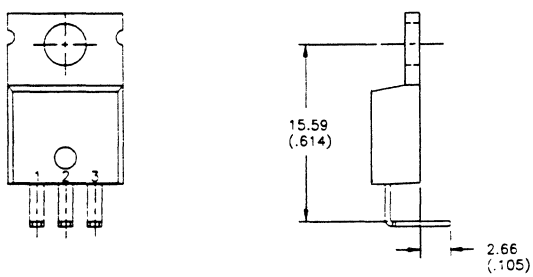
OPTION – 004



OPTION – 005



OPTION – 006



OPTION – 009

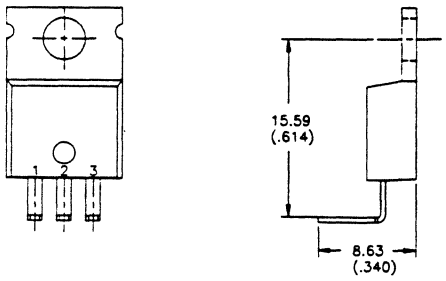
TERM 1 – GATE
TERM 2 – DRAIN
TERM 3 – SOURCE

Dimensions in millimeters and (inches)

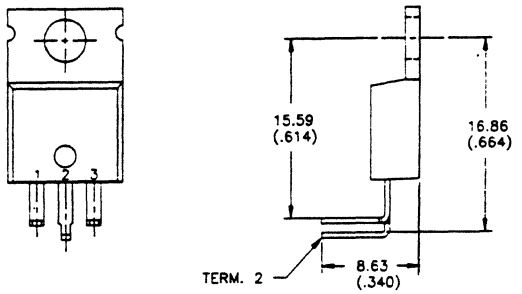
HEXFET Power MOSFETs
TO-220 Optional Leadforms

International Rectifier

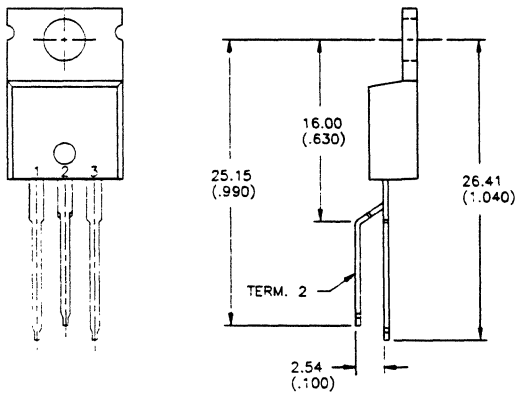
International Rectifier now offers standard leadform in various configurations to allow the flexibility to meet the variety of design requirements. Shown below are IR's standard leadform offerings. To order a device with leadforming, simply state the desired TO-220 HEXFET Part Number then indicate the leadform of your choice with the three digit suffix. For the correct suffix refer to the leadform options which are shown below. Example: IRF530-004 is an IRF530 HEXFET with an option –004 leadform.



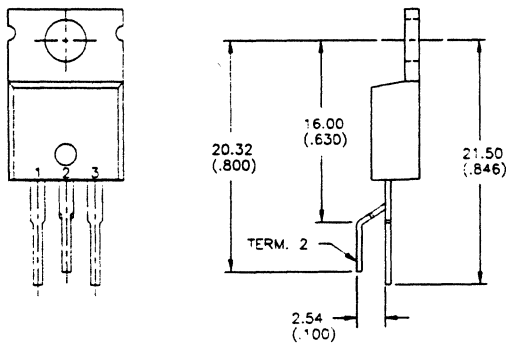
OPTION – 010



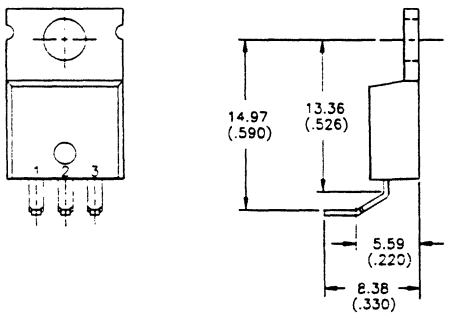
OPTION – 011



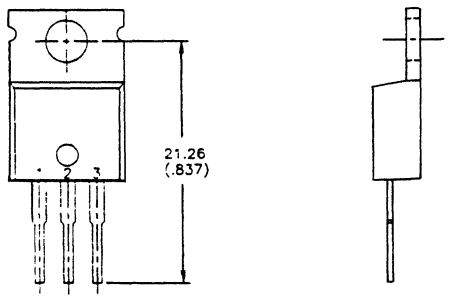
OPTION – 012



OPTION – 013



OPTION – 015

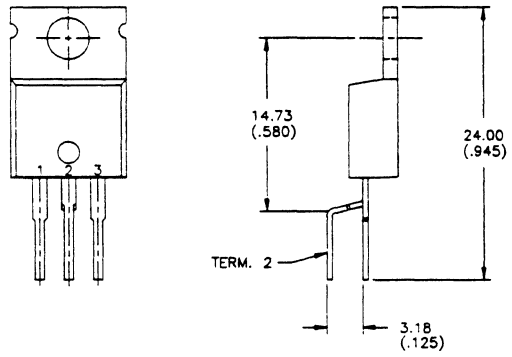


OPTION – 017

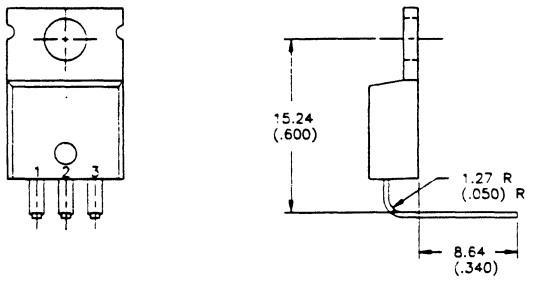
TERM 1 – GATE
TERM 2 – DRAIN
TERM 3 – SOURCE

Dimensions in millimeters and (inches)

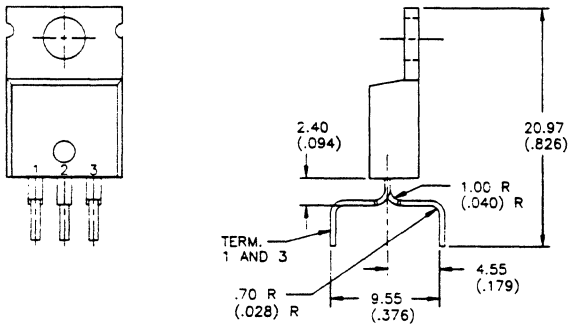
International Rectifier now offers standard leadform in various configurations to allow the flexibility to meet the variety of design requirements. Shown below are IR's standard leadform offerings. To order a device with leadforming, simply state the desired TO-220 HEXFET Part Number then indicate the leadform of your choice with the three digit suffix. For the correct suffix refer to the leadform options which are shown below. Example: IRF530-004 is an IRF530 HEXFET with an option –004 leadform.



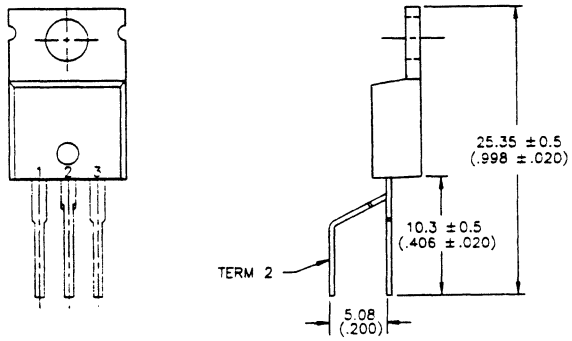
OPTION – 018



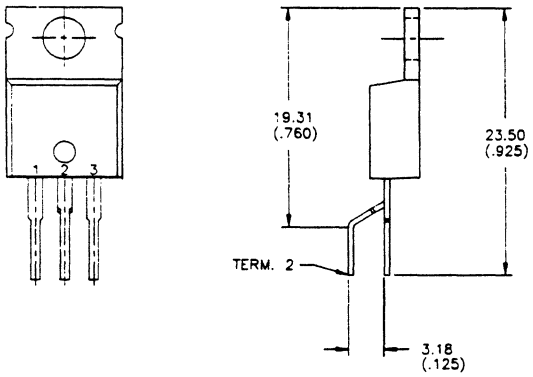
OPTION – 019



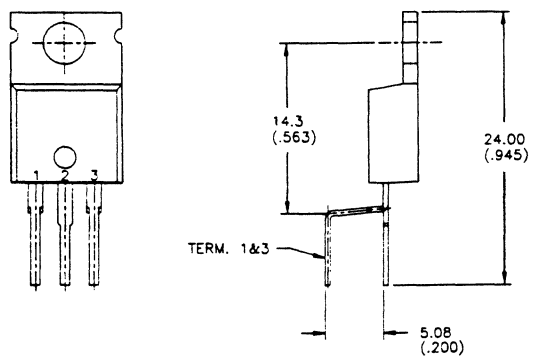
OPTION – 024



OPTION – 029



OPTION – 030



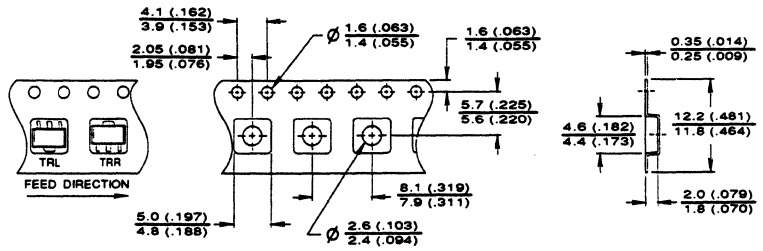
OPTION – 031

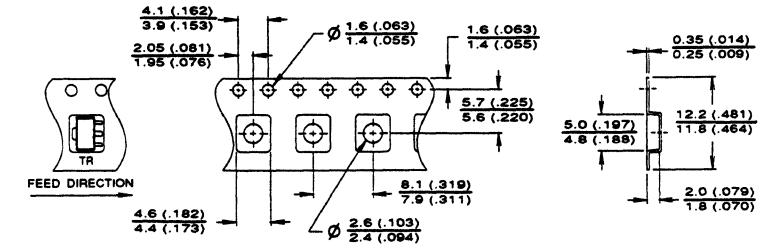
TERM 1 – GATE
TERM 2 – DRAIN
TERM 3 – SOURCE

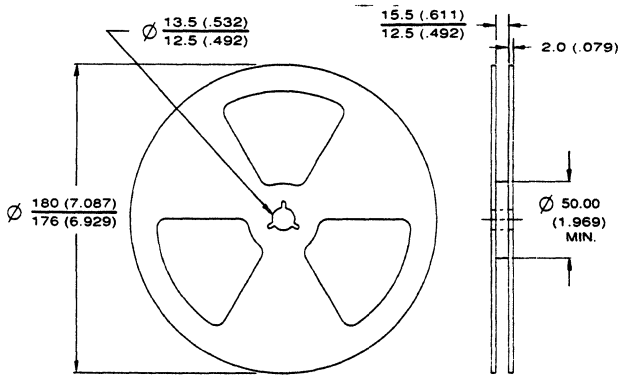
Dimensions in millimeters and (inches)

O

SOT-89



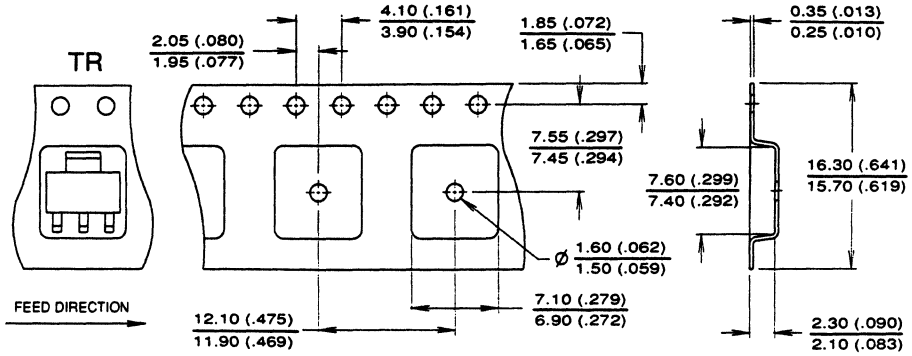


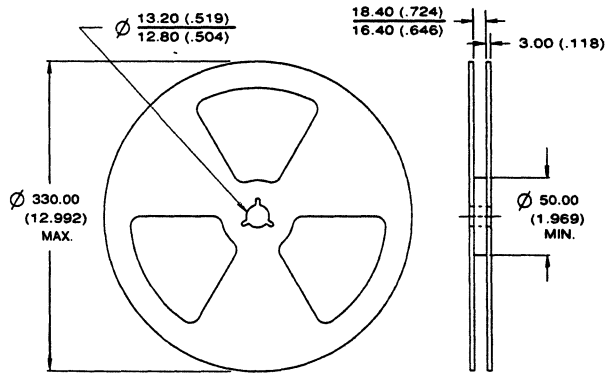


SOT-89 Tape & Reel

When ordering, indicate the part number, part orientation, and the quantity. Quantities are in multiples of 1000 pieces per reel for TR, TRL, and TRR.

SOT-223



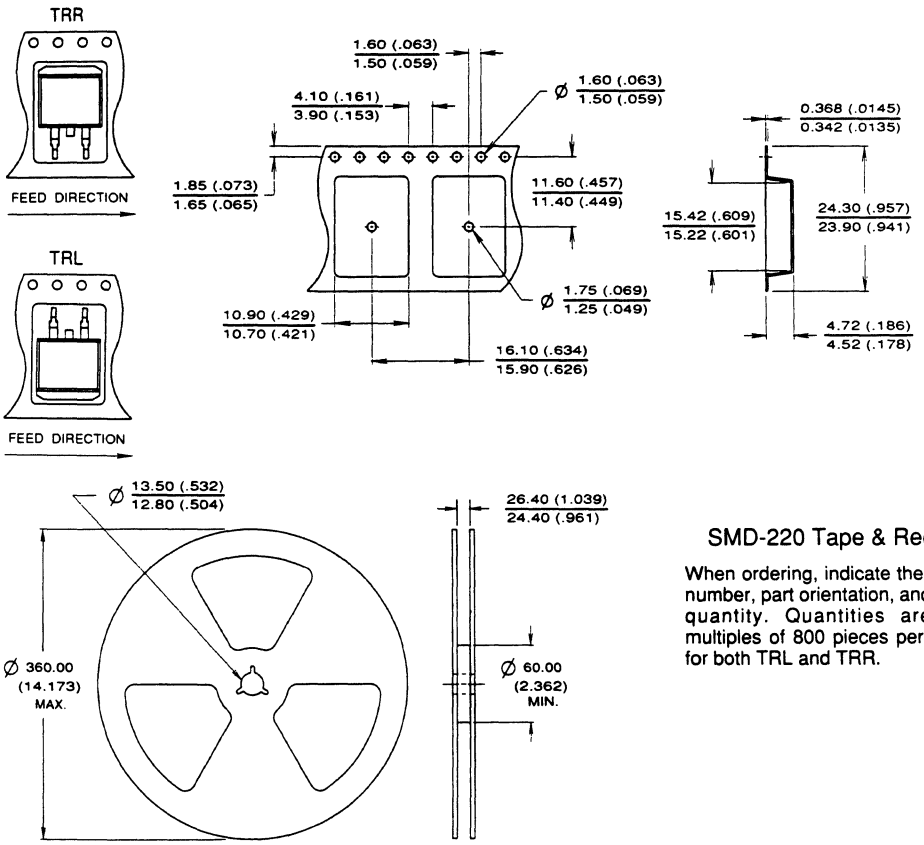


SOT-223 Tape & Reel

When ordering, indicate the part number, part orientation, and the quantity. Quantities are in multiples of 2500 pieces per reel for TR.

Dimensions in millimeters and (inches)

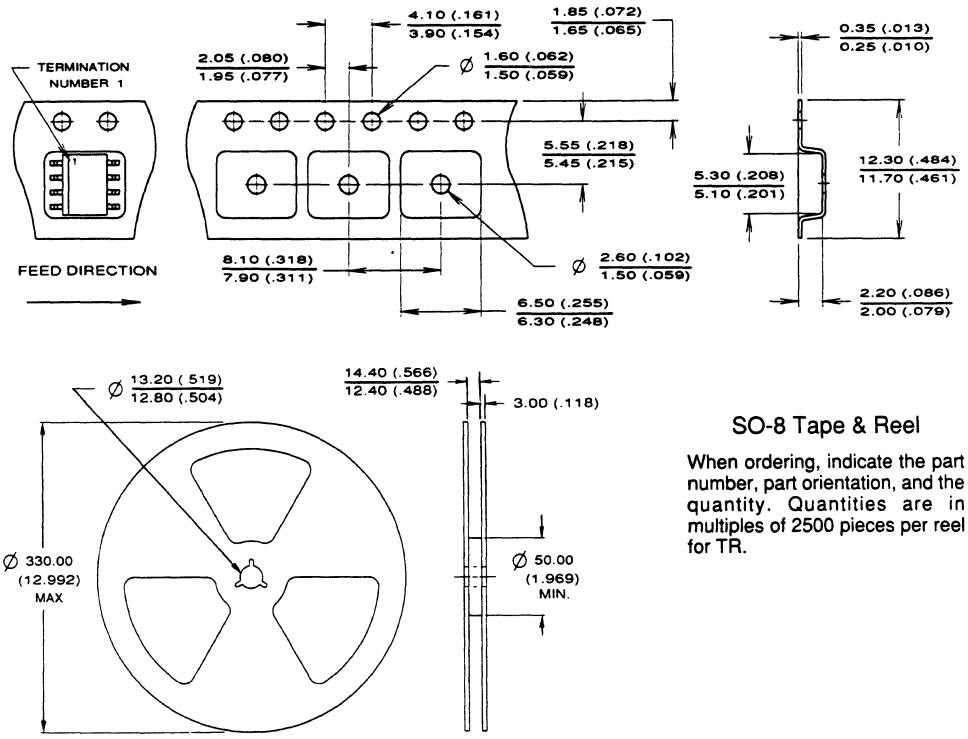
SMD-220



SMD-220 Tape & Reel

When ordering, indicate the part number, part orientation, and the quantity. Quantities are in multiples of 800 pieces per reel for both TRL and TRR.

SO-8



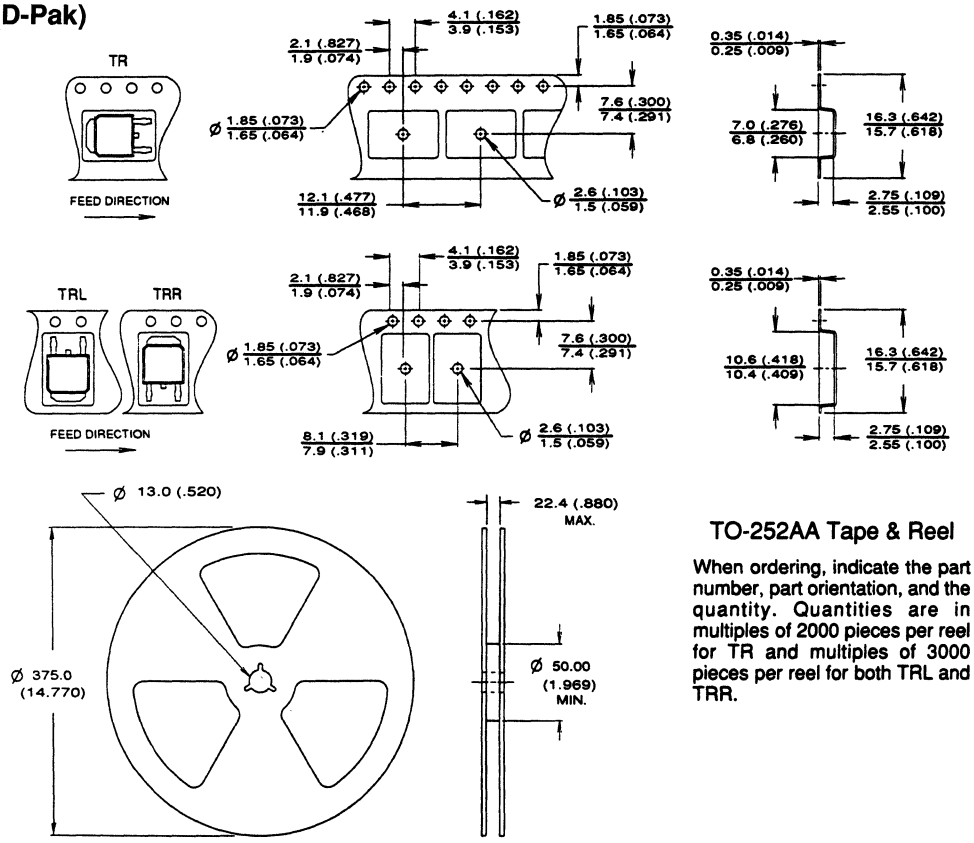
SO-8 Tape & Reel

When ordering, indicate the part number, part orientation, and the quantity. Quantities are in multiples of 2500 pieces per reel for TR.

Dimensions in millimeters and (inches)

O

TO-252AA (D-Pak)

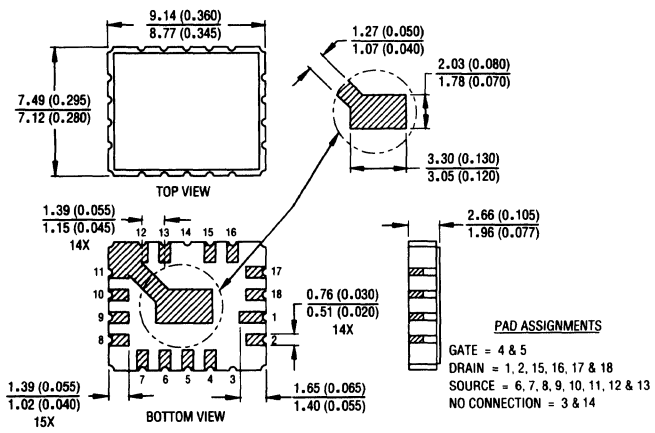


TO-252AA Tape & Reel

When ordering, indicate the part number, part orientation, and the quantity. Quantities are in multiples of 2000 pieces per reel for TR and multiples of 3000 pieces per reel for both TRL and TRR.

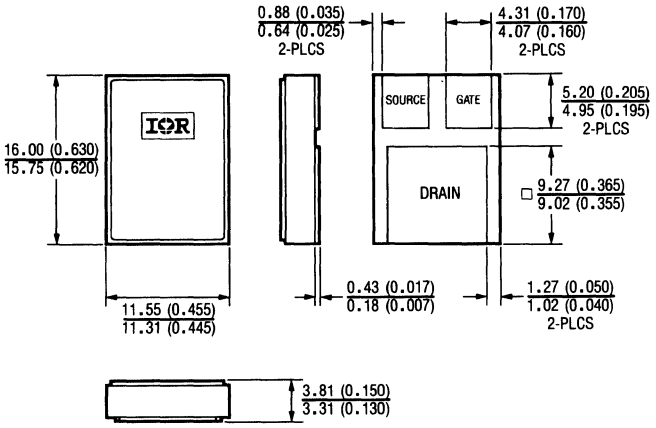
Dimensions in millimeters and (inches)

H20



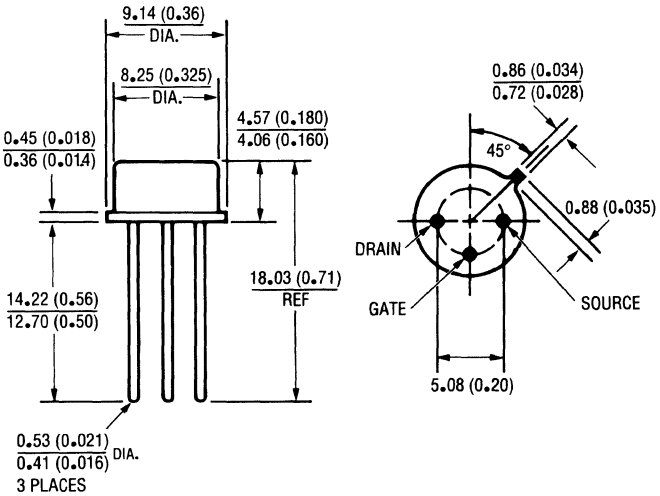
Case Style Leadless Chip Carrier (LCC)

H21



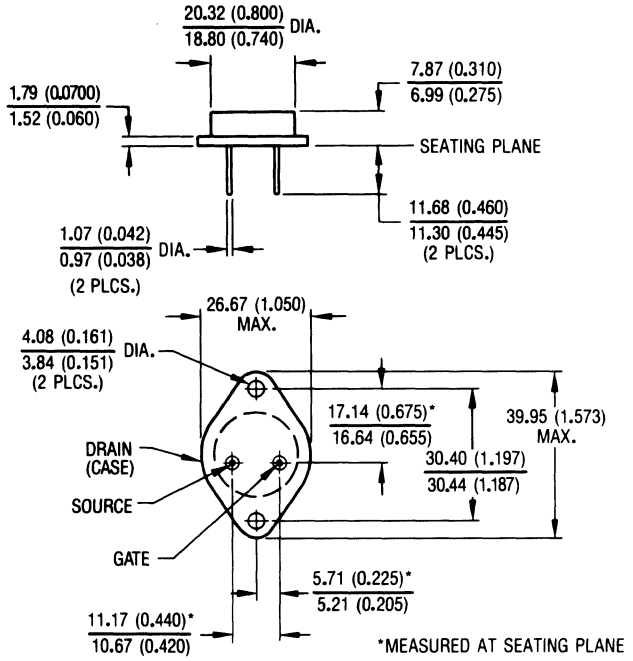
Case Style SMD-1

H22



Case Style Conforms to JEDEC Outline TO-205AF (TO-39)

H23

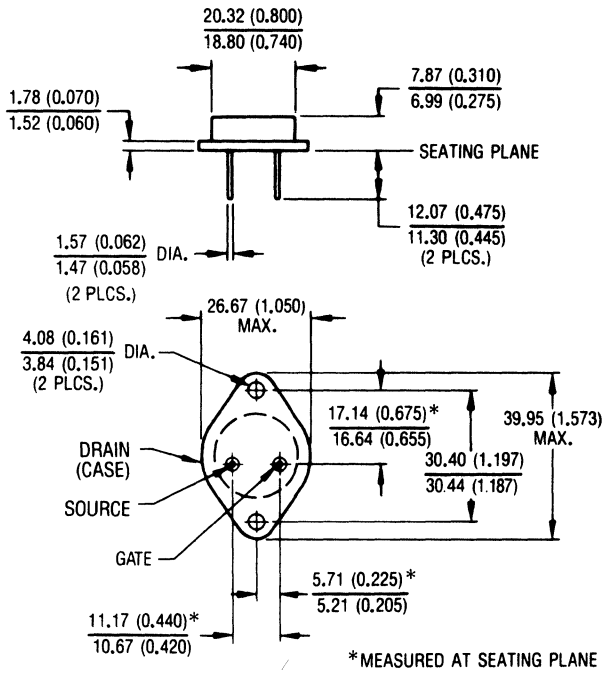


Case Style Conforms to JEDEC Outline TO-204AA (Modified TO-3)

Dimensions in millimeters and (inches)

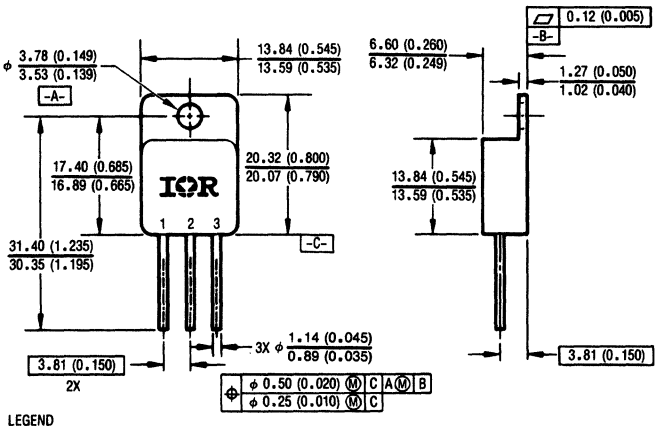
O

H24



Case Style Conforms to JEDEC Outline TO-204AE (Modified TO-3)

H25

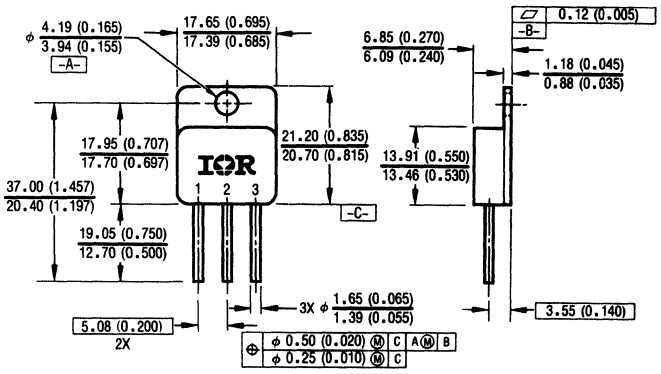


LEGEND
1 DRAIN
2 SOURCE
3 GATE

NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

Case Style Conforms to JEDEC Outline TO-254AA

H26

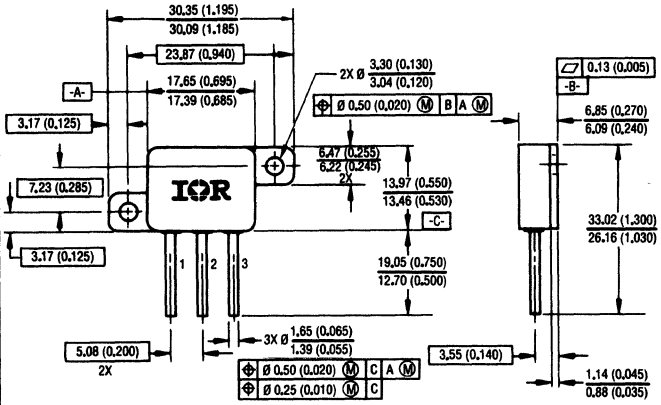


NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

LEGEND
1 DRAIN
2 SOURCE
3 GATE

Case Style Conforms to JEDEC Outline TO-258AA

H27



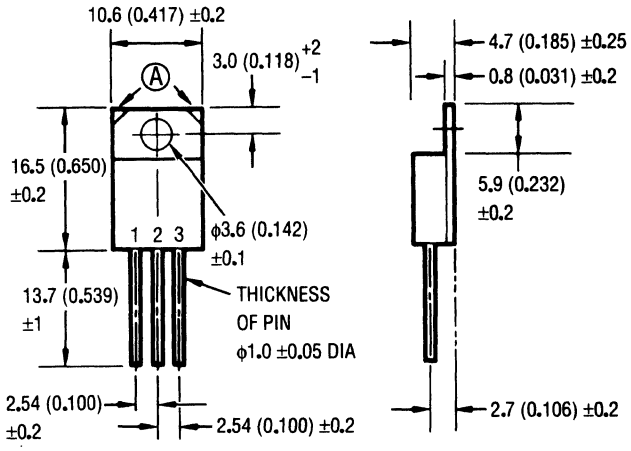
NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

LEGEND
1 DRAIN
2 SOURCE
3 GATE

Case Style Conforms to JEDEC Outline TO-259AA

Dimensions in millimeters and (inches)

H28

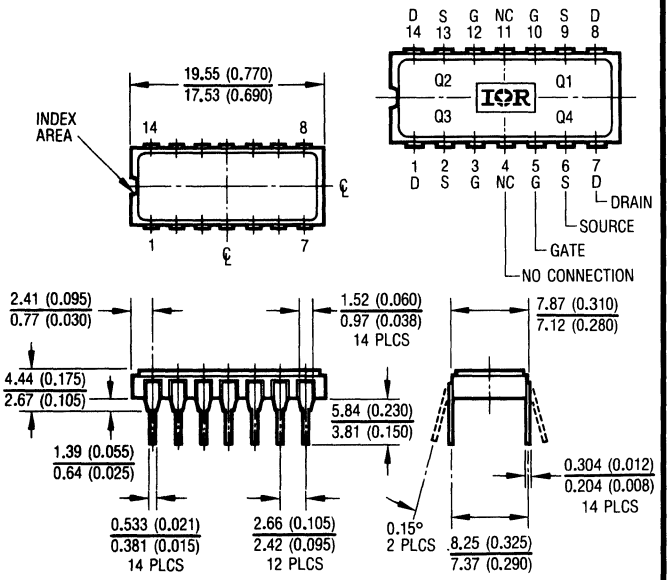


TERM	IRFY . . .	IRFY . . . M
1	GATE	DRAIN
2	DRAIN	SOURCE
3	SOURCE	GATE

Ⓐ Corners removed to indicate 'M' option

Case Style Conforms to JEDEC Outline TO-257AB

H29



Conforms to JEDEC MO-036AB

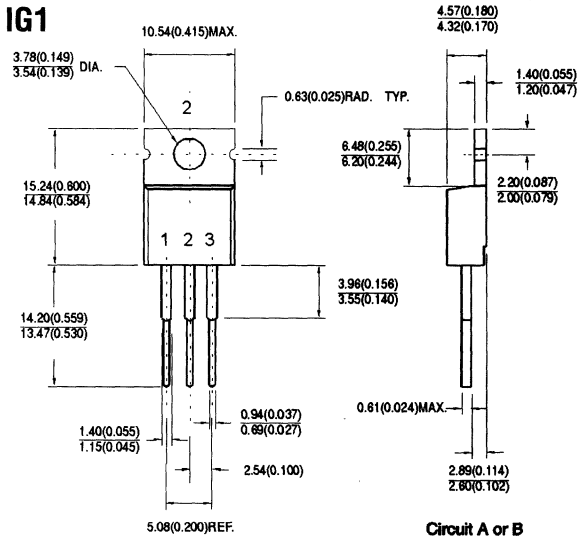
Dimensions in millimeters and (inches)

Insulated Gate Bipolar Transistors – IGBTs and IGBT/UltraFast™ Diodes – *CoPack*

International IOR Rectifier

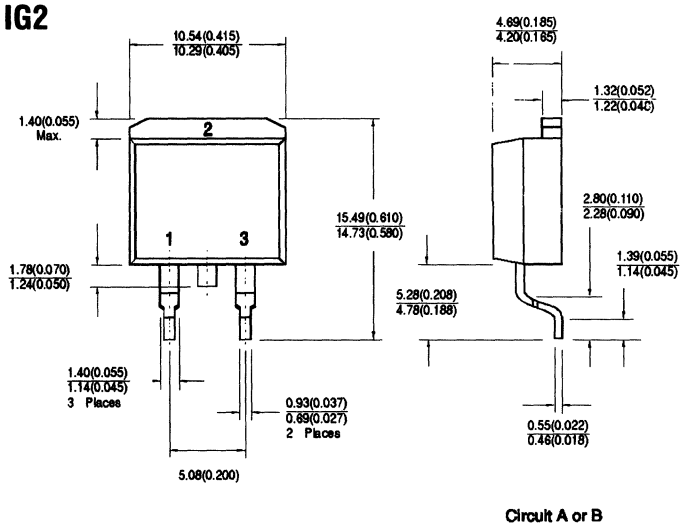
Discrete and Module Types

IG1



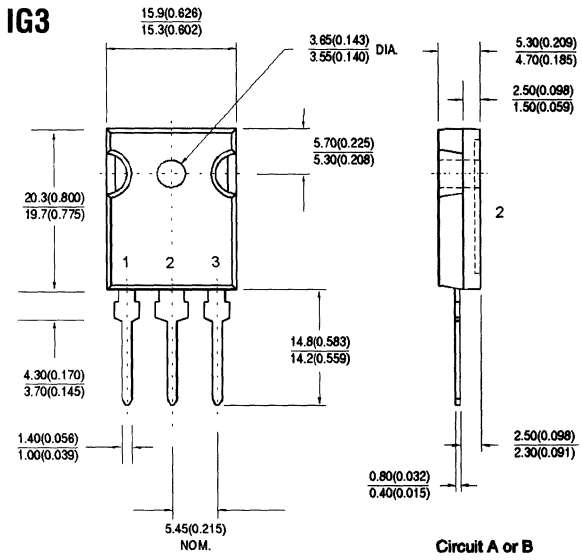
Case Style TO-220AB

IG2



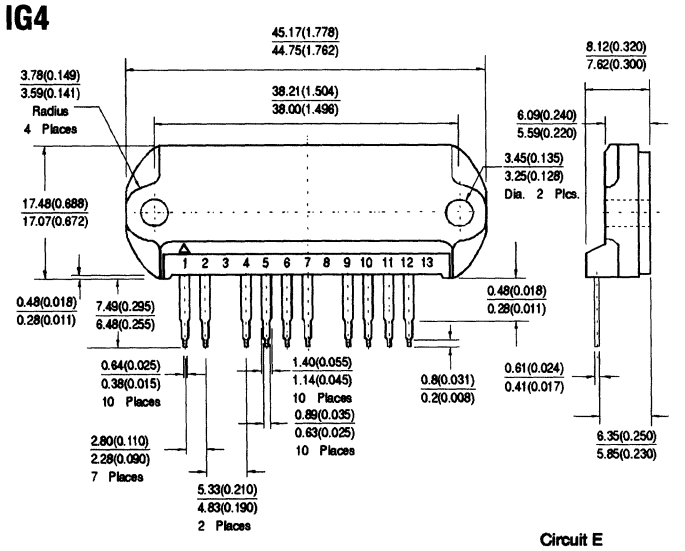
Case Style SMD-220

IG3



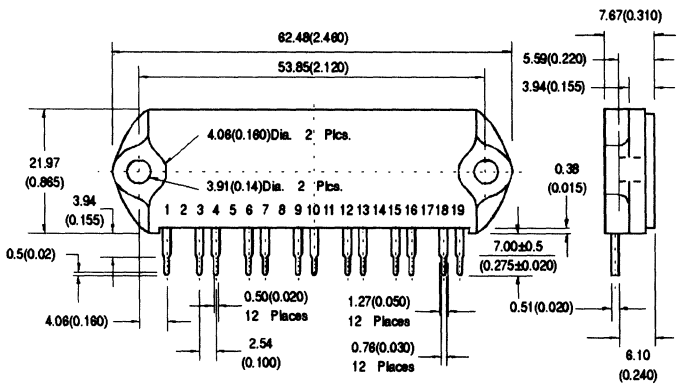
Case Style TO-247AC

IG4



Case Style IMS-1 (13 Pins)

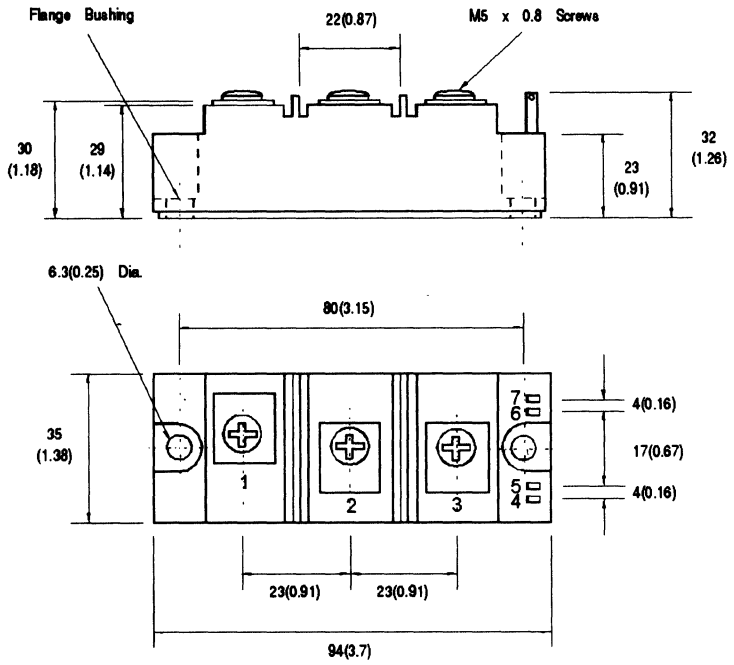
IG5



Case Style IMS-2 (19 Pins)

Dimensions in millimeters and (inches)

