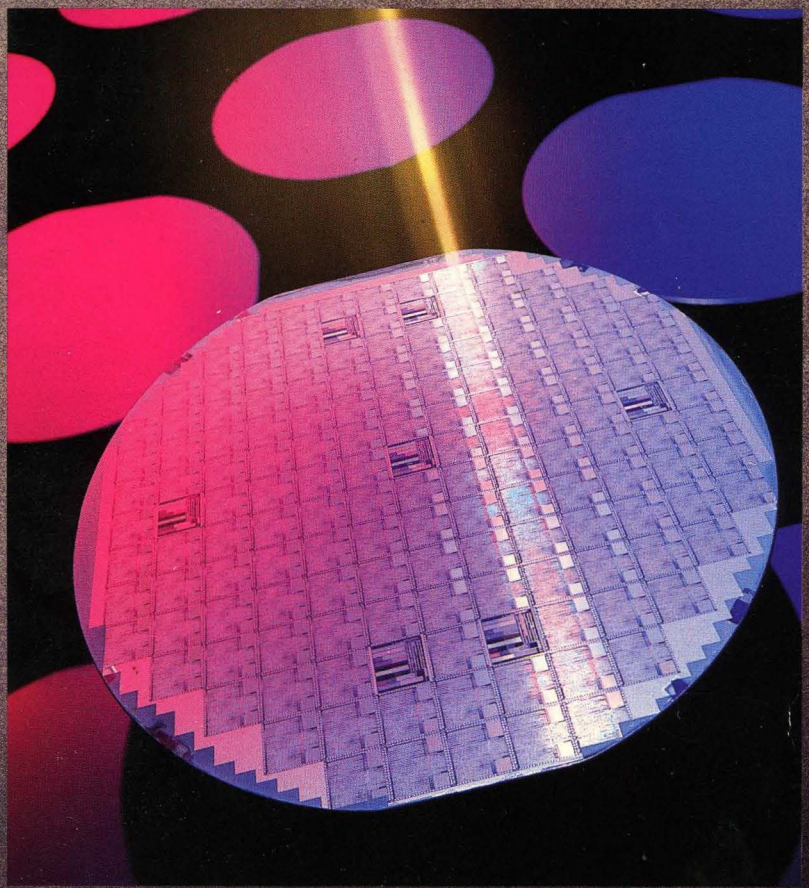
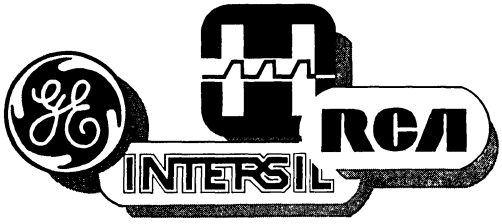
A Short-Form Reference to
Harris Semiconductor Products



PRODUCTS GUIDE '89

HARRIS



THE NEW HARRIS SEMICONDUCTOR

In December 1988, the General Electric Solid State Division was acquired by Harris, adding GE, RCA, and Intersil semiconductor products to the Harris line.

This Product Guide describes only pre-acquisition Harris Semiconductor products. For GE/RCA/Intersil listings, consult the GESS "Product Selection Guide" (SPG-201P).

Harris Semiconductor products are sold by description only. Harris reserves the right to make changes in circuit design, specifications, and other information at any time without prior notice. Reference to products of other manufacturers are solely for convenience of comparison and do not imply total equivalency of design, performance, or otherwise.

To obtain Harris Semiconductor product information from overseas locations, please consult the directory on page 87.

To order literature or receive more information about Harris Semiconductor products, services, or capabilities, contact:

Harris Semiconductor Literature Dept.
P.O. Box 883, MS CB-1-25
Melbourne, FL 32901
(407) 724-3739

INTRODUCTION

Harris Semiconductor's Melbourne, Florida, complex contains complete facilities for design, masking, wafer fab and final testing.

Harris Semiconductor sector is a leading manufacturer of analog DI, digital CMOS, radiation-hardened, ASIC and custom integrated circuits. All represent the state-of-the-art in complexity and performance.

Because of this expertise in design and production, Harris can offer you the most reliable product available in a wide variety of formats, options and packages.

Continuing research and development maintains our position as the eighth largest U.S. merchant producer of semiconductors. Harris is recognized worldwide as an industry innovator and technology leader.

This booklet contains brief descriptions of all Harris silicon and gallium arsenide products currently available. Plus helpful information on packaging and a product cross reference. For more detailed information, contact your local Harris sales representative or call our literature dept. (407) 724-7418.

Analog Products

Harris is a major force in analog integrated circuitry, with a broad line of products — including bipolar and CMOS switches, multiplexers, data acquisition and conversion circuits and telecommunications products — recognized industrywide for their high performance and reliability.

Two material processes, Dielectric Isolation (DI) and Complementary Metal Oxide Semiconductor (CMOS), are prime examples of Harris leadership in high-performance analog products development.

The DI process developed by Harris is utilized to meet the high-performance requirements of the commercial, military, telecommunications and space markets which need high voltage and high temperature circuits.

Dielectric Isolation (DI) effectively surrounds each active device, such as NPN or PNP transistors, with and insulating layer of silicon dioxide. This isolation removes any possibility of latch-up and also reduces inherent leakage currents.

The Harris SAJI (Self-Aligned Junction Isolation) CMOS process is key to attaining the low-power, high performance and density potential of LSI (Large Scale Integration) and VLSI (Very Large Scale Integration).

This commitment to innovation, coupled with strong engineering and processing capabilities, enables Harris to continually give customers the competitive edge.

INTRODUCTION

Custom Integrated Circuits

Harris designs, develops and manufactures custom and semicustom analog, digital bipolar and CMOS circuits for specialized military and commercial applications.

In the government marketplace, Harris is a leading supplier of radiation-hardened ICs for a number of U.S. military projects such as the Peacekeeper and advanced Trident missile programs, B-1B bomber and major satellite programs. Harris recently introduced the 80C86RH radiation-hardened 16-bit CMOS microprocessor family.

Harris is also using its systems expertise and semiconductor technologies to meet the challenge of VHSIC-like, next-generation micron and submicron IC systems for DOD.

Harris also produces an array of non-military custom and semicustom products. These include ICs for commercial aircraft as well as telecommunications, data processing and industrial applications.

Digital Products

Harris is a pioneer in the development and production of digital integrated circuits, achieving many breakthroughs in CMOS and bipolar technology: the first 16-bit CMOS microprocessor family (80C86); first CMOS PROM; first 4K static CMOS RAM; first 256K static CMOS RAM module; and, most recently, the first CMOS programmable logic circuit and first CMOS version of the 16-bit 80286 microprocessor.

More than a decade of technological creativity and performance — marked by continual research and development, increasing quality control and a relentless commitment to excellence — has made Harris today's leader in digital products.

Military/Space Products

For over a decade Harris has been a leader in high reliability radiation hardened standard data sheet products for military and space environments. Both Dielectric Isolation and junction isolation process technologies have been hardened to levels exceeding 100K rad total dose radiation. Harris' portfolio of standard hardened CMOS products includes 4K and 16K static RAMS, 8 and 16 bit microprocessors and peripheral devices, a 16K CMOS PROM, 8 and 16-bit analog multiplexers, a family of hardened analog switches and the 15530RH Manchester encoder-decoder. Hardened bipolar devices include a full line of high performance op amps, a latching comparator and a regulating pulse width modulator. Harris also will offer JAN Class S rad hard products and has been JAN certified for the 16K and 4K Rad Hard SRAMs. The standard manufacturing flows adhere closely to Mil Std Class B and Class S requirements.

Harris is a supplier of hi-rel radiation hardened products to programs such as Milstar, Cruise Missile, GPS, Trident, Galilleo, Mars Observer, ITALSAT, INMARSAT, ISO and a number of classified programs. Harris' on-going research and development programs will continue to provide a source of new radiation hardened products and technologies for extended environment military and space programs.

Microwave (GaAs) Products

Harris Microwave Semiconductor was established in 1980 in Milpitas, California, with a clear goal: research and develop gallium arsenide technology for use in electronic systems requiring great speed, high frequencies and extreme miniaturization.

Today, this Harris company is setting new standards in manufacturing consistency in the production of GaAs FETs and MMICs. Custom design and fabrication services are also available whereby customers can design or specify specialized MMIC or FET devices for manufacture at HMS.

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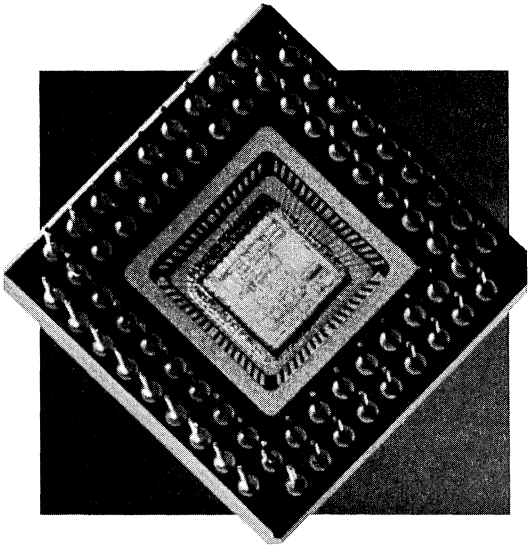


Revolution Through Evolution: Our 80C286 shatters your best ideas about μP speed, power and throughput!

CMOS
REAL-TIME MICROCONTROLLER

RTX 2000™

Features

- Fast 100ns Machine Cycle
- Single Cycle Instruction Execution
- Direct Execution of FORTH
  >Eliminates Assembly Language Programming
- Single Cycle 16-bit Multiply
- Fast Division, Square Root
- Single Cycle Subroutine Call/Return
- Three Cycle Interrupt Latency
- Two On-Chip 256 Word Stacks
- On-Chip Interrupt Controller
- Three On-Chip 16-bit Timer/Counters
- ASIC Bus™ for Off-Chip Extension of Architecture
- 1 Megabyte Total Address Space
- Word and Byte Memory Access
- Low Power CMOS . . . . . 5mA/MHz Typical
- Fully Static
- 84-Pin PGA Package
- Available in Harris Standard Cell Library

Description

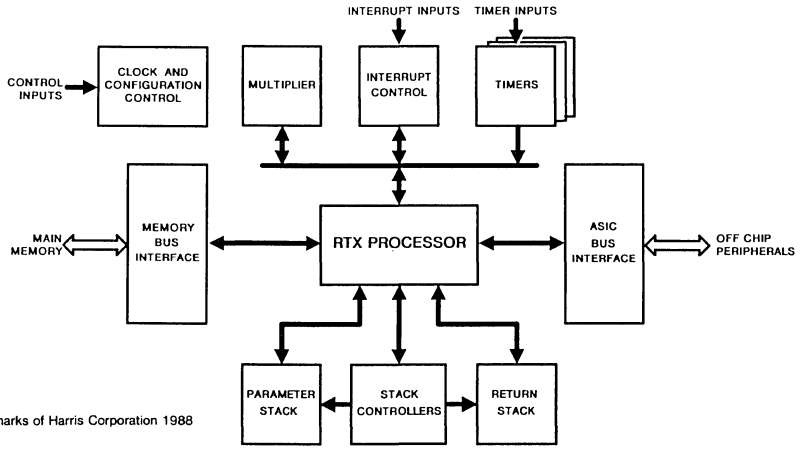
The RTX 2000 is a high performance 16-bit microcontroller with on-chip times, interrupt controller, and multiplier. A unique feature of this processor is the high performance ASIC Bus, which provides for architecture extension using off-chip hardware acceleration logic and application specific I/O devices.

Utilizing a stack oriented, multiple bus architecture and one or two cycle instruction timers, the RTX 2000 allows the efficient implementation of such real-time applications as Digital Signal Processing (DSP), Digital Control Processing, Image Processing, Robotics, Graphics, Simulation, Animation, and many other applications. Because these applications can be supported in high level languages such as FORTH and C on the RTX 2000, the development cycle time to system implementation is drastically reduced.

The RTX 2000 Microprocessor is an exceptionally powerful device with the ability to meet numerous application specific needs. The advantages of the RTX are further enhanced through the use of optional peripherals and by the development system support which Harris provides for the RTX hardware and IBM™ PC-based software.

The RTX 2000 has been designed and fabricated utilizing the Harris Advanced Standard Cell and Compiler Library. As part of the Harris family of compatible cell libraries, the RTX 2000 can be incorporated into customer ASIC designs.