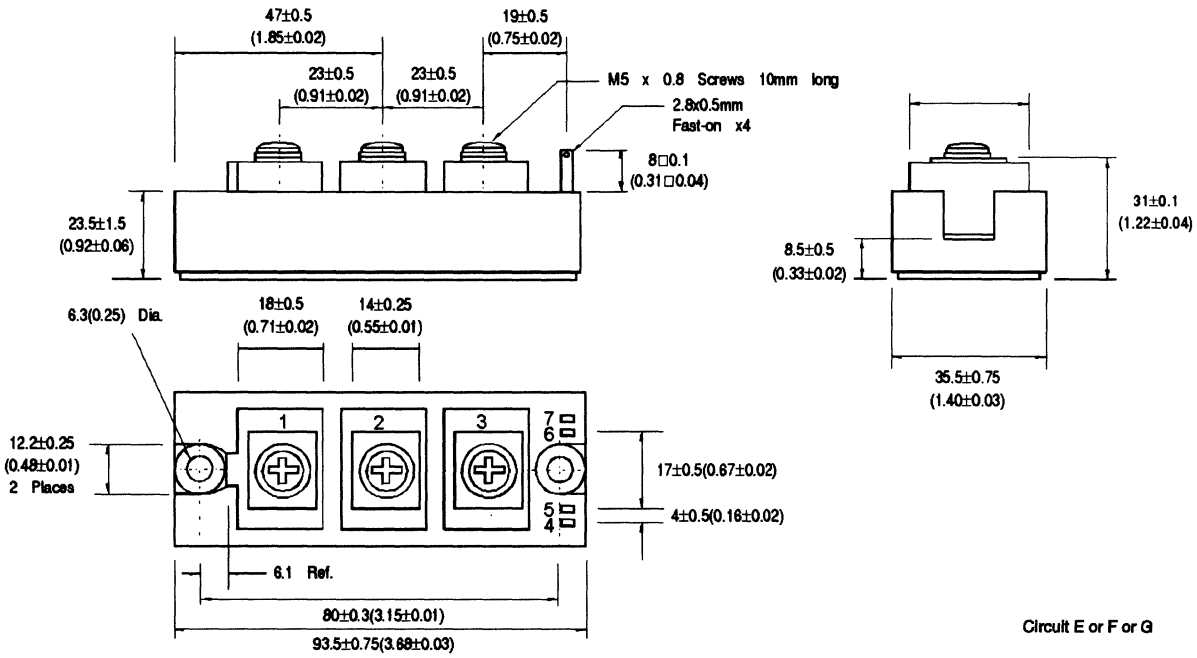
IG6



Circuit E or F or G

Case Style INT-A-pak – 600V

IG7



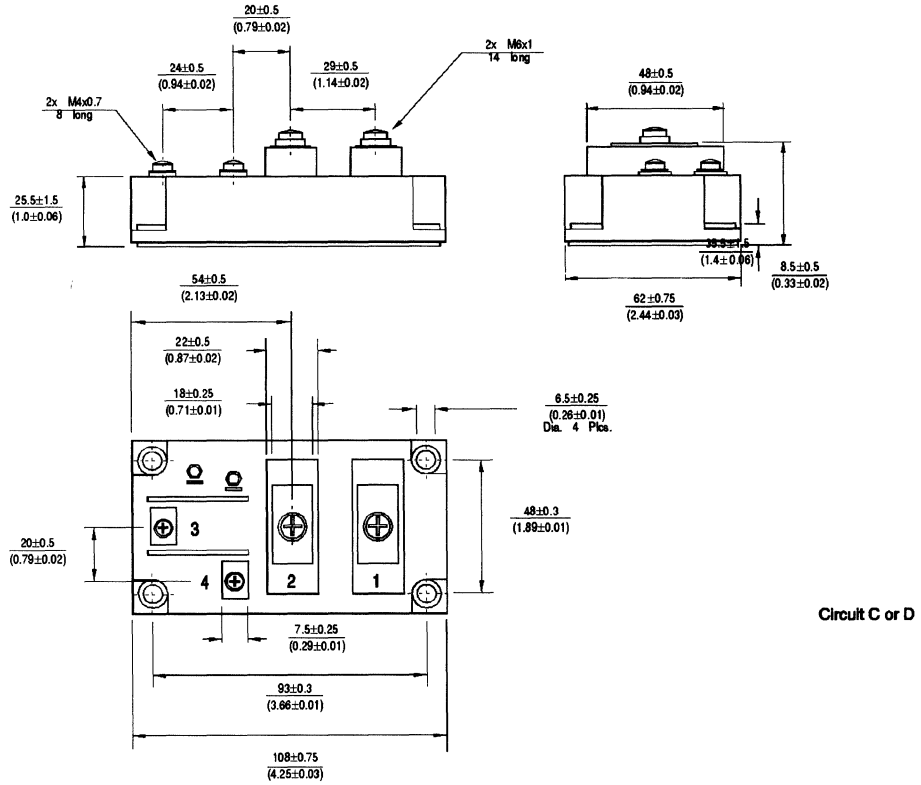
Circuit E or F or G

Case Style INT-A-pak – 1200V

Dimensions in millimeters and (inches)

O

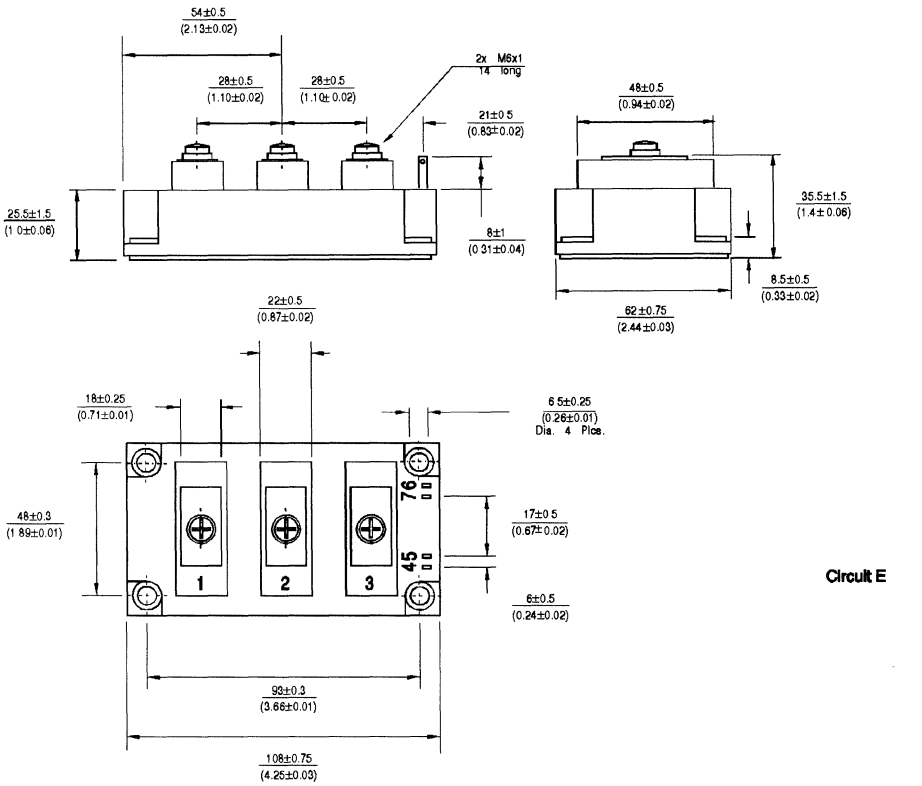
IG8



Circuit C or D

Case Style Double INT-A-pak

IG9

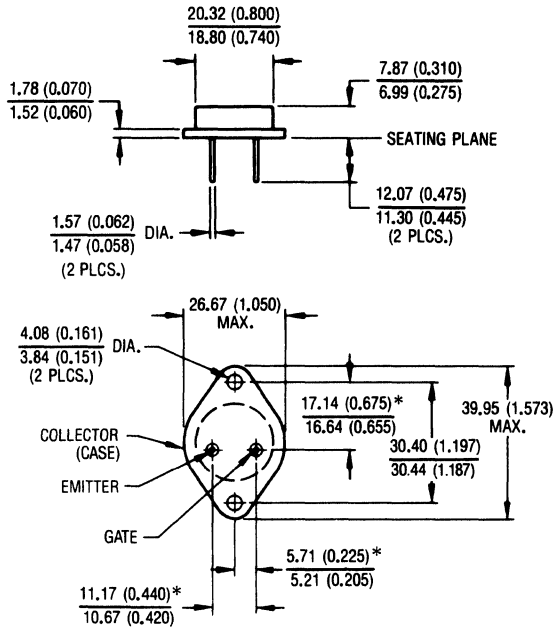


Circuit E

Case Style Double INT-A-pak

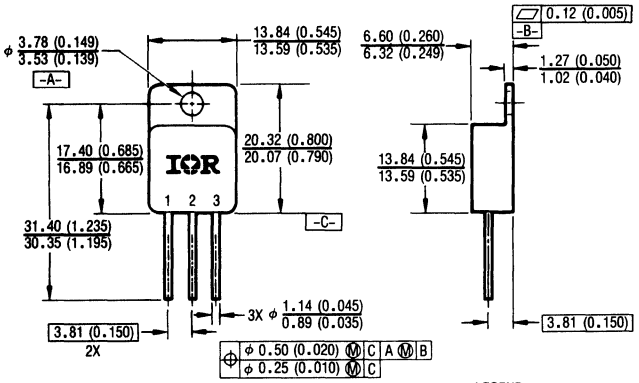
Dimensions in millimeters and (inches)

IG20



Conforms to JEDEC Outline TO-204AE (Modified TO-3)

IG21

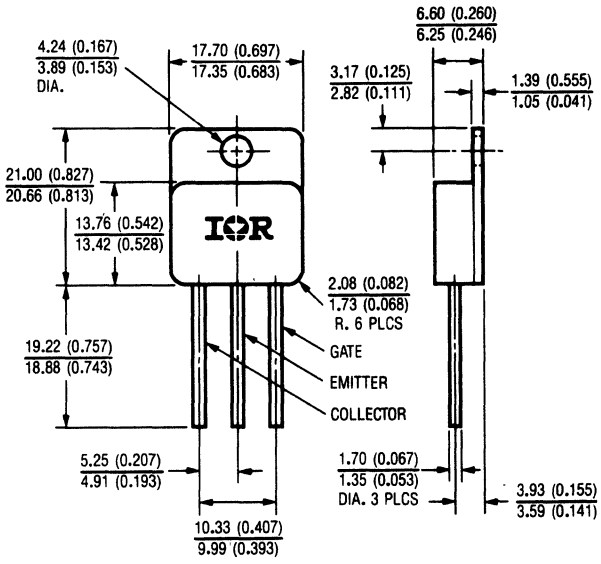


NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

LEGEND
1 COLLECTOR
2 EMITTER
3 GATE

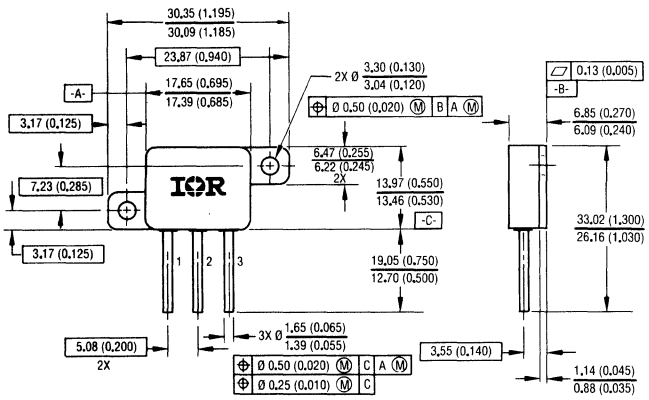
Conforms to JEDEC Outline TO-254AA

IG22



Conforms to JEDEC Outline TO-258AA

IG23



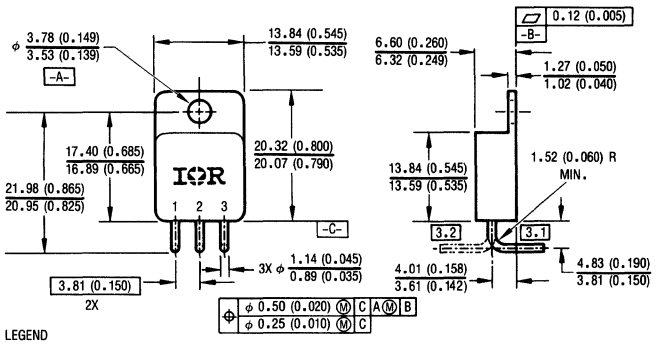
NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

LEGEND
1 COLLECTOR
2 EMITTER
3 GATE

Conforms to JEDEC Outline TO-259AA

Dimensions in millimeters and (inches)

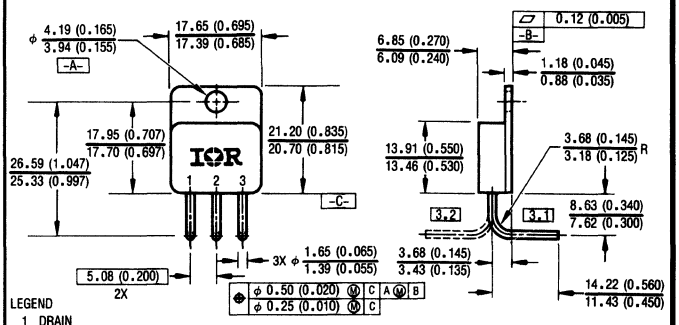
O



LEGEND
1 DRAIN
2 SOURCE
3 GATE

NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
3 LEADFORM IS AVAILABLE IN EITHER ORIENTATION:
3.1 EXAMPLE: IRFM044D
3.2 EXAMPLE: IRFM044U

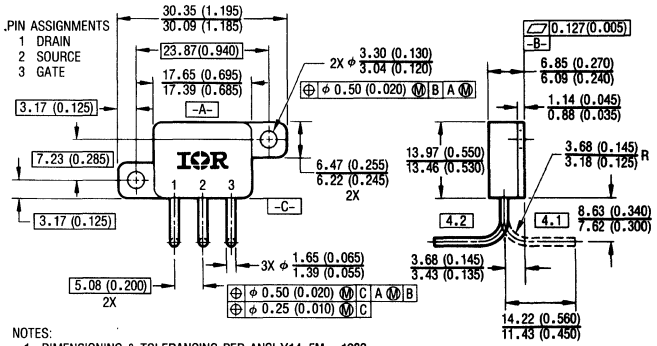
Optional Leadforms for Outline TO-254



LEGEND
1 DRAIN
2 SOURCE
3 GATE

NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
3 LEADFORM IS AVAILABLE IN EITHER ORIENTATION:
3.1 EXAMPLE: IRFV064D
3.2 EXAMPLE: IRFV064U

Optional Leadforms for Outline TO-258



NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 CONTROLLING DIMENSION: INCH.
3 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4 LEADFORM IS AVAILABLE IN EITHER ORIENTATION:
4.1 EXAMPLE: IRFI360D
4.2 EXAMPLE: IRFI360U

LEGEND
1 DRAIN
2 SOURCE
3 GATE

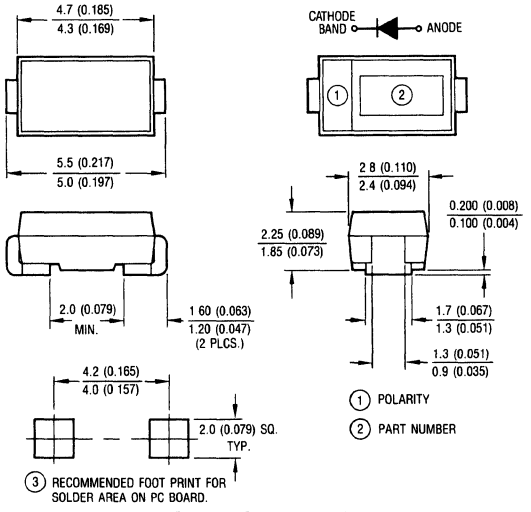
Optional Leadforms for Outline TO-259

Dimensions in millimeters and (inches)

Ultra Fast Recovery, HEXFRED and Schottky Diodes

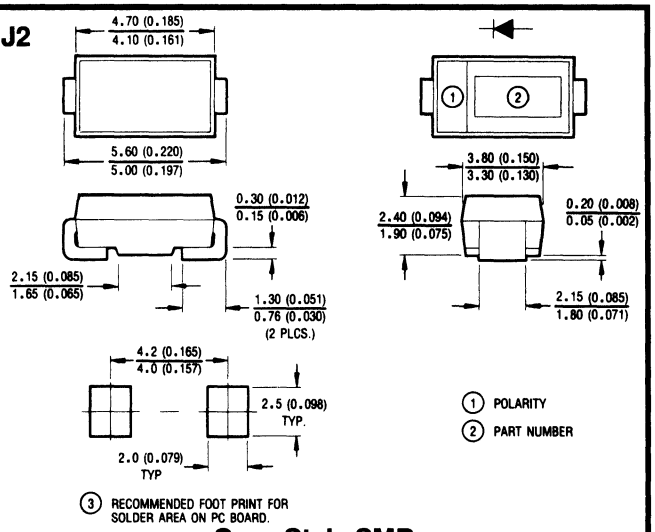
Case Outlines

J1



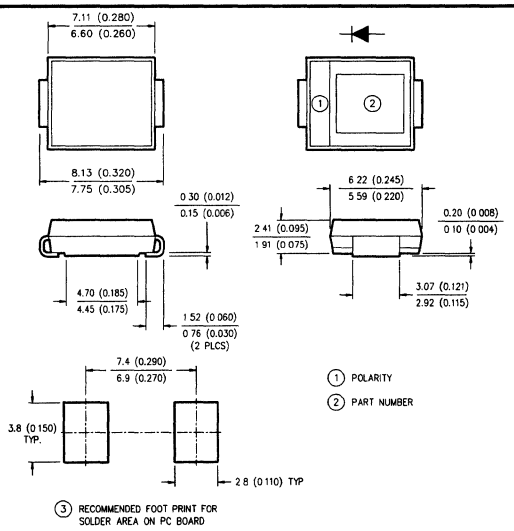
Case Style D-64

J2



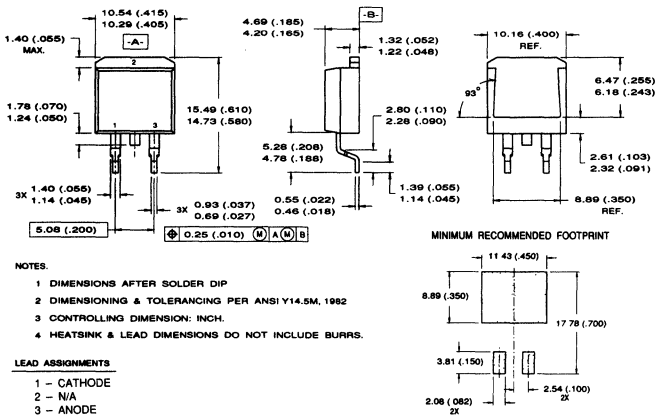
Case Style SMB

J3



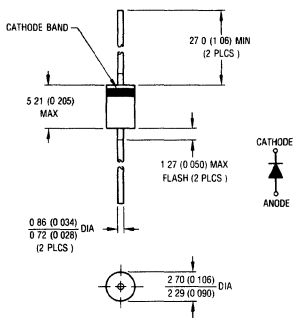
Case Style SMC

J4



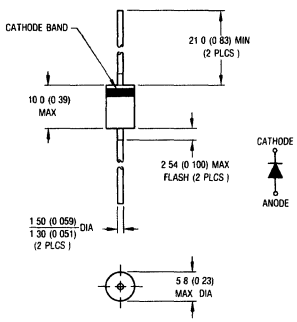
Case Style SMD-220

J5



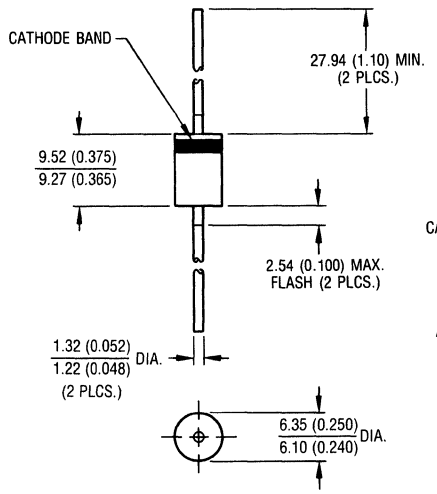
Case Style DO-240AL (DO-41)

J6



Case Style DO-201AD C-16

J7



Case Style DO-204AR

Dimensions in millimeters and (inches)

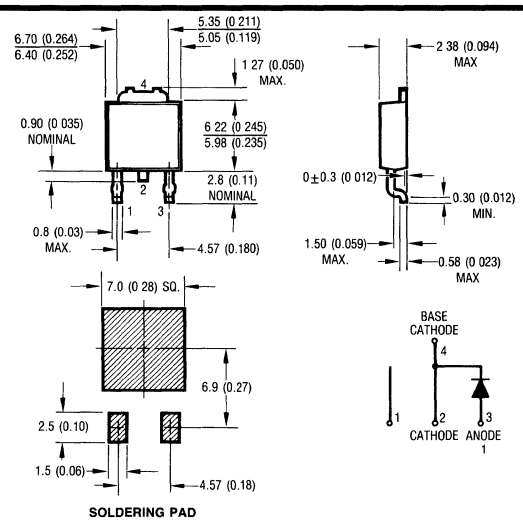
O

Ultra Fast Recovery, HEXFRED and Schottky Diodes

Case Outlines

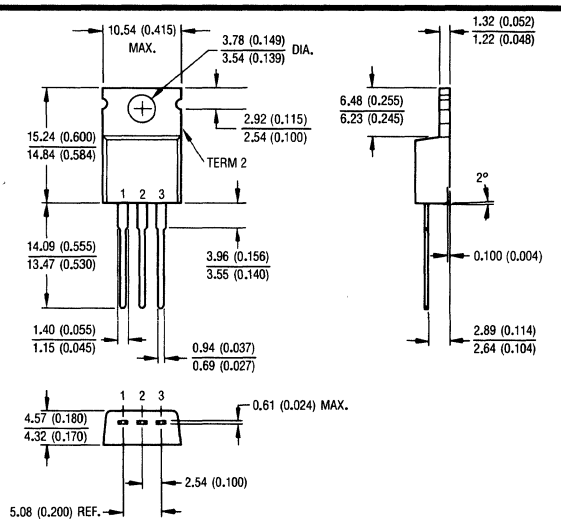
International IOR Rectifier

J8



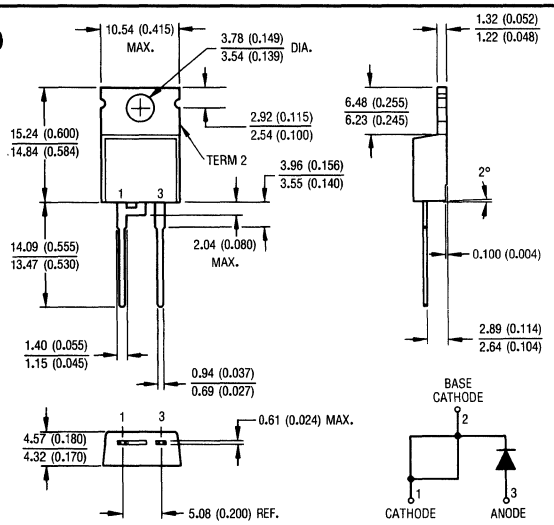
Case Style D-Pak (TO-252AA)

J9



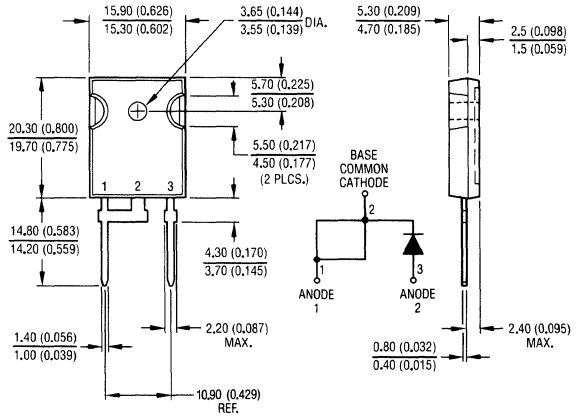
Case Style TO-220AB

J10



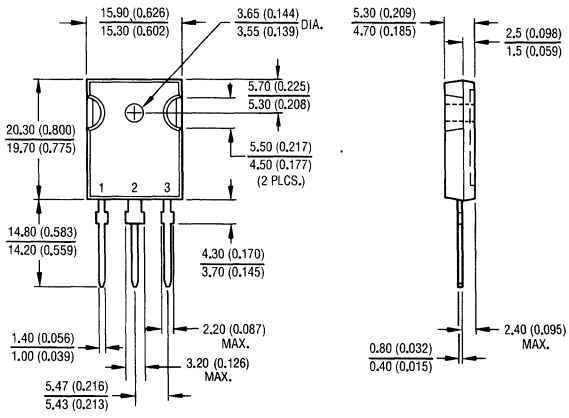
Case Style TO-220AC

J11



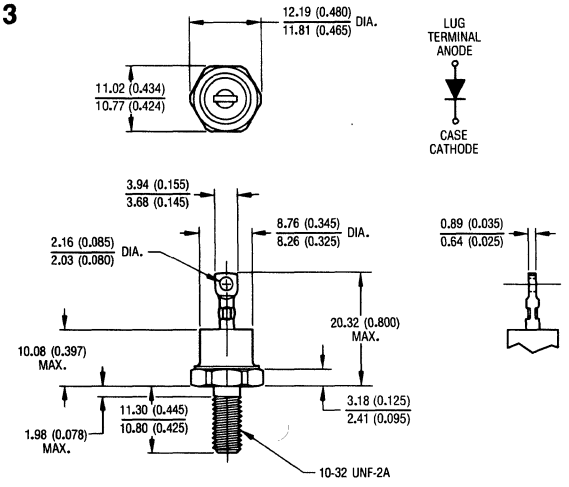
Case Style Modified TO-247AC (TO-3P)

J12



Case Style TO-247AC (TO-3P)

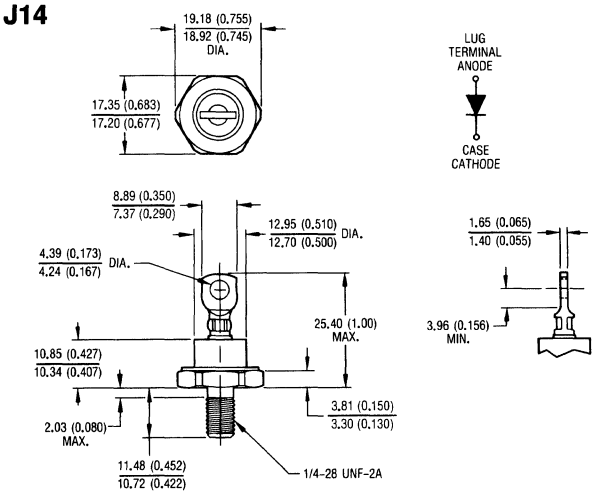
J13



Case Style DO-203AA (DO-4)

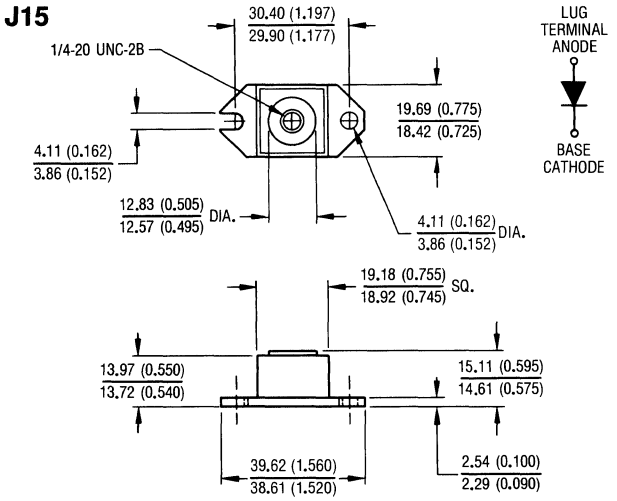
Dimensions in millimeters and (inches)

J14



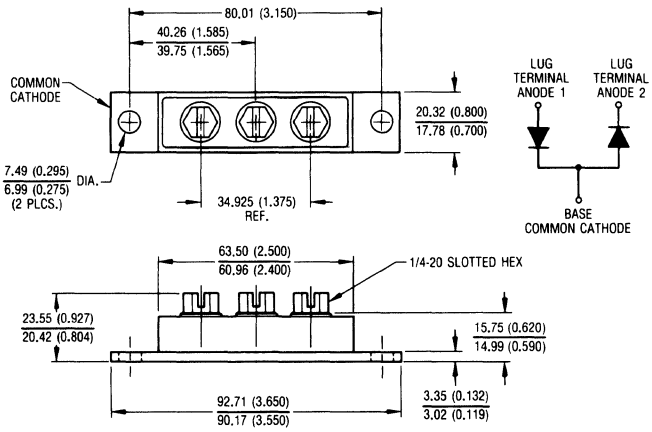
Case Style DO-203AB (DO-5)

J15



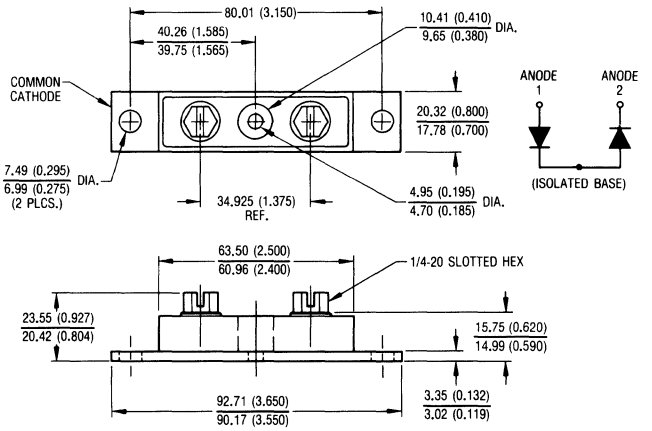
Case Style Half Pak Module

J16



Non Isolated
Case Style TO-244AB (Modified)

J17



Isolated
Case Style TO-244AB (Mofified)

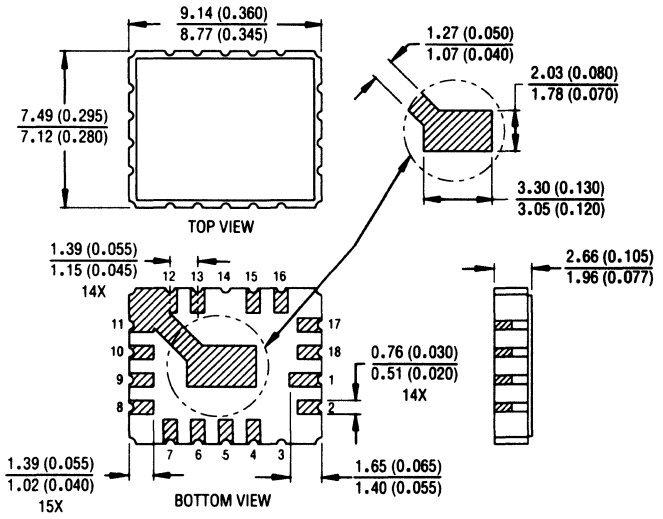
Dimensions in millimeters and (inches)

HEXFRED and Schottky Diodes – Government/Space

Case Outlines

International IOR Rectifier

J30



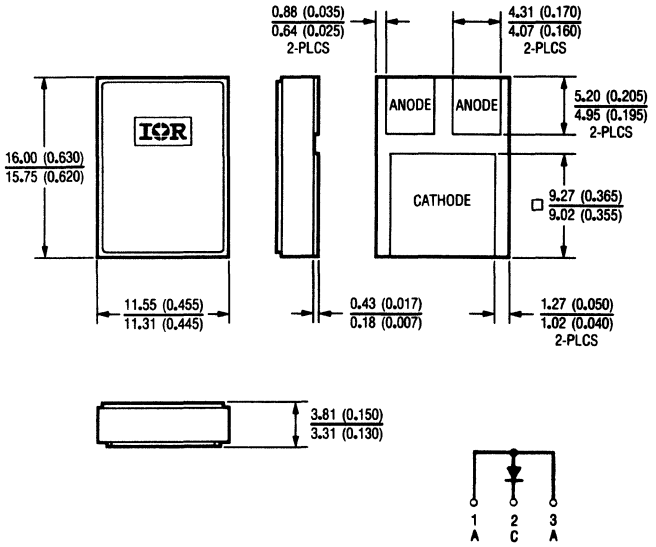
ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES)

LEGEND

CATHODE: PINS 1, 2, 15, 16, 17 & 18
ANODE: PINS 6, 7, 8, 9, 10, 11, 12 & 13
NO CONNECTION: PINS 3, 4, 5 & 14

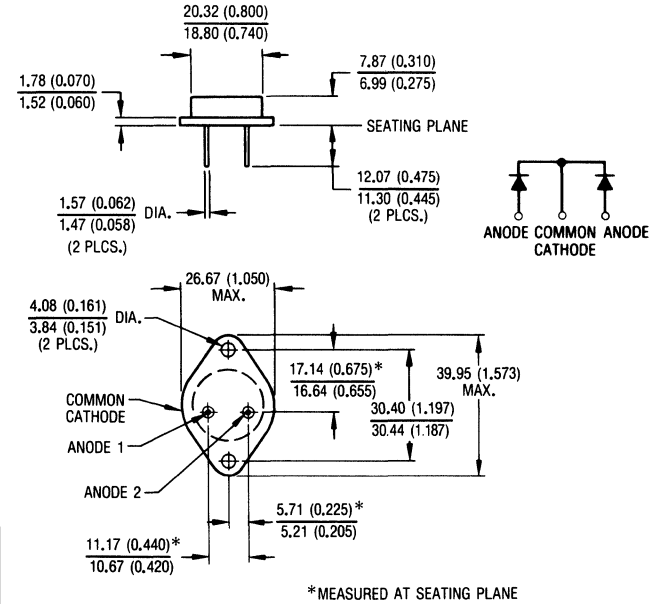
Case Style Leadless Chip Carrier (LCC)

J31



Case Style SMD-1

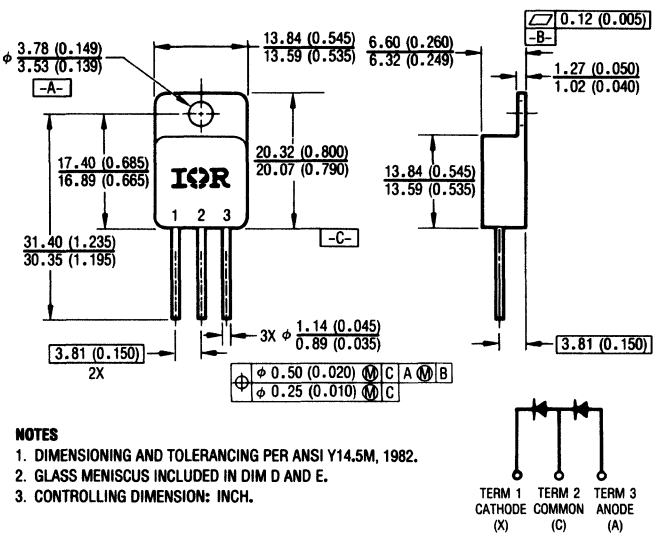
J32



*MEASURED AT SEATING PLANE

Case Style Conforms to JEDEC Outline TO-204AE (Modified TO-3)

J33



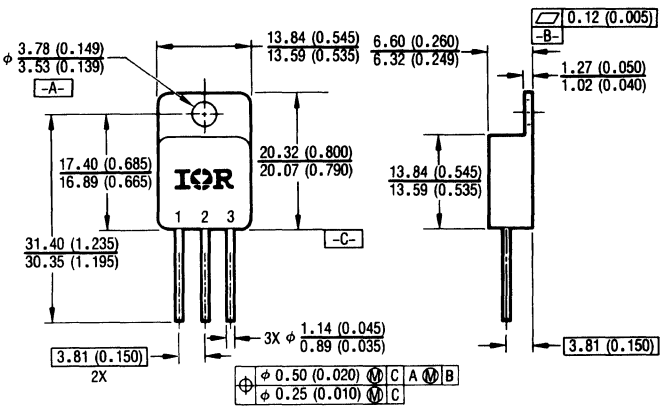
NOTES

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. GLASS MENISCUS INCLUDED IN DIM D AND E.
3. CONTROLLING DIMENSION: INCH.

Case Style Conforms to JEDEC Outline TO-254AA

Dimensions in millimeters and (inches)

J34

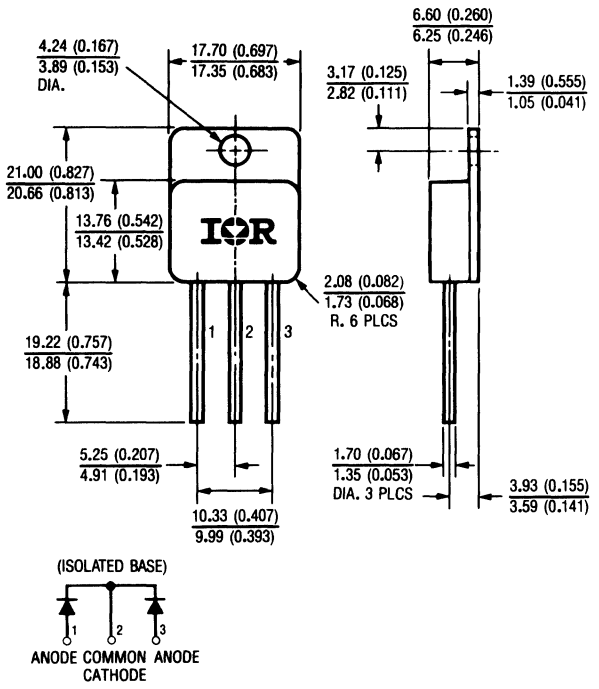


NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

LEGEND
1 CATHODE
2 N/C
3 ANODE

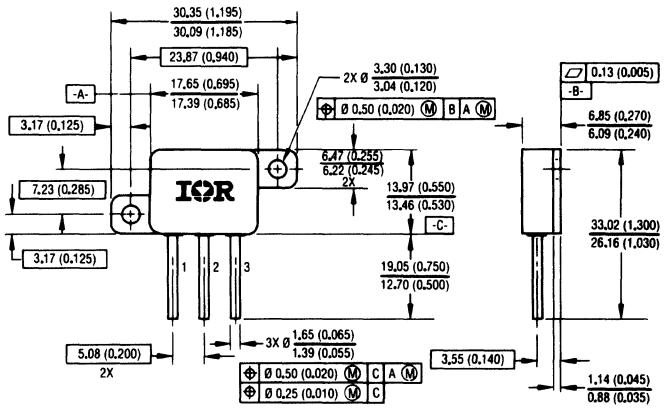
Case Style Conforms to JEDEC Outline TO-254AA

J35



Case Style Conforms to JEDEC Outline TO-258AA

J36



NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

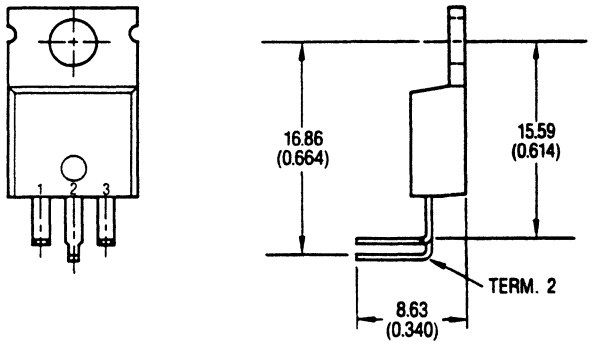
Case Style Conforms to JEDEC Outline TO-259AA

Dimensions in millimeters and (inches)

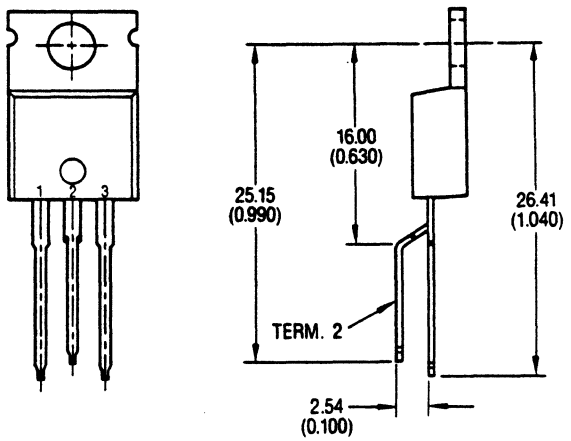
O

TO-220 Optional Leadforms

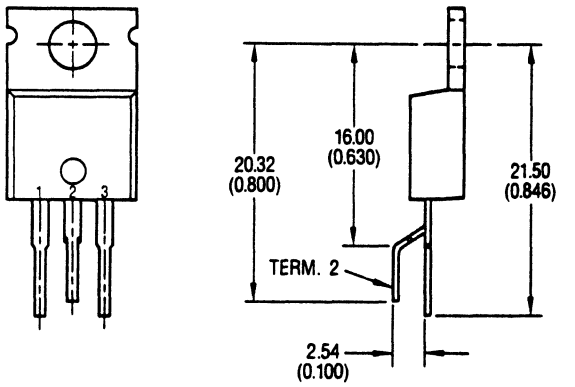
International Rectifier now offers standard leadform in various configurations to allow the flexibility to meet the variety of design requirements. Shown below are IR's standard leadform offerings. To otder a device with leadforming, simply state the desired TO-220 SCHOTTKY Part Number then indicate the leadform of your choice with the three digit suffix. For the correct suffix refer to the leadform options which are shown below. Example: 12CTQ045-004 is an 12CTQ045 SCHOTTKY with an option –004 leadform.