RTX Block Diagram

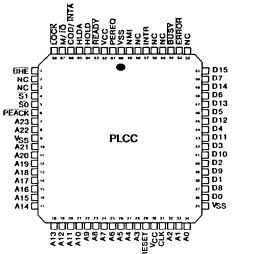


CMOS STATIC MICROPROCESSORS

High Performance Microprocessor With Memory Management and Protection 80C286

Features

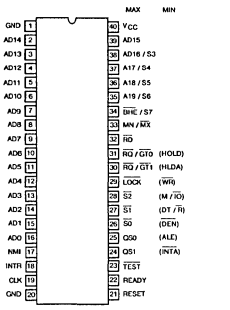
- Compatible with NMOS 80286
- Static CMOS Design for Low Power Operation
  > ICCSB = 5mA Maximum
  > ICCOP = 20mA/MHz Maximum
- High Performance Processor (Up to Fourteen Times the Throughput of the 8086)
- Two 80C86 Upward Compatible Operating Modes:
  > 80C286 Real Address Mode
  > Protected Virtual Address Mode
- Wide Range of Clock Rates:
  > DC to 16MHz (80C286-16)
  > DC to 12.5MHz (80C286-12)
  > DC to 10MHz (80C286-10)
- Available in 68 Pin PGA (Pin Grid Array) and PLCC (plastic leaded chip carrier) packages



16-Bit Microprocessor 80C86

Features

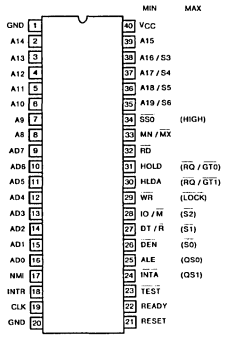
- Compatible with NMOS 8086
- Completely static design
  — DC to 5 MHz (80C86)
  — DC to 8 MHz (80C86-2)
- Low power operation:
  — 10 mA/MHz operating current
  — 500 μA standby current
- 1 MByte of direct memory addressing capability



8-Bit Microprocessor 80C88

Features

- Compatible with NMOS 8088
- Completely static design
  — DC to 5 MHz (80C88)
  — DC to 8 MHz (80C88-2)
- Low power operation:
  — 10 mA/MHz operating current
  — 500 μA standby current
- Software compatible with 80C86/8086/8088
- 1 MByte of direct memory addressing capability



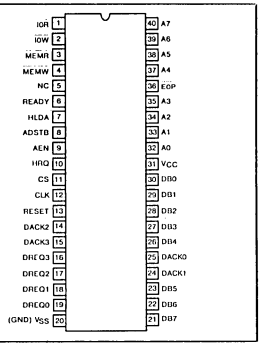
CMOS PERIPHERAL CIRCUITS

DMA Controller 82C37A

COMING SOON

Features

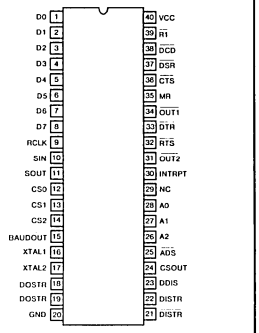
- Compatible with NMOS 8237A
- Provides control for direct memory access operation
- Up to 4 Mb/s transfer rate with 8 MHz clock
- Four independently programmable DMA channels
- Low power operation
- 12.5 MHz operation with 0 wait state DMA transfers
- 16 bit DMA transfer capability



Asynchronous Communication Element 82C50A

Features

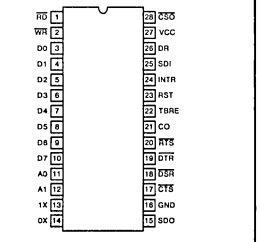
- Complete serial communication interface
  - — UART
  - — Baud rate generator
- 80C86/88 compatible
- DC to 10 MHz operation (DC to 625 Kbaud)
- Modem interface control lines
- Low CMOS power dissipation
- Compatible with NMOS 8250A



Serial Controller Interface 82C52

Features

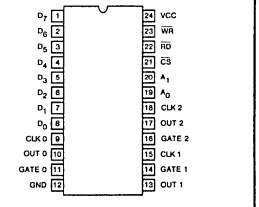
- UART/Baud rate generator in a single 28-pin package
- Operates from DC to 1 Mbaud with an asynchronous 16X clock
- 72 programmable baud rates
- Low power operation:
  - — 1 mA/MHz operating current, typical
- 40-pin version available (HD-6406)



Programmable Interval Timer 82C54

Features

- Compatible with NMOS 8254
- Enhanced version NMOS 8253
- Three independent 16-bit counters
- Six programmable counter modes
- Completely TTL compatible
- 8 MHz count frequency
- Low power operation:
  - >ICCOP: 10 mA @ 8 MHz count frequency
  - >ICCSB: 10 μA maximum

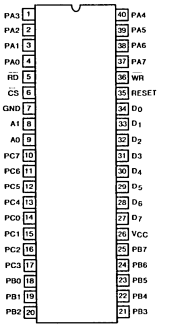


CMOS PERIPHERAL CIRCUITS

Programmable Peripheral Interface 82C55A

Features

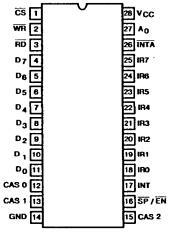
- Three independent programmable 8-bit I/O ports
- High speed, no "wait state" operation with 5 MHz/8 MHz 80C86/88
- Fully TTL compatible
- 2.5 mA drive capability on all I/O port outputs
- Compatible with NMOS 8255A
- 24 programmable I/O pins
- Enhanced control word read capability
- High darlington drive outputs on all ports
- Standby current: 10μA, maximum



Priority Interrupt Controller 82C59A

Features

- Compatible with NMOS 8259A
- Eight maskable interrupt inputs
- Cascade operation allows up to 64 interrupt inputs with no additional circuitry
- Supports both 8080/85 and 80C86/88 formats
- Standby current: 10 μA, maximum
- Fully TTL compatible
- Programmable interrupt modes

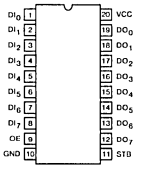


CMOS BUS SUPPORT CIRCUITS

Octal Latching Bus Driver
82C82

Features

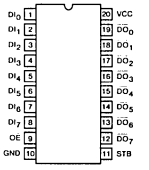
- Bipolar 8282 function compatible
- Propagation delay guaranteed: 35 ns maximum
  - — Full temperature range
  - — 10% power supply tolerances
  - — Load capacitance: 300 pf
- Gated inputs reduce operating power
- ICCSB: 10 μA maximum



Octal Latching Inverting Bus Driver
82C83H

Features

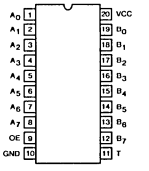
- Bipolar 8283 function compatible
- Full eight-bit latching buffer with inverted data output
- Guaranteed propagation delay of 25 ns Max. @ C_L = 300 pf
- Gated inputs reduce operating power
- ICCSB: 10 μA maximum
- High output sink current: 20 mA



Octal Transceiver
82C86H

Features

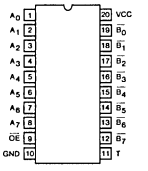
- Bipolar 8286 function compatible
- Eight-bit bidirectional bus transceiver
- Guaranteed propagation delay of 32 ns Max. @ C_L = 300 pf
- Gated inputs reduce operating power
- ICCSB: 10 μA maximum
- High output sink current: 20 mA



Octal Inverting Transceiver
82C87H

Features

- Bipolar 8287 function compatible
- Eight-bit bidirectional bus transceiver with inverting data outputs
- Guaranteed propagation delay of 30 ns Max. @ C_L = 300 pf
- Gated inputs reduce operating power dissipation
- ICCSB: 10 μA maximum
- High output sink current: 20 mA

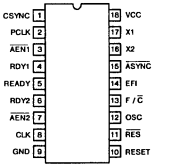


CMOS BUS SUPPORT CIRCUITS

Clock Generator/Driver 82C84A

Features

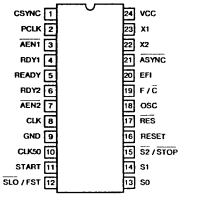
- Compatible with bipolar 8284A
- Output frequencies up to 8 MHz
- Provides Ready synchronization
- Parallel resonant crystal inputs
- ICCOP: 40 mA @ 8 MHz system frequency
- TTL compatible inputs/outputs



Static Clock Controller/Generator 82C85

Features

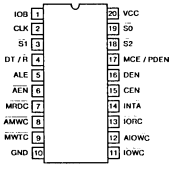
- Provides complete static clock control for 80C86 and 80C88 systems
- Supports stop-clock, stop-oscillator and low-frequency operation
- 80C86/88 status line interface allows software control
- DC to 8 MHz system clock
- Low CMOS power dissipation
- 24 pin slimline package



Bus Controller 82C88

Features

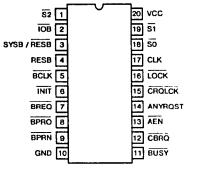
- Pin compatible with bipolar 8288
- Generates system control signals for maximum mode 80C86/88, 8086/88
- Bipolar drive capability
- Low power operation:
  - — ICC standby: 10 μA maximum
  - — ICC operating: 1 mA/MHz maximum



Bus Arbiter 82C89

Features

- Pin compatible with bipolar 8289
- Provides bus control arbitration in multi-master processor systems
- Low power operation:
  - — ICCSB: 10 μA maximum
  - — ICCOP: 1 mA/MHz maximum
- Bipolar drive capability

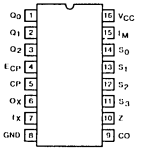


CMOS DATA COMMUNICATION

Bit Rate Generator (BRG) HD-4702

Features

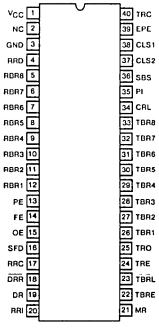
- Low power dissipation
- Programmable bit rate selection
- 13 commonly used bit rates
- Uses standard 2.4575 MHz crystal
- Conforms to EIA RS-404
- On-chip input pull-up circuits



Universal Asynchronous Receiver/Transmitter (UART) HD-6402R, HD-6402B

Features

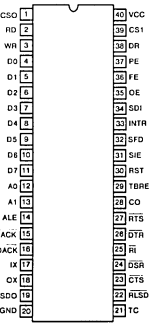
- Operates from DC to 8 MHz (DC to 500 Kbaud)
- Programmable word length, stop bits and parity
- Industry standard pinout
- Single +5 V power supply
- Fully TTL compatible
- Automatic data formatting and status generation



Programmable Asynchronous Communications Interface HD-6406

Features

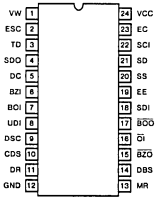
- UART/Baud rate generator in a single 40-pin package
- Data rates from DC to 1 Mbaud with an asynchronous 16X clock
- 72 programmable baud rates
- Complete modem interface signals
- DMA handshaking operation
- Low power operation:
  — 1 mA/MHz, typical
- 28-pin version available (82C52)



Asynchronous Serial Manchester Adapter (ASMA) HD-6408

Features

- 1 Mb/s data rate
- Sync identification and lock-in
- Clock recovery
- Manchester II encode and decode
- Low bit error rate
- Industrial temperature range
  -40°C to +85°C

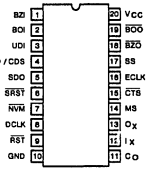


CMOS DATA COMMUNICATION

Manchester Encoder/Decoder (MED) HD-6409

Features

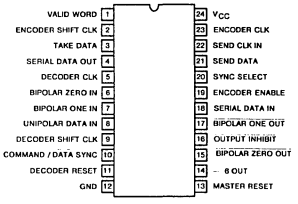
- 1 Mb/s data rate
- Digital PLL clock recovery
- On chip oscillator
- Independent Manchester II encode and decode
- Wide temperature ranges available
  -40°C to +85°C
  -55°C to +125°C



Manchester Encoder/Decoder (MED) HD-15530

Features

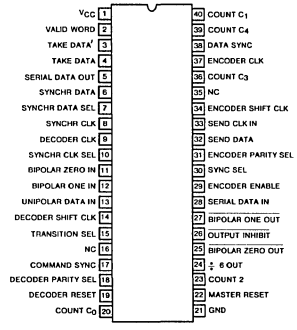
- Support of MIL-STD-1553
- 1.25 Mb/s data rate
- Sync identification and lock-in
- Clock recovery
- Separate encode and decode
- Low operating power: 50 mW @ 5 Volts
- Full temperature range: -55°C to +125°C



Manchester Encoder/Decoder (MED) HD-15531

Features

- Support of MIL-STD-1553
- 1.25 Mb/s data rate
- 2.5 Mb/s option (HD-15531B)
- Sync identification and lock-in
- Clock recovery
- Variable frame length to 32 bits
- Separate encode and decode
- Low operating power: 50 mW @ 5 Volts
- Full temperature range: -55°C to +125°C



APPLICATION SPECIFIC INTEGRATED CIRCUITS (ASIC)

The Harris ASIC Commitment

Provide a single graphics interface for today's designer that ties together many design tools, operates in a single framework, is capable of accessing mulitiply technology libraries, and operates on multiple UNIX 68XXX-based platforms.

Harris Semiconductor, a leader in custom microelectronic products for over two decades, is firmly established in the ASIC market and now brings the designer a combination of state-of-the-art proven process technologies and the most widely used and efficient designs systems in the industry.

The Harris Track Record

Harris ASIC customers benefit from the experience, resources and stability of a major IC manufacturer. Harris Semiconductor is presently the eighth largest merchant semiconductor supplier in the United States and is widely considered the foremost manufactureer of radiation hardened and dielectrically isolated (DI) devices. Harris introduced the world's first low power CMOS versions of the 8086, 8088, and 80286 microprocessors. Harris is well known for its high performance, high reliability analog ICs which are used in the world's most demanding systems.

The Harris Design Libraries

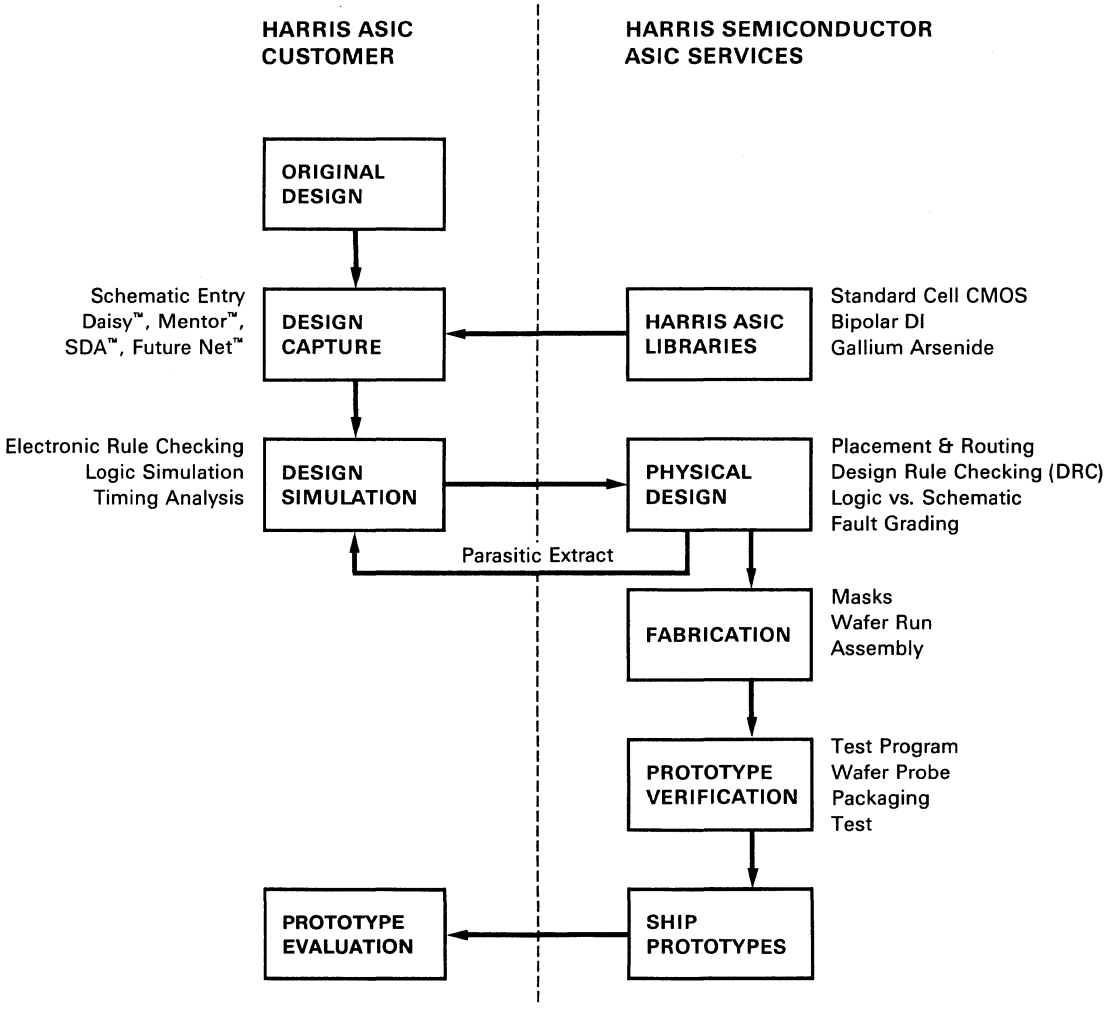
In addition to working with a full capability semiconductor vendor, the Harris ASIC customer gains full access to our semiconductor design tools, libraries, databases, and process technologies. Libraries include standard cell CMOS, bipolar DI, radiation-hardened, and gallium arsenide. Harris libraries are available through designer use of Daisy™, Mentor™, SDA™, or FutureNet™ software. Of course, design migration from one library to another is always available.

Standard Cell CMOS library Group:
Included in this group are 2.0 micron, 1.5 micron and 2.0 micron "hard field" double level metal (DLM) libraries. For military applications, class S and rad-hard designs are available. When a design is done in one library, it can be easily migrated to another library whenever necessary. The powerful Harris FORCE (FORTH Optimized RISC Computing Engine) core cell and peripherals are available in this library group, along with ARINC and other advanced macrocells.

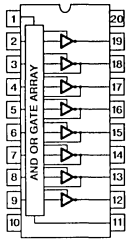
Bipolar DI Library:
Harris is the world's leader in dielectrically isolated (DI) IC processing — years of linear design experience and leadership is made available to designers who can take full advantage of the same tools and processes used to manufacture Harris' exemplary low noise, high speed circuits. The design system is highly integrated, with SPICE (industry standard circuit simulator) capability. Designers can mix n-p-n and p-n-p transistors in the same circuit.

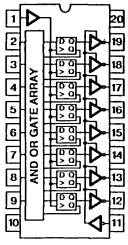
Gallium Arsenide Library:
The Harris Microwave Standard Cell (HMS) library is a broad and growing collection of predefined standard cell — consisting of basic logic functions, gates, and appropriate I/O circuitry. Each is fully characterized to support custom placement, routing and simulation of your circuit design.

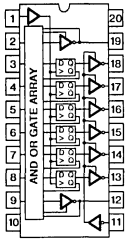
ASIC
DESIGN FLOW

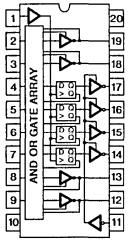


CMOS PROGRAMMABLE LOGIC

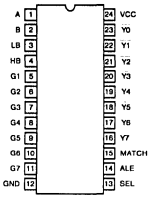
Part Number	Description	Maximum Pwr. Supply Current	Maximum I/O Propagation Delay	
HPL-16LC8	CMOS 16L8 10 inputs 6 bidirectionals 2 outputs Programmable output polarity Security fuse for pattern protection	ICCSB: 150 μA ICCOP: 6 mA/MHz	125 ns	

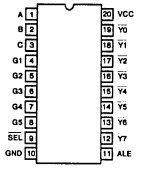
Part Number	Description	Maximum Pwr. Supply Current	Maximum I/O Propagation Delay	
HPL-16RC8	CMOS 16R8 8 inputs 8 registered outputs Programmable output polarity Security fuse for pattern protection	ICCSB: 150 μA ICCOP: 7 mA/MHz	125 ns	

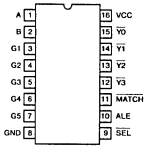
Part Number	Description	Maximum Pwr. Supply Current	Maximum I/O Propagation Delay	
HPL-16RC6	CMOS 16R6 8 inputs 6 registered outputs 2 bidirectionals Programmable output polarity Security fuse for pattern protection	ICCSB: 150 μA ICCOP: 7 mA/MHz	125 ns	

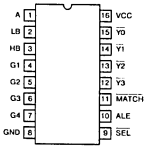
Part Number	Description	Maximum Pwr. Supply Current	Maximum I/O Propagation Delay	
HPL-16RC4	CMOS 16R4 8 inputs 4 registered outputs 4 bidirectionals Programmable output polarity Security fuse for pattern protection	ICCSB: 150 μA ICCOP: 7 mA/MHz	125 ns	

CMOS PROGRAMMABLE LOGIC

Part Number	Description	Maximum Pwr. Supply Current	Maximum Propagation Delay	
HPL-82C339	• 24-pin Programmable Chip Select Decoder (PCSD™) • Nine programmable inputs • Superset of 74138/74139	ICCSB: 50 μA ICCOP: 2 mA/MHz	50 ns	

Part Number	Description	Maximum Pwr. Supply Current	Maximum Propagation Delay	
HPL-82C338	• 20-pin Programmable Chip Select Decoder (PCSD™) • Five programmable inputs • Superset of 74138	ICCSB: 50 μA ICCOP: 2 mA/MHz	50 ns	

Part Number	Description	Maximum Pwr. Supply Current	Maximum Propagation Delay	
HPL-82C138	• 16-pin Programmable Chip Select Decoder (PCSD™) • Five programmable inputs • Similar to 74138	ICCSB: 50 μA ICCOP: 2 mA/MHz	50 ns	

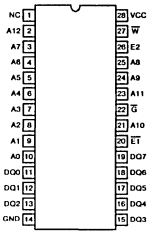
Part Number	Description	Maximum Pwr. Supply Current	Maximum Propagation Delay	
HPL-82C139	• 16-pin Programmable Chip Select Decoder (PCSD™) • Six programmable inputs • Similar to 74139	ICCSB: 50 μA ICCOP: 2 mA/MHz	50 ns	

PCSD™ is a trademark of Harris Corporation

CMOS STATIC RAMs 64K

8192 x 8 — 64K Asynchronous

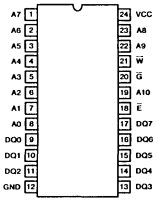
Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-65642	150 ns	20 mA	250 μA	AM99C88 NMC6164
HM-65642B	150 ns	20 mA	100 μA	MB8464 CDM6264



CMOS STATIC RAMs — 16K

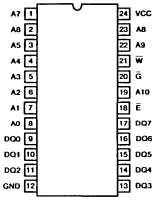
2048 x 8 — 16K Synchronous

Part Number	Access Time	Power Supply Current		Similar To
		Operating	Standby	
HM-6516B	120 ns	10 mA/MHz	50 μA	Hitachi 6116 Toshiba 5517
HM-6516	200 ns	10 mA/MHz	100 μA	National 6516



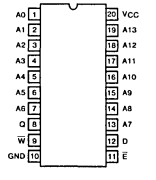
2048 x 8 — 16K Asynchronous

Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-65162S	55 ns	70 mA	100 μA	
HM-65162B	70 ns	70 mA	50 μA	Fujitsu 8416 Hitachi 6116
HM-65162	90 ns	70 mA	100 μA	NEC 446 Toshiba 5517
HM-65162C	90 ns	70 mA	900 μA	National 6116 IDT 6116



16384 x 1 — 16K Asynchronous

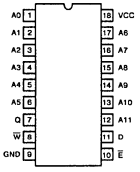
Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-65262S	55 ns	50 mA	50 μA	Hitachi 6167
HM-65262B	70 ns	50 mA	50 μA	IDT 6167
HM-65262	85 ns	50 mA	50 μA	



CMOS STATIC RAMs — 4K & 1K

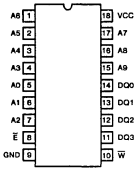
4096 x 1 — 4K Synchronous

Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-6504S	120 ns	7 mA/MHz	25 μA	Fujitsu 8404
HM-6504B	200 ns	7 mA/MHz	25 μA	Oki 5104
HM-6504	300 ns	7 mA/MHz	25 μA	National 6504



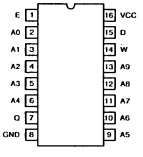
1024 x 4 — 4K Synchronous

Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-6514S	120 ns	7 mA/MHz	25 μA	Fujitsu 6514 Hitachi 4334 Nec 444
HM-6514B	200 ns	7 mA/MHz	25 μA	RCA 5114 Toshiba 5514
HM-6514	300 ns	7 mA/MHz	25 μA	National 6514



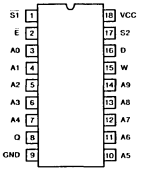
1024 x 1 — 1K Synchronous

Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-6508B	180 ns	4 mA/MHz	10 μA	National 74C929 Intersil 6508
HM-6508	250 ns	4 mA/MHz	10 μA	AMI 56508

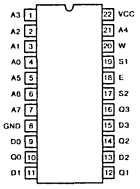


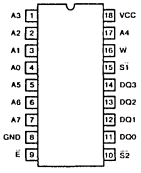
1024 x 1 — 1K Synchronous

Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-6518B	180 ns	4 mA/MHz	10 μA	National 74C930 Intersil 6518
HM-6518	250 ns	4 mA/MHz	10 μA	



CMOS STATIC RAMS — 1K

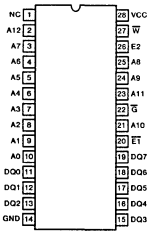
256 x 4 — 1K Synchronous					
Part Number	**Access Time**	**Power Supply Current**		**Replaces Pin for Pin**	
		Operating	**Standby**		
HM-6551B	220 ns	4 mA/MHz	10 μA	Intersil 6551	
HM-6551	300 ns	4 mA/MHz	10 μA		

256 x 4 — 1K Synchronous					
Part Number	**Access Time**	**Power Supply Current**		**Replaces Pin for Pin**	
		Operating	**Standby**		
HM-6561B	220 ns	4 mA/MHz	10 μA	Intersil 6561	
HM-6561	300 ns	4 mA/MHz	10 μA		

CMOS STATIC RAM MODULES

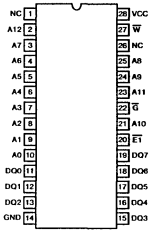
LCC RAM Module — 8K x 8 — 64K Asynchronous

Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-8808AS	100 ns	70 mA	250 μA	EDH8808A
HM-8808AB	120 ns	70 mA	250 μA	IDT7M864
HM-8808A	150 ns	70 mA	900 μA	HM6264



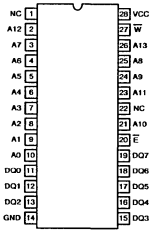
LCC RAM Module — 8K x 8 — 64K Asynchronous

Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-8808S	100 ns	70 mA	250 μA	EDH8808
HM-8808B	120 ns	70 mA	250 μA	IDT8M864
HM-8808A	150 ns	70 mA	900 μA	



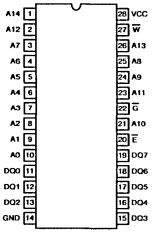
LCC RAM Module — 16K x 8 — 128K Asynchronous

Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-8816H	85 ns	400 mA	800 μA	—
HM-8816HB	70 ns	400 mA	800 μA	—



LCC RAM Module — 32768 x 8 — 256K Asynchronous

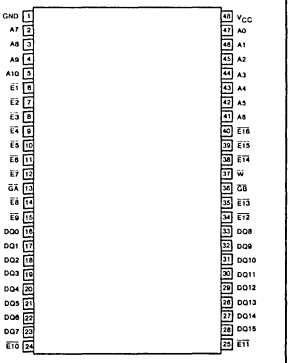
Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-8832	180 ns	20 mA	900 μA	EDH8832 IDT7M856 HM62256 MSM5256 μPD43256 TC55256



CMOS STATIC RAM MODULES

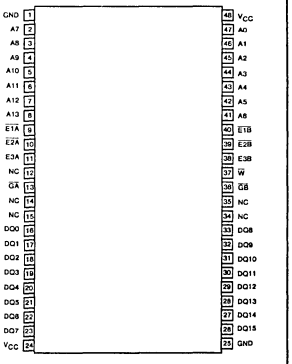
LCC RAM Module — 16384 x 16 / 32768 x 8 — 256K Synchronous

Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-92560	150 ns	30/15 mA	500 μA	—
HM-92560-5	250 ns	35/20 mA	3.5 mA	—



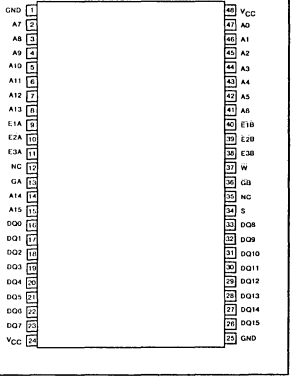
LCC Buffered Ram Module — 16384 x 16 / 32768 x 8 — 256K Synchronous

Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-92570	250 ns	30/15 mA	600 μA	EDH892570
	300 ns	35/20 mA	3.5 mA	



LCC Buffered Ram Module — 65536 x 16 / 131072 x 8 — 1M Asynchronous

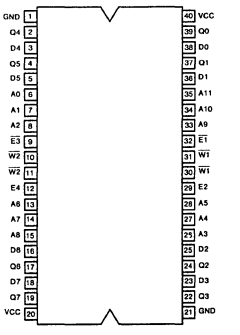
Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM-91M2	180 ns	20 mA	750 mA	EDH891M2



CMOS STATIC RAM MODULES

LCC RAM Module — 16384 x 4 / 8192 x 8 — 64K Synchronous

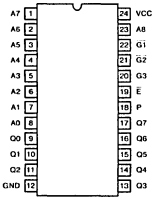
Part Number	Access Time	Power Supply Current		Replaces Pin for Pin
		Operating	Standby	
HM5-6564	350 ns	56/28 mA	800 μA	—
HM5-6564-5	450 ns	60/30 mA	5.6 mA	—



CMOS PROMs — 4K & 16K

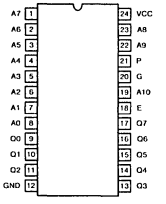
512 x 8 — 4K Synchronous

Part Number	Fuse Element	Access Time	Power Supply Current		Replaces Pin for Pin
			Operating	Standby	Harris 6641
HM-6642B	NiCr	120 ns	20 mA/MHz	100 μA	Similar to: Harris 7641
HM-6642	NiCr	200 ns	20 mA/MHz	100 μA	Similar to: Signetics 82S141



2048 x 8 — 16K Synchronous

Part Number	Fuse Element	Access Time	Power Supply Current		Replaces Pin for Pin
			Operating	Standby	Harris 6616
HM-6617B	NiCr	90 ns	20 mA/MHz	100 μA	Similar to: NMOS 2716
HM-6617	NiCr	120 ns	20 mA/MHz	100 μA	Similar to: National 27C16, National 6716, Intersil 6716, Harris 6616



MILITARY PRODUCT REFERENCE GUIDE

Harris Semiconductor has long been a major supporter of the military market. The knowledge and expertise gained from this association is manifested in our latest military efforts: Military Drawing and 883-compliant products. This Military Product Guide gives you a complete overview of our commitment to military support. For more information on these products, please contact Harris Semiconductor or your nearest Harris sales office or representative.