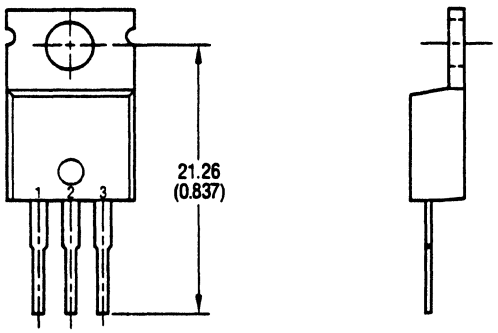
OPTION -011



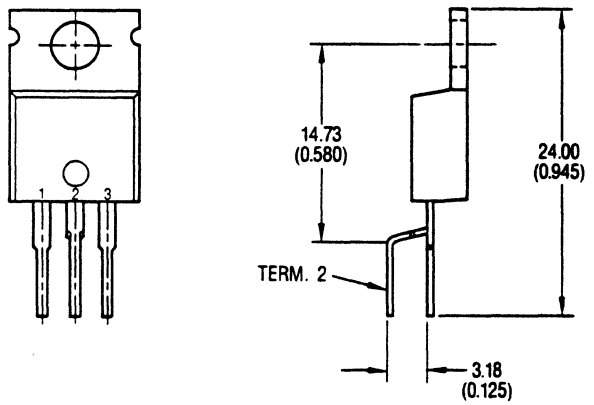
OPTION -012



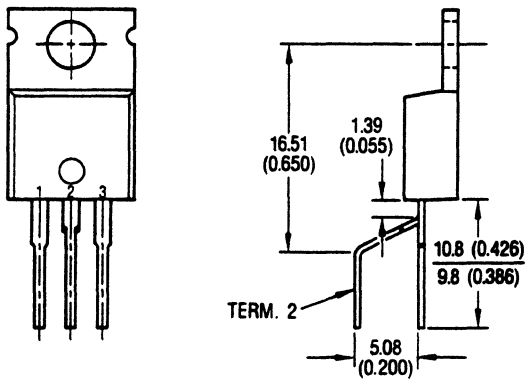
OPTION -013



OPTION -017



OPTION -018



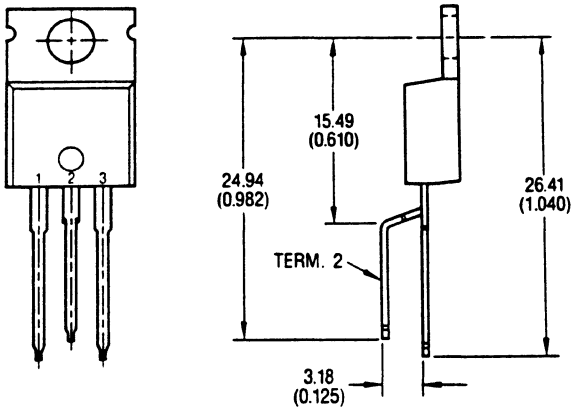
OPTION -029

Tolerance ±0.010 Inches

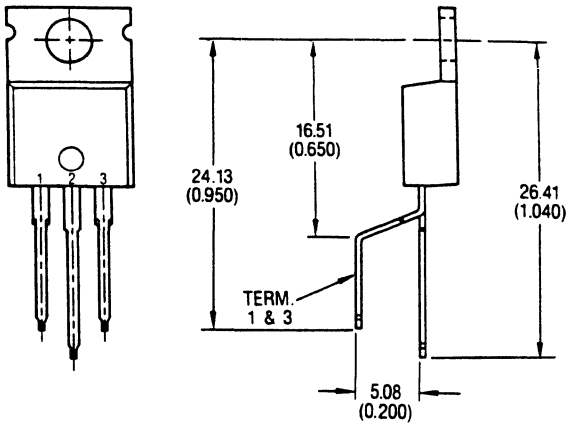
Dimensions in Millimeters and (Inches)

TO-220 Optional Leadforms

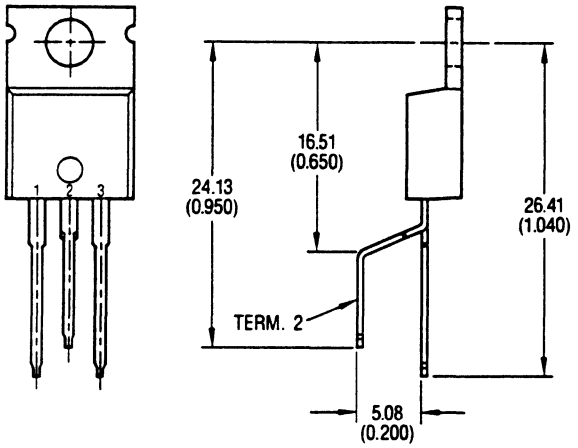
International Rectifier now offers standard leadform in various configurations to allow the flexibility to meet the variety of design requirements. Shown below are IR's standard leadform offerings. To otder a device with leadforming, simply state the desired TO-220 SCHOTTKY Part Number then indicate the leadform of your choice with the three digit suffix. For the correct suffix refer to the leadform options which are shown below. Example: 12CTQ045-004 is an 12CTQ045 SCHOTTKY with an option –004 leadform.



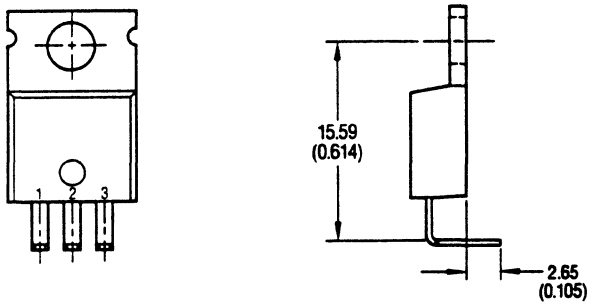
OPTION -003



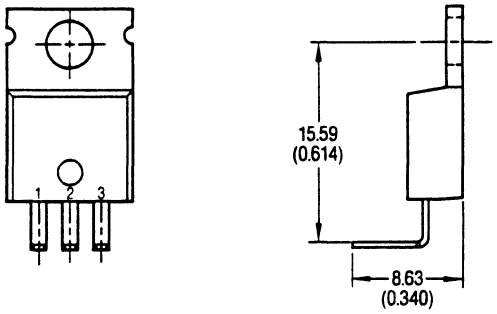
OPTION -004



OPTION -005(1)



OPTION -009



OPTION -010

Tolerance ±0.010 Inches

Dimensions in Millimeters and (Inches)

O

Tape and Reel Information for 11DQ and 31DQ Series

Axial lead devices are packed in accordance with EIA standard RS-296-D and specifications given below.

SERIES	COMPONENT PITCH A	INNER TAPE PITCH B	CUMULATIVE PITCH TOLERANCE
	±0.5 mm (0.020")	±1.5 mm (0.059")	
11DQ	5.0 mm	26.0 mm	2.0 mm/20 pitch
31DQ	10.0 mm	52.4 mm	2.0 mm/10 pitch

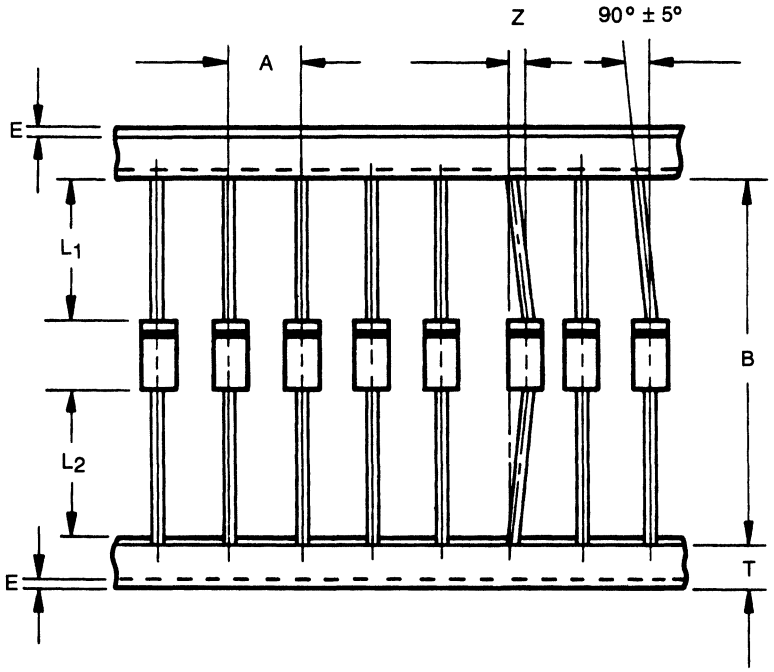
ORDERING INFORMATION

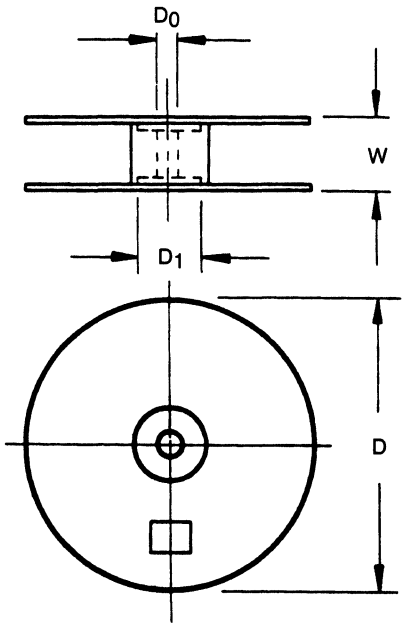
11DQ Series — Tape and Reel
when ordering indicate the part number and the quantity (in multiples of 5,000 pieces).

Example: 11DQ04 TR — 10,000 pieces

31DQ Series — Tape and Reel
when ordering indicate the part number and the quantity (in multiples of 1,200 pieces).

Example: 31DQ06 TR — 2,400 pieces



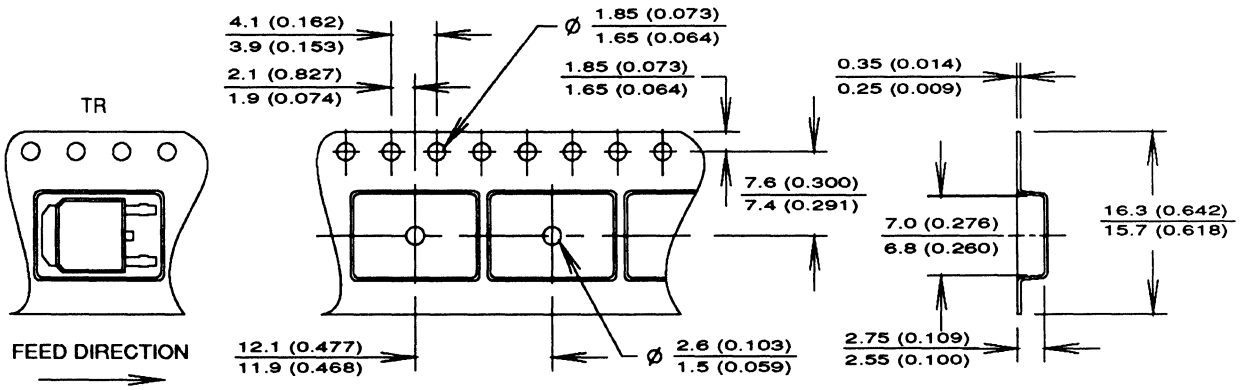


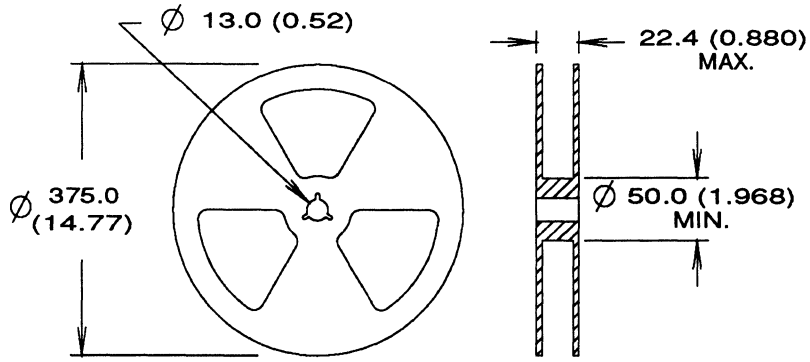
11DQ Series — 5,000 per reel
31DQ Series — 1,200 per reel

ITEM	SYMBOL	SPECIFICATIONS (mm)	SPECIFICATIONS (inch)
Component alignment	Z	1.2 max.	0.048 max.
Tape width	T	6.0 ±0.4	0.236 ±0.016
Exposed adhesive	E	0.8 max.	0.032 max.
Body eccentricity	$\|L_1 - L_2\|$	1.0 max.	0.040 max.
Reel outside diameter	D	330.0	13.0
Reel inner diameter	D_1	85.7 ±0.3	3.375 ±0.012
Feed hole diameter	D_0	16.6 ±0.4	0.655 ±0.016
Reel width	W	79.0 ±1.0	3.110 ±0.040

NOTE: 1. Each component lead shall be sandwiched between tapes for a minimum of 3.2 mm (0.126").
2. The reel width 'W' for 26 mm taping is 50.0 ±1.0 mm (1.97" ± 0.040")

Tape and Reel Information for 30WQ, 50WQ, and 6CWQ Series





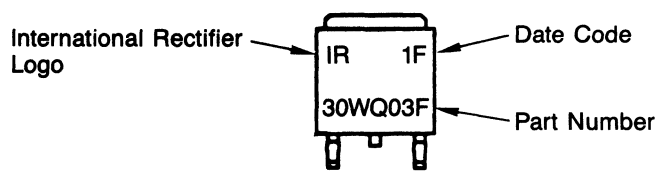
TO-252AA Tape & Reel

When ordering, indicate the part number and the quantity. Quantities are in multiples of 2,000 pieces per reel for TR.

e.g., 30WQ04F TR three-reel order is 6,000 pieces.

TO-252AA (D-Pak) Part Marking Information

Example: This is 30WQ04F with Date Code 1F.



O

Tape and Reel Information for 10MQ Series

IDENTIFICATION

Marking and identification
Each devices has 3 digits for identification. All 3 digits face the same direction. See the drawing below for the marking code.

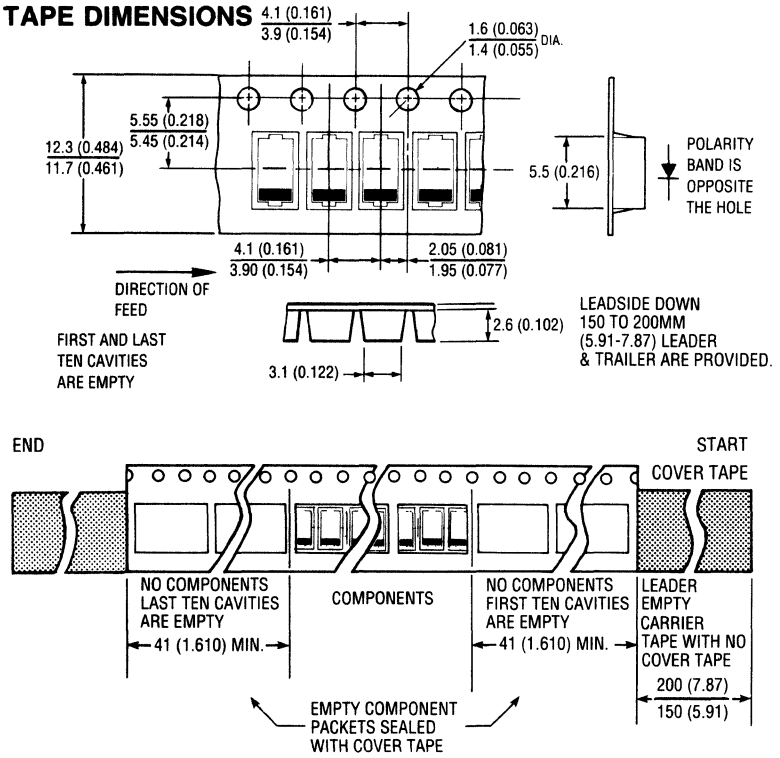
1st digit = device type & voltage
2nd digit = month manufactured
3rd digit = year manufactured

Example: A L 7
- 7 — 1987
- L — November
- A — 30V Schottky (10MQ030)

1st Digit Schottky		2nd Digit Month			3rd Digit Year
A =	30V	A = JAN	G = JUL		7 = 87
B =	40V	B = FEB	H = AUG		8 = 88
C =	50V	C = MAR	J = SEP		9 = 89
D =	60V	D = APR	K = OCT		0 = 90
E =	90V	E = MAY	L = NOV		
F =	100V	F = JUN	M = DEC		
G =	200V				

PACKAGING

TAPE DIMENSIONS



ORDERING INFORMATION

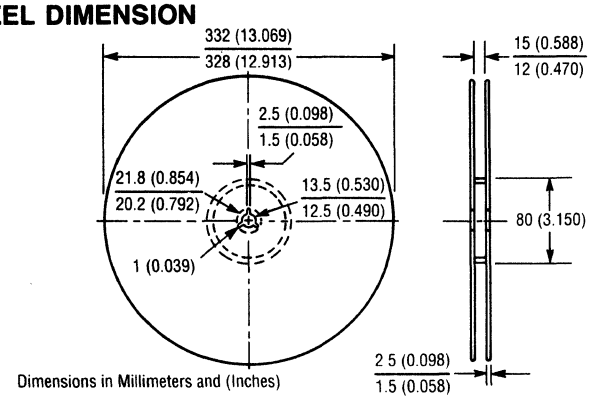
10MQ Series – Tape and Reel
when ordering indicate the part number and the quantity (in multiples of 7,500 pieces).

Example: 10MQ040TR – 15,000 pieces

10MQ Series – Bulk Quantities
when ordering, indicate the part number and the quantity in multiples of 1,000 pieces. Bulk quantities are supplied in plastic packages.

Example: 10MQ040 – 4,000 pieces
10MQ090 – 4,000 pieces

REEL DIMENSION



7500 Pieces Per Reel

Tape and Reel for SMB

IDENTIFICATION

MARKING and IDENTIFICATION

EACH DEVICE HAS 4 CHARACTERS, CONFIGURED TWO DIGITS ON TWO ROWS, FOR IDENTIFICATION. THE FIRST ROW DESIGNATES THE DEVICE AS MANUFACTURED BY INTERNATIONAL RECTIFIER AS INDICATED BY THE LETTERS "IR". THE SECOND ROW INDICATES THE CURRENT RATING AND VOLTAGE/PROCESS. SEE THE DRAWING BELOW FOR MARKING CODE.

FIRST ROW
IR

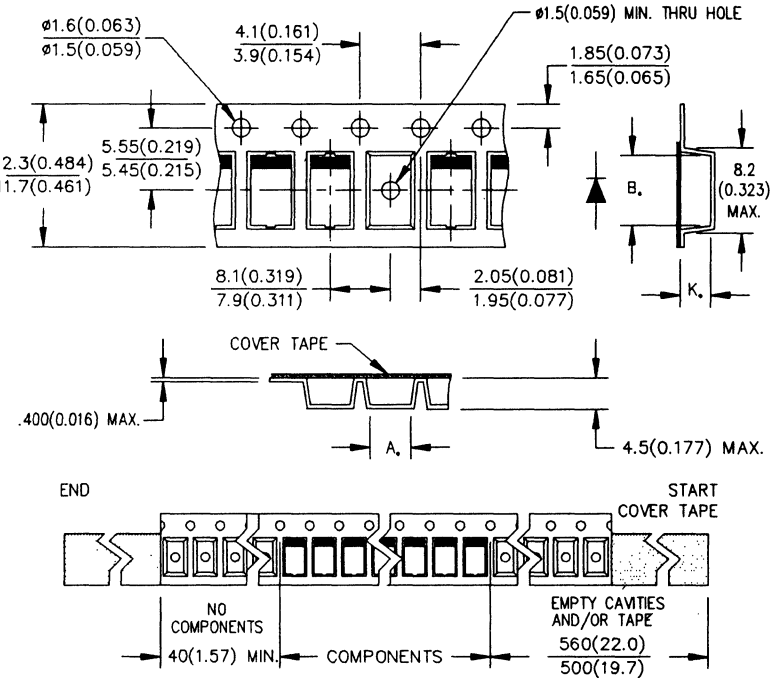
SECOND ROW
1st DIGIT=CURRENT RATING
2nd DIGIT=VOLTAGE/PROCESS

EXAMPLE: IR ——— INTERNATIONAL RECTIFIER
1F ——— 40 VOLT/STANDARD PROCESS
1 AMP

1st DIGIT CURRENT	2nd DIGIT VOLTAGE/PROCESS
1 = 1 AMP	A = 12 VOLTS
2 = 2 AMP	B = 15 VOLTS/STANDARD
3 = 3 AMP	C = 15 VOLTS/OR'ing
	D = 20 VOLTS
	E = 30 VOLTS
	F = 40 VOLTS/STANDARD
	G = 40 VOLTS/'830'
	H = 60 VOLTS
	J = 100 VOLTS
	K = 150 VOLTS
	L = 200 VOLTS

PACKAGING

TAPE DIMENSIONS



NOTE: A.,B.,K. ARE DETERMINED BY COMPONENT SIZE. THE CLEARANCE BETWEEN THE COMPONENT AND THE CAVITY SHALL BE WITHIN .05(.002) MIN. TO .65(.026) MAX. THE COMPONENT SHALL NOT ROTATE MORE THAN 20° WITHIN THE DETERMINED CAVITY.

ORDERING INFORMATION

10BQ SERIES-TAPE AND REEL

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY (IN MULTIPLES OF 3000 PIECES).

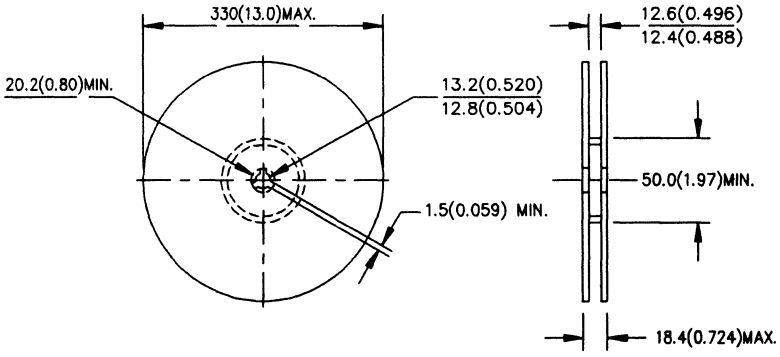
EXAMPLE: 10BQ040TR–6000 PIECES.

10BQ SERIES-BULK QUANTITIES

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY (IN MULTIPLES OF 250 PIECES).

EXAMPLE: 10BQ040–500 PIECES.

REEL DIMENSIONS



Conforms to EIA-481-Rev. A

O

Schottky Diode Tape and Reel Information

International IOR Rectifier

Tape and Reel for SMC

IDENTIFICATION

MARKING and IDENTIFICATION

EACH DEVICE HAS 4 CHARACTERS, CONFIGURED TWO DIGITS ON TWO ROWS, FOR IDENTIFICATION. THE FIRST ROW DESIGNATES THE DEVICE AS MANUFACTURED BY INTERNATIONAL RECTIFIER AS INDICATED BY THE LETTERS "IR". THE SECOND ROW INDICATES THE CURRENT RATING AND VOLTAGE/PROCESS. SEE THE DRAWING BELOW FOR MARKING CODE.

FIRST ROW
IR

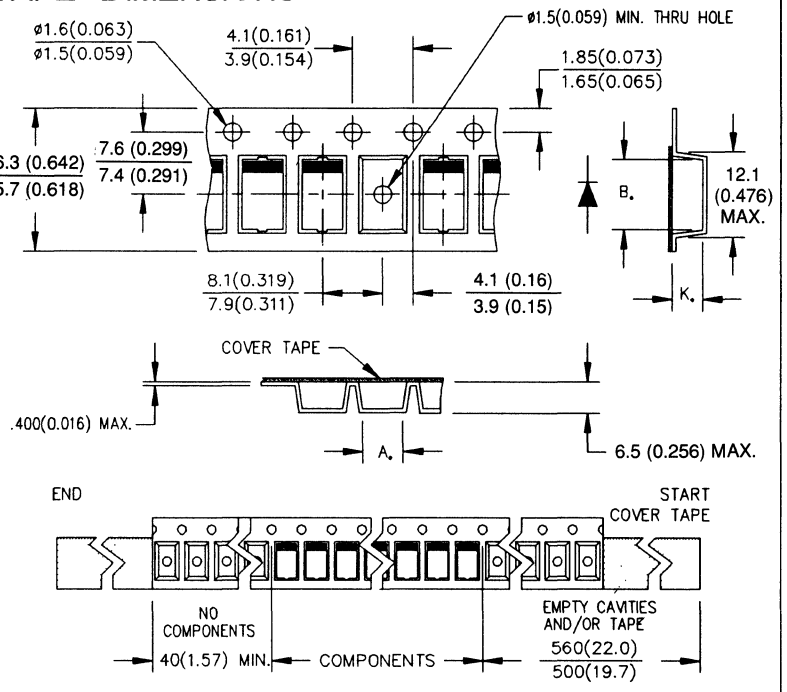
SECOND ROW
1st DIGIT=CURRENT RATING
2nd DIGIT=VOLTAGE/PROCESS

EXAMPLE: IR ——— INTERNATIONAL RECTIFIER
3F ——— 40 VOLT/STANDARD PROCESS
└——— 3 AMP

1st DIGIT CURRENT	2nd DIGIT VOLTAGE/PROCESS
1 = 1 AMP	A = 12 VOLTS
2 = 2 AMP	B = 15 VOLTS/STANDARD
3 = 3 AMP	C = 15 VOLTS/OR'ing
	D = 20 VOLTS
	E = 30 VOLTS
	F = 40 VOLTS/STANDARD
	G = 40 VOLTS/'830'
	H = 60 VOLTS
	J = 100 VOLTS
	K = 150 VOLTS
	L = 200 VOLTS

PACKAGING

TAPE DIMENSIONS



NOTE: A.,B.,K. ARE DETERMINED BY COMPONENT SIZE. THE CLEARANCE BETWEEN THE COMPONENT AND THE CAVITY SHALL BE WITHIN .05(.002) MIN. TO .65(.026) MAX. THE COMPONENT SHALL NOT ROTATE MORE THAN 20° WITHIN THE DETERMINED CAVITY.

ORDERING INFORMATION

30BQ SERIES – TAPE AND REEL

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY (IN MULTIPLES OF 1500 PIECES).

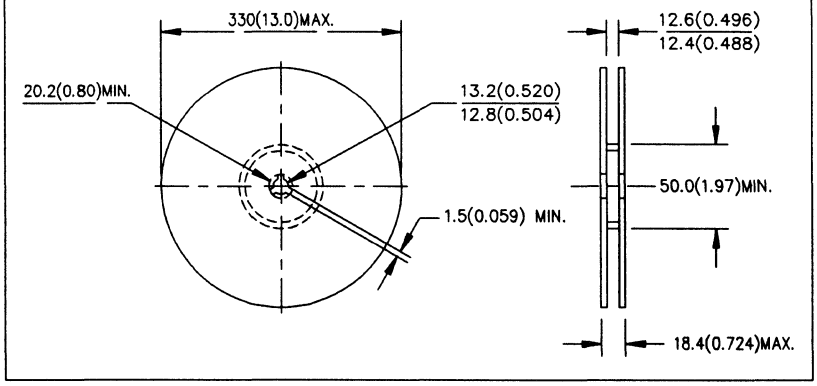
EXAMPLE: 30BQ040TR–6000 PIECES.

30BQ SERIES – BULK QUANTITIES

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY (IN MULTIPLES OF 200 PIECES).

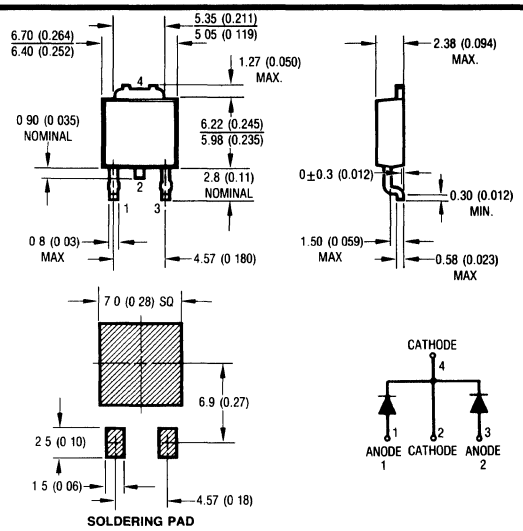
EXAMPLE: 30BQ040–400 PIECES.

REEL DIMENSIONS



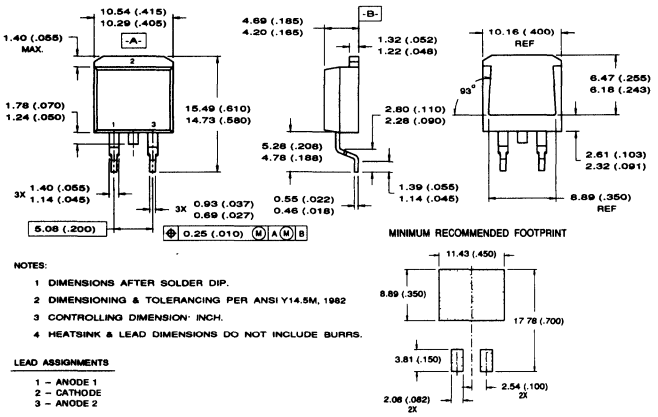
Conforms to EIA-481-Rev. A

K1



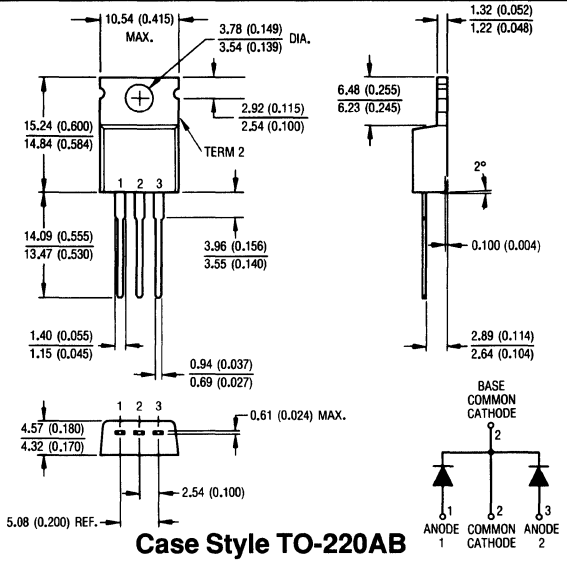
Case Style D-Pak (TO-252AA)

K2



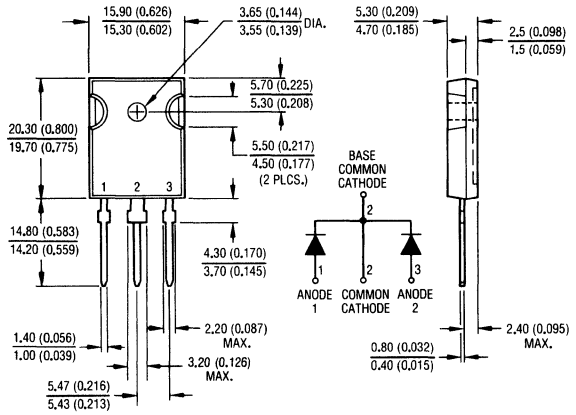
Case Style SMD-220

K3



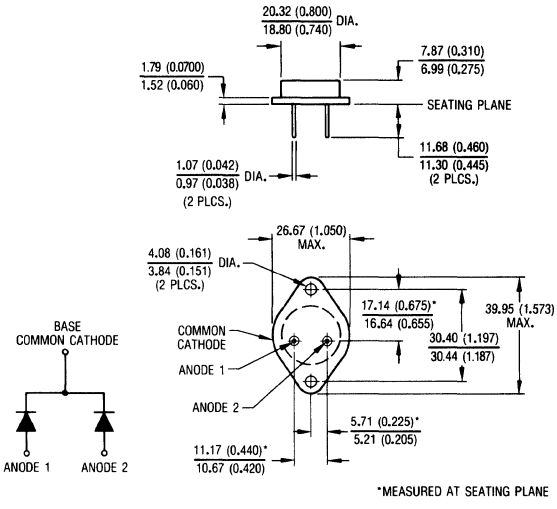
Case Style TO-220AB

K4



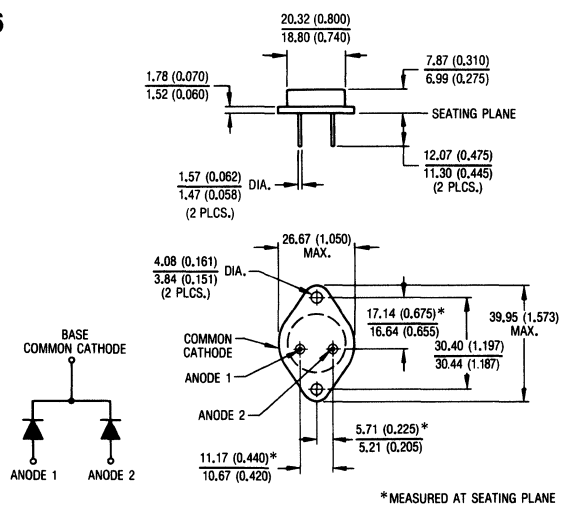
Case Style TO-247AC (TO-3P)

K5



Case Style TO-204AA (TO-3)

K6

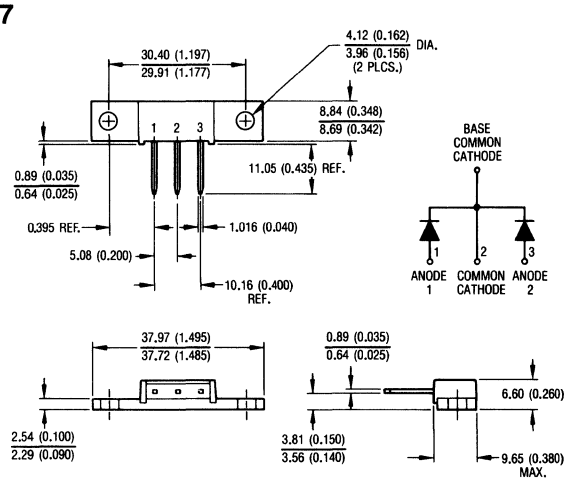


Case Style TO-204AE (Modified TO-3)

Dimensions in millimeters and (inches)

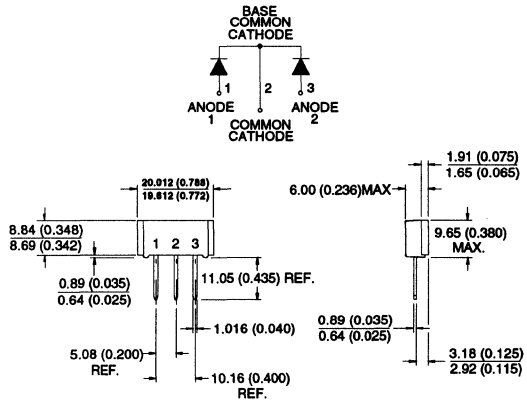
O

K7



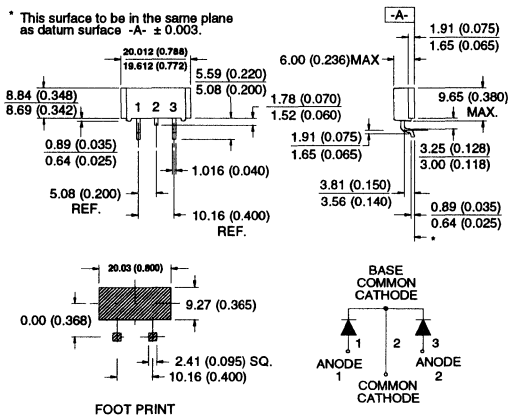
Case Style D-61-6

K8



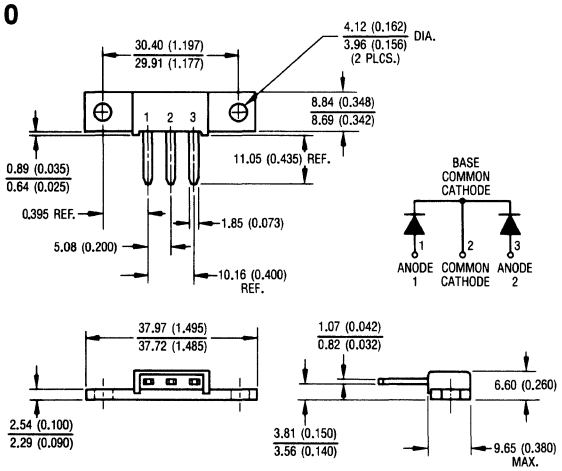
Case Style SMD61-6

K9



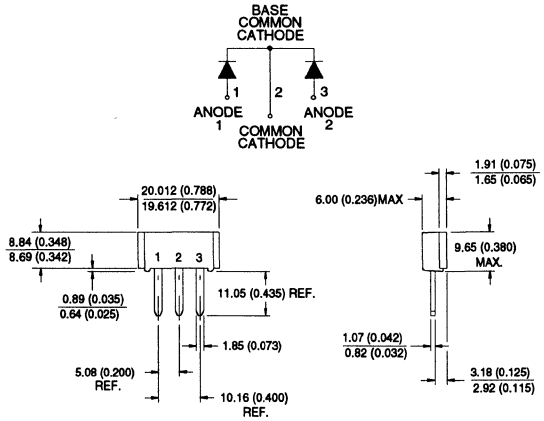
Case Style SLD61-6

K10



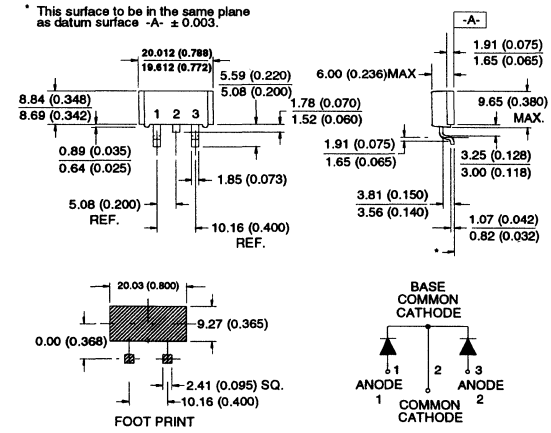
Case Style D-61-8

K11



Case Style SMD61-8

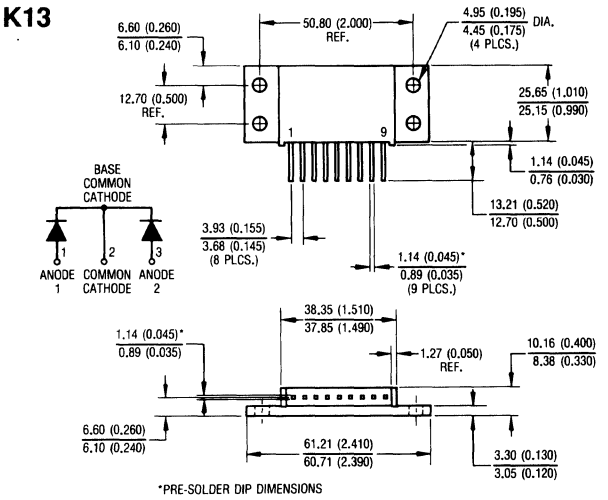
K12



Case Style SLD61-8

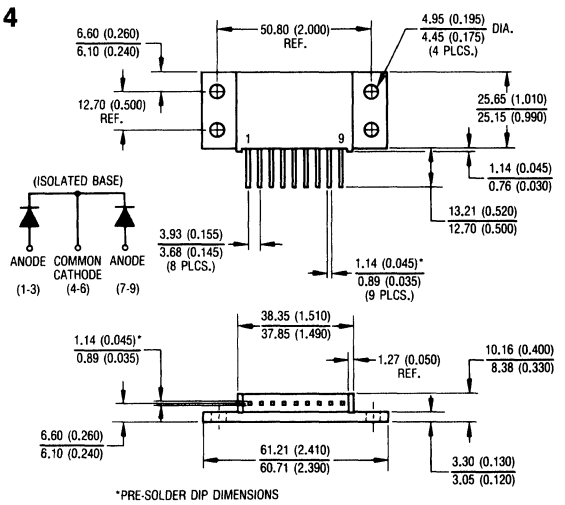
Dimensions in millimeters and (inches)