Radiation Hardened Products

Part Number	JAN Part Number	DESC Drawing Number	883 Part Number
HS-6504RH	24503SVC	—	HS-6504RH/883
HS-6514RH	24504SVC	—	HS-6504RH/883
HS-65C262RH	29107SJB	—	HS-65C262RH/883
HS-65T262RH	29108SJB	—	HS-65T262RH/883
HS-508ARH	—	5962R8753701EX	HS-508ARH/883
HS-1840RH	—	5962R8753801XX	HS-1840RH/883

Microprocessor Products

Part Number	JAN Part Number	Military Drawing Number	883 Part Number
MD80C86	—	8405201QA	MD80C86/883
MR80C86	—	84052012C	—
MD80C88	—	—	*MD80C88/883
MR80C88	—	—	*MR80C88/883
MD82C37A	—	*IN DEVELOPMENT	*MD82C37A/883
MR82C37A	—	*IN DEVELOPMENT	—
MD82C50A-5	—	—	*MD82C50A-5/883
MR82C50A-5	—	—	*MR82C50A-5/883
MD82C52	—	8501501XA	MD82C52/883
MR82C52	—	85015013C	—
MD82C54	—	8406501JA	*MD82C54/883
MR82C54	—	84065013C	—
MD82C55A-5	—	8406601QA	—
MR82C55A-5	—	8406601XC	—
MD82C55A	—	8406602QA	*MD82C55A/883
MR82C55A	—	8406602XC	—
MD82C59A-5	—	8501601YA	—
MR82C59A-5	—	85016013C	—
MD82C59A	—	8501602YA	*MD82C59A/883
MR82C59A	—	85016023C	—
MD82C82	—	8406701RA	*MD82C82/883
MR82C82	—	84067012C	—
MD82C83H	—	8406702RA	*MD82C83H/883
MR82C83H	—	84067022C	—
MD82C84A	—	8406801VA	*MD82C84A/883
MR82C84A	—	84068012C	—
MD82C85	—	*IN DEVELOPMENT	*MD82C85/883
MR82C85	—	*IN DEVELOPMENT	—
MD82C86H-5	—	8757701RA	*MD82C86H/883
MR82C86H-5	—	87577012C	—
MD82C87H-5	—	8757702RA	*MD82C87H/883
MR82C87H-5	—	87577022C	—
MD82C88	—	8406901RA	*MD82C88/883
MR82C88	—	84069012C	—
MD82C89	—	8552801RA	*MD82C89/883
MR82C89	—	85528012C	—

*Scheduled for Q1 CY89

MILITARY PRODUCT REFERENCE GUIDE

Microprocessor Products (continued)

Part Number	JAN Part Number	Military Drawing Number	883 Part Number
HD1-4702	—	—	HD1-4702/883
HD1-6402	—	—	HD1-6402/883
HD1-15530	—	7802991JA	HD1-15530/883**
HD4-15530	—	78029913C	—
HD1-15531	—	—	HD1-15531/883*

* Scheduled for Q1 CY89
** Scheduled for Q4 CY88

Data Acquisition Products

Part Number	JAN Part Number	Military Drawing Number	883 Part Number
HA-2420	—	8001601CA	HA-2420/883
HI-506	38510/190-01BXC	—	HI-0506/883
HI-506A	38510/190-02BXC	8513101XA	See HI-546/883
HI-507	38510/190-03BXC	—	HI-0507/883
HI-507A	38510/190-04BXC	8513102XA	See HI-547/883
HI-508	38510/190-07BEC	7705201EC	HI-0508/883
HI-508A	38510/190-05BEC	7705202EA	See HI-548/883
HI-509	38510/190-08BEC	—	HI-0509/883
HI-509A	38510/190-06BEC	85131-03	See HI-549/883
HI-516	—	—	HI-0516/883
HI-518	—	—	HI-0518/883
HI-524	—	—	HI-0524/883
HI-546	—	8513101XA	HI-0546/883
HI-547	—	8513102XA	HI-0547/883
HI-548	—	7705202EA	HI-0548/883
HI-549	—	8513103EA	HI-0549/883
HI-562A	—	—	HI-0562A/883
HI-1818A	—	—	HI-1818/883
HI-1828A	—	—	HI-1828A/883
HA-2420	—	—	HA-2420/883
HI-5320	—	—	—
HI-5330	—	—	HI-5330/883
HI-562A	—	—	HI-562A/883
HI-5687	—	83003-02	HI-5687/883
HI-5697	—	—	HI-5697/883
HI-574ASD	—	—	HI-574ASD/883
HI-574ATD	—	85127-04	HI-574ATD/883
HI-674ASD	—	—	HI-674ATD/883
HI-674ATD	—	85127-06	HI-674ATD/883
HI-565A	—	—	HI-565A/883
HI-774SD	—	—	HI-774SD/883
HI-774TD	—	—	HI-774TD/883

MILITARY PRODUCT REFERENCE GUIDE

CMOS Memory Products			
Part Number	**JAN Part Number**	**DESC Drawing Number**	**883 Part Number**
1K CMOS Static RAMs			
HM1-6508	—	—	HM1-6508/883
HM1-6508B	—	—	HM1-6508B/883
HM1-6518	—	—	HM1-6518/883
HM1-6518B	—	—	HM1-6518B/883
HM1-6551	—	—	HM1-6551/883
HM1-6551B	—	—	HM1-6551B/883
HM1-6561	—	—	HM1-6561/883
HM1-6561B	—	—	HM1-6561B/883
4K CMOS Static RAMs			
HM1-6504	—	8102405VA	HM1-6504/883
HM1-6504B	—	8102403VA	HM1-6504B/883
HM1-6504S	24501BVX	8102401VA*	HM1-6504S/883
HM1-6514	—	8102406VA	HM1-6514/883
HM1-6514B	—	8102404VA	HM1-6514B/883
HM1-6514S	24502BVX	8102402VA*	HM1-6514S/883
HM4-6514	—	—	HM4-6514/883
HM4-6514B	—	—	HM4-6514B/883
HM1-6514S	—	—	HM4-6514S/883
16K CMOS Synchronous Static RAMs			
HM1-6516	29102BJX	8403601JA	HM1-6516/883
HM1-6516B	—	8403607JA	HM1-6516B/883
HM4-6516	—	8403601ZC	HM4-6516/883
16K CMOS Asynchronous Static RAMs			
HM1-65162	29104BJX	8403602JA	HM1-65162/883
HM1-65162B	—	8403606JA	HM1-65162B/883
HM1-65162C	—	8403603JA	HM1-65162C/883
HM1-65162S	—	—	—
HM4-65162	—	8403602XC	HM4-65162/883
HM4-65162B	—	8403606XC	HM4-65162B/883
HM4-65162C	—	8403603XC	HM4-65162C/883
HM1-65262	29103BJX	8413201RA	HM1-65262/883
HM1-65262B	—	8413203RA	HM1-65262B/883
HM4-65262	—	8413201YC	HM4-65262/883
HM4-65262B	—	8413203YC	HM4-65262B/883
64K CMOS Static RAMs			
HM1-65642	29201BJX	8552503YA	HM1-65642/883
HM4-65642	—	8552503XC	HM4-65642/883
HM1-65642B	—	—	HM1-65642B/883

*Obsolete - may still be purchased for contracts prior to 10/22/85.

CMOS Memory Products (continued)			
Part Number	**JAN Part Number**	**DESC Drawing Number**	**883 Part Number**
CMOS Static RAM Modules HM5-6564 HM5-8808 HM5-8808B HM5-8808S HM5-8808A HM5-8808AB HM5-8808AS HM5-8816H HM5-8832B HM5-91M2 HM5-92560 HM5-92570	Harris CMOS static RAM modules are available for military and high-reliability applications processed to our high-rel DASH 8 program flow. This includes burn-in and value-added processing (temperature cycling, SEM inspection, etc.). Please contact your local Harris sales office or representative for details.		
CMOS Fuse Link PROMs			
HM1-6642	—	—	HM1-6642/883
HM4-6642	—	—	HM4-6642/883
HM6-6642	—	—	HM6-6642/883
HM1-6617	—	—	HM1-6617/883
HM4-6617	—	—	HM4-6617/883
HM6-6617	—	—	HM6-6617/883

Linear Products			
Part Number	**JAN Part Number**	**DESC Drawing Number**	**883 Part Number**
HA240X	—	—	HA1-2400/883
	—	—	HA4-2400/883
HA2500	12204BGC	—	HA2-2500/883
	—	—	HA7-2500/883
HA2502	—	—	HA2-2502/883
	—	—	HA4-2502/883
	—	—	HA7-2502/883
HA2510	12205BGC	—	HA2-2510/883
	—	—	HA7-2510/883
HA2512	—	—	HA2-2512/883
	—	—	HA4-2512/883
	—	—	HA7-2512/883
HA2520	12206BGC	—	HA2-2520/883
	—	—	HA7-2520/883
HA2522	—	—	HA2-2522/883
	—	—	HA4-2522/883
	—	—	HA7-2522/883
HA2529	—	—	HA2-2529/883
	—	—	HA4-2529/883
	—	—	HA7-2529/883

MILITARY PRODUCT REFERENCE GUIDE

Linear Products (continued)

Part Number	JAN Part Number	DESC Drawing Number	883 Part Number
HA2539	—	—	HA1-2539/883
	—	—	HA4-2539/883
HA2540	—	—	HA1-2540/883
	—	—	HA4-2540/883
HA2541	—	—	HA2-2541/883
	—	—	HA1-2541/883
HA2542	—	—	HA2-2542/883
HA2544	—	—	HA2-2544/883
	—	—	HA4-2544/883
	—	—	HA7-2544/883
HA2600	12202BGC	—	HA2-2600/883
	—	—	HA7-2600/883
HA2602	—	—	HA2-2602/883
	—	—	HA4-2602/883
	—	—	HA7-2602/883
HA2620	12203BGC	—	HA2-2620/883
	—	—	HA7-2620/883
HA2622	—	—	HA2-2622/883
	—	—	HA4-2622/883
	—	—	HA7-2622/883
HA2640	—	7800302GC	HA2-2640/883
	—	—	HA4-2640/883
	—	—	HA7-2640/883
HA4741	—	—	HA1-4741/883
	—	—	HA4-4741/883
HA4900	—	—	—
HA4902	—	—	HA1-4902/883
	—	—	HA4-4902/883
HA5002	—	—	HA2-5002/883
	—	—	HA4-5002/883
	—	—	HA7-5002/883
HA5033	—	—	HA2-5033/883
HA5101	—	—	HA2-5101/883
	—	—	HA4-5101/883
	—	—	HA7-5101/883
HA5102	—	—	HA2-5102/883
	—	—	HA4-5102/883
	—	—	HA7-5102/883
HA5104	—	—	HA1-5104/883
	—	—	HA4-5104/883
HA5111	—	—	HA2-5111/883
	—	—	HA4-5111/883
	—	—	HA7-5111/883
HA5112	—	—	HA2-5112/883
	—	—	HA4-5112/883
	—	—	HA7-5112/883

MILITARY PRODUCT REFERENCE GUIDE

Linear Products (continued)

Part Number	JAN Part Number	DESC Drawing Number	883 Part Number
HA5114	—	—	HA1-5114/883
	—	—	HA4-5114/883
HA5127	—	—	HA2-5127/883
	—	—	HA4-5127/883
	—	—	HA7-5127/883
HA5134	—	—	HA1-5134/883
	—	—	HA4-5134/883
HA5135	—	—	HA2-5135/883
	—	—	HA4-5135/883
	—	—	HA7-5135/883
HA5137	—	—	HA2-5137/883
	—	—	HA4-5137/883
	—	—	HA7-5137/883
HA5141	—	—	HA2-5141/883
	—	—	HA4-5141/883
	—	—	HA7-5141/883
HA5142	—	—	HA2-5142/883
	—	—	HA4-5142/883
	—	—	HA7-5142/883
HA5144	—	—	HA1-5144/883
	—	—	HA4-5144/883
HA5147	—	—	HA2-5147/883
	—	—	HA4-5147/883
	—	—	HA7-5147/883
HA5151	—	—	HA2-5151/883
	—	—	HA4-5151/883
	—	—	HA7-5151/883
HA5152	—	—	HA2-5152/883
	—	—	HA4-5152/883
	—	—	HA7-5152/883
HA5154	—	—	HA1-5154/883
	—	—	HA4-5154/883
HA5177	—	—	HA2-5177/883
	—	—	HA4-5177/883
	—	—	HA7-5177/883
HA5190	—	—	HA1-5190/883
HA5190	—	—	HA2-5190/883
	—	—	HA4-5190/883
HI200	—	—	HI1-200/883
	—	—	HI2-200/883
HI201	12302BEA	—	HI1-201/883
	12302BEC	—	—
	—	—	HI4-201/883
HI201HS	—	8671601EA	HI1-201HS/883
	—	86716012A	HI-201HS/883
HI222	—	—	HI1-222/883
	—	—	HI4-222/883