K13



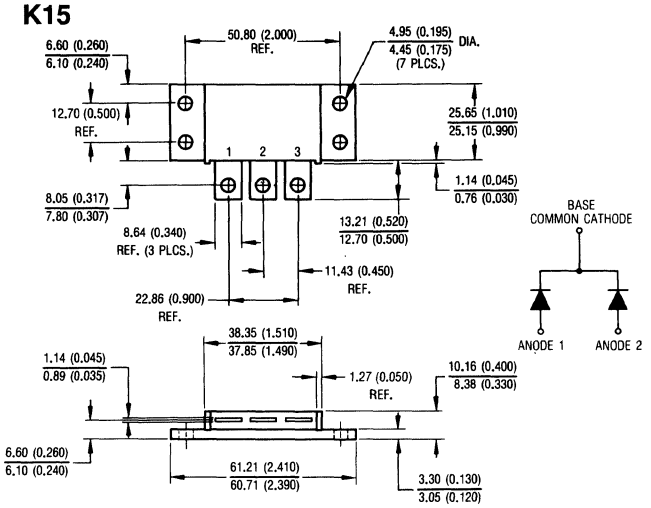
Case Style D-60

K14



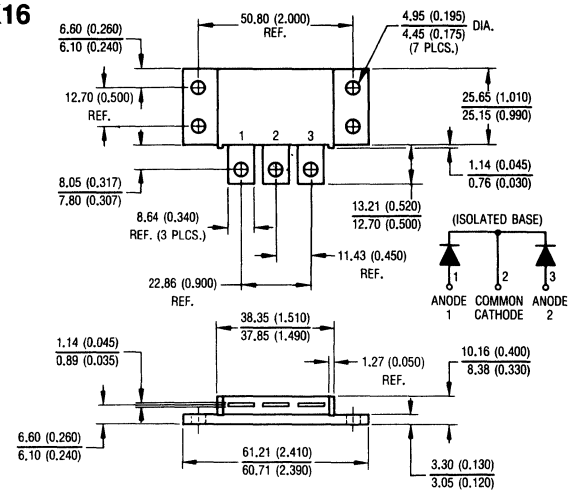
Isolated Case Style D-60

K15



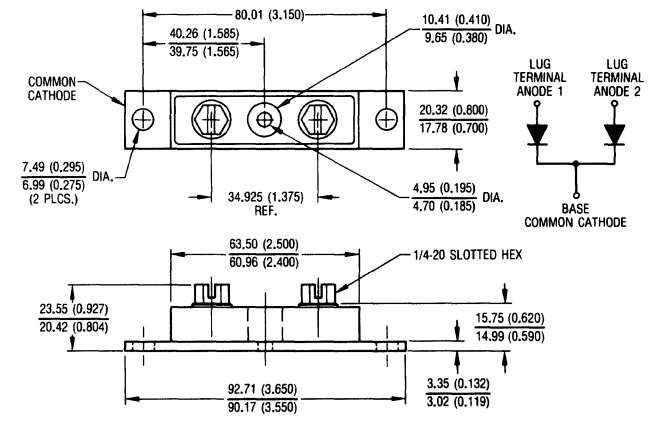
Case Style TO-249AA

K16



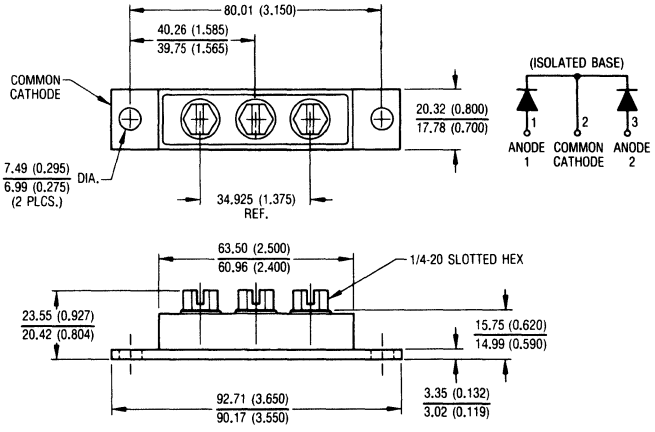
Isolated Case Style TO-249AA

K17



Case Style TO-244AB (Modified)

K18



Isolated
Case Style TO-244AB (Modified)

Dimensions in millimeters and (inches)

O

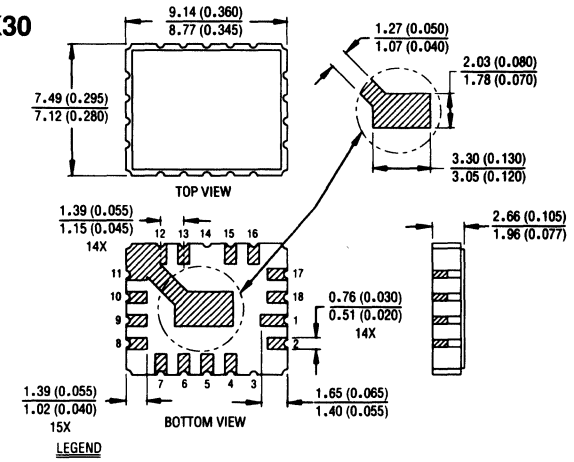
Schottky Diode/HEXFRED Govt/Space

Center Tap Devices

Case Outlines

International
IOR Rectifier

K30

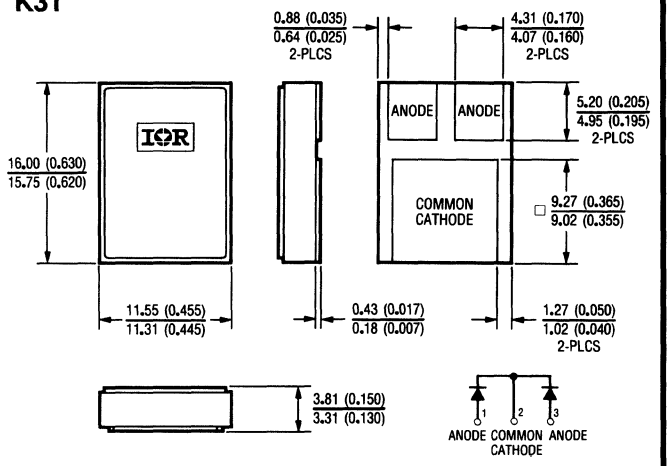


LEGEND

CATHODE. PINS 1, 2, 15, 16, 17 & 18
ANODE. PINS 6, 7, 8, 9, 10, 11, 12 & 13
NO CONNECTION: PINS 3, 4, 5 & 14

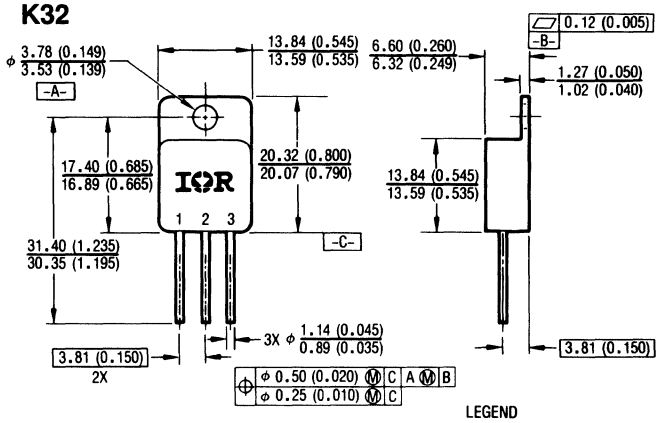
Case Style Leadless Chip Carrier (LCC)

K31



Case Style SMD-1

K32

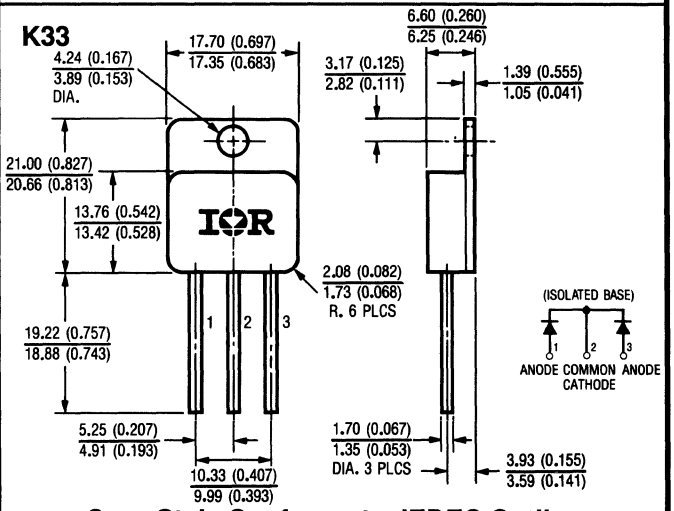


NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.
2 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

LEGEND
1 ANODE
2 COMMON CATHODE
3 ANODE

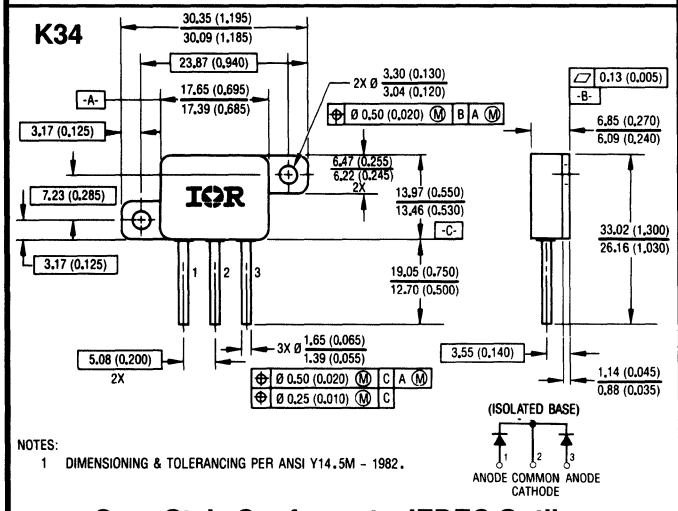
Case Style Conforms to JEDEC Outline TO-254AA

K33



Case Style Conforms to JEDEC Outline TO-258AA

K34



NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M - 1982.

Case Style Conforms to JEDEC Outline TO-259AA

Dimensions in millimeters and (inches)

Wafer(1) Part Number	Die(2) Part Number	Die "A" Length/Side (in.) mm	Bond Pad "B" Length/Side (in.) mm	Anode Metallization (Topside)	Process	Tray Quantity	Equivalent Finished Product
SC043H100SWB	N/A	(0.0433) 1.10	(0.0362) 0.92	Silver	830	N/A	10MQ, 11DQ
SC043S040SWB	N/A	(0.0433) 1.10	(0.0362) 0.92	Silver	Standard	N/A	10MQ, 11DQ
SC043S060SWB	N/A	(0.0433) 1.10	(0.0362) 0.92	Silver	Standard	N/A	10MQ, 11DQ
SC066H100AWB	N/A	(0.0661) 1.68	(0.0591) 1.50	Aluminum	830	N/A	6CWQ, 30WQ, 50WQ
SC066H100SWB	N/A	(0.0661) 1.68	(0.0591) 1.50	Silver	830	N/A	31DQ
SC066S040AWB	N/A	(0.0661) 1.68	(0.0591) 1.50	Aluminum	Standard	N/A	6CWQ, 30WQ, 50WQ
SC066S040SWB	N/A	(0.0661) 1.68	(0.0591) 1.50	Silver	Standard	N/A	31DQ
SC066S060AWB	N/A	(0.0661) 1.68	(0.0591) 1.50	Aluminum	Standard	N/A	6CWQ, 30WQ, 50WQ
SC066S060SWB	N/A	(0.0661) 1.68	(0.0591) 1.50	Silver	Standard	N/A	31DQ
SC090H045AWB	SC090H045A	0.0900 (2.29)	0.0700 (1.78)	Aluminum	830	196	12CTQ
SC090H150AWB	SC090H150A	0.0900 (2.29)	0.0700 (1.78)	Aluminum	830	196	10CTQ
SC090S045AWB	SC090S045A	0.0900 (2.29)	0.0700 (1.78)	Aluminum	Standard	196	15CTQ
SC125H045AWB	SC125H045A	0.125 (3.18)	0.105 (2.67)	Aluminum	830	100	10TQ, 20CTQ, 30CTQ
SC125H045SWB	SC125H045S	0.125 (3.18)	0.105 (2.67)	Silver	830	100	80SQ
SC125H100AWB	SC125H100A	0.125 (3.18)	0.105 (2.67)	Aluminum	830	100	8TQ, 16CTQ, 30CPQ
SC125H100SWB	SC125H100S	0.125 (3.18)	0.105 (2.67)	Silver	830	100	50SQ
SC125H150AWB	SC125H150A	0.125 (3.18)	0.105 (2.67)	Aluminum	830	100	30CPQ
SC125S030AWB	SC125S030A	0.125 (3.18)	0.105 (2.67)	Aluminum	Standard	100	32CTQ
SC125S045AWB	SC125S045A	0.125 (3.18)	0.105 (2.67)	Aluminum	Standard	100	25CTQ, 30CPQ
SC125S045SWB	SC125S045S	0.125 (3.18)	0.105 (2.67)	Silver	Standard	100	90SQ
SC125S060AWB	SC125S060A	0.125 (3.18)	0.105 (2.67)	Aluminum	Standard	100	30CPQ
SC150H045AWB	SC150H045A	0.150 (3.81)	0.130 (3.30)	Aluminum	830	49	18TQ, 40CDQ, 60CDQ, SD241
SC150R015AWB	SC150R015A	0.150 (3.81)	0.130 (3.30)	Aluminum	OR'ing	49	19TQ
SC150S045AWB	SC150S045A	0.150 (3.81)	0.130 (3.30)	Aluminum	Standard	49	20TQ
SC175H045SWB	SC175H045S	0.175 (4.45)	0.155 (3.94)	Silver	830	49	30FQ, 1N6391
SC175H100AWB	SC175H100A	0.175 (4.45)	0.155 (3.94)	Aluminum	830	49	40CPQ
SC175H100SWB	SC175H100S	0.175 (4.45)	0.155 (3.94)	Silver	830	49	30FQ
SC175S045AWB	SC175S045A	0.175 (4.45)	0.155 (3.94)	Aluminum	Standard	49	40CPQ
SC175S045SWB	SC175S045S	0.175 (4.45)	0.155 (3.94)	Silver	Standard	49	20FQ, 21FQ, 1N6096, SD41
SC175S060AWB	SC175S060A	0.175 (4.45)	0.155 (3.94)	Aluminum	Standard	49	40CPQ
SC200E045SWB	SC200E045S	0.200 (5.08)	0.180 (4.57)	Silver	Efficient	36	84CNQ, 224CNQ, 444CNQ
SC200H045SWB	SC200H045S	0.200 (5.08)	0.180 (4.57)	Silver	830	36	75HQ, 85HQ, 61CNQ, 81CNQ 61CMQ, 161CMQ, 121CNQ, 201CNQ, 301CNQ, 401CNQ
SC200H100SWB	SC200H100S	0.200 (5.08)	0.180 (4.57)	Silver	830	36	60HQ, 63CNQ, 83CNQ 63CMQ, 163CMQ, 203CNQ, 303CNQ, 403CNQ
SC200R015SWB	SC200R015S	0.200 (5.08)	0.180 (4.57)	Silver	OR'ing	36	85CNQ
SC200S030SWB	SC200S030S	0.200 (5.08)	0.180 (4.57)	Silver	Standard	36	55HQ, 62CNQ, 82CNQ 62CMQ, 162CMQ 132CNQ, 220CNQ, 440CNQ
SC200S045SWB	SC200S045S	0.200 (5.08)	0.180 (4.57)	Silver	Standard	36	50HQ, 51HQ, SD51 60CNQ, 80CNQ, 60CMQ, 160CMQ 120CNQ, 200CNQ, 400CNQ
SC275H045SWB	SC275H045S	0.275 (6.99)	0.255 (6.48)	Silver	830	25	N/A
SC275H100SWB	SC275H100S	0.275 (6.99)	0.255 (6.48)	Silver	830	25	N/A
SC275S030SWB	SC275S030S	0.275 (6.99)	0.255 (6.48)	Silver	Standard	25	N/A
SC275S045SWB	SC275S045S	0.275 (6.99)	0.255 (6.48)	Silver	Standard	25	N/A

(1) Die in probed un-cut, wafer form.
(2) Die in probed waffle pack form. For die outline drawing see page 190.
(3) All die and bond pads are square.

CODING

SC 125 H 045 A

SC - Schottky Chip
125 - Die Size in inches x 1000; e.g. 125 = 0.125"
H = Process; e.g. E = Efficient Low VF; H = '830' High Temperature; R = "OR'ing" Lowest VF; S = Standard
045 = Voltage Rating; e.g. 015 = 15V; 030 = 30V; 045 = 45V; 060 = 60V; 100 = 100V; 150 = 150V
A = Anode Final Metallization; e.g. A = Aluminum; S = Silver

Case Outlines and Circuit Configurations

Pace - paks

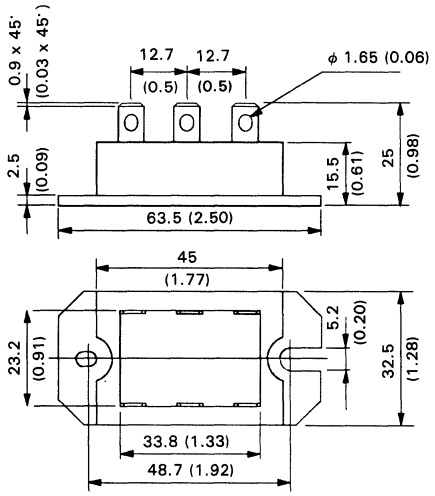
Case outline M1

P	4	0	2	K	W
①	②	③	④	⑤	⑥

Part number coding

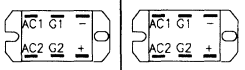
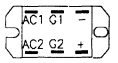
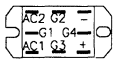
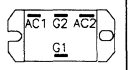
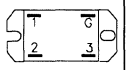
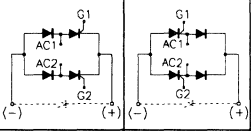
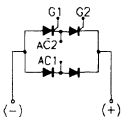
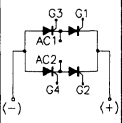
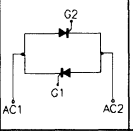
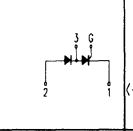
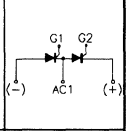
1 - Module type
2 - Current rating:
1 = 25A DC (P100 series)
4 = 40A DC (P400 series)
3 - Circuit configuration (0, 1, 2, 3, 4, 6 or 7)
4 - Voltage code (See Table)
5 - K = Optional voltage suppression
6 - W = Optional free-wheeling diode

VRRM	
1 =	400V
2 =	600V
3 =	800V
4 =	1000V
5 =	1200V



- All dimensions in millimetres (inches)
- Dimensions are nominal
- Full engineering drawings are available on request

Circuit Type and Coding

Circuit "0"	Circuit "1"	Circuit "2"	Circuit "3"	Circuit "4"	Circuit "6"	Circuit "7"
						
						
Single Phase Hybrid Bridge Common Cathode	Single Phase Hybrid Bridge Common Anode	Single Phase Hybrid Bridge Doubler connection	Single Phase All SCR Bridge	SCR AC Switch	Hybrid Doubler	SCR Doubler

Case Outlines and Circuit Configurations

"B" modules

Case outline M2

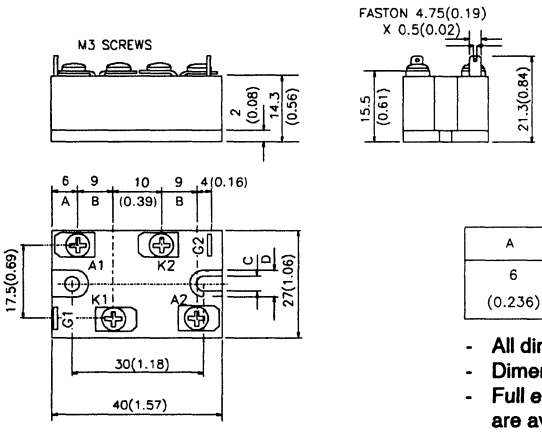
B	25	RIA	120	K	L
①	②	③	④	⑤	⑥

Part number coding

1 - Module type
2 - Current range
3 - Circuit configuration (See Circuit Configuration Table)
4 - Voltage code : Code x 10 = VRRM
5 - No code = Standard recovery (diodes)
dv/dt = 100V/µs (thyristors)
Code = dv/dt (thyristors)

6 - Terminal type:
L = fast-on terminals
No letter = screw terminals

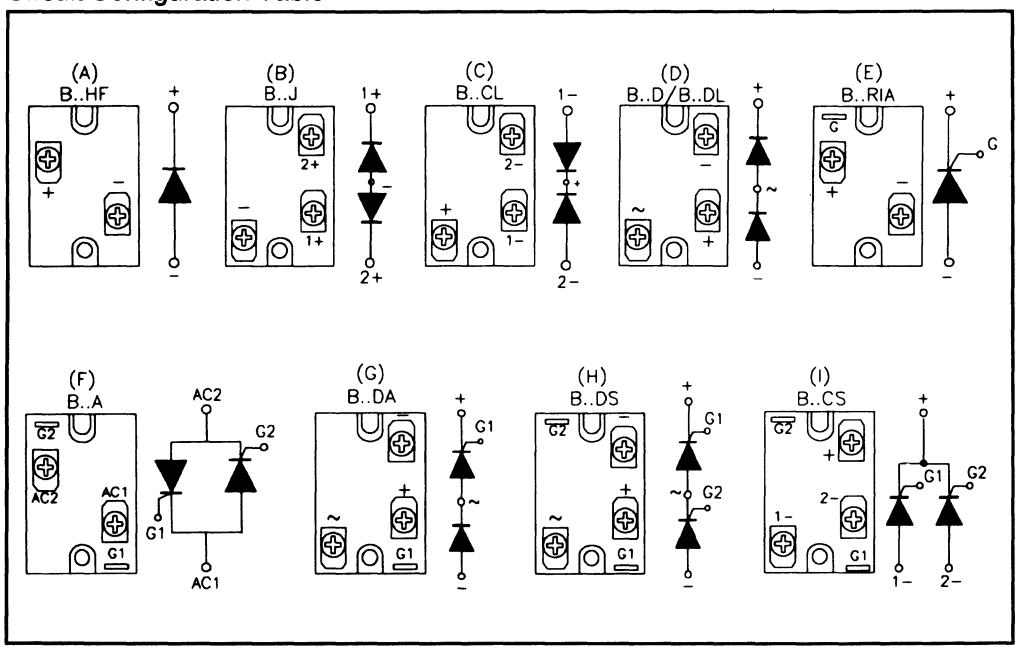
dv/dt
D = 500V/µs
K = 1000V/µs



A	B	C	D
6 (0.236)	9 (0.354)	4.2 (0.165)	8.1 (0.318)

- **All dimensions in millimetres (inches)**
- **Dimensions are nominal**
- **Full engineering drawings are available on request**

Circuit Configuration Table



Case Outlines and Circuit Configurations

"T" modules

Case outline M3

T	85	HF	L	80	S05
①	②	③	④	⑤	⑥

Part number coding

- May contain beryllium oxide ceramic, and under normal circumstances is non hazardous.
- Do not open, cut or grind.
- Unserviceable parts must be disposed of as harmful waste.

1 - Module type
2 - Current ratings : Standard and Fast Recovery diodes
- 40 = 40A (Avg)
- 70 = 70A (Avg)
- 85 = 85A (Avg)
- 110 = 110A (Avg) (Only Standard Recovery)

: Thyristors
- 50 = 50A (Avg)
- 70 = 70A (Avg)
- 90 = 90A (Avg)

3 - Circuit configuration:
- HF = for diodes
- RIA = for thyristors

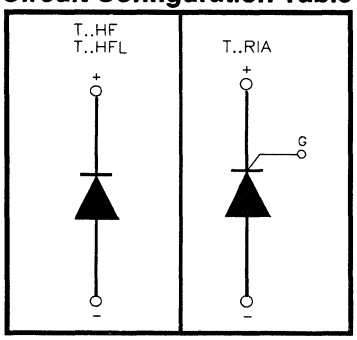
(See Circuit Configuration Table).

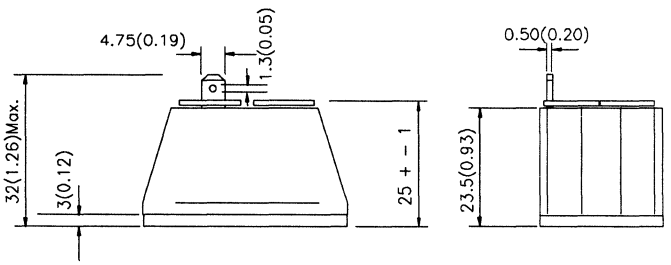
4 - No letter = for standard recovery diodes and thyristors
L = only for fast diodes

5 - Voltage code : Code x 10 = VRRM

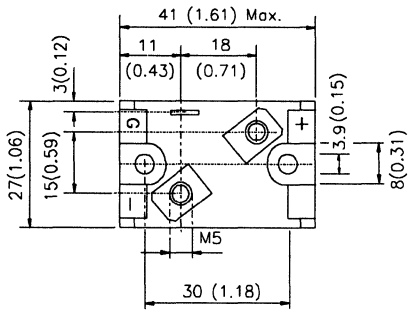
6 - trr code (only for fast diodes):
- S02 = 200 ns
- S05 = 500 ns
- S10 = 1000 ns

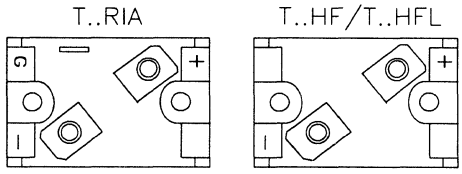
Circuit Configuration Table





- All dimensions in millimetres (inches)
- Dimensions are nominal
- Full engineering drawings are available on request





Case Outline M4

" / " – Identifies the **NEW** Generation

IRK	D		56	/	10		Part Number coding
①	②	③	④		⑤	⑥	

" = " – Identifies the **OLD** construction

IRK	D		56	–	10	
①	②	③	④		⑤	⑥

1 - Module type
2 - Circuit Configuration (See Circuit Configuration Table)
3 - No letter = Standard recovery
L = Fast recovery diode
4 - Current rating * : IT(AV) = code value with last digit rounded off "0" or "5"
5 - Voltage code : Code x 100 = VRRM

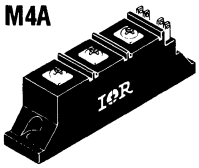
6 - No code = Standard recovery (diodes) dv/dt = 500V/µs (thyristors)
Code = trr (fast diodes) dv/dt (thyristors)

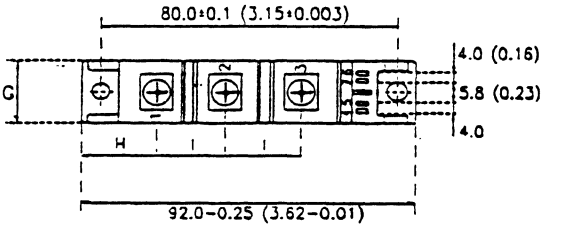
trr
S02 = 200ns
S05 = 500ns
S10 = 1000ns

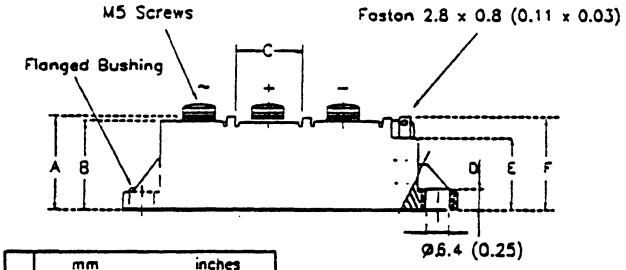
dv/dt
S90 = 1000V/µs

*With auxiliary cathode last digit = "1" or "6"
For no auxiliary cathode last digit = "2" or "7"

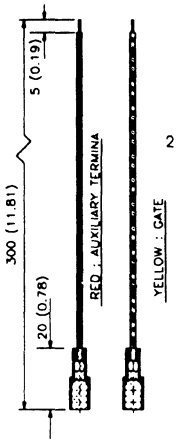
M4A



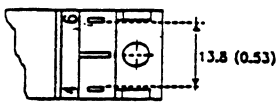




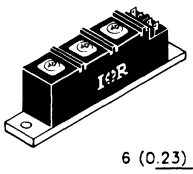
	mm	inches
A	30.0 ± 0.30	(1.18 ± 0.012)
B	29.0 ± 0.20	(1.14 ± 0.007)
C	18.0 ± 0.20	(0.71 ± 0.007)
D	05.8 ± 0.20	(0.23 ± 0.007)
E	24.0 ± 0.10	(0.94 ± 0.003)
F	30.0 – 1	(1.18 – 0.040)
G	20.5 ± 0.10	(0.81 ± 0.003)
H	21.0 ± 0.10	(0.83 ± 0.003)
I	20.0 ± 0.05	(0.79 ± 0.019)

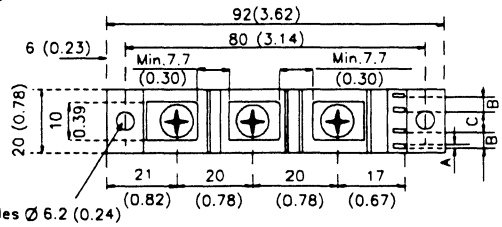


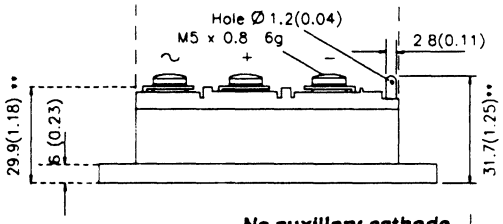
no auxiliary cathode



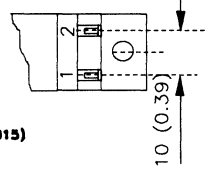
M4B







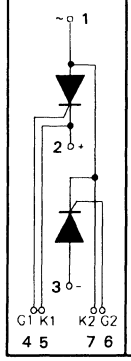
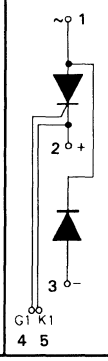
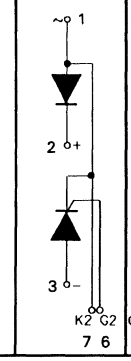
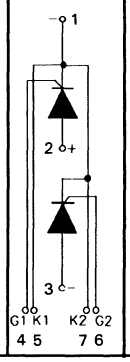
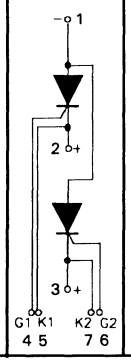
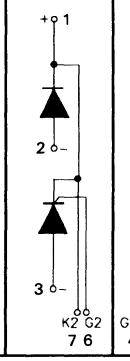
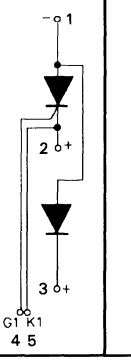
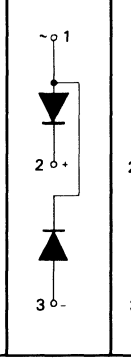
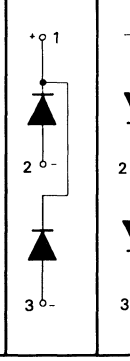
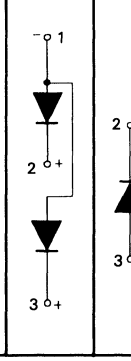
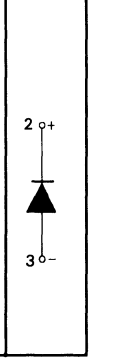
No auxiliary cathode



A	B	C	D	E	** +0.4(0.015)
0.8 (0.03)	4 (0.15)	5.8 (0.22)	Min.7.7 (0.30)	10 (0.39)	

All dimensions in millimeters (inches)

Circuit Configuation Table

IRKT	IRKH	IRKL	IRKU(1)	IRKV(1)	IRKK(1)	IRKN(1)	IRKD IRKDL	IRKC IRKCL	IRKJ IRKJL	IRKE IRKEL
										

Note (1). For configuration IRKU, IRKV, IRKK, IRKN contact factory.

O

Case Outlines and Circuit Configurations

INT-A-pak

Case outline M5

IRK	T	F	15	2	-	08	H	J	N
①	②	③	④	⑤		⑥	⑦	⑧	⑨

Part number coding

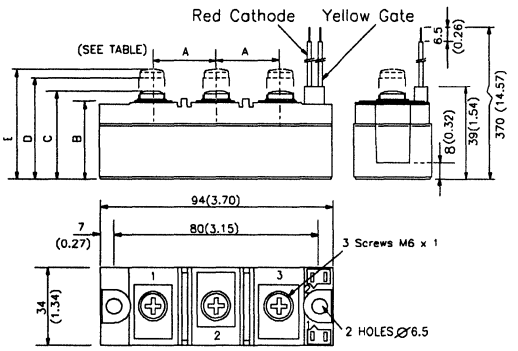
- Standard parts contain beryllium oxide substrate, and under normal circumstances is non hazardous.
- Do not open, cut or grind.
- Unserviceable parts must be disposed of as harmful waste.

1 - Module type
2 - Circuit configuration (See Circuit Configuration Table)
3 - No letter = standard recovery
F = Fast SCR
L = Fast recovery diode
4 - Current rating : Code x 10 = IT(AV)
5 - 1 & 5 = option with spacers and longer terminal screws
2 & 6 = option with standard terminal screws
6 - Voltage code: Code x 100 = VRRM
7 - Fast diode : trr code
Fast thyristor : dynamic dv/dt code
8 - Fast thyristor : tq code
9 - No letter = Beryllium Oxide ceramic substrate
N = Aluminum Nitride substrate

dv/dt	
C =	20V/µs
D =	50V/µs
E =	100V/µs
F =	200V/µs
H =	400V/µs

tq	
N =	10µs
M =	12µs
L =	15µs
P =	18µs
K =	20µs
J =	25µs

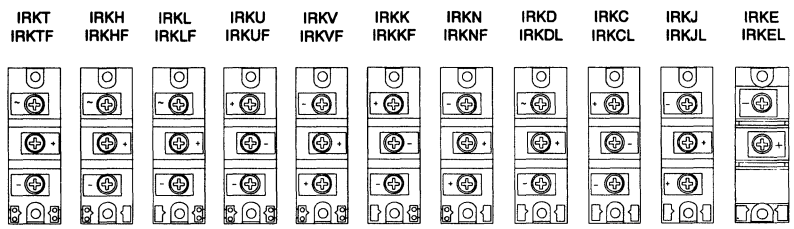
trr
S10 = 1000ns
S20 = 2000ns



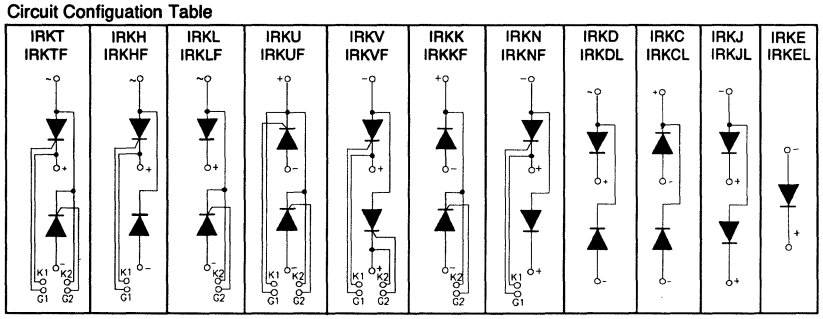
Dimensions relevant to code ⑤

For all types	A	B	C	D	E
IRK...1, 5	25(0.984)	----	----	41(1.614)	47(1.85)
IRK...2, 6	23(0.906)	30(1.18)	36(1.417)	----	----

- All dimensions in millimetres (inches)
- Dimensions are nominal
- Full engineering drawings are available on request



Circuit Configuation Table



Case Outlines and Circuit Configurations

MAGN-A-pak

Case outline M6

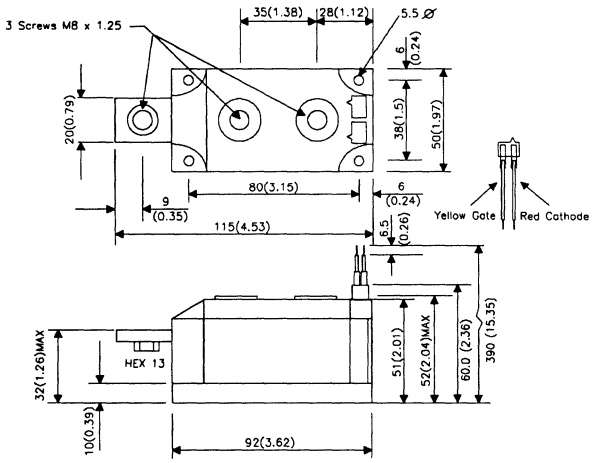
IRK	T	F	200	-	08	H	J	N
①	②	③	④		⑤	⑥	⑦	⑧

Part number coding

- Standard parts contain beryllium oxide substrate, and under normal circumstances is non hazardous.
- Do not open, cut or grind.
- Unserviceable parts must be disposed of as harmful waste.