Linear Products (continued)

Part Number	JAN Part Number	DESC Drawing Number	883 Part Number
HI300	—	86716012C	HI2-300/883
	—	—	HI1-300/883
HI301	—	—	HI2-301/883
	—	—	HI1-301/883
HI302	—	—	HI1-302/883
HI303	—	—	HI1-303/883
HI304	—	—	HI1-304/883
	—	—	HI2-304/883
HI305	—	—	HI1-305/883
	—	—	HI2-305/883
HI306	—	—	HI1-306/883
HI307	—	—	HI1-307/883
HI381	—	—	HI1-381/883
	—	—	HI2-381/883
HI384	—	—	HI1-384/883
HI387	—	—	HI1-387/883
	—	—	HI2-387/883
HI390	—	—	HI1-390/883
HI5040	—	8100609EX	HI1-5040/883
HI5041	—	8100610EX	HI1-5041/883
HI5042	—	8100611EX	HI1-5042/883
HI5043	—	8100612EX	HI1-5043/883
	—	81006122A	HI4-5043/883
HI5044	—	8100613EX	HI1-5044/883
HI5045	—	8100614EX	HI1-5045/883
	—	81006142A	HI4-5045/883
HI5046	—	8100615EA	HI1-5046/883
HI5046A	—	8100621EA	HI1-5046A/883
HI5047	—	8100616EA	HI1-5047/883
HI5047A	—	8100622EA	HI1-5047A/883
HI5048	—	8100617EA	HI1-5048/883
HI5049	—	8100620EA	HI1-5049/883
	—	81006202A	HI4-5049/883
HI5050	—	8100618EA	HI1-5050/883
HI5051	—	8100619EA	HI1-5051/883
	—	81006192A	HI4-5051/883

OPERATIONAL AMPLIFIERS: PINOUTS

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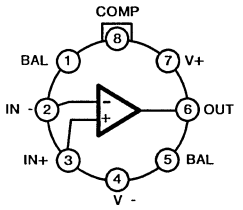

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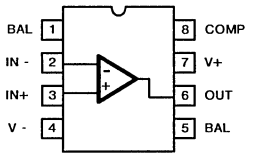

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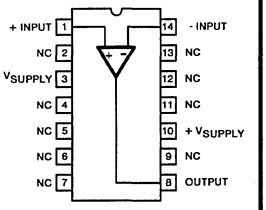

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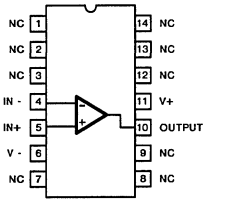

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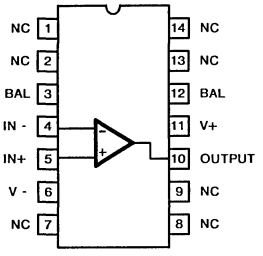

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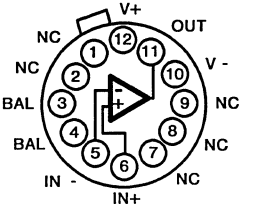

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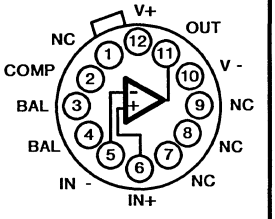

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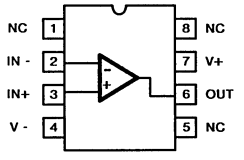

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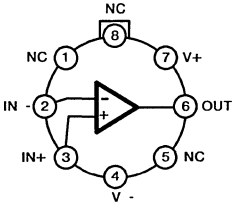

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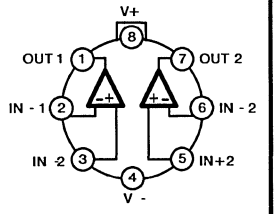

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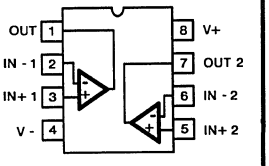

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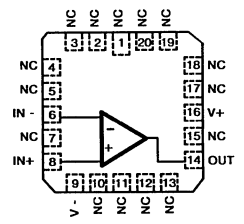

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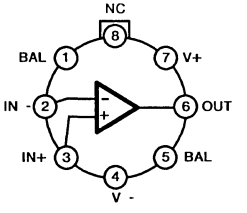

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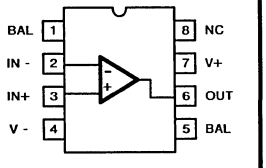

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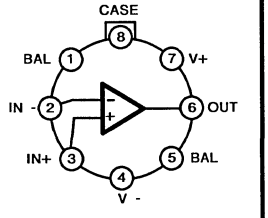

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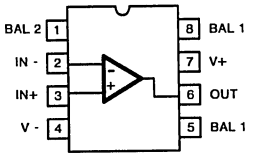

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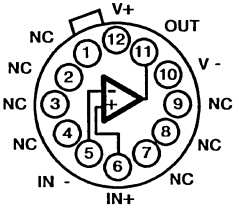

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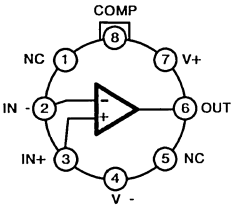

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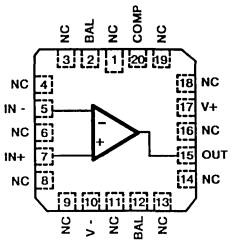

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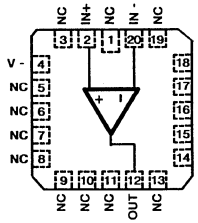

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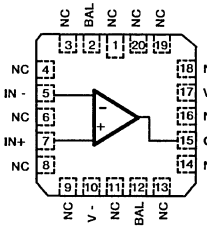

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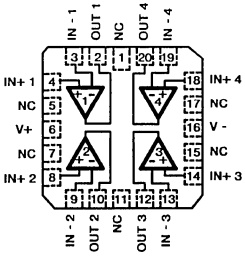

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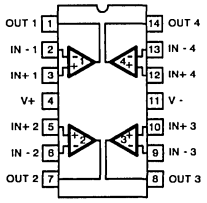

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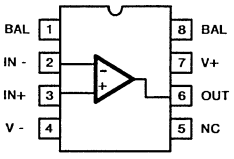

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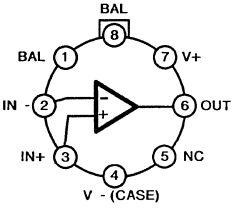

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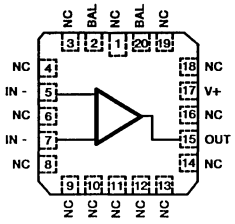

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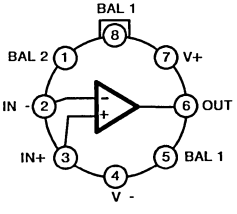

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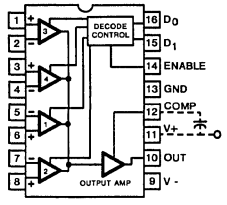

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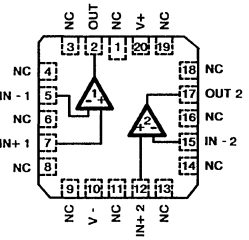

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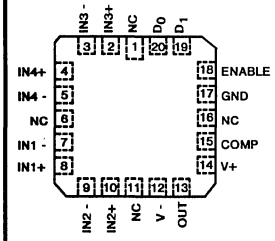

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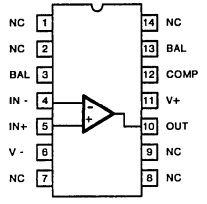


OPERATIONAL AMPLIFIERS: WIDE BANDWIDTH

	Part Number	Temperature Range	Pinout (See pages 26, 27)	Gain Band-Width Product (MHz)	Full Power Bandwidth (MHz)	Slew Rate (V/μs)	Bias Current (nA)	Open Loop Gain (KV/V)	Minimum Gain Stable	Comments
SINGLES	HA-2500	-55°C to +125°C	1,2	12	0.5	30	100	30	Unity	
	HA-2502	-55°C to +125°C	1,2	12	0.5	30	125	25	Unity	
	HA-2505	0°C to +75°C	1,2	12	0.5	30	125	25	Unity	
	HA-2510	-55°C to +125°C	1,2,20	12	1.0	65	100	15	Unity	
	HA-2512	-55°C to +125°C	1,2	12	1.0	60	125	15	Unity	
	HA-2515	0°C to +75°C	1,2	12	1.0	60	125	15	Unity	
	HA-2520	-55°C to +125°C	1,2,20	20	2.0	120	100	15	3	
	HA-2522	-55°C to +125°C	1,2	20	1.6	120	125	15	3	
	HA-2525	0°C to +75°C	1,2	20	1.6	-120	125	15	3	
	HA-2529	-55°C to +125°C	1,2,20	20	2.6	150	50	18	3	New
	HA-2539	-55°C to +125°C -25°C to +85°C 0°C to +75°C	3,21	600	9.5	600	5000	30	10	
	HA-2540	-55°C to +125°C -25°C to +85°C 0°C to +75°C	4,13	400	6.0	400	5000	30	10	
	HA-2541	-55°C to +125°C 0°C to +75°C	5,6	40	4.5	280	6000	16	Unity	New, fast settling
	HA-2542	-55°C to +125°C 0°C to +75°C	7,32	70	5.5	375	6000	30	2	New, high output current
	HA-2544	-55°C to +125°C 0°C to +75°C	14,15,20	50	4.2	150	8000	6	Unity	New, video
	HA-2600	-55°C to +125°C	2,27	12	0.075	7	1	150	Unity	
	HA-2602	-55°C to +125°C	2,27	12	0.075	7	15	150	Unity	
	HA-2605	0°C to +75°C	2,27	12	0.075	7	5	150	Unity	
	HA-2620	-55°C to +125°C	2,20,27	100	0.6	35	1	150	5	
	HA-2622	-55°C to +125°C	2,27	100	0.6	35	5	150	5	
	HA-2625	0°C to +75°C	2,27	100	0.6	35	5	150	5	
	HA-5111	-55°C to +125°C 0°C to +75°C	1,2,20	100	0.8	50	100	1000	10	New, low noise
	HA-5137	-55°C to +125°C 0°C to +75°C	25,26,27	63	0.3	17	8	1800	5	New, precision
	HA-5147	-55°C to +125°C 0°C to +75°C	25,26,27	120	0.5	35	± 15	1500	10	New, precision
	HA-5147A	-55°C to +125°C 0°C to +75°C	25,26,27	120	0.5	35	± 10	1800	10	New, precision
	HA-5160	-55°C to +125°C 0°C to +75°C	19	100	1.0	120	0.02	150	10	J-FET
	HA-5162	-55°C to +125°C 0°C to +75°C	19	100	1.0	70	0.02	100	10	J-FET
	HA-5190	-55°C to +125°C	4,13,18	150	6.5	200	5000	30	5	Fast settling
	HA-5195	0°C to +75°C	4,18	150	6.5	200	5000	30	5	Fast settling
DUALS	HA-5102	-55°C to +125°C 0°C to +75°C	11,12,30	8	0.05	3	130	230	Unity	Low noise
	HA-5112	-55°C to +125°C 0°C to +75°C	11,12,30	60	0.25	20	130	230	10	Low noise
QUADS	HA-2400	-55°C to +125°C	29,31	40	0.5	30	50	150	10	Addressable
	HA-2404	-25°C to +85°C	29	40	0.5	30	50	150	10	Addressable
	HA-2405	0°C to +75°C	29	40	0.5	30	50	150	10	Addressable
	HA-2406	0°C to +75°C	29	30	0.3	20	50	150	10	Addressable
	HA-5104	-55°C to +125°C 0°C to +75°C	23,24	8	0.05	3	130	230	Unity	Low noise
	HA-5114	-55°C to +125°C 0°C to +75°C	23,24	60	0.25	20	130	230	10	Low noise

OPERATIONAL AMPLIFIERS: HIGH SLEW-RATE

	Part Number	Temperature Range	Pinout (See pages 24,25)	Slew Rate (V/μs)	Gain Band-Width Product (MHz)	Full Power Bandwidth (MHz)	Bias Current (nA)	Open Loop Gain (KV/V)	Minimum Gain Stable	Comments
SINGLES	HA-2500	-55°C to +125°C	1,2	30	12	0.5	100	30	Unity	
	HA-2502	-55°C to +125°C	1,2,20	30	12	0.5	125	25	Unity	
	HA-2505	0°C to +75°C	1,2	30	12	0.5	125	25	Unity	
	HA-2620	-55°C to +125°C	2,20	35	100	0.6	1	150	5	
	HA-2622	-55°C to +125°C	2,20	35	100	0.6	5	150	5	
	HA-2625	0°C to +75°C	2	35	100	0.6	5	150	5	
	HA-5147	-55°C to +125°C 0°C to +75°C	25,26,27	35	120	0.5	± 15	1500	10	New, precision
	HA-5147A	-55°C to +125°C 0°C to +75°C	25,26,27	35	120	0.5	± 10	1800	10	New, precision
	HA-5111	-55°C to +125°C 0°C to +75°C	1,2,20	50	100	0.8	100	1000	10	New, low noise
	HA-2512	-55°C to +125°C	1,2,20	60	12	1.0	125	15	Unity	
	HA-2515	0°C to +75°C	1,2	60	12	1.0	125	15	Unity	
	HA-2510	-55°C to +125°C	1,2	65	12	1.0	100	15	Unity	
	HA-2529	-55°C to +125°C	1,2,20	150	20	2.6	50	18	3	New
	HA-5162	-55°C to +125°C 0°C to +75°C	19	70	100	1.0	0.02	100	10	J-FET
	HA-5160	-55°C to +125°C 0°C to +75°C	19	120	100	1.0	0.02	150	10	J-FET
	HA-2520	-55°C to +125°C	1,2	120	20	2.0	100	15	3	
	HA-2522	-55°C to +125°C	1,2,20	120	20	1.6	125	15	3	
	HA-2525	0°C to +75°C	1,2	120	20	1.6	125	15	3	
	HA-2544	-55°C to +125°C 0°C to +75°C	14,15,20	150	50	4.2	8000	6	Unity	New, video
	HA-5190	-55°C to +125°C	4,13,18	200	150	6.5	5000	30	5	Fast settling
	HA-5195	0°C to +75°C	4,18	200	150	6.5	5000	30	5	Fast settling
	HA-2541	-55°C to +125°C 0°C to +75°C	5,6	280	40	4.5	6000	16	Unity	New, fast settling
	HA-2542	-55°C to +125°C 0°C to +75°C	7,32	375	70	5.5	6000	30	2	New, high output current
	HA-2540	-55°C to +125°C -25°C to +85°C 0°C to +75°C	4,13	400	400	6.0	5000	30	10	
	HA-2539	-55°C to +125°C -25°C to +85°C 0°C to +75°C	3,21	600	600	9.5	5000	30	10	
DUALS	HA-5112	-55°C to +125°C 0°C to +75°C	11,12,30	20	60	0.3	130	230	10	Low noise
QUADS	HA-2400	-55°C to +125°C	29,31	30	40	0.5	50	150	10	Addressable
	HA-2404	-40°C to +85°C	29	30	40	0.5	50	150	10	Addressable
	HA-2405	0°C to +75°C	29	30	40	0.5	50	150	10	Addressable
	HA-2406	0°C to +75°C	29	20	30	0.3	50	150	10	Addressable
	HA-5114	-55°C to +125°C 0°C to +75°C	23,24	20	60	0.3	130	230	10	Low noise

OPERATIONAL AMPLIFIERS: LOW POWER

	Part Number	Temperature Range	Pinout (See pages 24,25)	Supply Current (μA/ Amplifier)	Supply Range (V)	Slew Rate (V/μs) At Indicated Supply Current	Gain Band-with Product (kHz) At Indicated Supply Current	Output Swing (V) ± 15V Power Supplies	Offset Voltage (mV)	Single Supply Operation	Comments
SINGLES	HA-5135	-55°C to +125°C 0°C to +75°C	17,22,28	1000	± 5/± 20	0.8	2500	± 12	0.01		Precision
	HA-5180	-55°C to +125°C -25°C to +85°C 0°C to +75°C	15,16	700	± 5/± 20	7	2000	± 12	1.0		J-FET Ultra-low bias
	HA-5151	-55°C to +125°C 0°C to +75°C	9,10	200	± 1.5/± 15 + 3/+ 30	4.5	1300	> ± 10	0.5	Yes	New
	HA-5141	-55°C to +125°C 0°C to +75°C	9,10	50	± 1.5/± 15 + 3/+ 30	1	400	0/+4(+5Vs)	2	Yes	Ultra-low power
	HA-2720	-55°C to +125°C	14,15	1.5/15	± 3/± 20	0.1/0.8	120/1200	± 13.5	2.0		Programmable
DUALS	HA-5152	-55°C to +125°C 0°C to +75°C	11,12,30	200	± 1.5/± 15 + 3/+ 30	4.5	1300	> ± 10	0.5	Yes	New
	HA-5142	-55°C to +125°C 0°C to +75°C	11,12,30	50	± 1.5/± 15 + 3/+ 30	1	400	0/+4(+5Vs)	2	Yes	Ultra-low power
QUADS	HA-5134	-55°C to +125°C 0°C to +75°C	23,24	1000	± 5/± 20	1.2	4000		0.025		New, precision
	HA-5154	-55°C to +125°C 0°C to +75°C	23,24	200	± 1.5/± 15 + 3/+ 30	4.5	1300	> ± 10	0.5	Yes	New
	HA-5144	-55°C to +125°C 0°C to +75°C	23,24	50	± 1.5/± 15 + 3/+ 30	1	400	0/+4(+5Vs)	2	Yes	Ultra-low power

OPERATIONAL AMPLIFIERS: PRECISION

Part Number	Temperature Range	Pinout (See pages 24,25)	Offset Voltage (μV)	Offset Voltage Drift (μV/°C)	Bias Current (nA)	Open Loop Gain (KV/V)	1 kHz Noise Current (pA/$\sqrt{Hz}$)	1 kHz Noise Voltage (nV/$\sqrt{Hz}$)	CMRR (dB)	PSRR (dB)	Supply Current (mA/amp)	Comments
HA-5170	-55°C to +125°C -25°C to +85°C 0°C to +75°C	14,15,20	100	2	0.02	600	0.01	10	100	105	1.9	J-FET
HA-5180	-55°C to +125°C -25°C to +85°C 0°C to +75°C	15,16	1000	5	0.0003	1000	0.01	70	110	105	0.7	J-FET
HA-5134	-55°C to +125°C 0°C to +75°C	23,24	50	2	± 10	3000	1	7	120	116	1.6	New, quad
HA-5135	-55°C to +125°C 0°C to +75°C	17,22,28	10	0.4	1	10,000	0.14	9.0	120	130	1	
HA-5127A	-55°C to +125°C -25°C to +85°C 0°C to +75°C	25,26,27	10	0.2	± 10	1800	0.4	3.0	126	120	3	New
HA-5127	-55°C to +125°C -25°C to +85°C 0°C to +75°C	25,26,27	20	0.3	± 12	1800	0.4	3.0	123	120	3	New
HA-5137A	-55°C to +125°C -25°C to +85°C 0°C to +75°C	25,26,27	10	0.2	± 10	1800	0.4	3.0	126	120	3	New
HA-5137	-55°C to +125°C -25°C to +85°C 0°C to +75°C	25,26,27	20	0.3	± 12	1800	0.4	3.0	123	120	3	New
HA-5147A	-55°C to +125°C -25°C to +85°C 0°C to +75°C	25,26,27	10	0.2	± 10	1800	0.4	3.0	126	114	3.5	New
HA-5147	-55°C to +125°C -25°C to +85°C 0°C to +75°C	25,26,27	30	0.4	± 15	1500	0.4	3.2	120	96	3.5	New

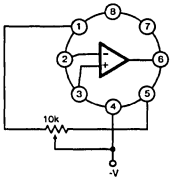
OPERATIONAL AMPLIFIERS: GENERAL PURPOSE

	Part Number	Temperature Range	Pinout (See pages 26,27	Gain Bandwidth Product (MHz)	Slew Rate (V/μs)	Offset Voltage (mV)	Bias Current (nA)	1 kHz Noise Voltage (nV/√Hz)	Open Loop Gain (KV/V)	Minimum Gain Stable	Supply Current (mA/package)	Comments
SINGLES	HA-2500	-55°C to +125°C	1,2	12	30	2	100	21	30	Unity	4	High slew
	HA-2502	55°C to +125°C	1,2	12	30	4	125	21	25	Unity	4	High slew
	HA-2505	0°C to +75°C	1,2	12	30	4	125	21	25	Unity	4	High slew
	HA-2600	-55°C to +125°C	1,2	12	7	0.5	1	16	150	Unity	3	Wide band
	HA-2602	-55°C to +125°C	1,2	12	7	3	15	16	150	Unity	3	Wide band
	HA-2605	0°C to +75°C	1,2	12	7	3	5	16	150	Unity	3	Wide band
	HA-5101	-55°C to +125°C 0°C to +75°C	14,15	10	10	0.5	100	3.5	1000	Unity	4	New, low noise
	HA-5111	-55°C to +125°C 0°C to +75°C	1,2	100	50	0.5	100	3.5	1000	10	4	New, low noise
QUADS	HA-5102	-55°C to +125°C 0°C to +75°C	11,12,30	8	3	0.5	130	4.3	230	Unity	3	Low noise
	HA-5112	-55°C to +125°C 0°C to +75°C	11,12,30	60	20	0.5	130	4.3	230	10	3	Low noise
DUALS	HA-4741	-55°C to +125°C	23,24	3.5	1.6	0.5	60	9	100	Unity	<5	Quad 741, JI
	HA-4741	0°C to +75°C	24	3.5	1.6	1	60	9	50K	Unity	<7	Quad 741, JI
	HA-5104	-55°C to +125°C 0°C to +75°C	23,24	8	3	0.5	130	4.3	230	Unity	5	Low noise, compensated
	HA-5114	-55°C to +125°C 0°C to +75°C	23,24	60	20	0.5	130	4.3	230	10	5	Low noise, uncompensated
	HA-5134	-55°C to +125°C 0°C to +75°C	23,24	4	1.2	.025	15	7	1000	Unity	4	New, precision

OPERATIONAL AMPLIFIERS: HIGH VOLTAGE

HA-2640, HA-2645

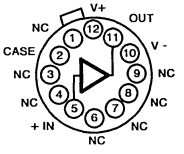
Features	Applications
• Slew rate: 1 V/μs • Bandwidth: 4 MHz • Input offset voltage: 4 mV • Offset current: 5 nA • Output voltage swing: ± 35 V • Input voltage swing: ± 35 V • Supply range: ± 10 V to ± 40 V • Output overload protection	• Industrial control systems • Power supplies • High-voltage regulators • Resolver excitation • Signal conditioning

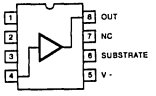


BUFFERED AMPLIFIERS: VIDEO

HA-5002

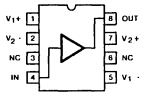
Features	Applications
• Voltage gain: .995 • High slew rate: 1300 V/μs • —3dB bandwidth: 110 MHz • High output current: 200 mA • Pulsed output current: 400 mA • Low supply current: 8.3 mA	• High frequency buffers • High speed line drivers • High power current boosters • High power current sources





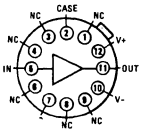
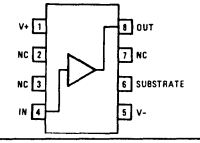
HA-5004

Features	Applications
• High slew rate: 1200 V/μs • High output current: ±100 mA • Unity gain bandwidth: 90 MHz • Gain range: 1 to 10 v/v • Current-mode feedback • Thermal overload protection • Output enable/disable	• Video gain block • Zero insertion loss line driver • Current to voltage converter • High speed buffer



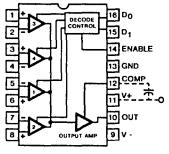
BUFFERED AMPLIFIERS: VIDEO

HA-5033

Features	Applications	Pinout
• Differential phase error: 0.1° • Differential gain error: 0.1% • High slew rate: 1300 V/μs • —3dB bandwidth: 250 MHz • High output current	• Video buffers • High frequency buffers • High speed line drivers • Current boosters	METAL CAN  MINI-DIP 

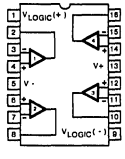
OPERATIONAL AMPLIFIERS: ADDRESSABLE

HA-2400, HA-2404, HA-2405, HA-2406

Features	Applications	
• Four channels addressable • High slew rate: 30 V/μs • Wide gain bandwidth product: 40 MHz • High gain: 150K • TTL compatible	• Signal selection/multiplexing • Variable gain stages • Oscillators • Filters • Comparators • Integrators	

COMPARATORS

HA-4900, HA-4902, HA-4905

Features	Applications	
• Fast response time: 130 ns • Low offset voltage: 2 mV • Low offset current: 10 nA • Single or dual supply • Analog and logic supplies separated for easier interface and noise immunity	• Threshold detectors • Zero crossing detectors • Window detectors • Interface • Oscillators	

NEW LINEAR PRODUCTS: COMING SOON

Monolithic Power Supply HV-1205

Features

- Direct 120/240 VAC to 5 VDC • 50 mA at < 50 mVp-p ripple • Switching pre-regulator • Uses Harris' high voltage process

Precision High Speed Operational Amplifier HA-2548

Features

- 150 V/μs slew rate • 300 μV offset voltage • 5 μV/°C offset drift • 250 ns 0.01% settling time

Single and Dual Wideband Operational Amplifiers HA-5221/5222

Features

- 40 MHz unity gain bandwidth • 750 μV maximum offset voltage • 30 mA output current

Precision PRAM Four Channel Programmable Amplifier HA-2410

Features

- 100 μV low offset voltage • 100 μV offset voltage matching • 140 dB high open loop gain • 130 dB high CMRR and PSRR • 150 mW low power consumption • Pin compatible with HA-2400/04/05

Ultra High Slew Rate Operational Amplifier HFA-0001

Features

- 300 MHz unity gain bandwidth • 43 MHz full power bandwidth • 1000 V/μS high slew rate • +50 mA high output drive • Monolithic construction

Wideband Operational Amplifier HFA-0002

Features

- 1 GHz wide gain bandwidth product • 150 V/μs high slew rate • 100 dB high open loop gain • 1 mV low offset voltage • 150 mW low power consumption • Monolithic construction

High Slew Rate Operational Amplifier HFA-0005

Features

- 250 MHz unity gain bandwidth • 25.8 MHz full power bandwidth • 600 V/μs high slew rate • +50 mA high output drive • Monolithic bipolar construction

Wideband Two Quadrant Analog Multiplier HA-2546/2547

Features

- 400 V/μs high speed voltage output • 1.8% low multiplication error • 5 μA input bias currents • −52 dB control signal feedthrough • 40 MHz (HA-2546)/100MHz (HA-2547) wide signal bandwidth • 11 MHz wide control bandwidth • 0.10 dB gain tolerance to 5 MHz

High Speed/Low Distortion Sample/Hold Operational Amplifier HA-5340

Features

- 400 ns acquisition time to 0.01% (10V step) • 120 ns hold-mode settling time to 0.01% (10V step) • 74 dB signal to noise and distortion (20 Vp-p, 450 KHz)