1 - Module type
2 - Circuit configuration (See Circuit Configuration Table)
3 - No letter = standard recovery
F = Fast SCR
L = Fast recovery diode

4 - Current rating : IT (AV)
5 - Voltage code : Code x 100 = VRRM
6 - Fast diode : trr code
Fast thyristor : dynamic dv/dt code
7 - Fast thyristor : tq code
8 - No letter = Beryllium Oxide ceramic substrate
N = Aluminum Nitride substrate

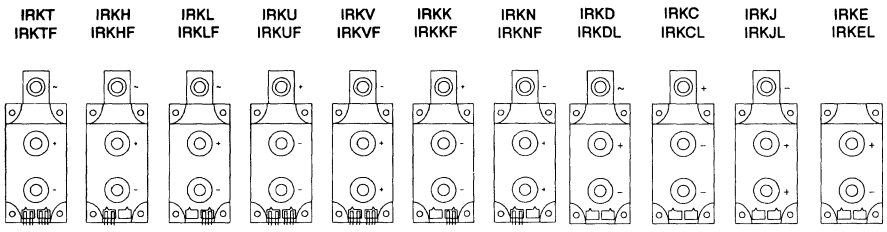


dv/dt	
C =	20V/µs
D =	50V/µs
E =	100V/µs
F =	200V/µs
H =	400V/µs

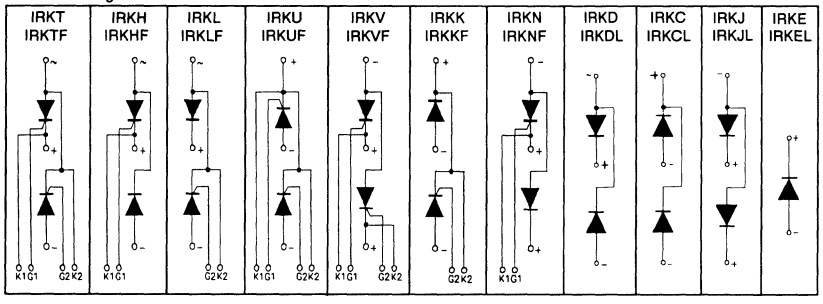
tq	
N =	10µs
M =	12µs
L =	15µs
P =	18µs
K =	20µs
J =	25µs

trr	
S10 =	1000ns
S20 =	2000ns

- All dimensions in millimetres (inches)
- Dimensions are nominal
- Full engineering drawings are available on request



Circuit Configuation Table

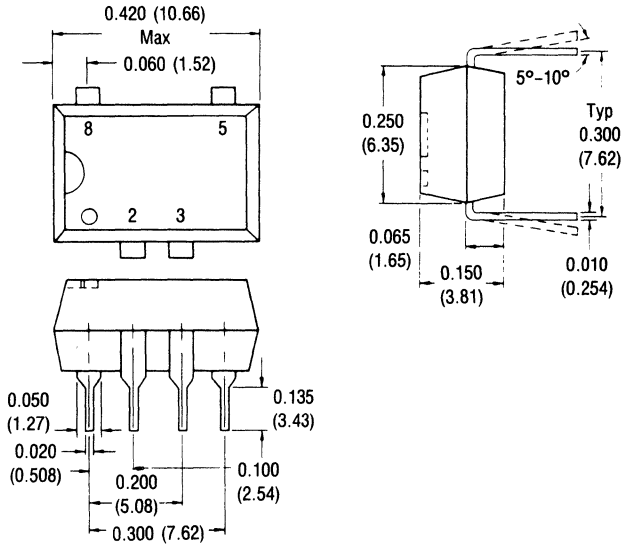


O

Microelectronic Relay
Case Outlines

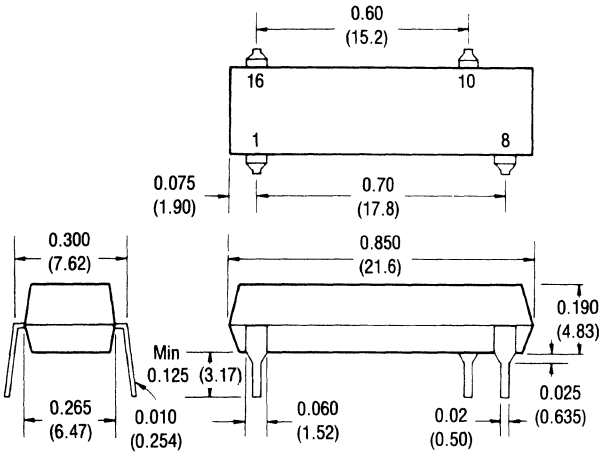
International
IOR Rectifier

MR1



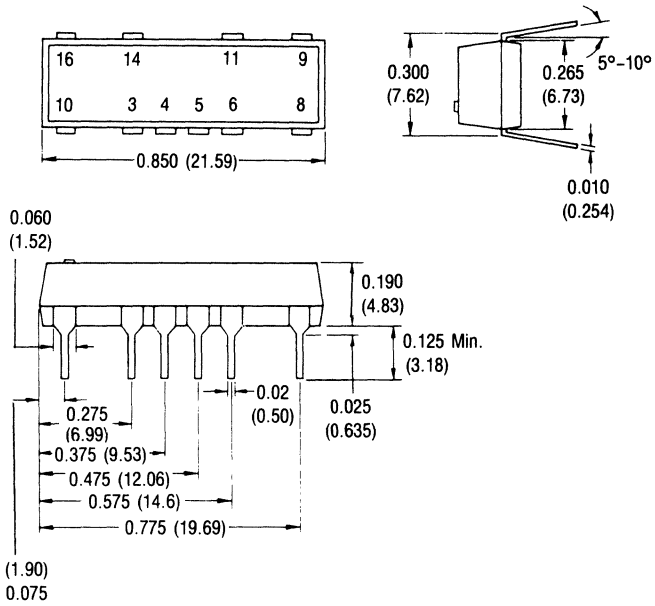
ChipSwitch CS. BOSFET PVD, PVA & PVI Series

MR2



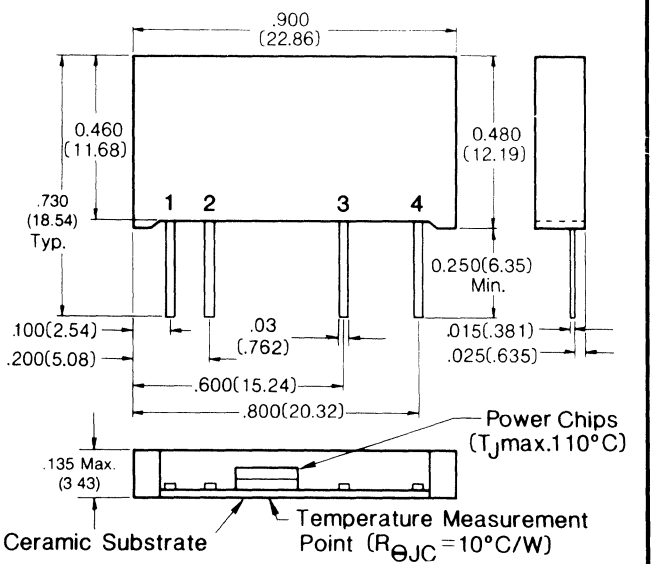
Pinout ChipSwitch DP Series

MR3



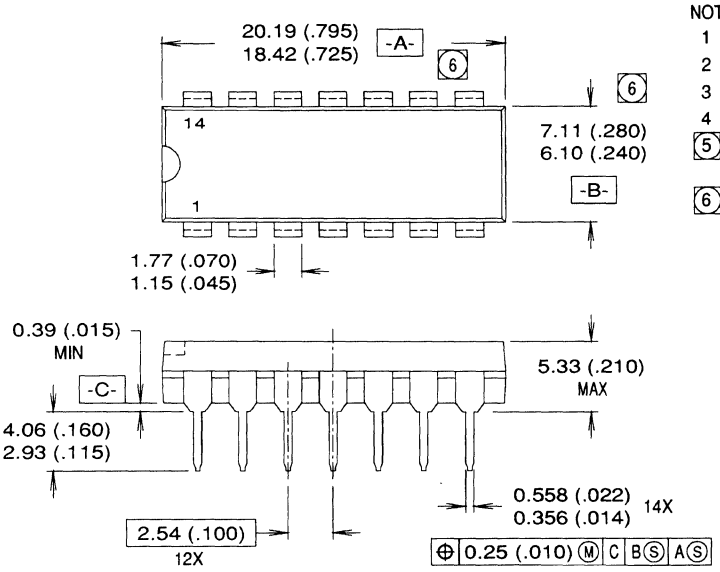
BOSFET PVR Series

MR4

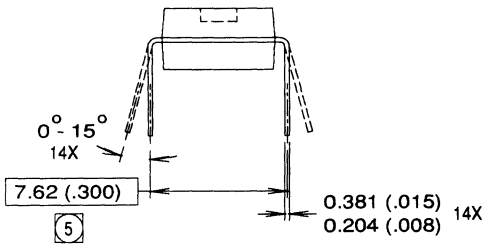


ChipSwitch SP

P1

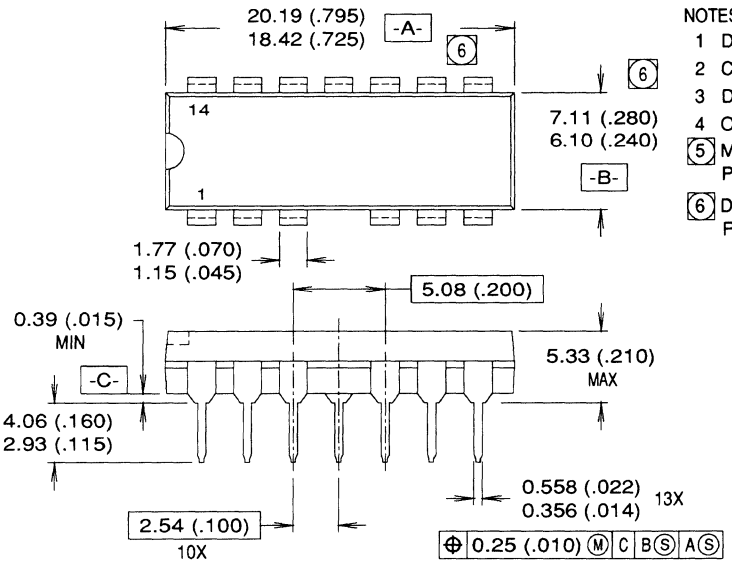


NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2 CONTROLLING DIMENSION: INCH.
3 DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4 OUTLINE CONFORMS TO JEDEC OUTLINE MS-001AC.
5 MEASURED WITH THE LEADS CONSTRAINED TO BE PERPENDICULAR TO DATUM PLANE C.
6 DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.25 (.010).

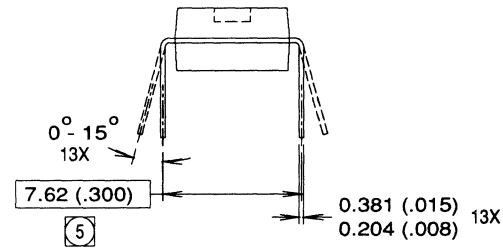


14 Lead DIP

P2



NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2 CONTROLLING DIMENSION: INCH.
3 DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4 OUTLINE CONFORMS TO JEDEC OUTLINE MS-001AC.
5 MEASURED WITH THE LEADS CONSTRAINED TO BE PERPENDICULAR TO DATUM PLANE C.
6 DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.25 (.010).

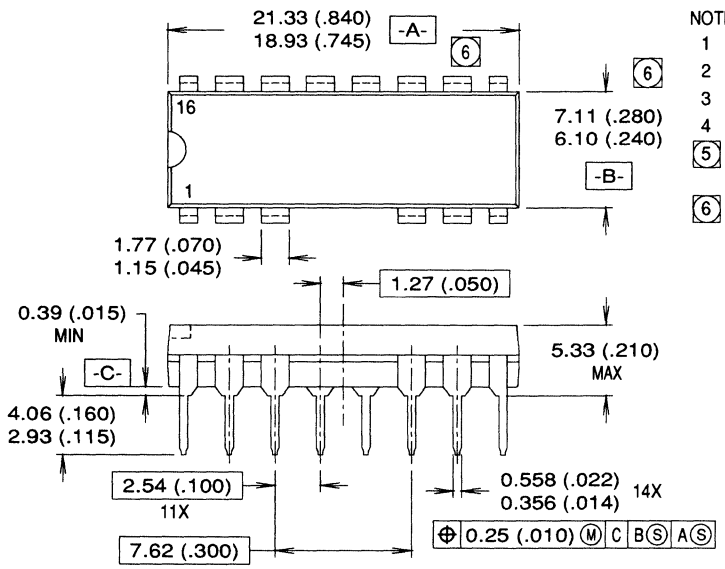


14 Lead DIP w/o Pin 4

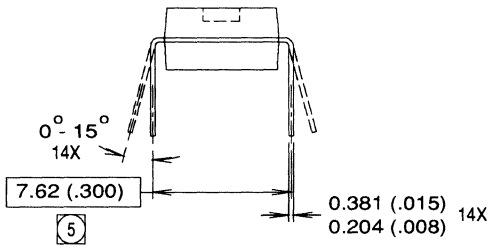
Dimensions in Millimeters and (Inches)

O

P3

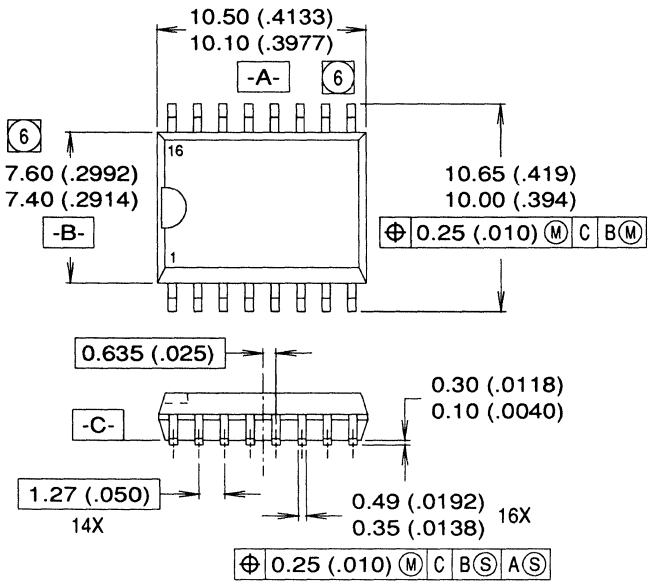


NOTES:
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-001AA.
5. MEASURED WITH THE LEADS CONSTRAINED TO BE PERPENDICULAR TO DATUM PLANE C.
6. DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.25 (.010).

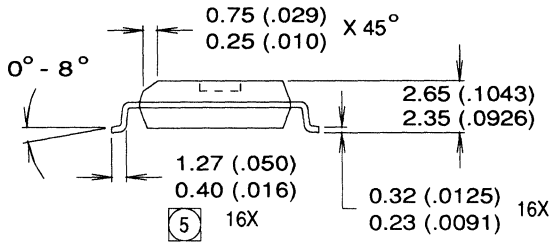


16 Lead DIP w/o Pin 4 & 5

P4



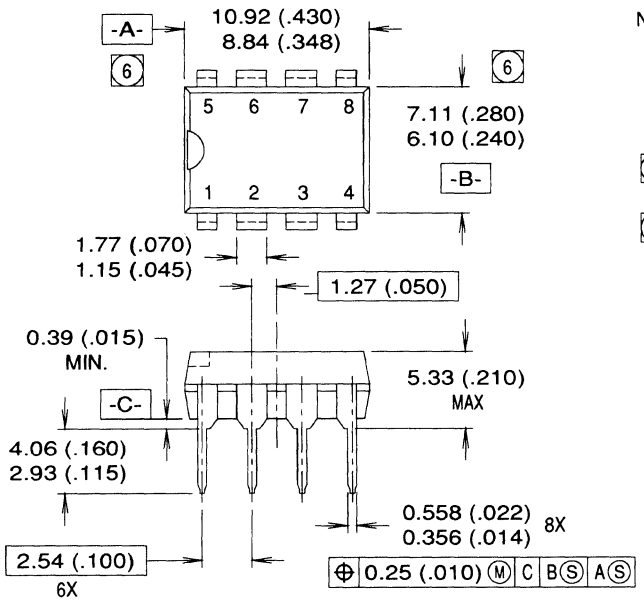
NOTES:
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-013AA.
5. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.
6. DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.15 (.006).



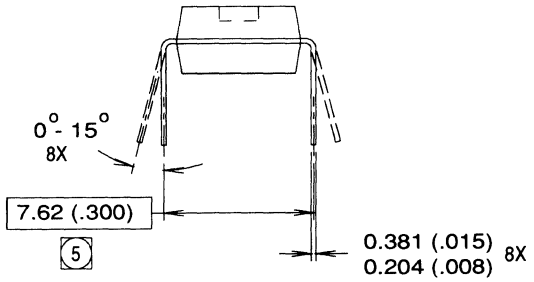
16 Lead SOIC Wide Body

Dimensions in Millimeters and (Inches)

P5

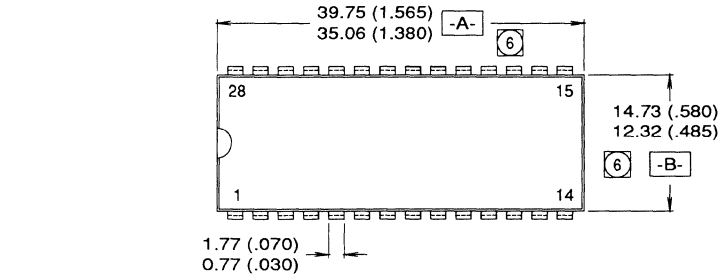


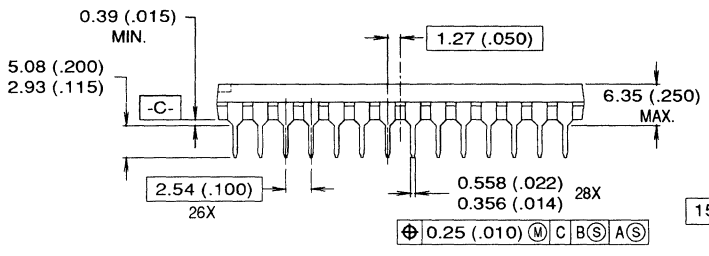
NOTES:
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-001AB.
5. MEASURED WITH THE LEADS CONSTRAINED TO BE PERPENDICULAR TO DATUM PLANE C.
6. DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.25 (.010).



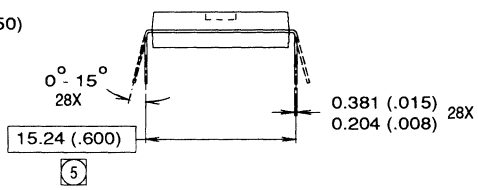
8 Lead DIP

P6





NOTES:
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-011AB.
5. MEASURED WITH THE LEADS CONSTRAINED TO BE PERPENDICULAR TO DATUM PLANE C.
6. DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.25 (.010).

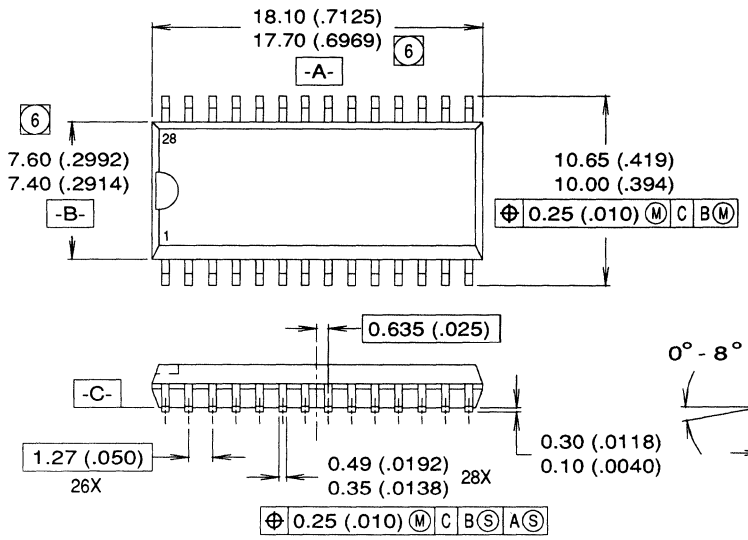


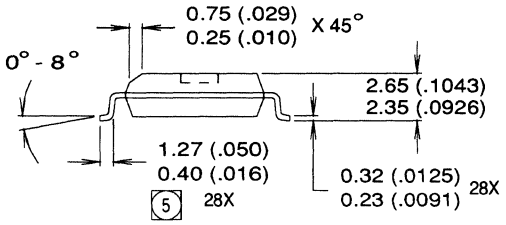
28 Lead Dip

Dimensions in Millimeters and (Inches)

O

P7

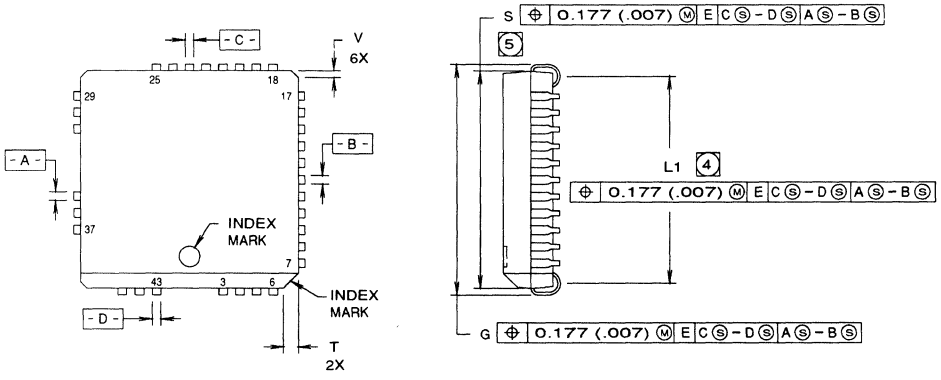




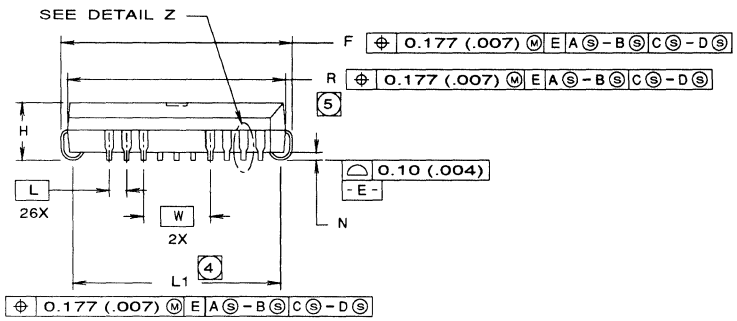
NOTES:
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-013AE.
5. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.
6. DIMENSION DOES NOT INCLUDE MOLD PROTUSIONS. MOLD PROTUSIONS SHALL NOT EXCEED 0.15 (.006).

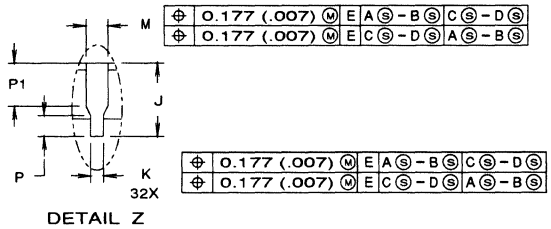
28 Lead SOIC Wide Body

P8



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
F	17.40	17.65	.685	.695
G	17.40	17.65	.685	.695
H	4.20	4.57	.165	.180
J	2.29	3.04	.090	.120
K	0.33	0.48	.013	.019
L	1.27 BSC		.050 BSC	
M	0.66	0.81	.026	.032
N	0.51	—	.020	—
P	0.64	—	.025	—
R	16.51	16.66	.650	.656
S	16.51	16.66	.650	.656
T	1.07	1.21	.042	.048
V	—	0.50	—	.020
W	5.08 BSC		.200 BSC	
L1	15.50	16.00	.610	.630
P1	1.53	—	.060	—



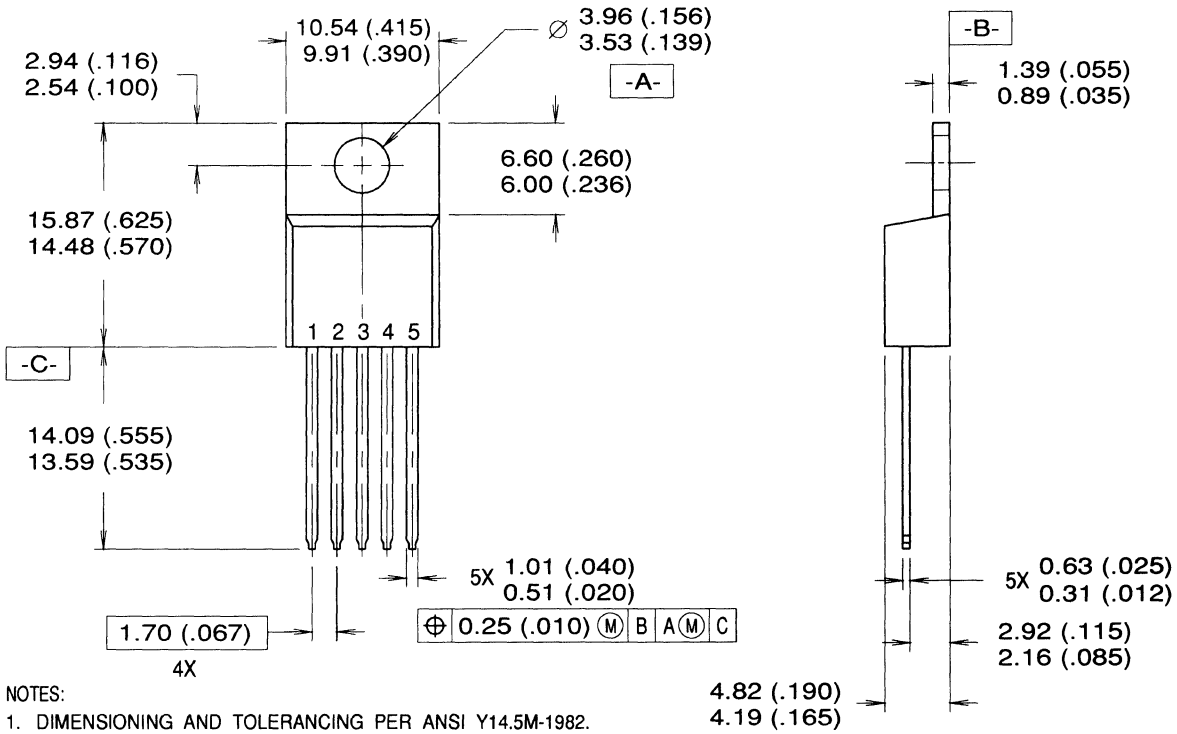


NOTES:
1. DIMENSIONING & TOLERENCING PER ANSI Y14.5M-1982
2. CONTROLLING DIMENSION: INCH.
3. DATUMS A, B, C, & D ARE DETERMINED BY WHERE THE TOP OF THE LEADS EXIT PLASTIC BODY AT MOLD PARTING LINE.
4. TO BE MEASURED AT E SEATING PLANE.
5. DIMENSIONS DO NOT INCLUDE MOLD FLASH, ALLOWABLE FLASH, FLASH IS .254mm / .010.
6. CONFORMS TO JEDEC OUTLINE MO-047AC.
7. DIMENSIONS SHOWN IN MILLIMETERS (INCHES).

44 Pin PLCC w/o 12 Leads

Dimensions in Millimeters and (Inches)

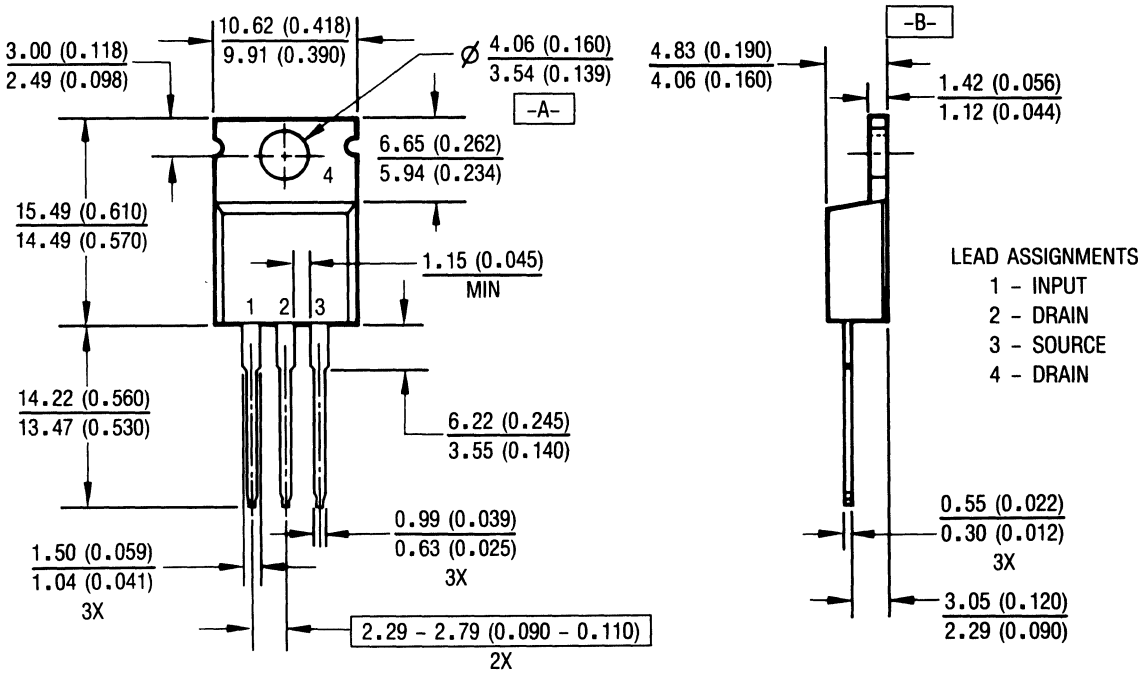
P9



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. ALL DIMENSIONS REFER TO JEDEC OUTLINE TS-001

Similar to TO-220, 5 Lead

P10



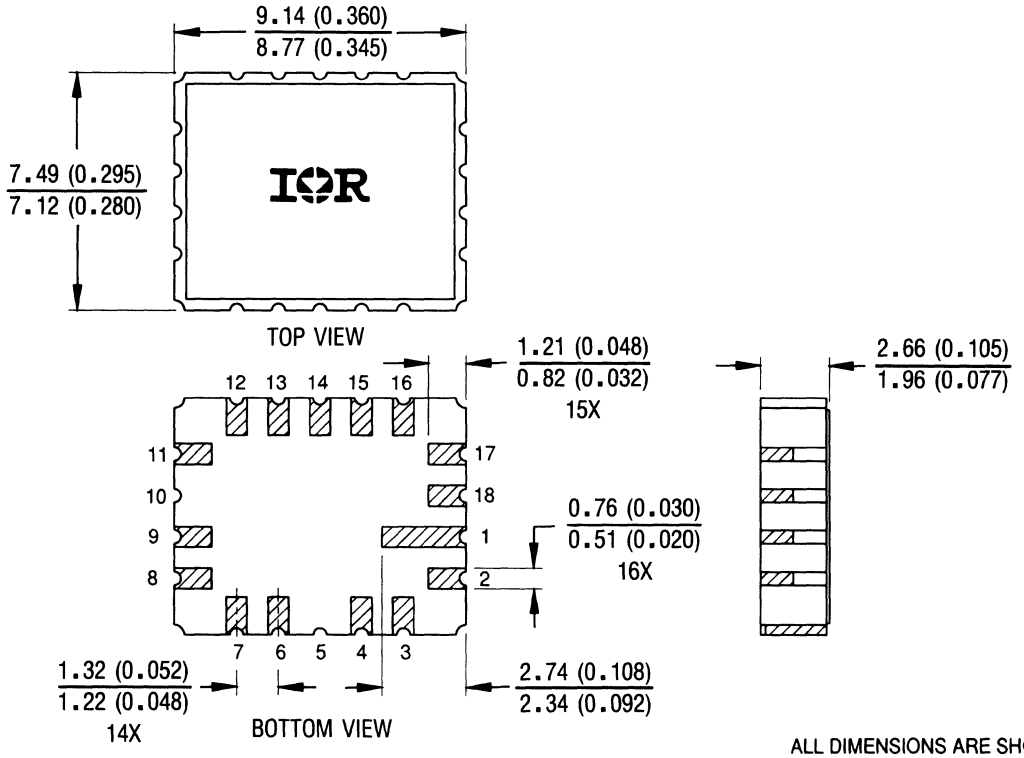
NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M, 1982.
2 CONTROLLING DIMENSION: INCH.
3 HEATSINK & LEAD MEASUREMENTS DO NOT INCLUDE BURRS.

Similar to TO-220, 3 Lead

Dimensions in Millimeters and (Inches)

O

P20



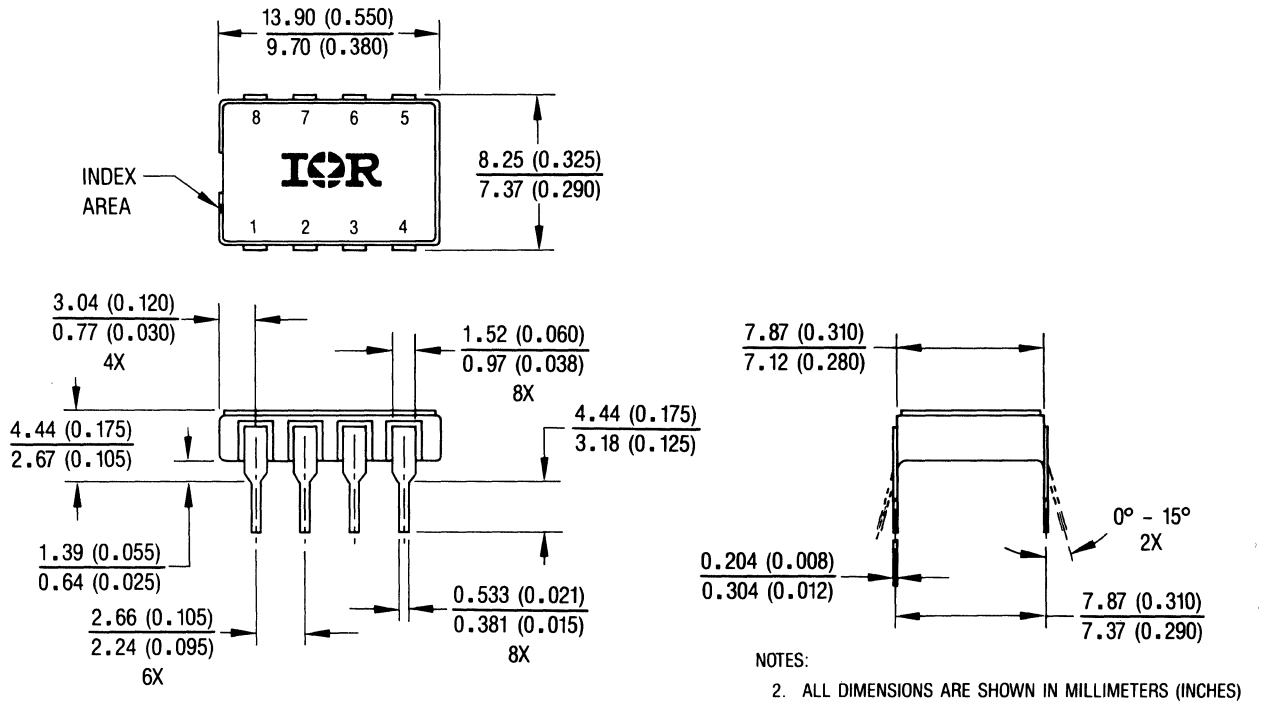
PAD ASSIGNMENTS

1 — Lo
2 — COMM
4 — Vcc
6 — Vs
8 — VB
9 — Ho
11 — V_{DD}
13 — HIN
14 — SD
15 — LIN
17 — Vss
3, 5, 7, 10, 12, 16 & 18 } NO CONNECTION

ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES)

Leadless Chip Carrier (LCC) Package

P21



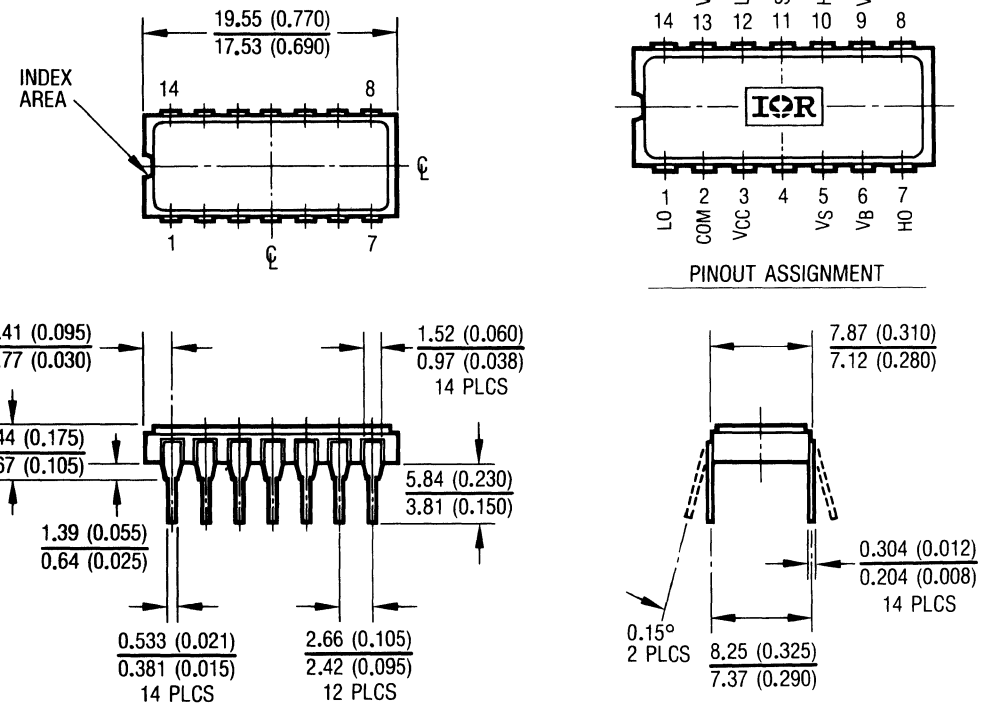
NOTES:

2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES)

8 Pin Dip Package
Conforms to JEDEC Outline MO-036AA

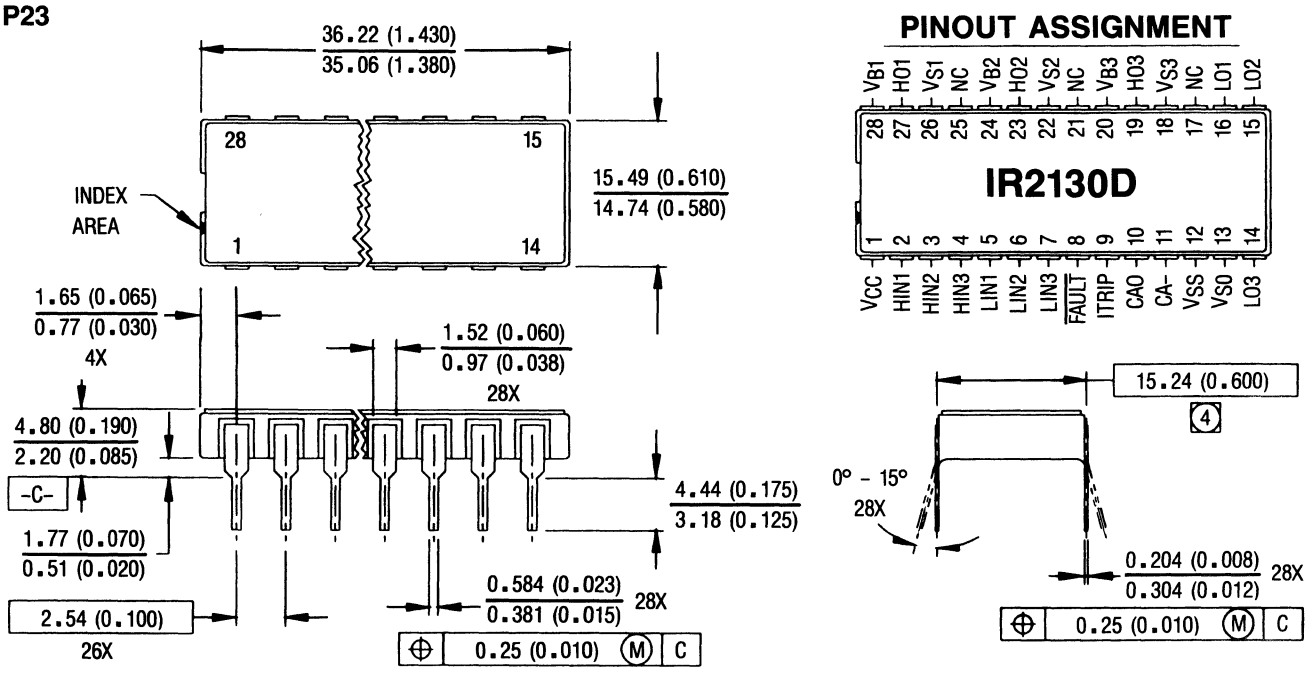
Dimensions in millimeters and (inches)

P22



14 Pin Dip
Outline Conforms to JEDEC MO-036AB

P23



NOTES:

1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M, 1982.
2 CONTROLLING DIMENSION: INCH.
3 DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4 DIMENSION IS TO CENTER OF LEADS WHEN FORMED PARALLEL.

28 Pin Dip Package
Conforms to JEDEC Outline MO-038AB

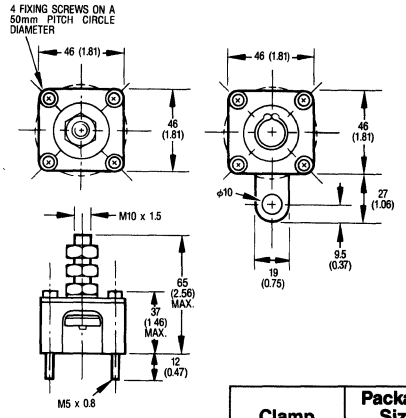
Dimensions in millimeters and (inches)

O

Mounting Hardware

STUD & SIDE TERMINAL BOX CLAMPS

K22-0276 & -0323 K22-0287 & -0328



Clamp	Package Size
K22-0276	'A'
K22-0287	'A'
K22-0323	'E'
K22-0328	'E'

The correct clamping force is achieved by tightening evenly the four retaining screws until the box makes contact with the heatsink.

LOW STUD PROFILE TERMINAL BOX CLAMPS

K22-0311 & K22-0346

Configuration similar to K22-0276 and K22-0323 respectively.

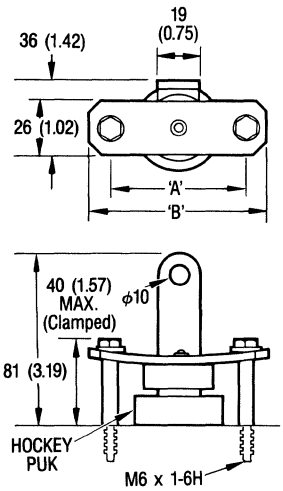
Clamp	Package Size
K22-0311	'A'
K22-0346	'E'

Terminal has M8 x 1.25 threads and is provided with one nut.

Max. height over terminal is 51 (2.01).

Height over heads of screws holding down box is 24 (0.94).