ANALOG MULTIPLEXERS: OVERVOLTAGE-PROTECTED

Part Number	Multiplexer Type	Temperature Range	Package	R_{on}Max. Full Temp (Ω)	Off Output Leakage (nA) Max. Full Temp	Access Time (nS) Typ. 25°C	Settling Time (.1%) Typ. 25°C
HI1-0506A-2 HI1-0506A-5 HI3-0506A-5 HI1-0506A-8 HI4-0506A-8	Single-ended 16-channel 70 Vp-p input	-55°C to +125°C 0°C to +75°C 0°C to +75°C -55°C to +125°C -55°C to +125°C	28-pin cerdip 28-pin cerdip 28-pin epoxy dip 28-pin cerdip 28-pin LCC ceramic	1.8K	300	500	1.2μs
HI1-0507A-2 HI1-0507A-5 HI3-0507A-5 HI1-0507A-8 HI4-0507A-8	Differential 8-channel 70 Vp-p input	-55°C to +125°C 0°C to +75°C 0°C to +75°C -55°C to +125°C -55°C to +125°C	28-pin cerdip 28-pin cerdip 28-pin epoxy dip 28-pin cerdip 28-pin LCC ceramic	1.8K	200	500	1.2 μs
HI1-0508A-2 HI1-0508A-5 HI3-0508A-5 HI1-0508A-8 HI4-0508A-8	Single-ended 8-channel 70 Vp-p input	-55°C to +125°C 0°C to +75°C 0°C to +75°C -55°C to +125°C -55°C to +125°C	16-pin cerdip 16-pin cerdip 16-pin epoxy dip 16-pin cerdip 20-pin LCC ceramic	1.8K	200	500	1.2 μs
HI1-0509A-2 HI1-0509A-5 HI3-0509A-5 HI1-0509A-8 HI4-0509A-8	Differential 4-channel 70 Vp-p input	-55°C to +125°C 0°C to +75°C 0°C to +75°C -55°C to +125°C -55°C to +125°C	16-pin cerdip 16-pin cerdip 16-pin epoxy dip 16-pin cerdip 20-pin LCC ceramic	1.8K	100	500	1.2 μs
HI1-546-2 HI1-546-4 HI1-546-5 HI3-546-5 HI1-546/883 HI4-546-8 HI4P546-5	Single-ended 16-channel 70 Vp-p input **With R_{ON} Matching**	-55°C to +125°C -25°C to +85°C 0°C to +75°C 0°C to +75°C -55°C to +125°C -55°C to +125°C -55°C to +125°C	28-pin cerdip 28-pin cerdip 28-pin cerdip 28-epoxy dip 28-pin cerdip 28-pin LCC ceramic 28-pin PLCC epoxy	1.8K	300	500	1.2 μs
HI1-547-2 HI1-547-4 HI1-547-5 HI3-547-5 HI1-547/883 HI4-547-8 HI4P547-5	Differential 8-channel 70 Vp-p input **With R_{ON} Matching**	-55°C to +125°C -25°C to +85°C 0°C to +75°C 0°C to +75°C -55°C to +125°C -55°C to +125°C -55°C to +125°C	28-pin cerdip 28-pin cerdip 28-pin cerdip 28-epoxy dip 28-pin cerdip 28-pin LCC ceramic 28-pin PLCC epoxy	1.8K	200	500	1.2 μs
HI1-548-2 HI1-548-4 HI1-548-5 HI3-548-5 HI1-548/883 HI4-548-8 HI4P548-5	Single-ended 8-channel 70 Vp-p input **With R_{ON} Matching**	-55°C to +125°C -25°C to +85°C 0°C to +75°C 0°C to +75°C -55°C to +125°C -55°C to +125°C -55°C to +125°C	16-pin cerdip 16-pin cerdip 16-pin cerdip 16-epoxy dip 16-pin cerdip 20-pin LCC ceramic 20-pin PLCC epoxy	1.8K	200	500	1.2 μs
HI1-549-2 HI1-549-4 HI1-549-5 HI3-549-5 HI1-549/883 HI4-549-8 HI4P549-5	Differential 4-channel 70 Vp-p input **With R_{ON} Matching**	-55°C to +125°C -25°C to +85°C 0°C to +75°C 0°C to +75°C -55°C to +125°C -55°C to +125°C -55°C to +125°C	16-pin cerdip 16-pin cerdip 16-pin cerdip 16-epoxy dip 16-pin cerdip 20-pin LCC ceramic 20-pin PLCC epoxy	1.8K	100	500	1.2 μs

ANALOG MULTIPLEXERS: GENERAL PURPOSE

Part Number	Multiplexer Type	Temperature Range	Package	R_{on}Max. Full Temp (Ω)	Off Output Leakage (nA) Max. Full Temp	Access Time (nS) Typ. 25°C	Settling Time (.1%) Typ. 25°C
HI1-0506-2	Single-ended	-55°C to +125°C	28-pin cerdip	400	300	250	1.2μs
HI1-0506-4	16-channel	-25°C to +85°C	28-pin cerdip				
HI1-0506-5		0°C to +75°C	28-pin cerdip				
HI3-0506-5		0°C to +75°C	28-pin epoxy dip				
HI1-0506/883		-55°C to +125°C	28-pin cerdip				
HI4-0506-8		-55°C to +125°C	28-pin LCC ceramic				
HI4P0506-5		0°C to +75°C	28-pin PLCC epoxy				
HI1-0507-2	Differential	-55°C to +125°C	28-pin cerdip	400	200	250	1.2μs
HI1-0507-4	8-channel	-25°C to +85°C	28-pin cerdip				
HI1-0507-5		0°C to +75°C	28-pin cerdip				
HI3-0507-5		0°C to +75°C	28-pin epoxy dip				
HI1-0507/883		-55°C to +125°C	28-pin cerdip				
HI4-0507-8		-55°C to +125°C	28-pin LCC ceramic				
HI4P0507-5		0°C to +75°C	28-pin PLCC epoxy				
HI1-0508-2	Single-ended	-55°C to +125°C	16-pin cerdip	400	200	250	360ns
HI1-0508-4	8-channel	-25°C to +85°C	16-pin cerdip				
HI1-0508-5		0°C to +75°C	16-pin cerdip				
HI3-0508-5		0°C to +75°C	16-pin epoxy dip				
HI1-0508/883		-55°C to +125°C	16-pin cerdip				
HI4-0508-8		-55°C to +125°C	20-pin LCC ceramic				
HI4P0508-5		0°C to +75°C	20-pin PLCC epoxy				
HI1-0509-2	Differential	-55°C to +125°C	16-pin cerdip	400	100	250	360ns
HI1-0509-4	4-channel	-25°C to +85°C	16-pin cerdip				
HI1-0509-5		0°C to +75°C	16-pin cerdip				
HI3-0509-5		0°C to +75°C	16-pin epoxy dip				
HI1-0509/883		-55°C to +125°C	16-pin cerdip				
HI4-0509-8		-55°C to +125°C	20-pin LCC ceramic				
HI4P0509-5		0°C to +75°C	20-pin PLCC epoxy				
HI1-1818A-2	Single-ended	-55°C to +125°C	16-pin cerdip	500	250	350	1.0μs
HI1-1818A-5	8-channel	0°C to +75°C	16-pin cerdip				
HI3-1818A-5	Low-power	0°C to +75°C	16-pin epoxy dip				
HI1-1818A-8		-55°C to +125°C	16-pin cerdip				
HI4P1818-5		0°C to +75°C	20-pin PLCC epoxy				
HI1-1828A-2	Differential	-55°C to +125°C	16-pin cerdip	500	125	350	1.0μs
HI1-1828A-5	4-channel	0°C to +75°C	16-pin cerdip				
HI3-1828A-5	Low-power	0°C to +75°C	16-pin epoxy dip				
HI1-1828A-8		-55°C to +125°C	16-pin cerdip				
HI4P1828-5		0°C to +75°C	20-pin PLCC epoxy				

ANALOG MULTIPLEXERS: HIGH SPEED/MODE PROGRAMMABLE

Part Number	Multiplexer Type	Temperature Range	Package	R_{on}Max, Full Temp (Ω)	Off Output Leakage (nA) Max, Full Temp	Access Time (nS) Typ, 25°C	Settling Time (.1%) Typ, 25°C
HI1-0516-2	16-channel/Dual 8	-55°C to +125°C	28-pin cerdip	1.0K	100	130	250 ns
HI1-0516-5		0°C to +75°C	28-pin cerdip				
HI3-0516-5		0°C to +75°C	28-pin epoxy dip				
HI1-0516-8		-55°C to +125°C	28-pin cerdip				
HI4-516-8		-55°C to +125°C	28-pin LCC ceramic				
HI1-0518-2	8-channel/Dual 4	-55°C to +125°C	18-pin cerdip	1.0K	50	130	250 ns
HI1-0518-5		0°C to +75°C	18-pin cerdip				
HI3-0518-5		0°C to +75°C	18-pin epoxy dip				
HI1-0518/883		-55°C to +125°C	18-pin cerdip				
HI4-518-8		-55°C to +125°C	20-pin LCC ceramic				
HI4P0518-5		0°C to +75°C	20-pin PLCC epoxy				

ANALOG MULTIPLEXERS: SPECIAL PURPOSE

Part Number	Multiplexer Type	Temperature Range	Package	R_{on}Max, Full Temp (Ω)	Off Output Leakage (nA) Max, Full Temp	Access Time (nS) Typ, 25°C	Settling Time (.1%) Typ, 25°C
HI1-0524-2	4-channel video	-55°C to +125°C	18-pin cerdip	1.5K	50	150	200 ns
HI1-0524-5	with low	0°C to +75°C	18-pin cerdip				
HI3-0524-5	10 MHz crosstalk	0°C to +75°C	18-pin epoxy dip				
HI1-0524/883		-55°C to +125°C	18-pin cerdip				
HI4-0524-8		-55°C to +125°C	20-pin LCC ceramic				
HI4P0524-5		0°C to +75°C	20-pin PLCC epoxy				
HI1-539-2	Differential	-55°C to +125°C	16-pin cerdip	1.1K	25	250	900 ns (.01%)
HI1-539-5	4-channel,	0°C to +75°C	16-pin cerdip		2.5		
HI3-539-5	Low-level	0°C to +75°C	16-pin epoxy dip		2.5		
HI1-539-8	Matched	-55°C to +125°C	16-pin cerdip		25		
HI4P539		0°C to +75°C	20-pin PLCC epoxy		2.5		

SAMPLE-AND-HOLD AMPLIFIERS

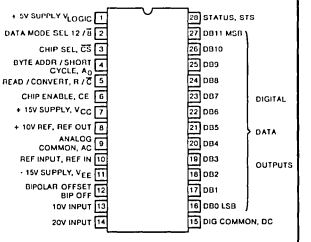
Part Number	Sample/Hold Type	Temperature Range	Package*	Acquisition Time, (to .01%) Typ, 25°C	Charge Transfer Typ, 25°C	Aperture Time Typ, 25°C	Gain Bandwidth Product Typ, 25°C
HA1-2420-2	Low droop rate	-55°C to +125°C	14-pin cerdip	3.2 μs	10 pC	30 ns	2.5 MHz
HA1-2425-5		0°C to +75°C	14-pin cerdip				
HA1-2420/883		-55°C to +125°C	14-pin cerdip				
HA3-2425-5		0°C to +75°C	14-pin epoxy	(C_H = 1,000 pF)			
HA4-2420-8		-55°C to +125°C	20-pin LCC ceramic				
HA4P2425-5		0°C to +75°C	20-pin PLCC epoxy				
HA1-5320-2	High speed	-55°C to +125°C	14-pin cerdip	1 μs	0.1 pC	25 ns	2.0 MHz
HA1-5320-5	Low charge transfer	0°C to +75°C	14-pin cerdip				
HA1-5320-8	Precision	-55°C to +125°C	14-pin cerdip				
HA4-5320-8	Complete—includes hold capacitor	-55°C to +125°C	20-pin LCC ceramic	(C_H = Internal)			C_H = 100 pF
HA1-5330-5	Very high speed	0°C to +75°C	14-pin cerdip	500 ns	.05 pC	20 ns	4.5 MHz
HA1-5330-4	Precision monolithic	-25°C to +85°C	14-pin cerdip				
HA1-5330-2	Complete—includes	-55°C to +125°C	14-pin cerdip				
HA1-5330/883	hold capacitor	-55°C to +125°C	14-pin cerdip				
HA4-5330/883		-55°C to +125°C	20-pin LCC ceramic	(C_H = Internal)			

A/D CONVERTERS: MICROPROCESSOR COMPATIBLE

12-Bit A/D Converter with μP Interface HI-574A

Features

- Complete with reference and clock
- 150 ns bus access time
- 20 μs typical conversion time (full temperature)
- ± 12 V to ± 15 V operation
- No missing codes over temperature
- Minimal set-up time for control signals
- Byte enable/short cycle (A_0 input)
- Improved alternate source for the AD574A and HS574
- Available in 28-pin cerdip, coming soon in leadless chip carriers

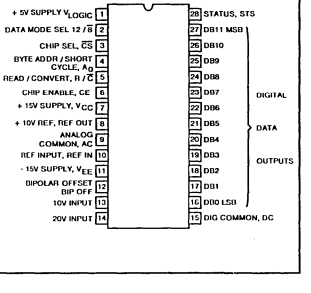


Part Number	Resolution Bits	Temperature Range	Linearity Error max, 25°C (LSB)	25°C Differential Nonlinearity, max No Missing Codes	Gain Drift ppm/°C, max Full Temp.	Conversion Speed. (μs) Max Over Temperature 12 Bits	8 Bits
HI-574AJD-5	12	0°C to +75°C	± 1	11 bits	± 45	25	17
HI-574AKD-5		0°C to +75°C	± ½	12 bits	± 25		
HI-574ALD-5		0°C to +75°C	+ ½	12 bits	± 10		
HI-574ASD-2		-55°C to +125°C	± 1	11 bits	± 50		
HI-574ASD/883		-55°C to +125°C	± 1	11 bits	± 50		
HI-574ATD-2		-55°C to +125°C	± ½	12 bits	± 25		
HI-574ATD/883		-55°C to +125°C	± ½	12 bits	± 25		