SINGLE SIDE MOUNTING CLAMPS FOR HOCKEY-PUK DIODE AND THYRISTORS



CLAMP	'A'	'B'
K22-0252	53 (2.09)	73 (2.87)

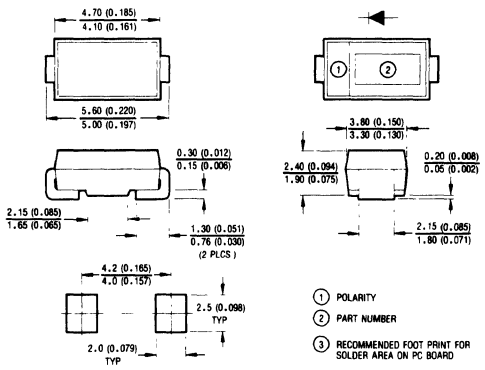
N.B.
*CLAMP USES M8 SCREWS

Suitable for 'A' or 'E' size hockey puk diodes and thyristors.

A clamping force of 4450N (1000 lbs) is achieved by tightening down the spring so that it is flat and parallel to the heatsink.

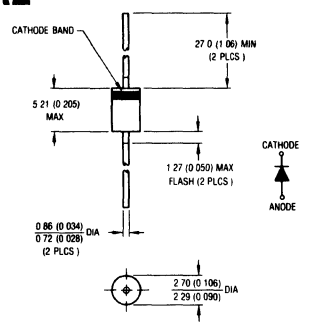
Dimensions in Millimeters and (Inches)

R1



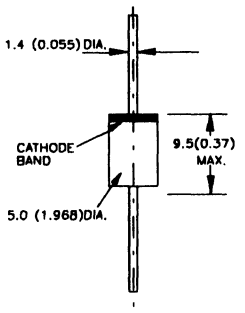
Case style SMB

R2



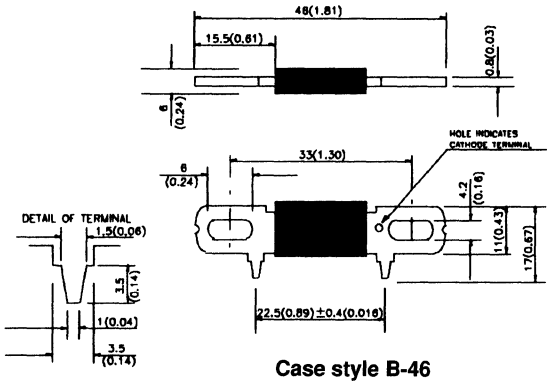
Case style DO-204AL (DO-41)

R3



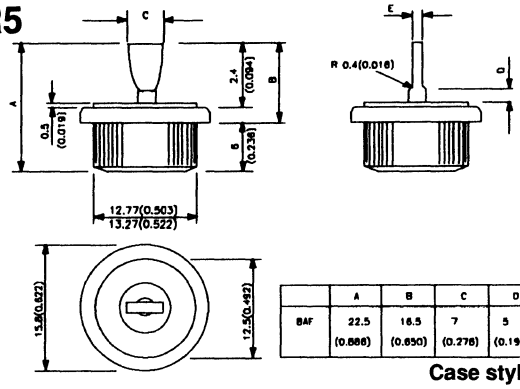
Case style DO-201AD

R4



Case style B-46

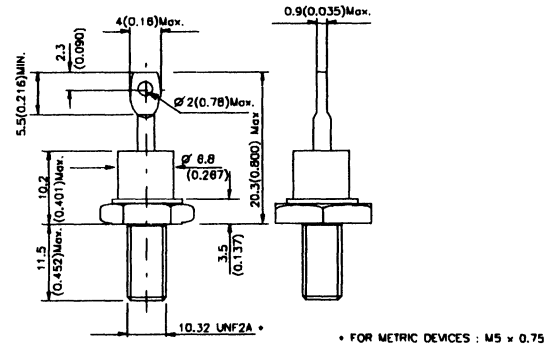
R5



	A	B	C	D	E
BAF	22.5 (0.886)	16.5 (0.650)	7 (0.276)	5 (0.197)	0.9 (0.035)

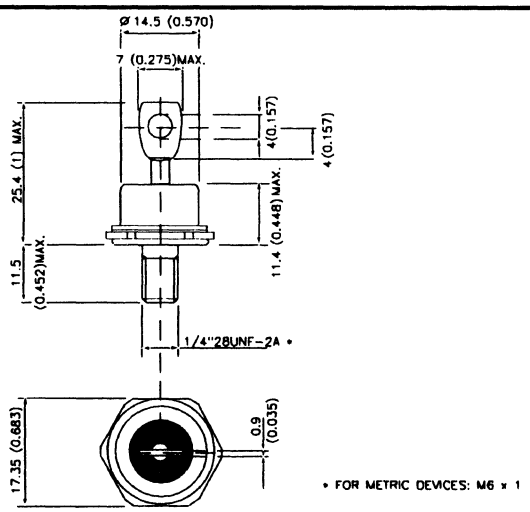
Case style B-47PP

R6



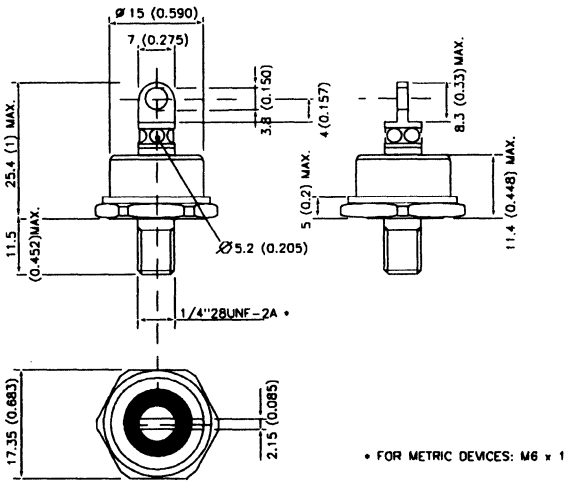
Case style DO-203AA (DO-4)

R7



Case style DO-203AB (DO-5)

R8

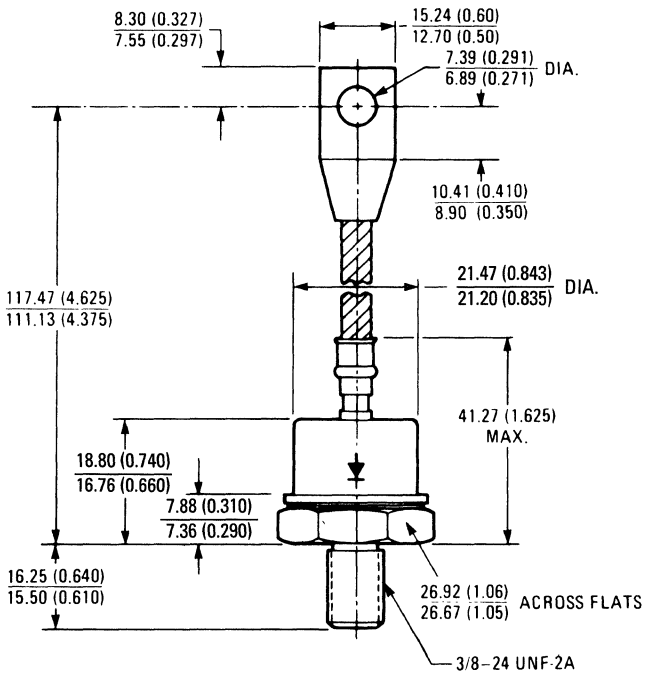


Case style DO-203AB (DO-5)

All dimensions in millimeters and (inches)

O

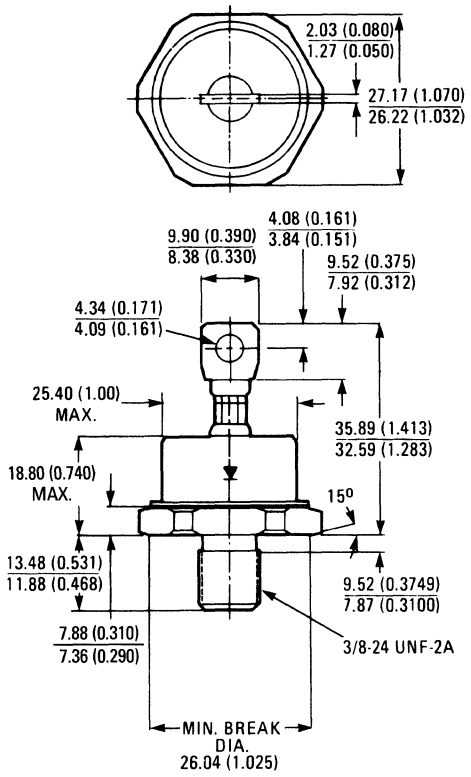
R9



M12 x 1.5 Metric Device

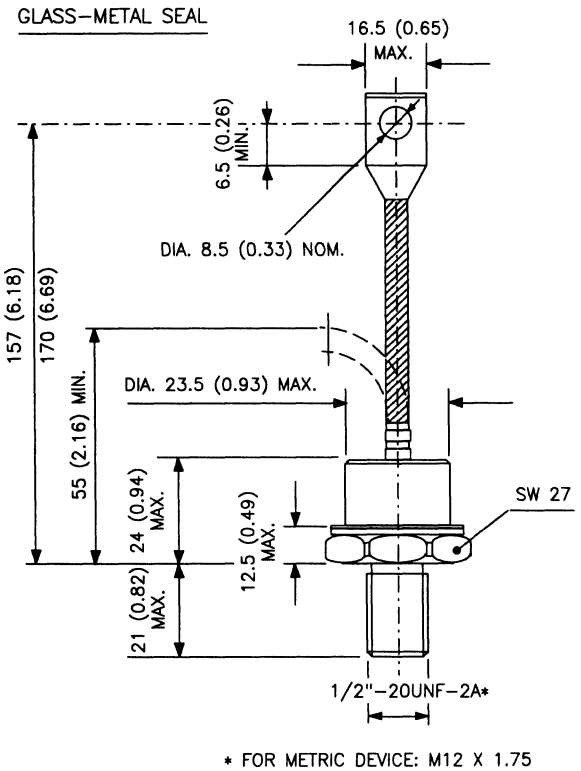
Case style DO-205AA (DO-8) (IR B-15)

R10



Case style B-42

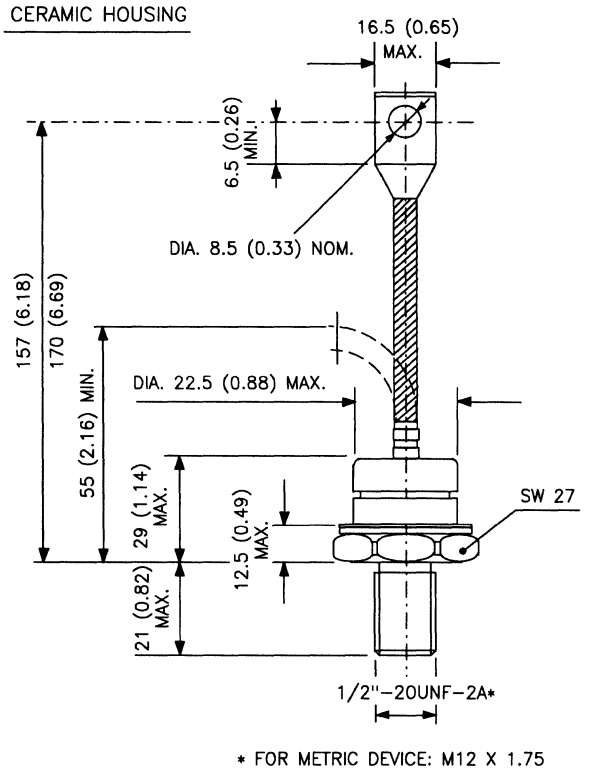
R11



* FOR METRIC DEVICE: M12 X 1.75

Case style DO-205AC (DO-30)

R12

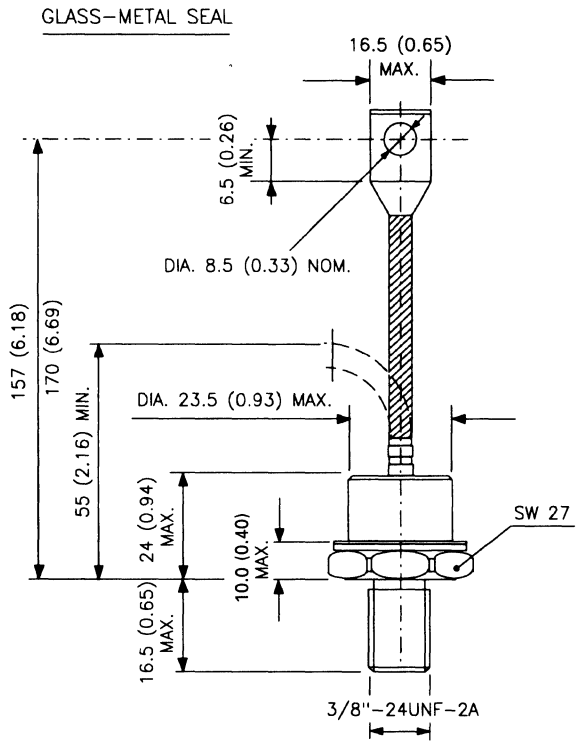


* FOR METRIC DEVICE: M12 X 1.75

Case style DO-205AC (DO-30)

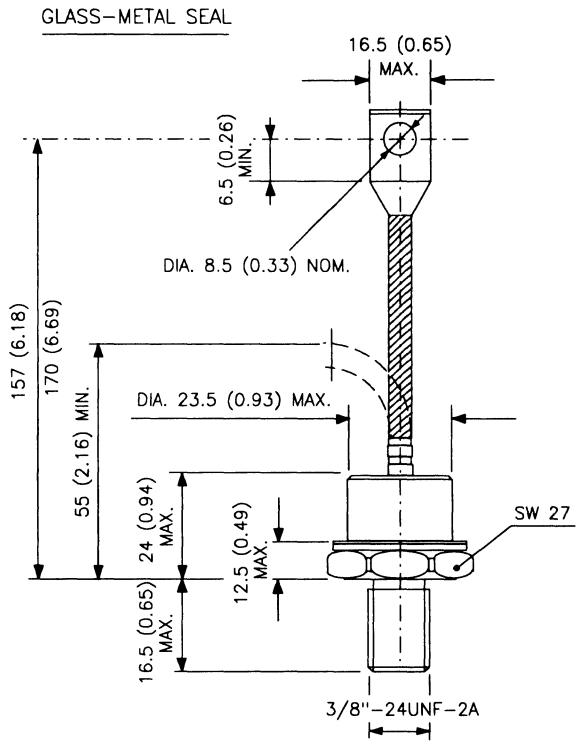
All dimensions in millimeters and (inches)

R13



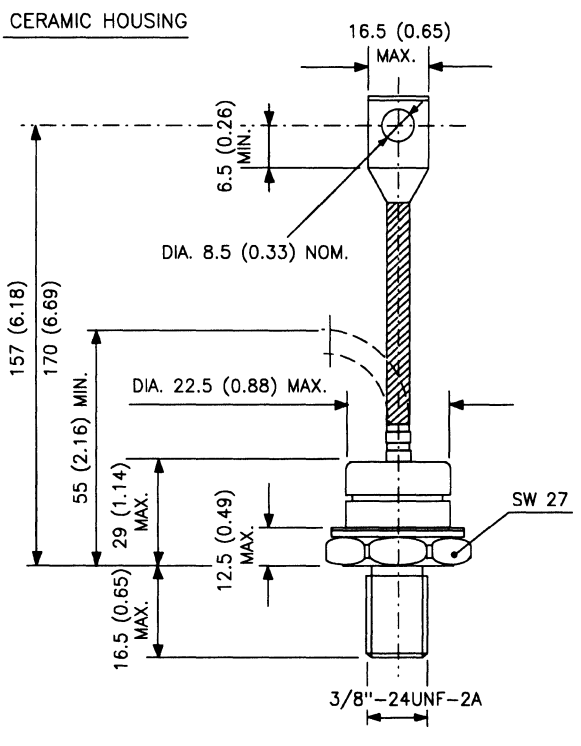
Case style DO-205AA (DO-8)

R14



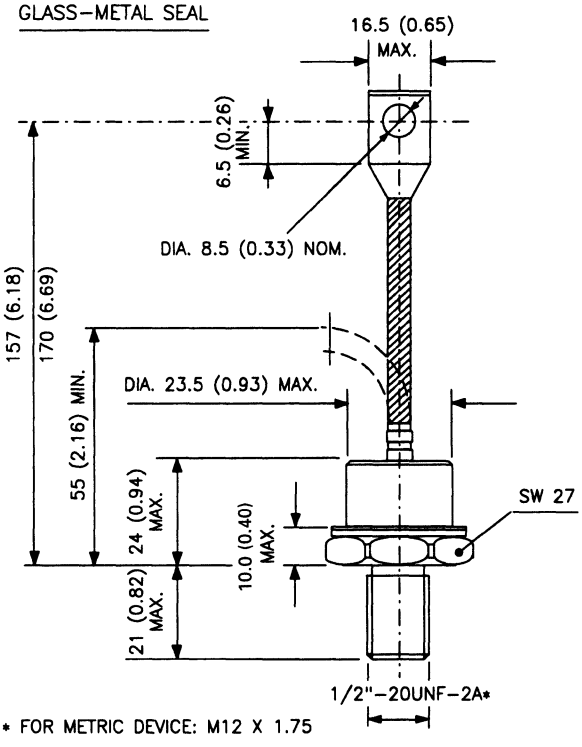
Case style DO-205AA (DO-8)

R15



Case style DO-205AA

R16

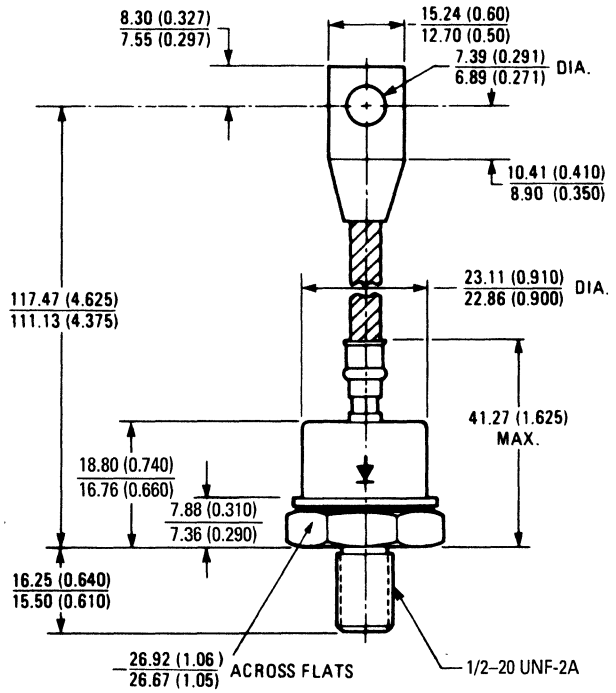


Case style DO-205AC (DO-30)

All dimensions in millimeters and (inches)

O

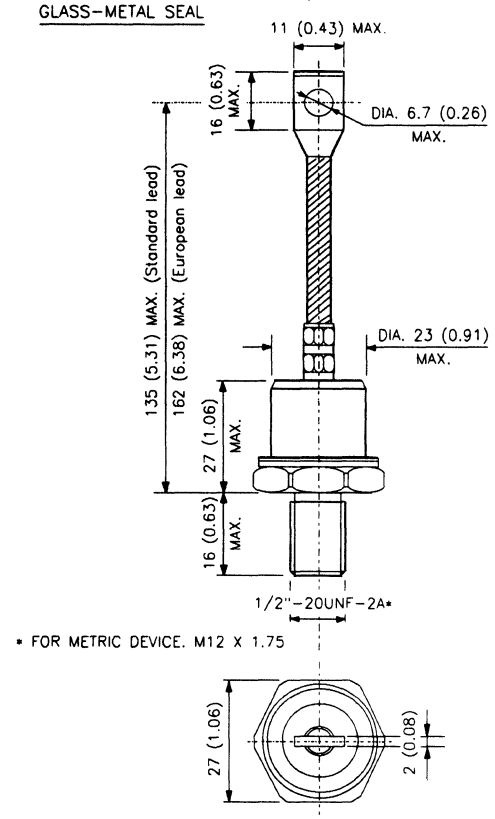
R17



Case style DO-205AC (DO-30)

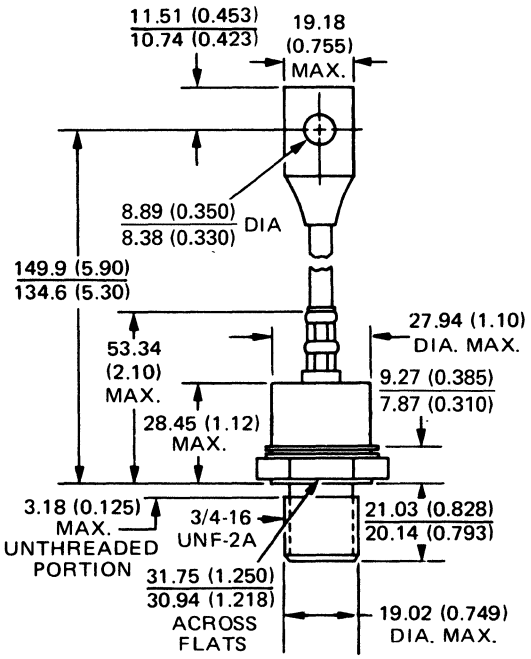
R18

GLASS-METAL SEAL



Case style similar to DO-205AC (DO-30)

R19

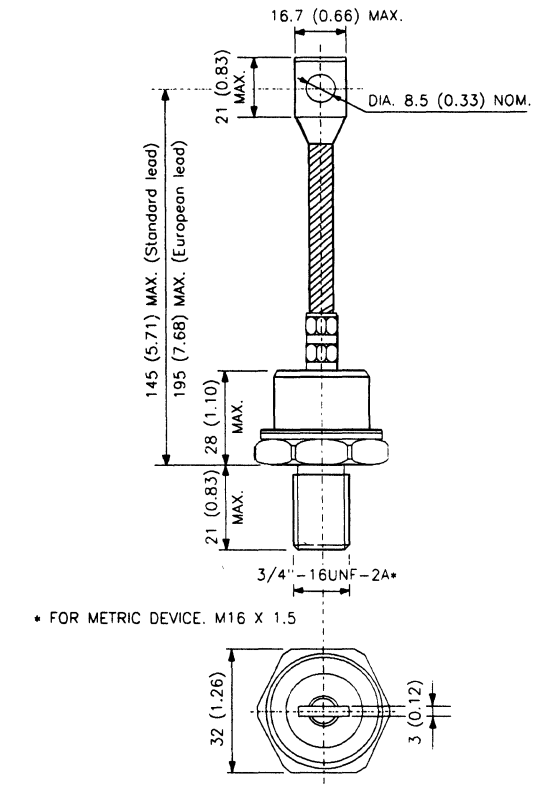


M16 x 1.5 METRIC DEVICE FOR 300U..AM
M20 x 1.5 METRIC DEVICE FOR 300U..AMA

Case style DO-205AB (DO-9) (IR B-13)

R20

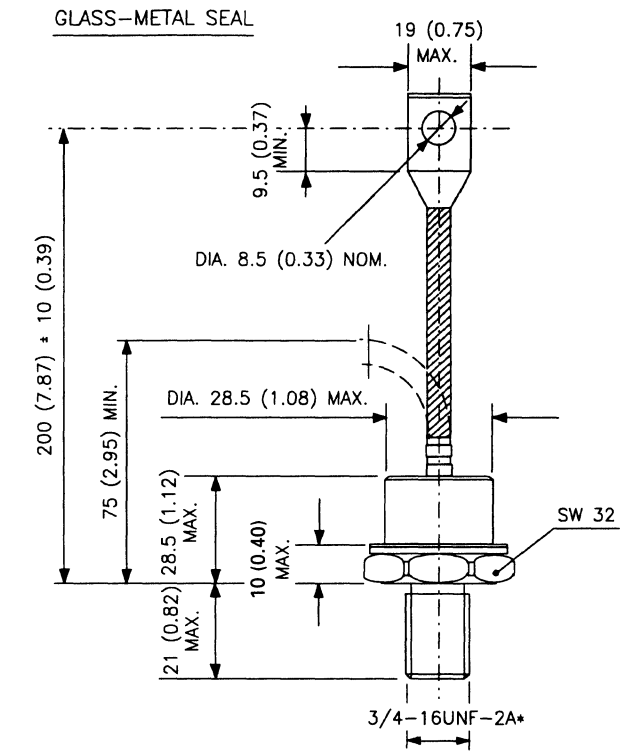
GLASS-METAL SEAL



Case style DO-205AB (DO-9)

All dimensions in millimeters and (inches)

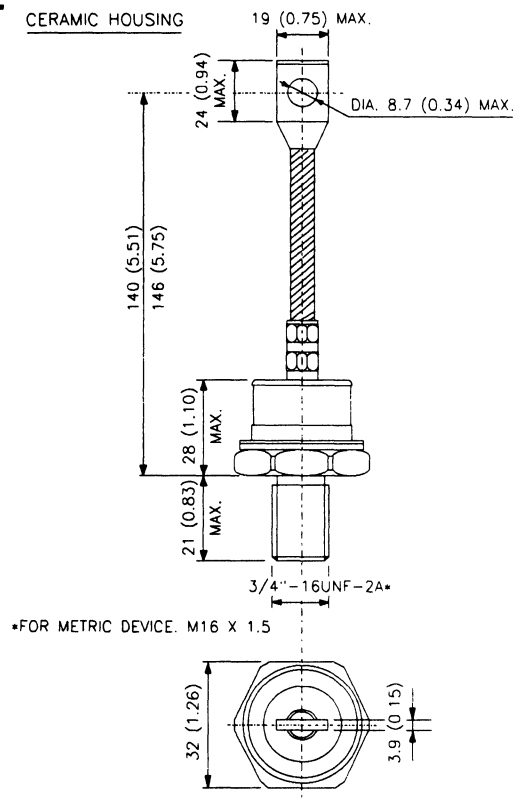
R21



* FOR METRIC DEVICE: M16 X 1.5

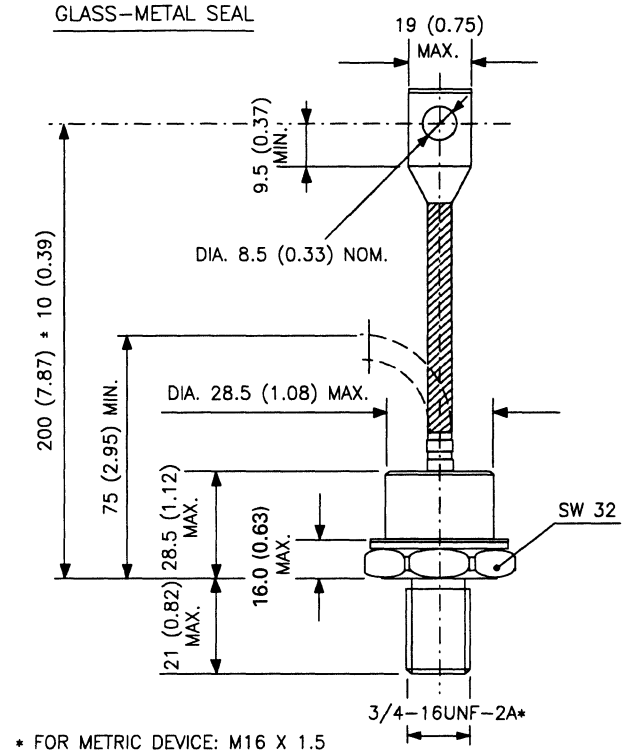
Case style DO-205AB (DO-9)

R22



Case style similar to DO-205AB (DO-9)

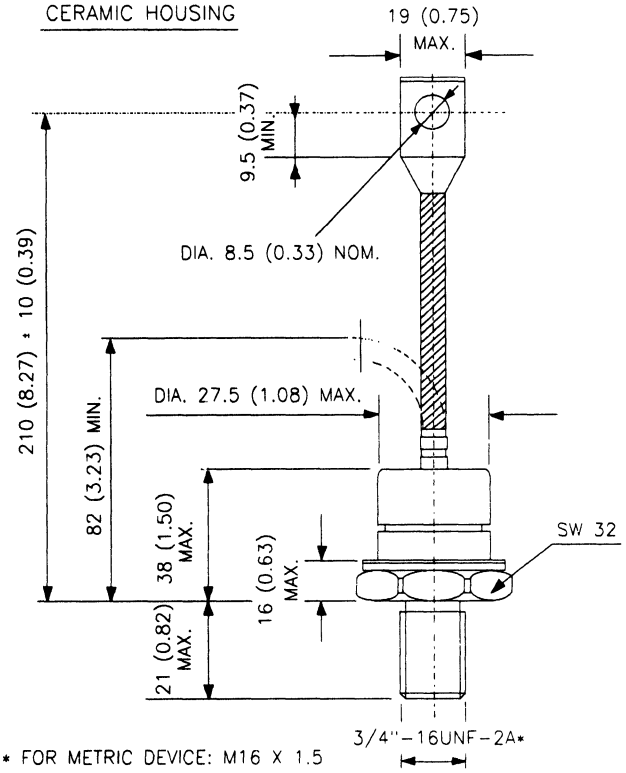
R23



* FOR METRIC DEVICE: M16 X 1.5

Case style DO-205AB (DO-9)

R24



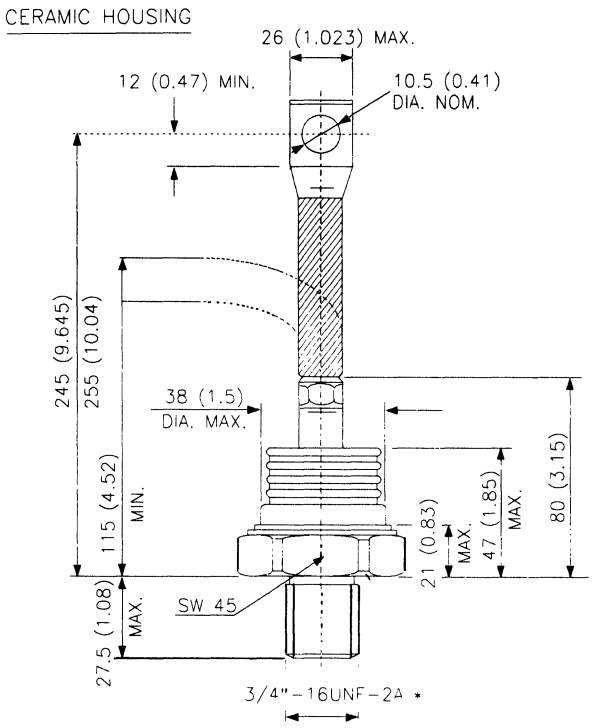
* FOR METRIC DEVICE: M16 X 1.5

Case style DO-205AB (DO-9)

All dimensions in millimeters and (inches)

O

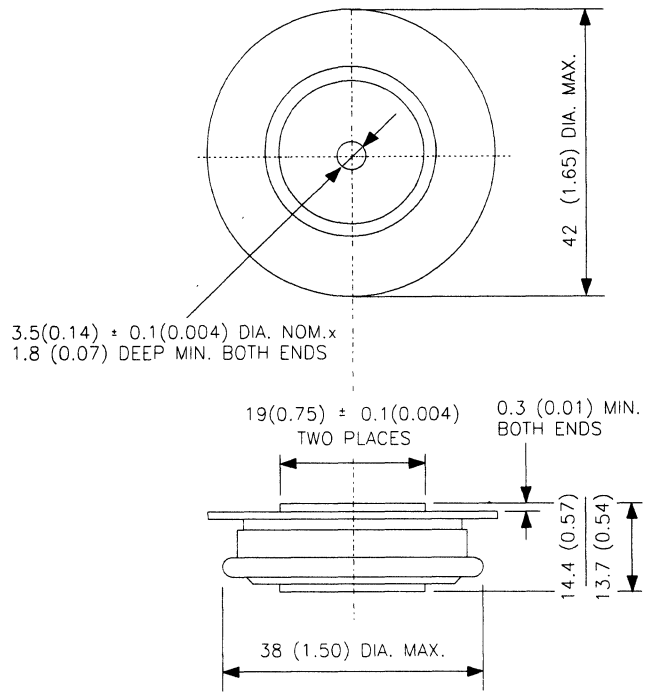
R25



* FOR METRIC DEVICE. M24 x 1.5

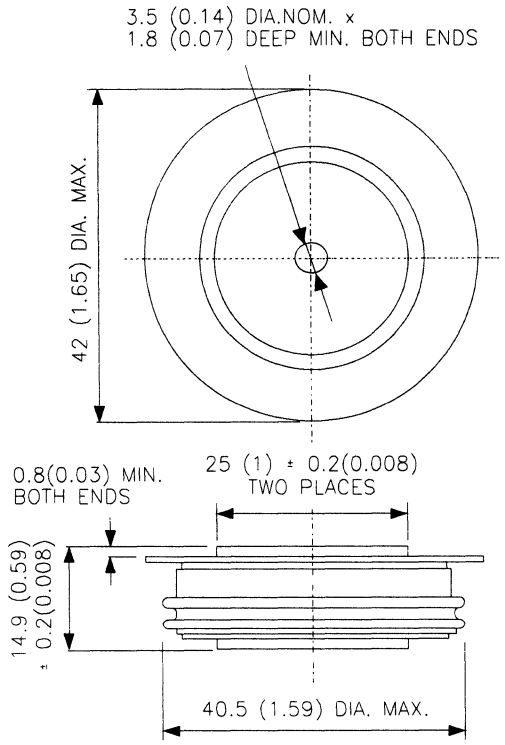
Case style B-8

R26



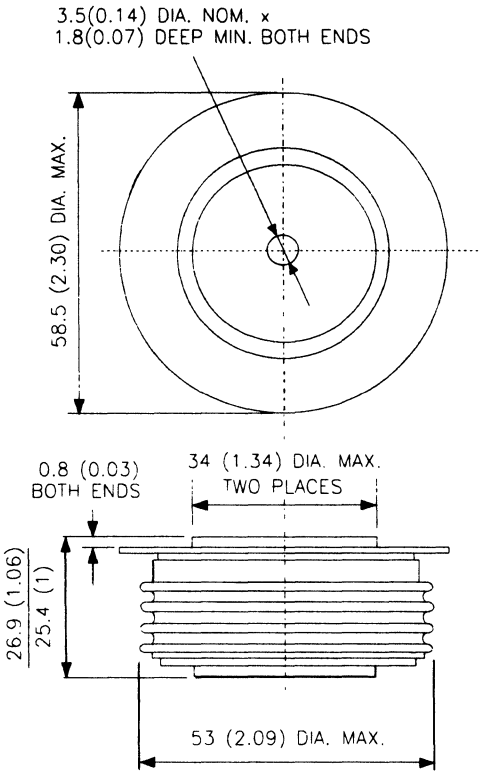
Case style DO-200AA (A-PUK)

R27



Case style B-43 (E-PUK)

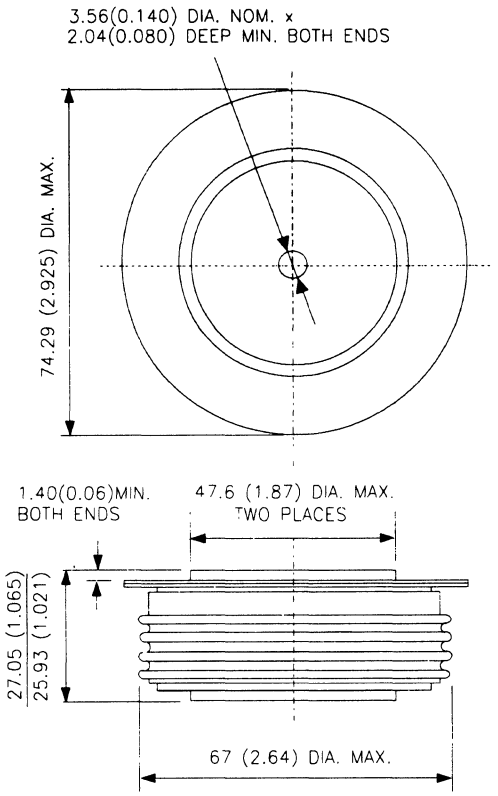
R28



Case style DO-200AB (B-PUK)

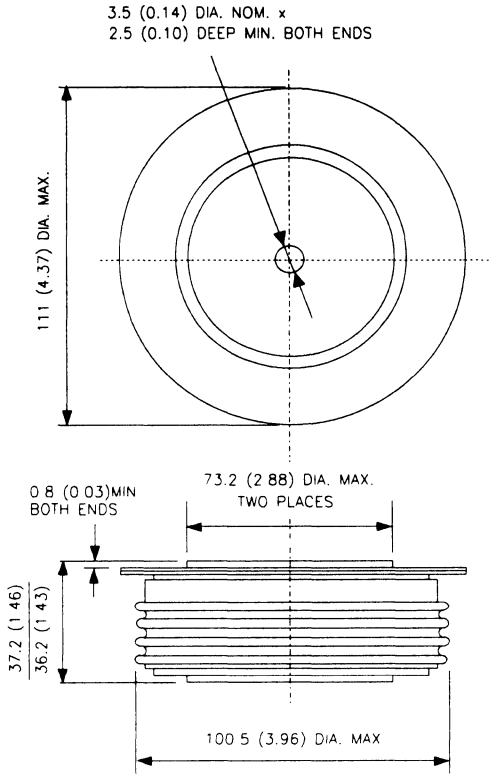
All dimensions in millimeters and (inches)

R29



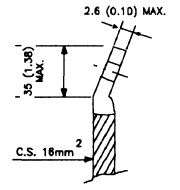
Case style DO-200AC (K-PUK)

R30

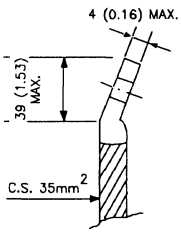


Case style B-44 (R-PUK)

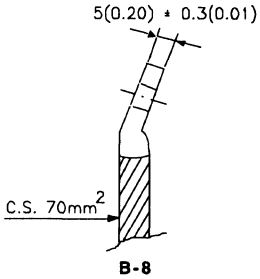
FLEXIBLE LEADS



DO-205AC (DO-30)
DO-205AA (DO-8)

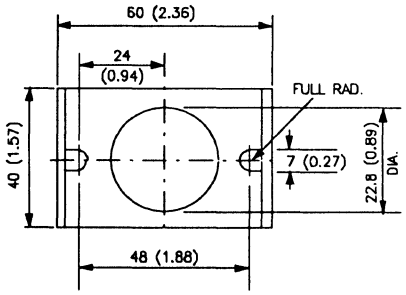


DO-205AB (DO-9)

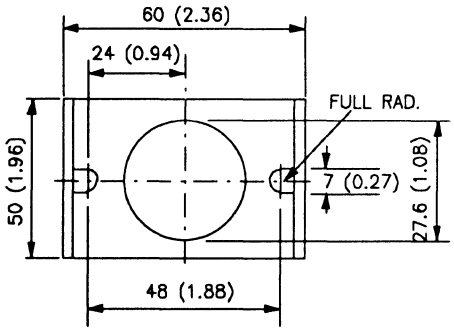


B-8

SPRING CLAMP

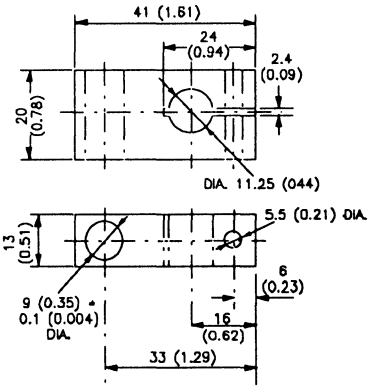


45L



70 / 300U

PINCH BOLT

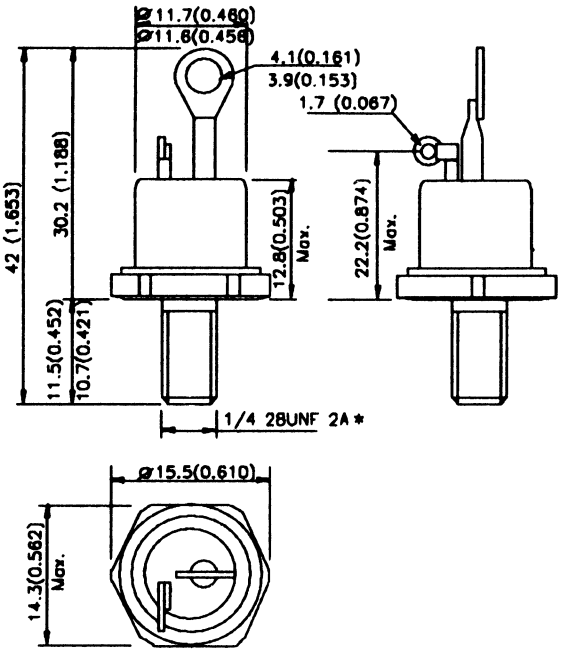


45L
70 / 300U

All dimensions in millimeters and (inches)

O

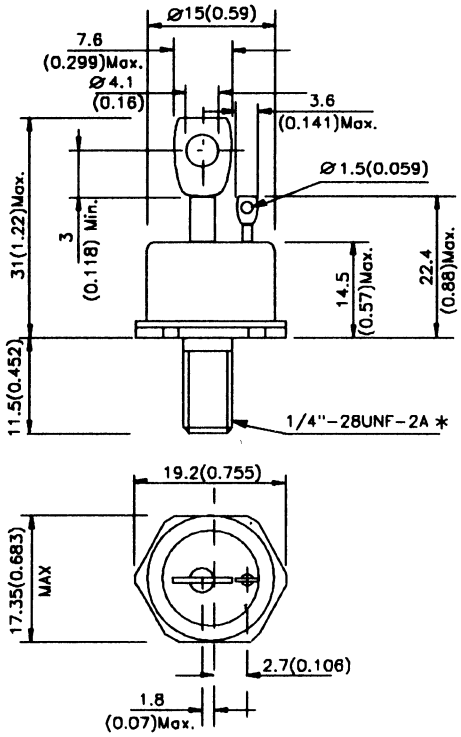
T1



* FOR METRIC DEVICES: M6 x 1

Case style TO-208AA (TO-48)

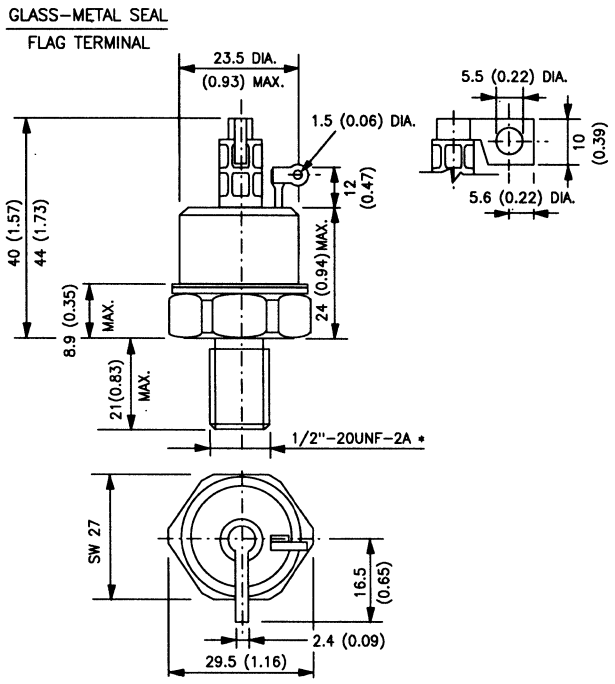
T2



* FOR METRIC DEVICES: M6 x 1

Case style TO-208AC (TO-65)

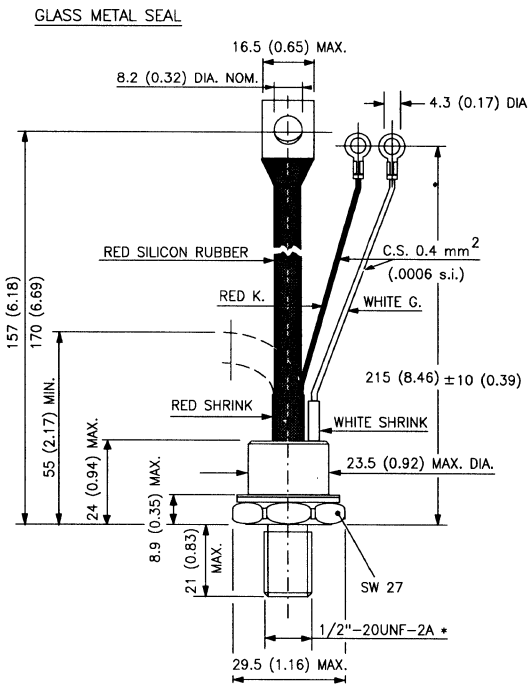
T3



* FOR METRIC DEVICE: M12 x 1.75 E 6

Case style similar to TO-208AD (TO-83)

T4



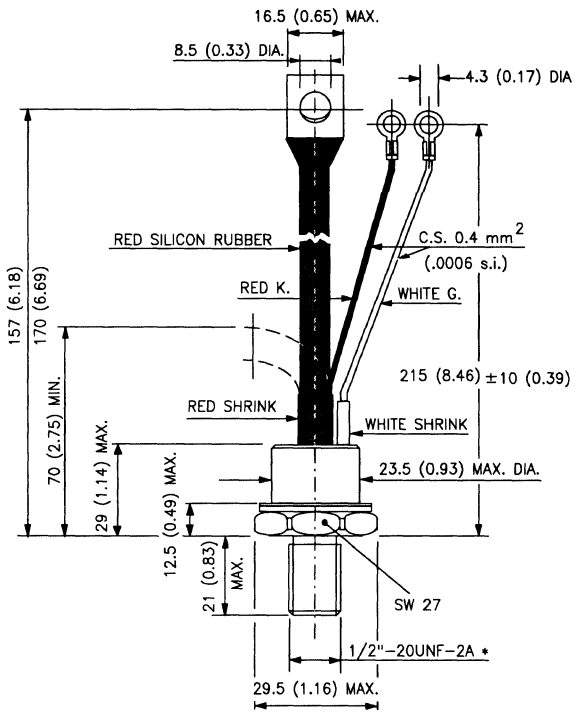
* FOR METRIC DEVICE : M12 x 1.75 E 6

Case style TO-209AC (TO-94)

All dimensions in millimeters and (inches)

T5

GLASS METAL SEAL

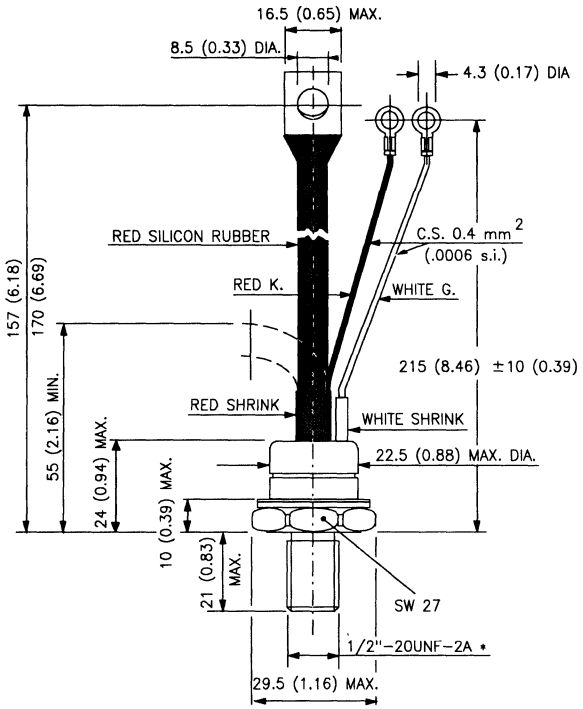


* FOR METRIC DEVICE : M12 x 1.75 E 6

Case style TO-209AC (TO-94)

T6

CERAMIC HOUSING

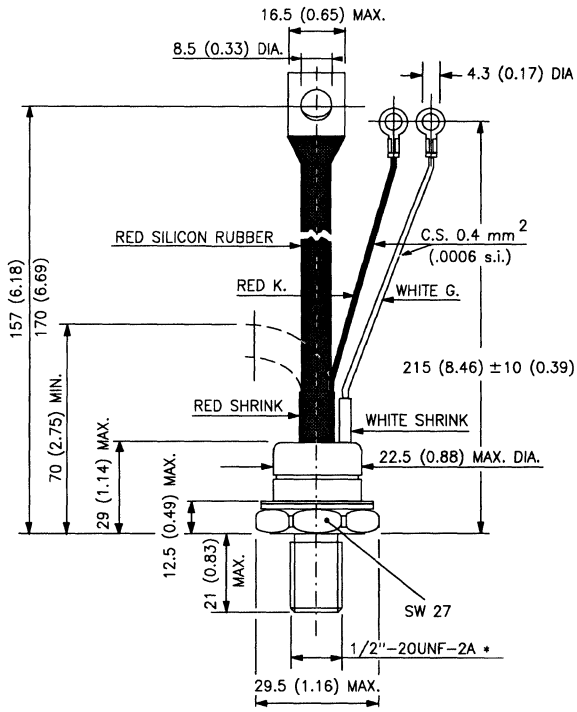


* FOR METRIC DEVICE : M12 x 1.75 E 6

Case style TO-209AC (TO-94)

T7

CERAMIC HOUSING

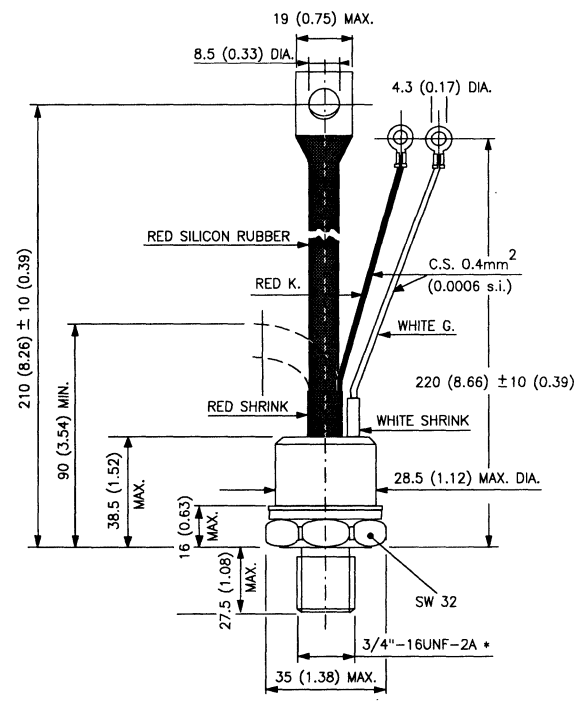


* FOR METRIC DEVICE : M12 x 1.75 E 6

Case style TO-209AC (TO-94)

T8

GLASS METAL SEAL



* FOR METRIC DEVICE : M16 x 1.5 – LENGHT 21 (0.83)

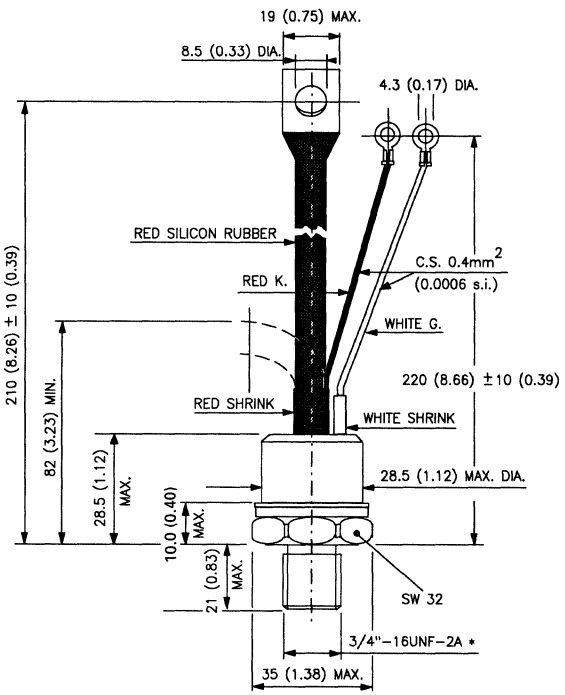
Case style TO-209AB (TO-93)

All dimensions in millimeters and (inches)

O

T9

GLASS METAL SEAL

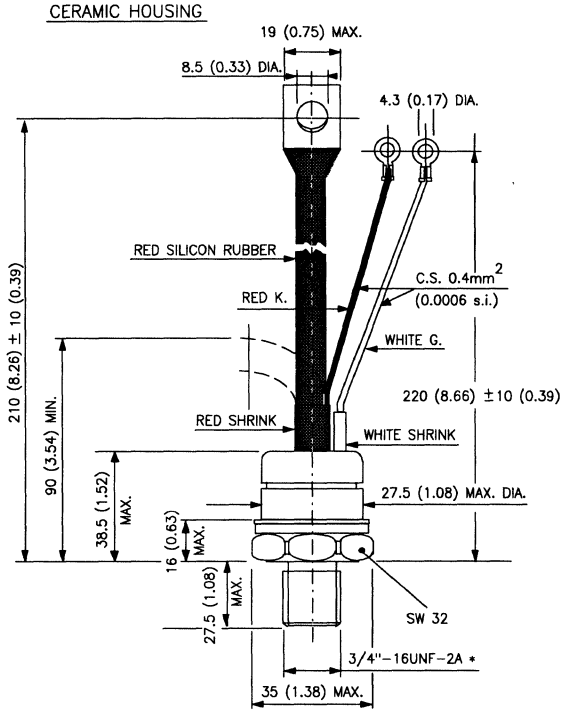


* FOR METRIC DEVICE : M16 x 1.5 – LENGHT 21 (0.83)

Case style similar to TO-209AB (TO-93)

T10

CERAMIC HOUSING

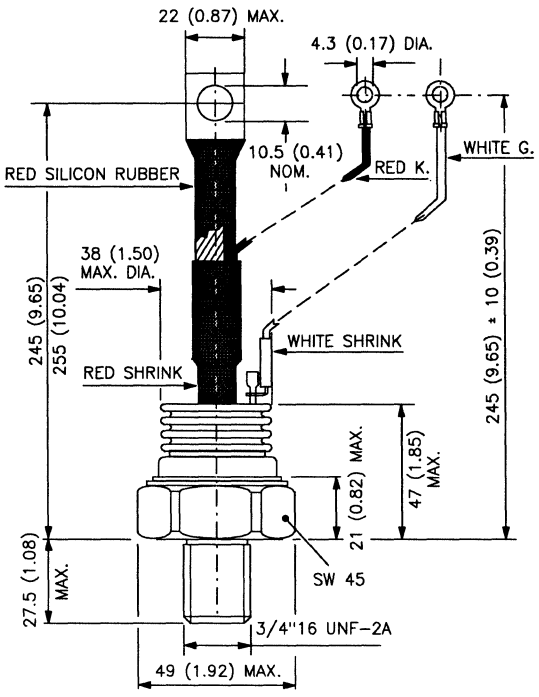


* FOR METRIC DEVICE : M16 x 1.5 – LENGHT 21 (0.83)

Case style TO-209AB (TO-93)

T11

CERAMIC HOUSING

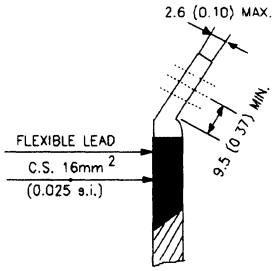


* FOR METRIC DEVICE: M24 X 1.5 – LENGHT SCREW 21 (0.83) MAX.

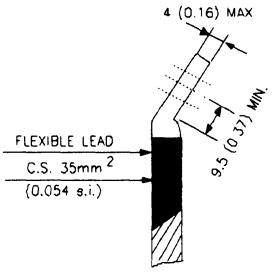
Case style TO-209AE (TO-118)

All dimensions in millimeters and (inches)

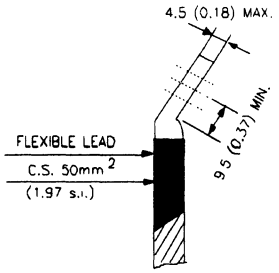
FLEXIBLE LEADS



TO-209AC (TO-94)

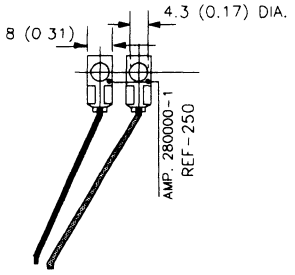


TO-209AB (TO-93)



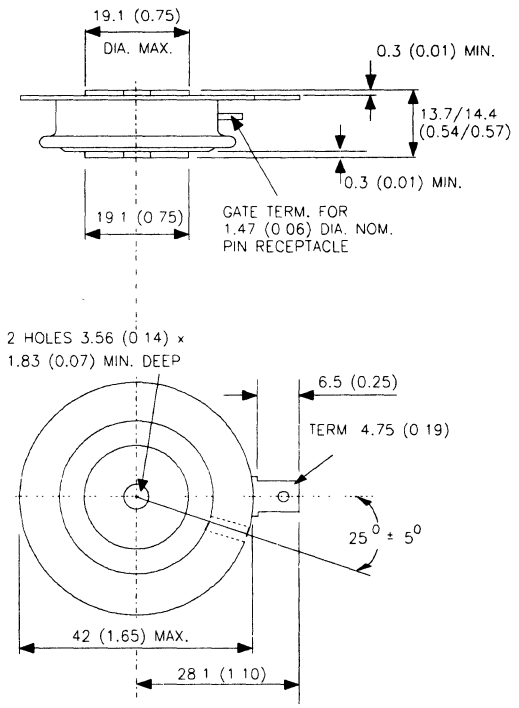
TO-209AE (TO-118)

FAST-ON TERMINALS (Option)



T12

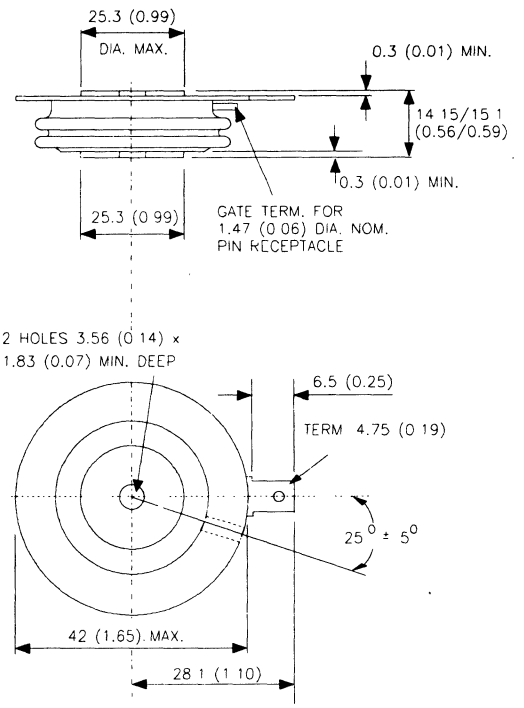
ANODE TO GATE
CREEPAGE DISTANCE: 7.62 (0.30) MIN.
STRIKE DISTANCE: 7.12 (0.28) MIN.



Case style TO-200AB (A-PUK)

T13

ANODE TO GATE
CREEPAGE DISTANCE: 11 18 (0.44) MIN.
STRIKE DISTANCE: 7.62 (0.30) MIN.

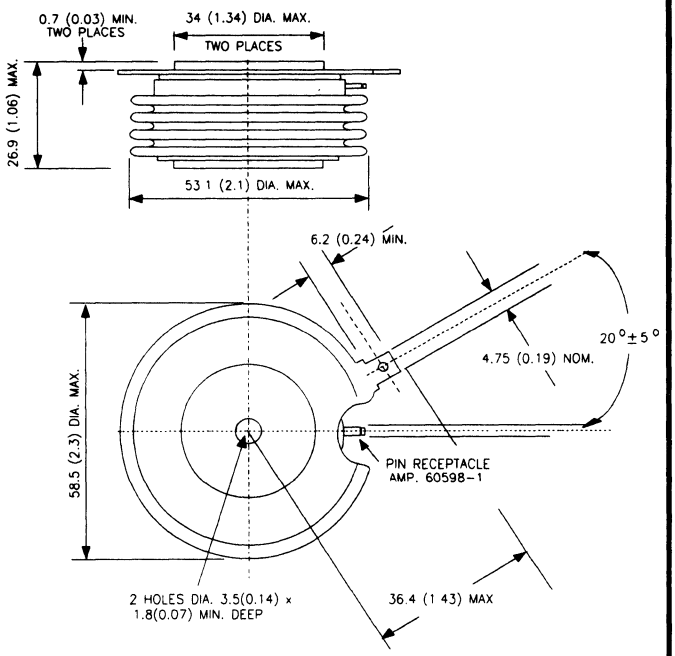


Case style TO-200AB (E-PUK)

All dimensions in millimeters and (inches)

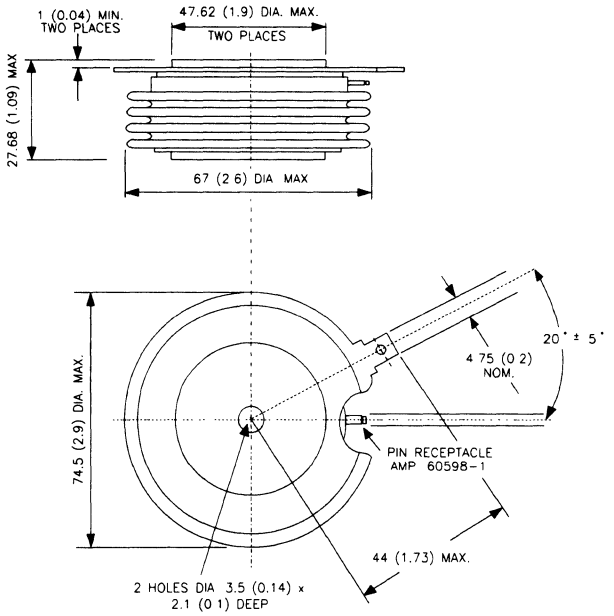
O

T14



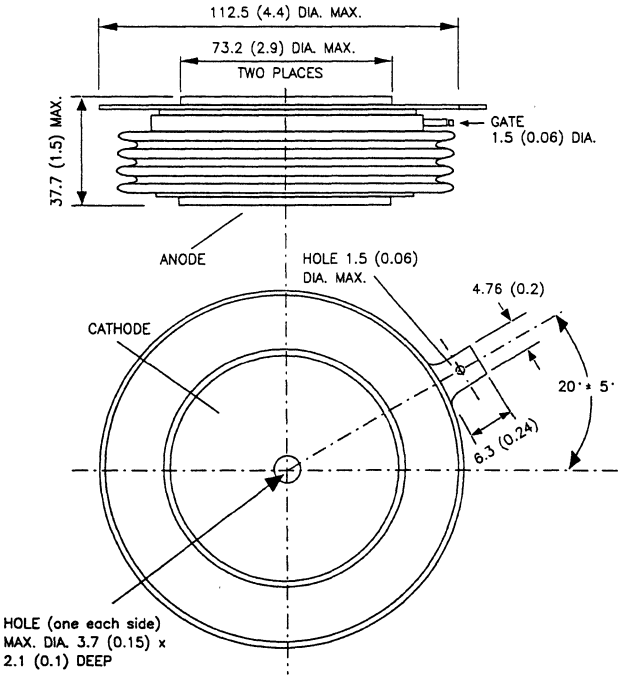
Case style TO-200AC (B-PUK)

T15



Case style A-24 (K-PUK)

T16

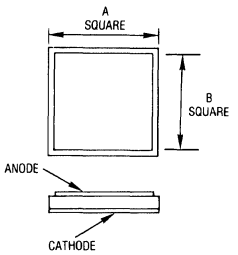


Case style A-36 (R-PUK)

All dimensions in millimeters and (inches)

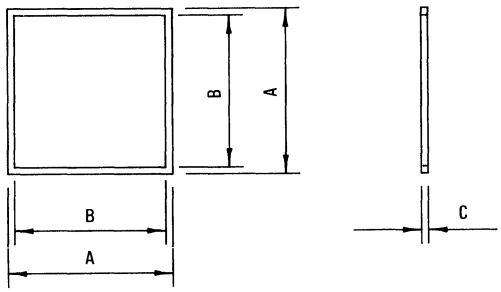
Diode and Thyristor Die Outline

Diode Die(1)



JUNCTION CARRIER QUANTITIES	
Basic Part	**Quantity Per Carrier**
SC090	196
SC125	100
SC150	49
SC175	49
SC200	36
SC275	25
Please note that junctions are only sold in multiples of the carriers shown above.	

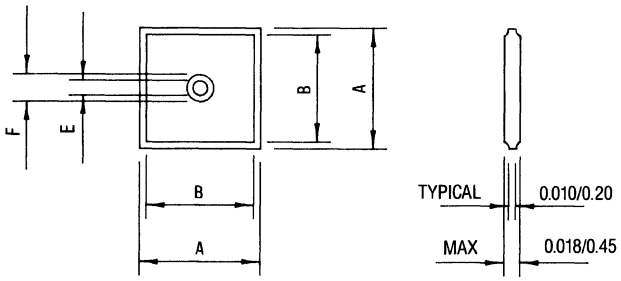
Schottky Diode Die



Die Part Number	A	B	C (Maximum)
IR150-- IR180-- IR210-- IR280-- IR350-- IR480--	0.150/3.81 0.180/4.57 0.210/5.33 0.280/7.11 0.350/8.89 0.480/12.19	0.130/3.40 0.160/4.17 0.190/4.93 0.260/6.71 0.330/8.48 0.460/11.79	0.014/0.36

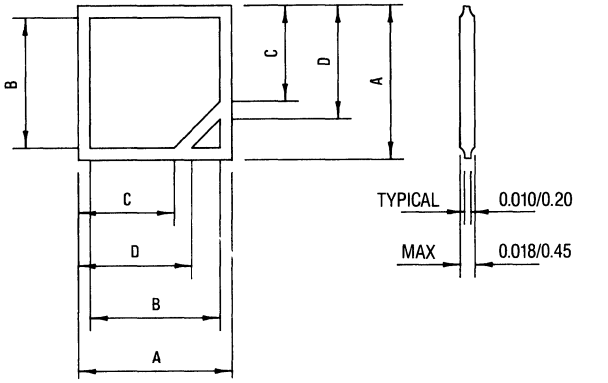
Standard and Fast Recovery Diode Die

Thyristor Die



Die Part Number	A	B	E	F
IR210SG/TG IR350SG/TG	0.210/5.33 0.350/8.89	0.170/4.32 0.310/7.87	0.038/0.81 0.040/1.02	0.064/1.62 0.080/2.03

Center Gate Thyristor Die



Die Part Number	A	B	E	F
IR230SG IR480SG	0.230/5.84 0.480/12.19	0.190/4.83 0.404/10.26	0.159/4.00 0.299/7.60	0.171/4.04 0.350/9.02

Corner Gate Thyristor Die

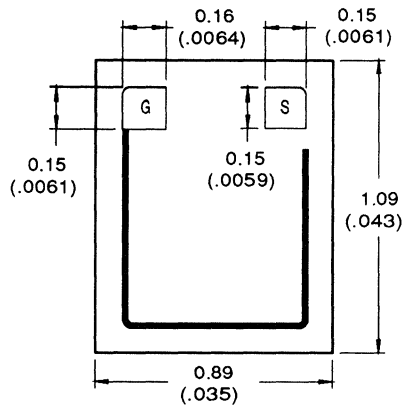
JUNCTION CARRIER QUANTITIES

Basic Part Number	Quantity Per Carrier
IR150DR/IR150LR	361
IR180DR	256
IR210DR/IR210LR	196
IR280DR/IR280LR	121
IR350DR/IR350LR	100
IR480DR/IR480LR	49
IR210SG/IR210TG IR230SG	Up to 2500 per jar
IR350SG/IR250TG	Up to 1000 per jar
IR480SG	Up to 500 per jar

Please note that Junctions are only sold in multiples of the carriers shown above.

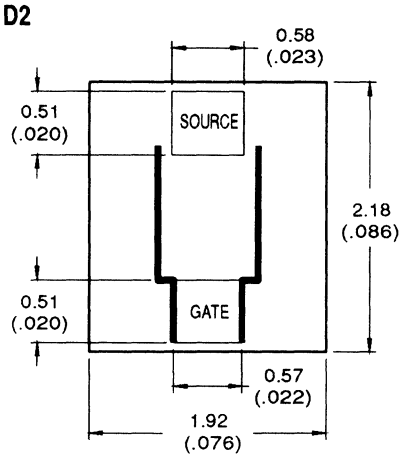
O

D1



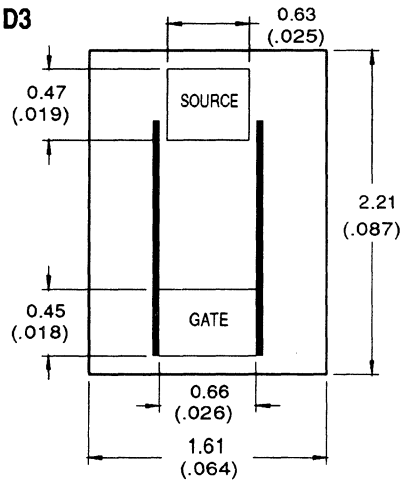
HEX-Z: 100V, N-CHANNEL

D2



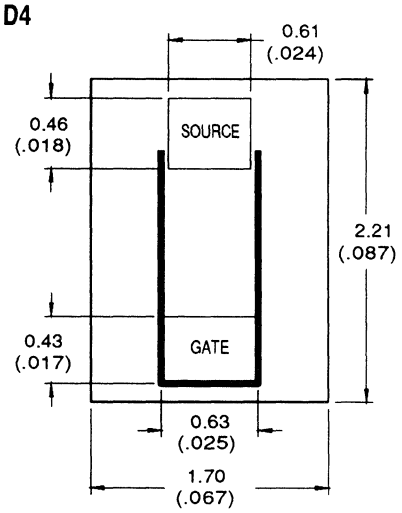
HEX-1: 60V, N-CHANNEL
LOGIC LEVEL: HEX-1: 60V, N-CHANNEL

D3



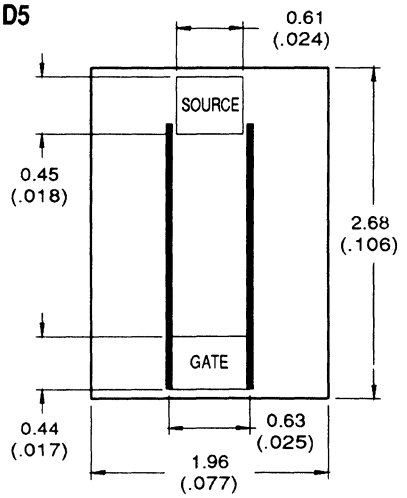
HEX-1: 100V, N-CHANNEL
LOGIC LEVEL: HEX-1: 100V, N-CHANNEL

D4



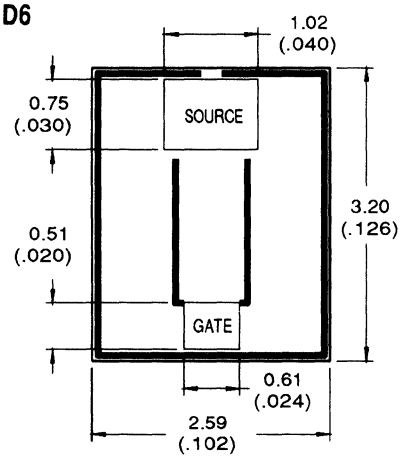
HEX-1: 200V TO 250V, N-CHANNEL

D5



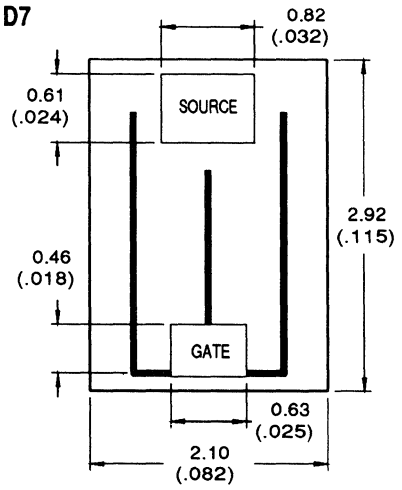
HEX-1: 400V, N-CHANNEL

D6



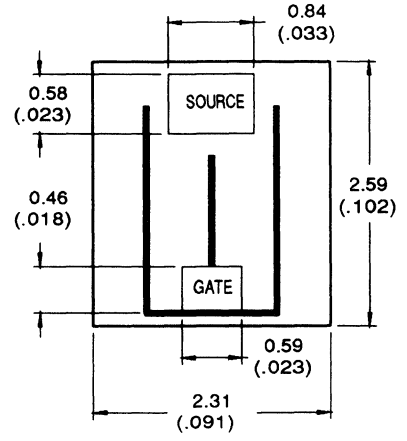
HEX-2: 60V, N-CHANNEL
LOGIC LEVEL: HEX-2: 60V, N-CHANNEL

D7



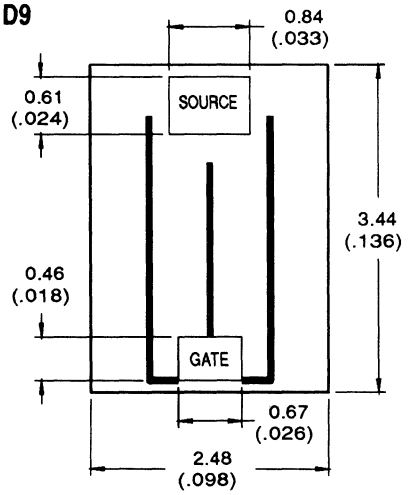
HEX-2: 100V, N-CHANNEL
LOGIC LEVEL: HEX-2: 100V, N-CHANNEL

D8



HEX-2: 200V TO 250V, N-CHANNEL

D9

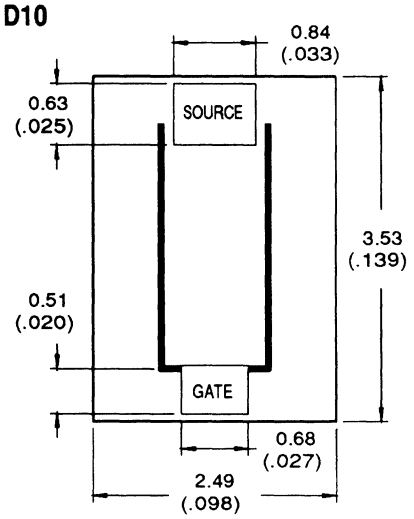


HEX-2: 400V TO 500V, N-CHANNEL

SEE NOTES FOR TOLERANCES & ALL OTHER INFORMATION

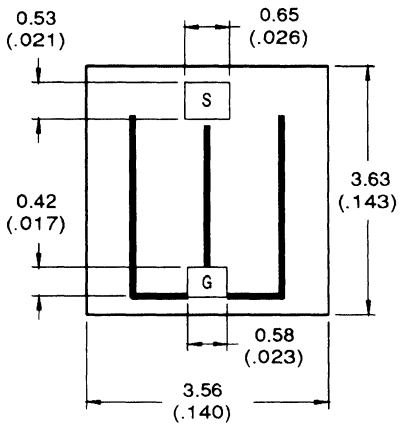
ALL DIMENSIONS SHOWN IN MILLIMETERS (INCHES)

D10



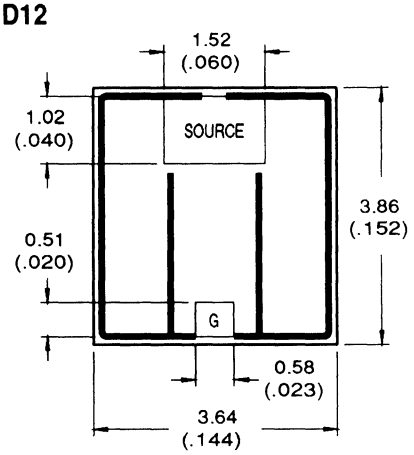
HEX-2 600V, N-CHANNEL

D11



HEX-2: 800V TO 1000V, N-CHANNEL

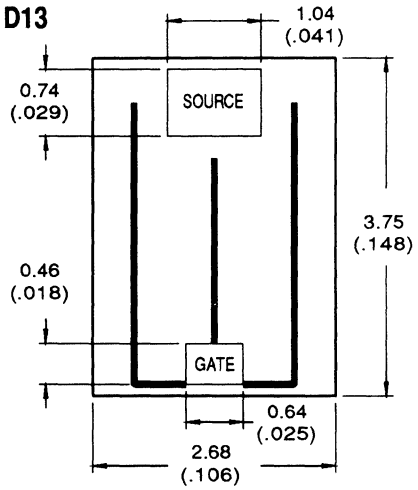
D12



HEX-3: 60V, N-CHANNEL

LOGIC LEVEL: HEX-3: 60V, N-CHANNEL

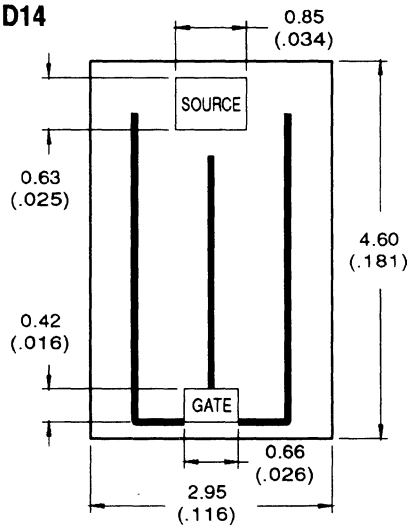
D13



HEX-3: 100V, N-CHANNEL

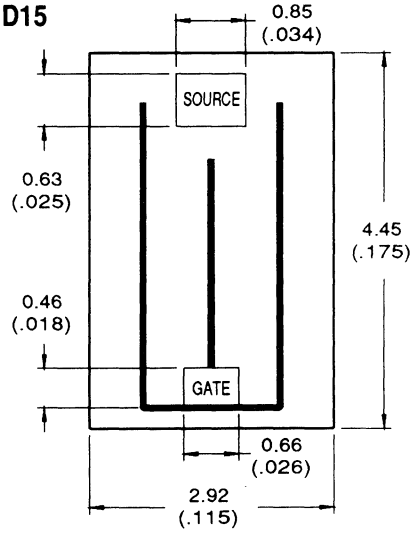
LOGIC LEVEL: HEX-3: 100V, N-CHANNEL

D14



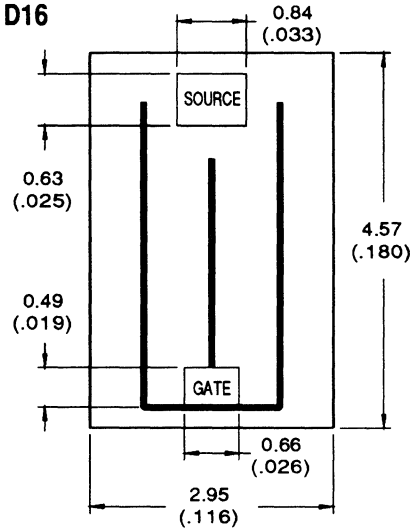
HEX-3: 200V TO 250V, N-CHANNEL

D15



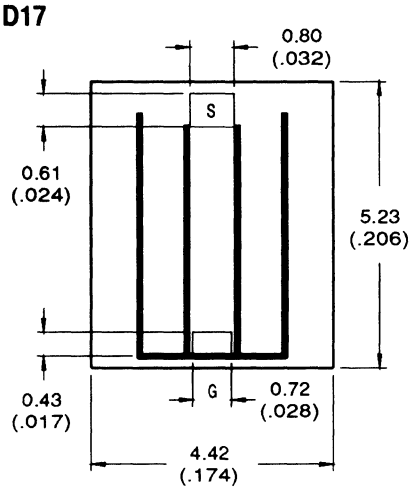
HEX-3: 400V TO 500V, N-CHANNEL

D16



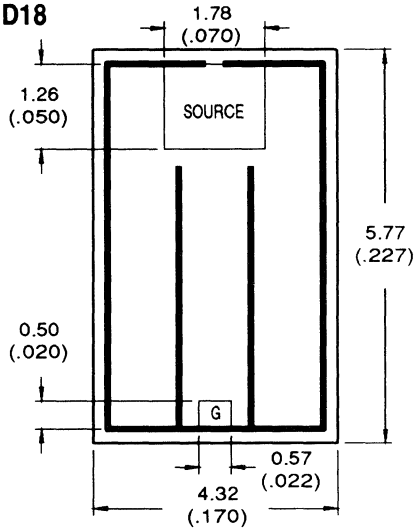
HEX-3: 600V, N-CHANNEL

D17



HEX-3: 800V TO 1000V, N-CHANNEL

D18



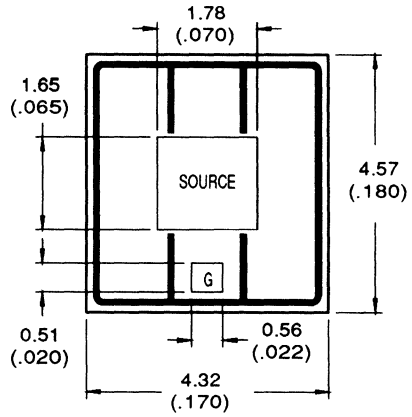
LOGIC LEVEL: HEX-4: 60V, N-CHANNEL

SEE NOTES FOR TOLERANCES & ALL OTHER INFORMATION

ALL DIMENSIONS SHOWN IN MILLIMETERS (INCHES)

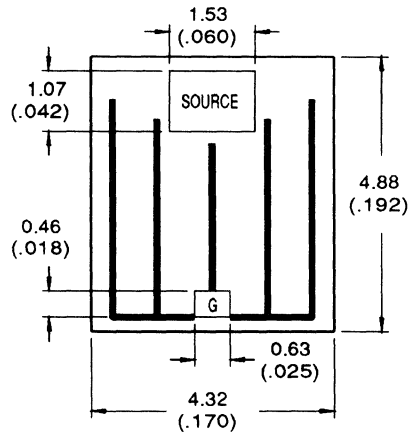
O

D19



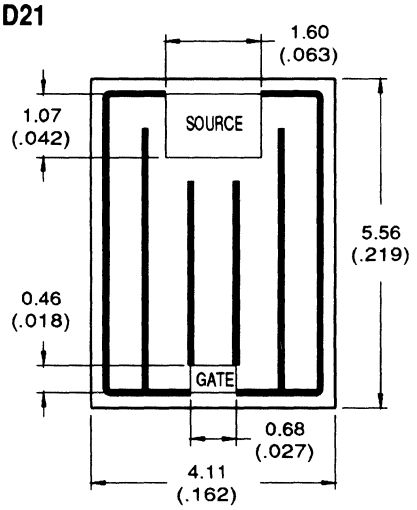
HEX-4: 50V TO 60V, N-CHANNEL

D20



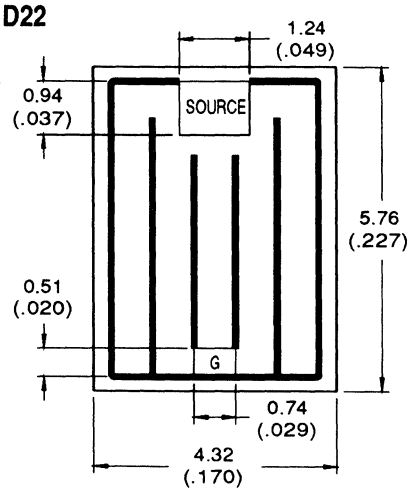
HEX-4: 100V, N-CHANNEL
LOGIC LEVEL: HEX-4: 100V, N-CHANNEL

D21



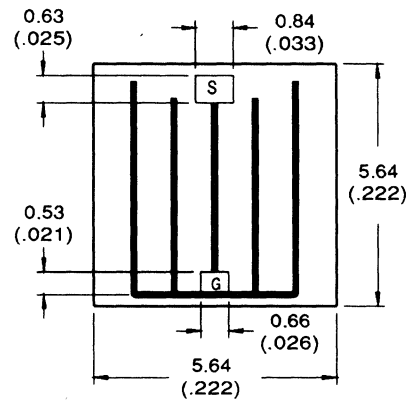
HEX-4: 200V TO 250V, N-CHANNEL

D22



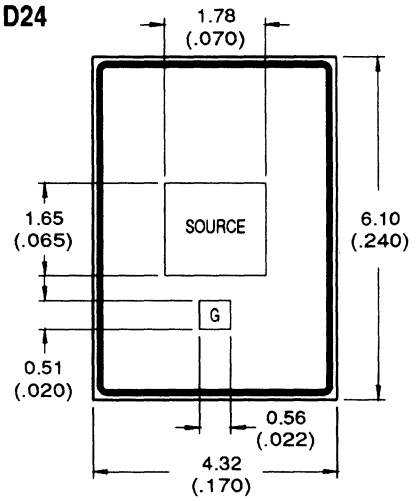
HEX-4: 400V TO 600V, N-CHANNEL

D23



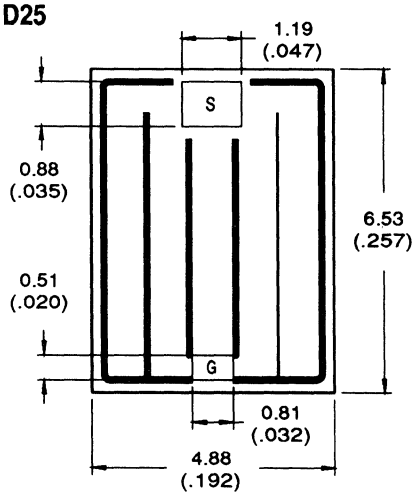
HEX-4: 800V TO 1000V, N-CHANNEL

D24



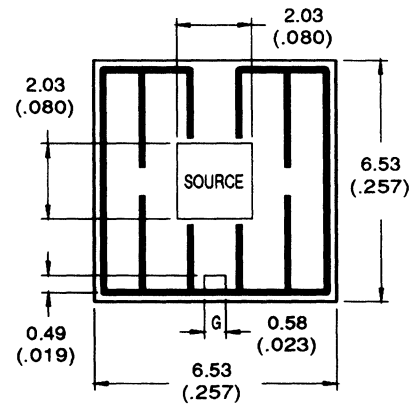
HEX-4.1: 60V, N-CHANNEL

D25



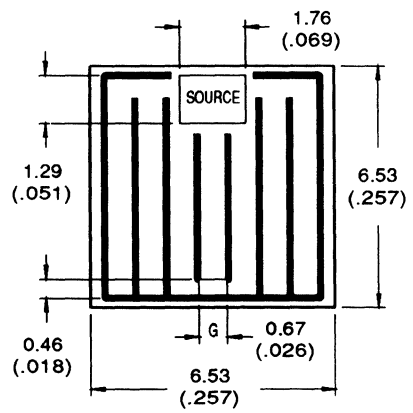
HEX-4.5: 500V TO 600V, N-CHANNEL

D26



HEX-5: 60V, N-CHANNEL

D27

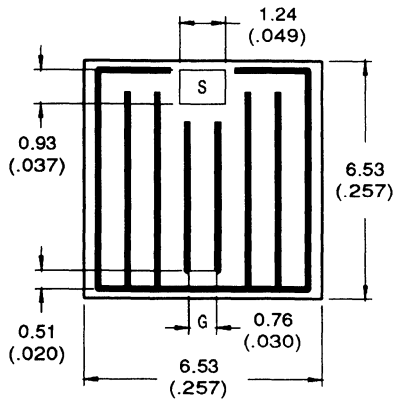


HEX-5: 100V TO 500V, N-CHANNEL

SEE NOTES FOR TOLERANCES & ALL OTHER INFORMATION

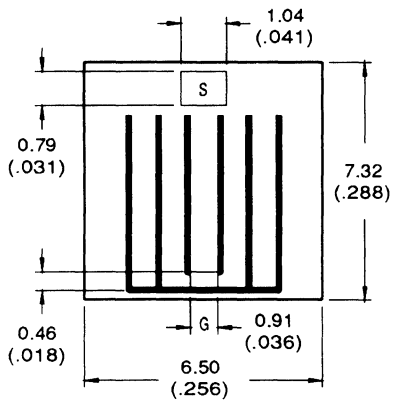
ALL DIMENSIONS SHOWN IN MILLIMETERS (INCHES)

D28



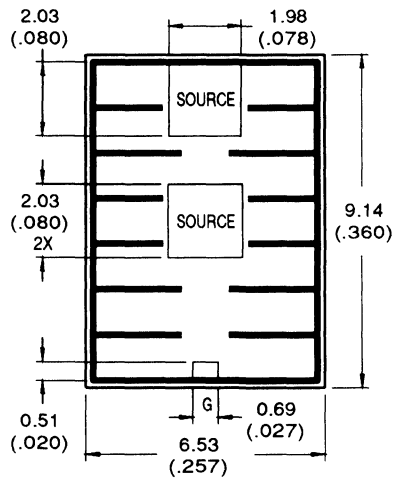
HEX-5: 600V, N-CHANNEL

D29



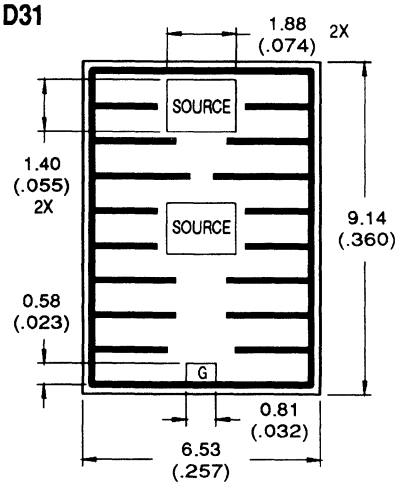
HEX-5: 800V TO 1000V, N-CHANNEL

D30



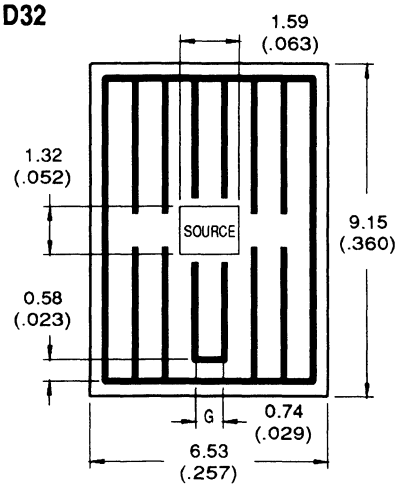
HEX-6: 60V, N-CHANNEL

D31



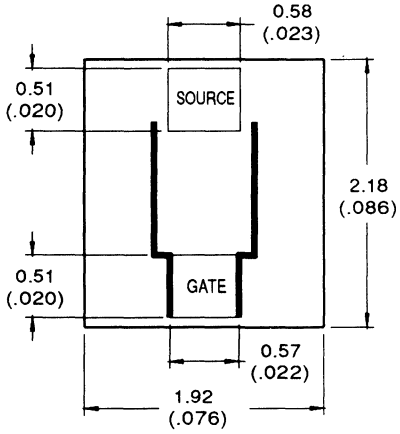
HEX-6: 200V TO 250V, N-CHANNEL

D32



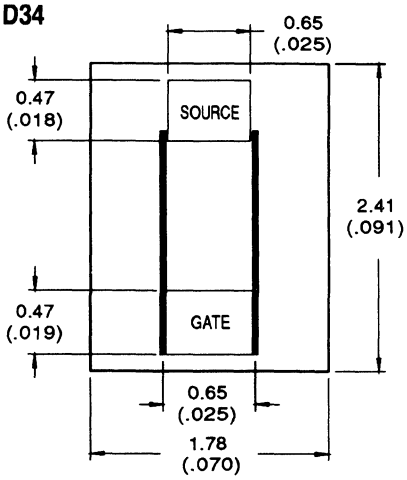
HEX-6: 400V TO 600V, N-CHANNEL

D33



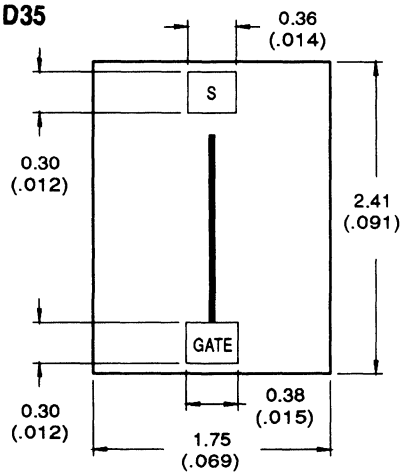
HEX-1: -60V, P-CHANNEL

D34



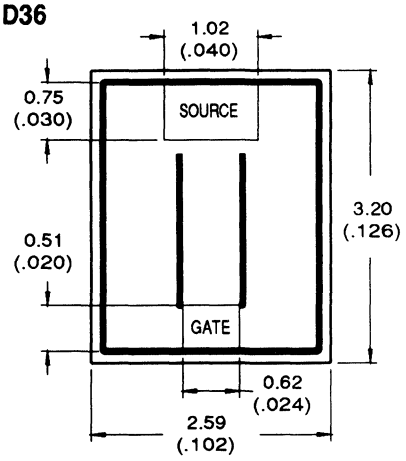
HEX-1: -100V, P-CHANNEL

D35



HEX-1: -200V, P-CHANNEL GEN 1

D36



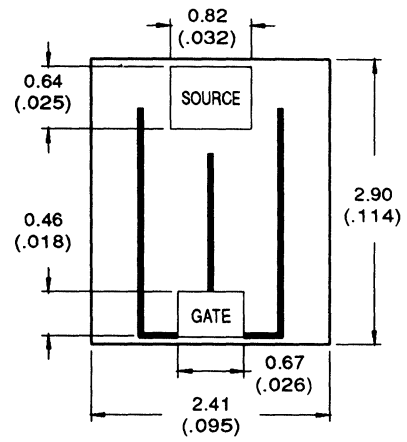
HEX-2: -60V, P-CHANNEL

SEE NOTES FOR TOLERANCES & ALL OTHER INFORMATION

ALL DIMENSIONS SHOWN IN MILLIMETERS (INCHES)

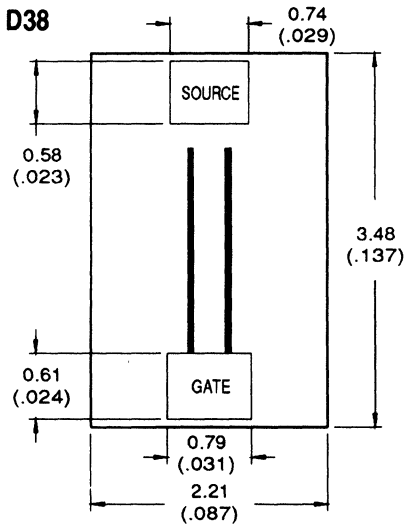
O

D37



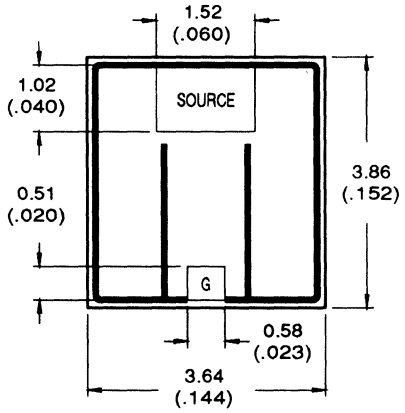
HEX-2: -100V, P-CHANNEL

D38



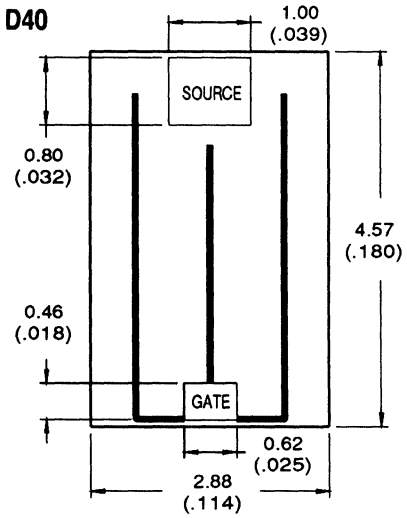
HEX-2: -200V, P-CHANNEL GEN 1

D39



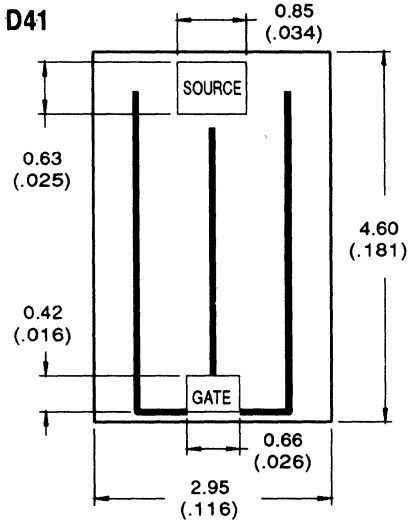
HEX-3: -60V, P-CHANNEL

D40



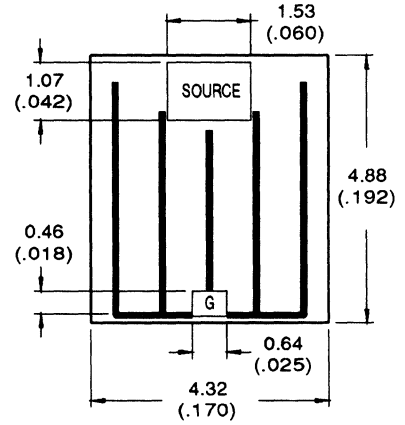
HEX-3: -100V, P-CHANNEL

D41



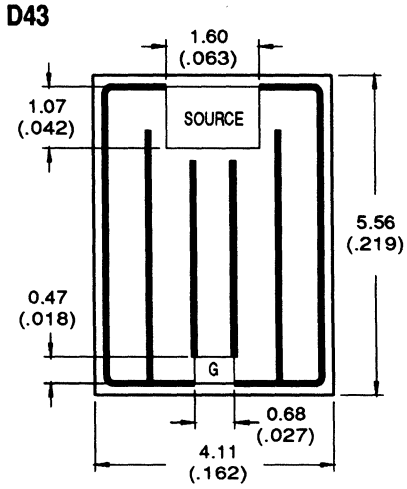
HEX-3: -200V, P-CHANNEL

D42



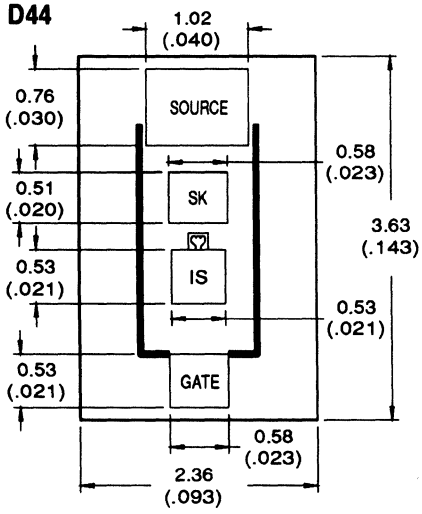
HEX-4: -100V, P-CHANNEL

D43



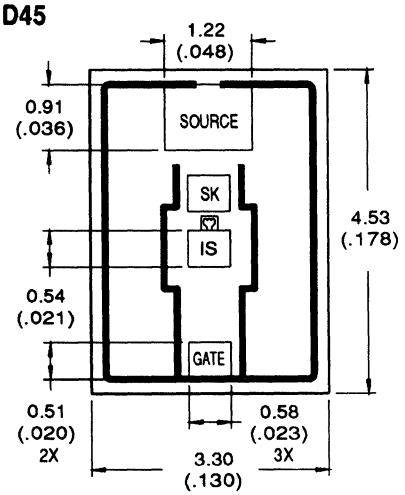
HEX-4: -200V, P-CHANNEL

D44



HEXSense-2: 60V, N-CHANNEL

D45

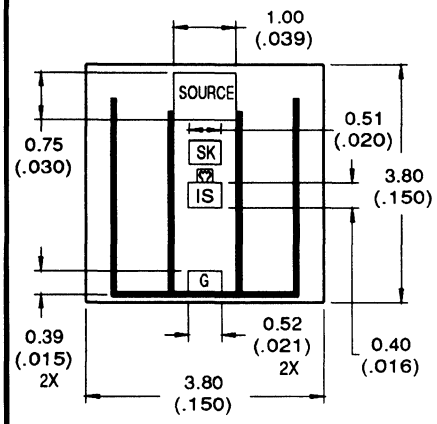


HEXSense-3: 60V, N-CHANNEL

SEE NOTES FOR TOLERANCES & ALL OTHER INFORMATION

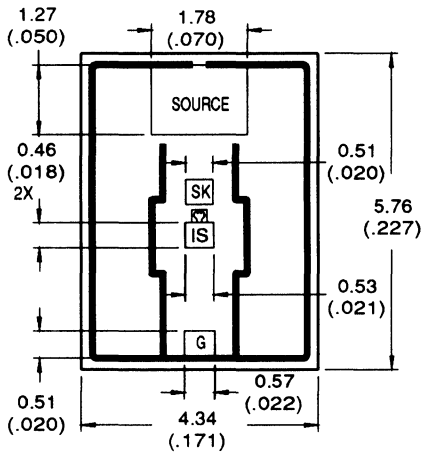
ALL DIMENSIONS SHOWN IN MILLIMETERS (INCHES)

D46



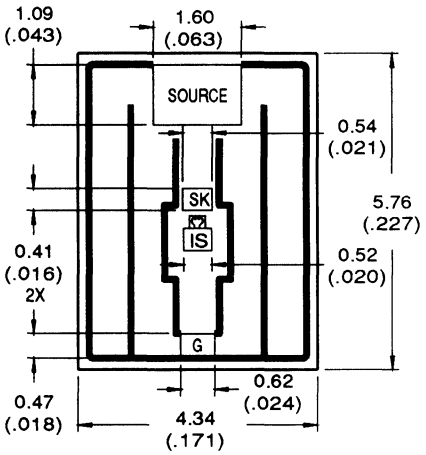
HEXSense-3: 100V TO 500V, N-CHANNEL

D47



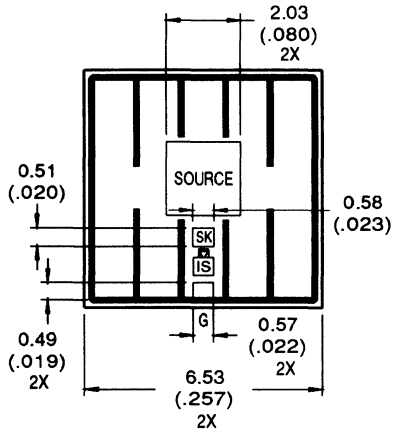
HEXSense-4: 60V, N-CHANNEL

D48



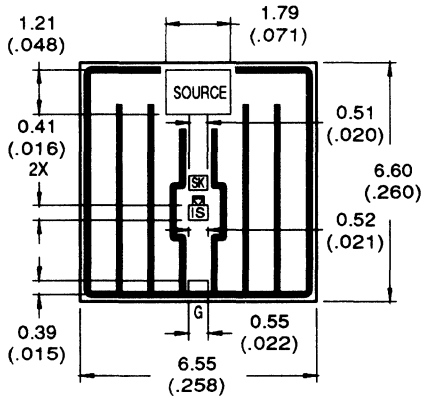
HEXSense-4: 100V TO 500V, N-CHANNEL

D49



HEXSense-5: 60V, N-CHANNEL

D50



HEXSense-5: 100V TO 500V, N-CHANNEL

D51

D52

NOTES:

1. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
2. CONTROLLING DIMENSION: (INCH).
3. LETTER DESIGNATION:
   S = SOURCE SK = SOURCE KELVIN
   G = GATE IS = CURRENT SENSE
4. DIMENSIONAL TOLERANCES:

BONDING PADS:	< 0.635 TOLERANCE	= +/- 0.013
WIDTH	< (0.0250) TOLERANCE	= +/- (0.0005)
&	> 0.635 TOLERANCE	= +/- 0.025
LENGTH	> (0.0250) TOLERANCE	= +/- (0.0010)
OVERALL DIE:	< 1.270 TOLERANCE	= +/- 0.102
WIDTH	< (0.050) TOLERANCE	= +/- (0.004)
&	> 0.635 TOLERANCE	= +/- 0.203
LENGTH	> (0.050) TOLERANCE	= +/- (0.008)

5. UNLESS OTHERWISE NOTED ALL DIE ARE GEN III

SEE NOTES FOR TOLERANCES & ALL OTHER INFORMATION

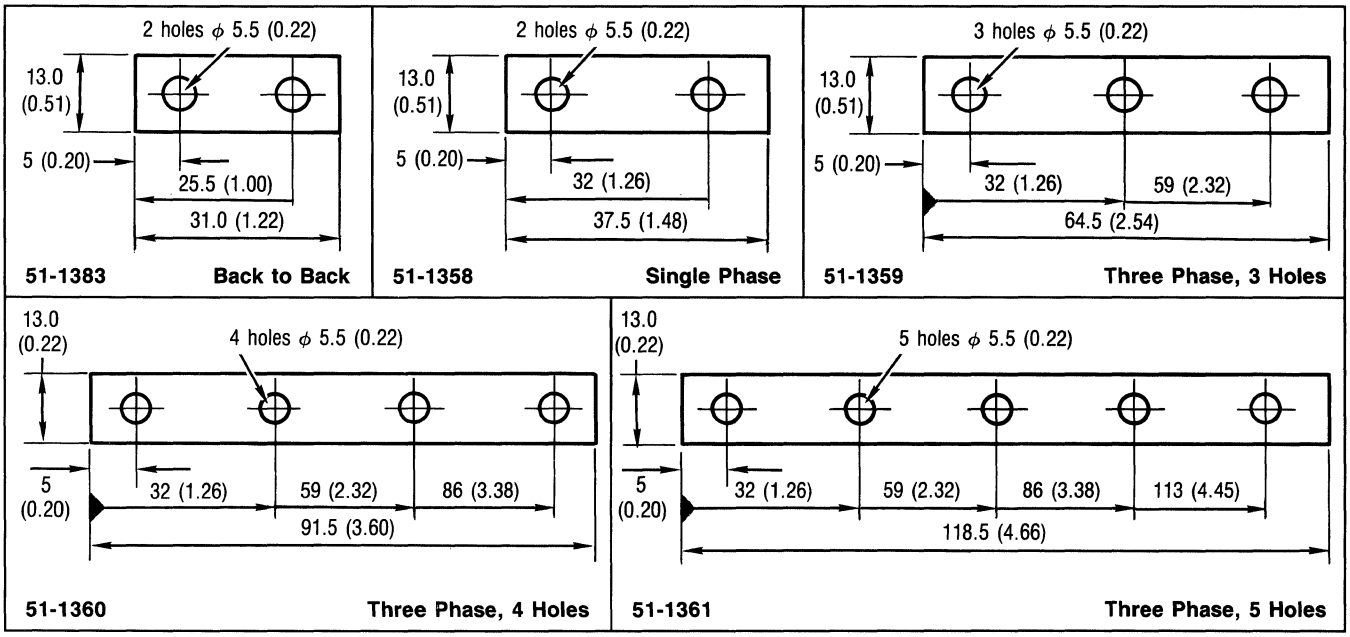
ALL DIMENSIONS SHOWN IN MILLIMETERS (INCHES)

O

Power Modules
Hardware

International IOR Rectifier

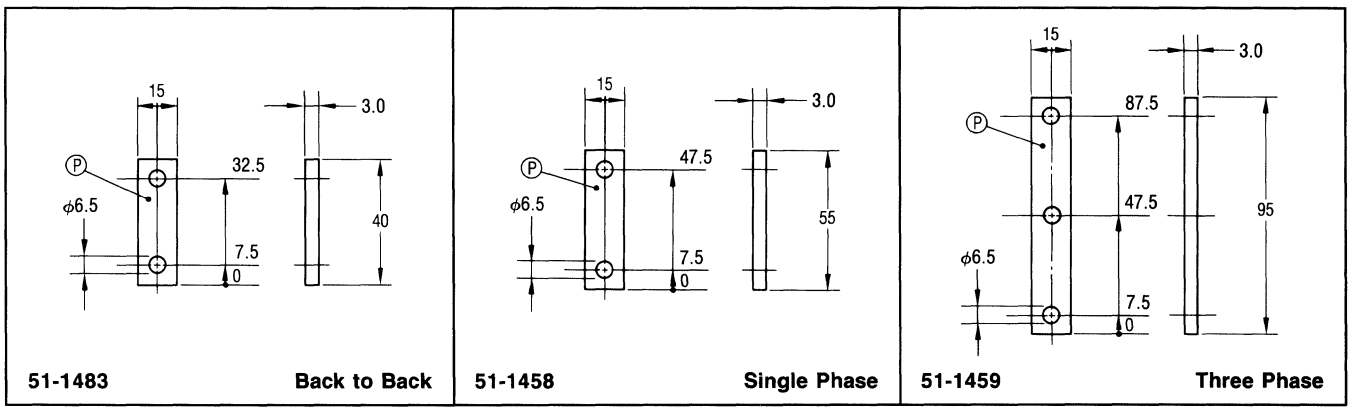
Busbars — Add-A-Pak



All busbars are 3mm thick.

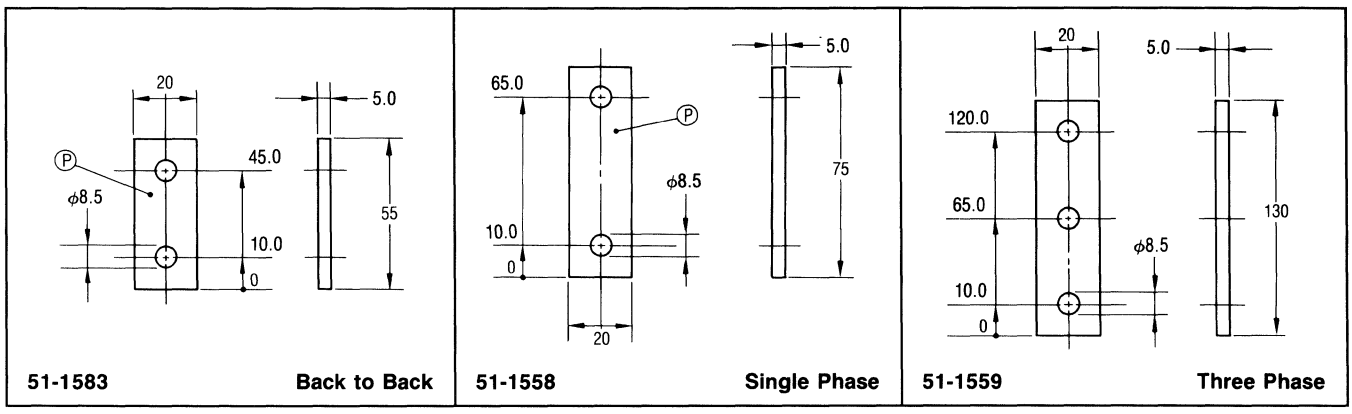
All dimensions in millimeter and (inches)

Busbars — Int-A-Pak



All dimensions in millimeter

Busbars — Magn-A-Pak



All dimensions in millimeters

Available Literature

International IOR Rectifier

DATABOOKS

GOVERNMENT AND SPACE PRODUCTS DESIGNER'S MANUAL GSP-1
HEXFET DESIGNER'S MANUAL - APPLICATION NOTES & RELIABILITY DATA ..... HDM-1, VOL. 1
HEXFET DESIGNER'S MANUAL (D-PAK,SMD-220,SOT-89,SO-8,SOT-223 ..... HDM-1, VOL. 3
TO-220 FULLPAK,TO-247 FULLPAK,HEXDIPS,I-PAK,TO-220 & TO-247
HEX-PAK DATABOOK HPD-1
INSULATED GATE BIPOLAR TRANSISTOR PRODUCT CATALOG IGBT-2
IGBT MODULES DATABOOK IGPM-2
MICROELECTRONIC RELAY DESIGNERS MANUAL MPIC-5
POWER MODULES DESIGNER'S MAUNAL PMD-1
SCHOTTKY DIODE DESIGNER'S MANUAL SDM-1
POWER SEMICONDUCTOR 1994 PRODUCT DIGEST SFC-94
RECTIFIER POWER-STANDARD RECOVERY TYPES (SUPPLEMENT TO NRPM-2 & SHVR-2) VDSR-2
RECTIFIER POWER - FAST RECOVERY TYPES (SUPPLEMENT TO FRPM-1) VDFR-2
THYRISTOR POWER - INVERTER TYPES (SUPPLEMENT TO IPM-1) VTI-2
THYRISTOR - PHASE CONTROL TYPES (SUPPLEMENT TO NTPM-2) VTPC-2

SELECTION GUIDES

MICROELECTRONIC RELAYS E1002F
HEXFET-POWER MOSFETS-IGBTs-INSULATED GATE BIPOLAR TRANSISTORS E1003J
-POWER INTEGRATED CIRCUITS-POWER INTERFACE PRODUCTS
SCHOTTKY BARRIER RECTIFIER DIODES E1005G
ENCAPSULATED BRIDGE RECTIFIER E1007E
INSULATED GATE BIPOLAR TRANSISTORS,HEXFET,HEXSENSE,LOGIC LEVEL,SCHOTTKY AND POWER SEMICONDUCTOR DIE E1022C
SURFACE MOUNTED DEVICES E1026A
HEXFRED-ULTRA FAST, SOFT RECOVERY DIODES E1027
INSULATED GATE BIPOLAR TRANSISTORS-(IGBTs) AND IGBT/ULTRAFAST DIODES (CO-PACK) E1028
FULLPAK-FULLY ISOLATED POWER MOSFETS-HEXFETS E1029

RELIABILITY REPORTS

POWER IC RELIABILITY REPORT, NUMBER 5, APRIL 1992
MICROELECTRONIC POWER IC RELAY RELIABILITY REPORT, REPORT NUMBER 13, JULY 1990
IR2110S RELIABILITY REPORT, POWER IC, REPORT NUMBER 3-AUGUST 1990
SCHOTTKY RELIABILITY REPORT NUMBER 2, MARCH 31, 1992
SCHOTTKY RELIABILITY REPORT, SEMI-ANNUAL, FIRST HALF, 1993
HEXFET RELIABILITY REPORT, QUARTERLY REPORT NUMBER 39, JULY 15, 1993
HEXFET RELIABILITY REPORT, QUARTERLY REPORT NUMBER 40, OCT 15, 1993
HEXFET RELIABILITY REPORT, QUARTERLY REPORT NUMBER 41, JAN 5, 1994
HEXFET RELIABILITY REPORT, QUARTERLY REPORT NUMBER 42, APRIL 15, 1994
CUSTOM PRODUCTS RELIABILITY REPORT NUMBER 9, JANUARY 1990
PVI1050 PHOTOVOLTAIC ISOLATOR RELIABILITY REPORT NUMBER 14, DECEMBER 1990
HEXFRED-ULTRA FAST, SOFT RECOVERY DIODE RELIABILITY REPORT JUNE, 1992
IGBT MODULE RELIABILITY REPORT #1 - NOVEMBER, 1991
IR2113 QUALIFICATION REPORT - AUGUST 1992
SO-8 RELIABILITY REPORT, JULY 1993-SURFACE MOUNT TECHNOLOGY (REPORT NUMBER SMT-01)

BROCHURES

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HEXSENSE - INTRODUCING A NEW SERIES OF CURRENT-SENSING HEXFETS
THE DRIVING FORCE BEHIND AUTOMOTIVE POWER ELECTRONICS

APPLICATION NOTES

POWER INTEGRATED CIRCUITS

IGBTs (INSULATED GATE BIPOLAR TRANSISTORS)

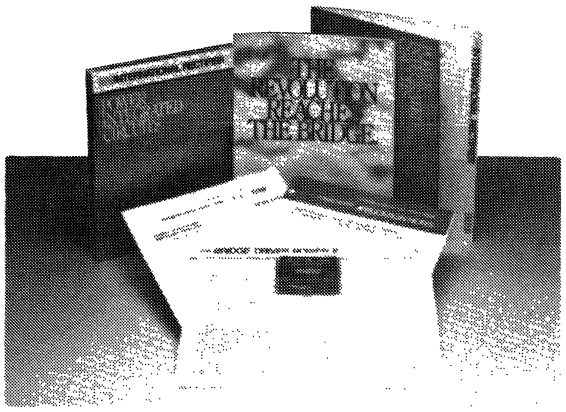
HEXFETs

Available Literature

DESIGN TIPS

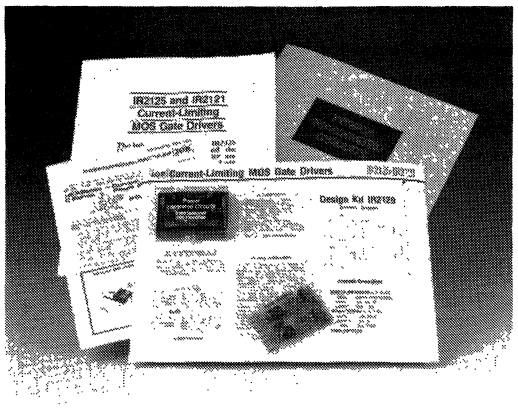
Application Materials:

IR2119 DESIGN KIT
FEATURING IR2110



KIT COMPONENTS
2 — IR2110 MOS Gate Drivers (500V, 2A)
2 — IR830 HEXFETs (500V, 4.5A) — Q1, Q2
1 — 10KF6 Diode (600V, 1A) — D1
1 — Capacitor (0.047 μF, 50V) — C1
2 — Resistors (47Ω, 1/4W, 5%) — R1, R2
1 — Resistor (10Ω, 1/4W, 5%) — R3
1 — Kit PC Wiring Board (located under foam)

IR2129 DESIGN KIT
FEATURING IR2125/IR2121



KIT COMPONENTS
1 — IR2125 MOS Gate Driver (500V)
1 — IR2121 MOS Gate Driver (20V)
2 — IRC830 HEXSense power FETs (500V) Q1, Q2
2 — Resistors (22Ω, .25W, 5%) R1, R3
2 — Resistors (120Ω, .25W, 5%) R2, R4
1 — 10KF6 Diode (600V) D1
2 — 1N4148 Diodes D2, D3
2 — Capacitors (1000pF, 100V, Ceramic) C1, C2
2 — Capacitors (10μF, 50V, Aluminum) C3, C4
2 — Capacitors (0.1μF, 100V, Ceramic) C5, C6
1 — Kit PC Wiring Board (located under foam)

ADDITIONAL POWER IC APPLICATION ARTICLES AVAILABLE FROM IR

NUMBER	**Power IC Technology**
ER91-1	"Trends in Integrated Power and Logic", by A. Alderman, D. Tam, P. Wood, P. Schugart presented at ELKOM March 7, 1991.
ER92-1	"MGDs: High Performance Integrated Drivers for Power MOSFETs & IGBTs", by Arnold Alderman and Steve Clemente
	IR2110
ER90-1	"High Voltage Chipset for Offline System Designs", by David Tam and Dan Kinzer.
ER90-3	"New High-Voltage Bridge Driver Simplifies PWM Inverter Design", by D. Grant and B. Pelly, presented at 1989 PCIM Conference.
	IR2125/IR2121
ER91-2	"Power IC Driver Protects MOSFETs and IGBTs, operates to 500V", by P. Wood, PCIM March 1991 Reprint.
	IR2130
ER91-3	"A 600 Volt Interface IC for Three-Phase Bridge Circuits", by Chris Choi and Peter Wood

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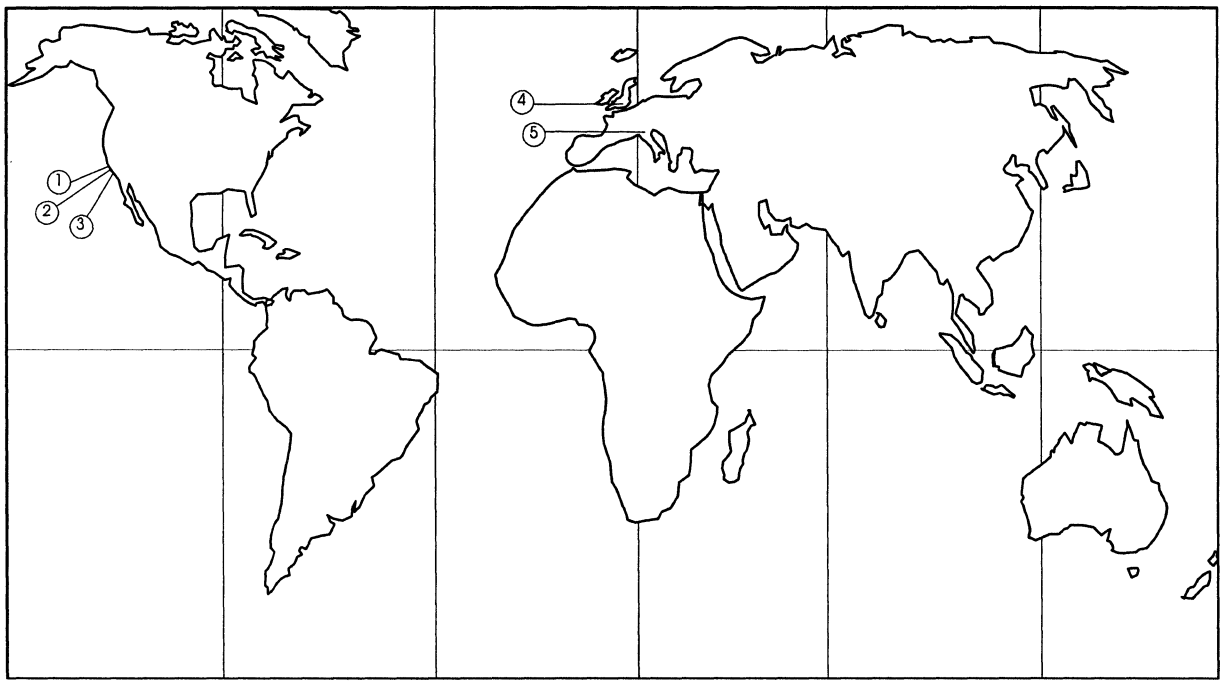

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② **HEXFET America**
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- Dedicated to power MOSFETs, IGBTs

③ **Tijuana, Mexico**

- Schottkys,HEXFREDs, IGBTs, HEXFET, Alloyed Diodes

④ **Oxted, England**

- Power MOSFETs, IGBTs, Schottkys, Power ICs, HEXFREDs

⑤ **Turin, Italy**

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