12-Bit A/D Converter with μP Interface HI-674A

Features

- Complete 12 bit A/D converter with reference and clock
- Fast conversion -12 μs typical, 15 μs maximum for 12 bits
- Selectable 8 or 12 line bus interface to microprocessor
- 150 ns bus access time
- Same pinout and functions as the HI-574A and AD574A
- No missing codes over temperature
- Available in 28-pin cerdip



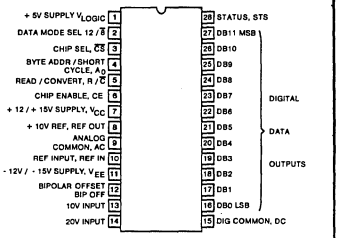
Part Number	Resolution Bits	Temperature Range	Linearity Error max, 25°C (LSB)	25°C Differential Nonlinearity, max No Missing Codes	Gain Drift ppm/°C, max Full Temp.	Conversion Speed. (μs) Max Over Temperature 12 Bits	8 Bits
HI-674AJD-5	12	0°C to +75°C	± 1	11 bits	± 45	15	10
HI-674AKD-5		0°C to +75°C	± ½	12 bits	± 25		
HI-674ALD-5		0°C to +75°C	+ ½	12 bits	± 10		
HI-674ASD-2		-55°C to +125°C	± 1	11 bits	± 50		
HI-674ASD/883		-55°C to +125°C	± 1	11 bits	± 50		
HI-674ATD-2		-55°C to +125°C	± ½	12 bits	± 25		
HI-674ATD/883		-55°C to +125°C	± ½	12 bits	± 25		

A/D CONVERTERS: MICROPROCESSOR COMPATIBLE

12-Bit A/D Converter with μP Interface HI-774

Features

- Complete with reference and clock
- 8 μs conversion time
- 150 ns bus access time
- Superior alternate source to the AD574A, HS574 and HI574A
- No missing codes over temperature
- Full 8 or 16-bit μP interface
- Error correction



Part Number	Resolution Bits	Temperature Range	Linearity Error max, 25°C (LSB)	25°C Differential Nonlinearity, max No Missing Codes	Gain Drift ppm/°C, max Full Temp.	Conversion Speed. (μs) Max Over Temperature 12 Bits	8 Bits
HI1-774JD-5		0°C to +75°C	±1	11 bits	±9		
HI1-774KD-5		0°C to +75°C	±½	12 bits	±5		
HI1-774SD-2		-55°C to +125°C	±1	11 bits	±20	11	8.3
HI1-774TD-2		-55°C to +125°C	±½	12 bits	±10		

D/A CONVERTERS: MONOLITHIC/HIGH PERFORMANCE

Part No.	Features	Resolution Bits	Temp. Range	Package	Output		Non-linearity Max, 25°C (LSB)	Settling Time to ½ LSB Typ, 25°C
					Current	Voltage		
HI1-5618A-2	Very fast settling time	8	-55°C to +125°C	18-pin cerdip	✓		±¼	65 ns
HI1-5618A-5	Low power		0°C to +75°C	18-pin cerdip			±¼	
HI3-5618A-5	CMOS, TTL or DTL compatible		0°C to +75°C	18-pin epoxy dip			±¼	
HI1-5618B-2	Guaranteed monotonic over		-55°C to +125°C	18-pin cerdip			±½	
HI1-5618B-5	temperature		0°C to +75°C	18-pin cerdip			±½	
HI3-5618B-5	On-chip resistors for gain and bipolar offset		0°C to +75°C	18-pin epoxy dip			±½	
HI1-565AJD	+10 V internal reference	12	0°C to +75°C	24-pin cerdip	✓		±¾	150 ns
HI1-565AKD	New industry standard		0°C to +75°C				±½	
HI1-565ASD	Low power		-55°C to +125°C				±¾	
HI1-565ATD	Pin compatible with AD565A		-55°C to +125°C				±½	
	Operates with ±12 V supplies							
HI1-5660-2	Low cost	12	-55°C to +125°C	24-pin cerdip	✓		±½	250 ns
HI1-5660-5	Similar to AD 566A		0°C to +75°C				±½	
HI1-5660-8	Excellent power supply		-55°C to +125°C				±½	
HI1-5660A-2	rejection		-55°C to +125°C				±¼	
HI1-5660A-5	Internal cancellation of ground currents		0°C to +75°C				±¼	
HI1-0562A-2	Low gain drift	12	-55°C to +125°C	24-pin cerdip	✓			300 ns
HI1-0562A-4	Similar to AD 562		-25°C to +85°C					
HI1-0562A-5	Monotonic over temperature		0°C to +75°C					
HI1-0562A/883				-55°C to +125°C				±¼
HI1-5680I-5	New industry standard	12	0°C to +75°C	24-pin cerdip	✓		±½	300 ns
HI1-5680V-5	direct replacement for the		0°C to +75°C			✓		1.5μs
HI1-5685I-4	DAC80/85/87		-25°C to +85°C		✓			300 ns
HI1-5685V-4	Complete DAC with		-25°C to +85°C			✓		1.5μs
HI1-5685AI-4	reference on-board		-25°C to +85°C		✓			300 ns
HI1-5685AV-4	±12 V power supply operation		-25°C to +85°C			✓		1.5 μs
HI1-5687I-2	Available in either current or		-55°C to +125°C		✓			300 ns
HI1-5687V-2	voltage output		-55°C to +125°C			✓		1.5 μs
HI1-5697V/883			-55°C to +125°C			✓		1.5 μs
HI1-5690V-5	Improved replacement	12	0°C to +75°C	24-pin cerdip		✓	±½	0.75 μs
HI1-5695V-4	for the DAC 80/85/87		-25°C to +85°C			✓		
HI1-5697V-2	Two or three supply		-55°C to +125°C			✓		
HI1-5697V/883	operation		-55°C to +125°C			✓		
	On-board low-noise reference							
HI1-DAC16B-5	Low unipolar offset and	16	0°C to +75°C	40-pin cerdip	✓		±2	1.0 μs†
HI1-DAC16C-5	offset T.C.						±4	
	Low drift							
	Excellent stability							
	TTL/5 V-CMOS compatible							

*Leadless chip carriers available.
†To ±2 LSB

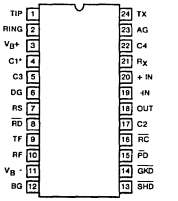
Subscriber Line Interface Circuit (SLIC)
HC-5502A, HC-5504

Features

- Monolithic integrated device
- Bipolar Dielectric Isolation (DI) high-voltage process
- Ring generator referenced to ground (5502A)
- Ring generator referenced to negative battery supply (5504)
- Low standby power
- Typical short loop current: 30mA (5502A) 40mA (5504)
- Controlled supply of battery feed current for short loops
- Overvoltage protection ±500 V in ceramic ±1000 V in plastic
- Internal ring relay driver. 5502A: Tip injected ringing. 5504: Tip/Ring/Balanced
- Switch hook, ground key and ring trip detection functions

Applications

- Solid-state line interface circuit for analog or digital PBX systems, replacing transformer and hybrid systems
- Combine most BORSHT functions on single chip
- BORSHT: Battery feed, overvoltage protection, Ring relay driver, Supervision (off-hook, ring trip and ground key detection), Hybrid (2-4 wire/4-2 wire conversions.
- Selected denial of power to subscriber loops
- Application Note #549
- Available in PLCC packaging



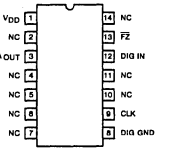
Continuously Variable Slope Delta Modulator (CVSD)
HC-55536, HC-55564

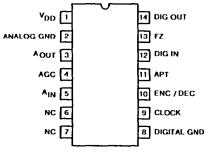
Features

- Real time A to D
- All digital
- Requires few external parts
- CMOS low power drain: 1.5 mW from single 3.0 V to 7 V supply
- Time constants determined by clock frequency
- No calibration or drift problems
- Automatic offset adjustment
- Half-duplex operation by digital control
- Automatic overload recovery
- Automatic "Quiet" pattern generation
- AGC control signal available (HC-55564)
- Commercial and military packaging

Applications

- Use with HC-5512 CVSD filter
- Voice I/O for digital systems and speech synthesis
- Voice encryption/scrambling/security
- Audio manipulations: delay lines, time compression, echo generation/echo suppression, and special effects
- Voice mail
- Voice store and forward
- Pagers
- Programmable signal generators
- Voice/data multiplexers
- Satellites
- Application Note #607





TELECOMMUNICATIONS PRODUCTS

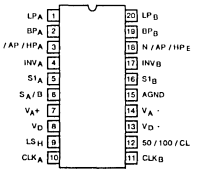
Universal Active Filter HF-10

Features

- Programmable passband gain, center frequency and Q. Low noise.
- Low-power 3 micron analog CMOS
- Clock to center frequency ratio accuracy ±2%
- Filter cutoff frequency stability directly dependent on external clock quality
- Separate highpass (or notch or allpass), bandpass, lowpass outputs. Any three operate simultaneously.
- f_Ox Q range up to 50 kHz minimum
- Operates to f_O = 20 kHz
- -55°C to +125°C temperature range operation to industry standard specification.

Applications

- Telecom
- Transmission
- Modems and multiplexers
- Speech processing
- General purpose filtering



PCM/PAM/CVSD Voiceband Filters HC-5512, HC-5512A, HC-5512D

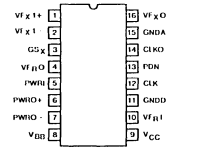
Features

- Industry standard pinout
- CMOS low power consumption: 45 mW (600Ω/0 dBm Load) 30 mW (power amps disabled)
- Power down mode: 0.5 mW
- ± 5 V power supplies
- Gain adjust range: 20 dB
- No external anti-aliasing components
- SIN x/x correction in receive filter
- 50/60 Hz rejection in transmit filter
- TTL/CMOS compatible
- All input-protected against static discharge due to handling
- Exceeds all D3/D4 and CCITT specifications*

*Except D version

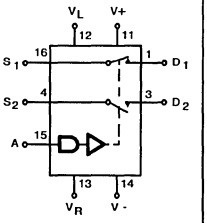
Applications

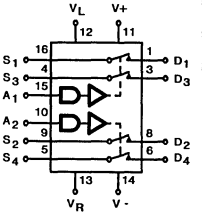
- Transmit and receive filtering for PCM CODECs and PAM applications
- Voice filtering in speech synthesis and digital radio
- Filtering in modems and multiplexers
- HC-5512D is military temp-range and available in LCC packaging



ANALOG SWITCHES

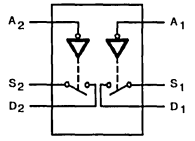
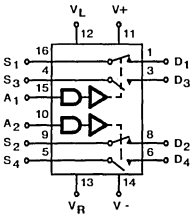
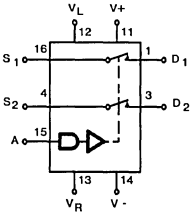
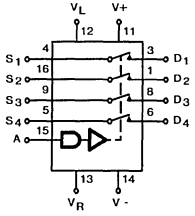
Part Number	Switch Type	Temperature Range °C	Package	R_{on} Max, Full Temp	Off Output Leakage Max, Full Temp	Switch ON Time Max, 25°C	Power Dissipation Typ, 25°C
HI1-0301-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0301-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0301-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0301-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI2-0301-2		-55°C to +125°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI2-0301-5		0°C to +75°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI2-0301-7		0°C to +75°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI2-0301-8		-55°C to +125°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI3-0301-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0305-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0305-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0305-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0305-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI2-0305-2		-55°C to +125°C	TO-100 can	75 Ω	100 nA	250 ns	1.5 mW
HI2-0305-5		0°C to +75°C	TO-100 can	75 Ω	100 nA	250 ns	1.5 mW
HI2-0305-7		0°C to +75°C	TO-100 can	75 Ω	100 nA	250 ns	1.5 mW
HI2-0305-8		-55°C to +125°C	TO-100 can	75 Ω	100 nA	250 ns	1.5 mW
HI3-0305-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0387-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0387-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0387-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0387-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI2-0387-2		-55°C to +125°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI2-0387-5		0°C to +75°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI2-0387-7		0°C to +75°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI2-0387-8		-55°C to +125°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI3-0387-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	300 ns	1.5 mW
HI1-5042-2		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5042-5		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5042-7		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5042-8		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI3-5042-5		0°C to +75°C	16-pin epoxy dip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5050-2		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5050-5		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5050-7		0°C to +75°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5050-8		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI3-5050-5		0°C to +75°C	16-pin epoxy dip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-0303-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0303-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0303-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0303-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0303-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI3-0303-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0307-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0307-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0307-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0307-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI3-0307-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0390-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0390-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0390-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0390-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI3-0390-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	300 ns	1.5 mW
HI1-5043-2		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5043-5		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5043-7		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5043-8		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI3-5043-5		0°C to +75°C	16-pin epoxy dip	75 Ω	500 nA	370 ns*	1.5 mW
HI4-5043-8		-55°C to +125°C	0.35" Sq LCC pack	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5051-2		-55°C to +125°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5051-5		0°C to +75°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5051-7		0°C to +75°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5051-8		-55°C to +125°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI3-5051-5		0°C to +75°C	16-pin epoxy dip	50 Ω	500 nA	370 ns*	1.5 mW





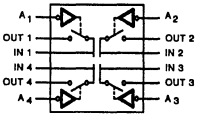
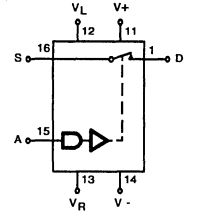
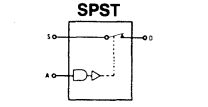
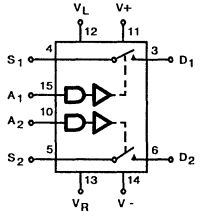
*TYPICAL VALUE

ANALOG SWITCHES

Part Number	Switch Type	Temperature Range °C	Package	R_{on} Max, Full Temp	Off Output Leakage Max, Full Temp	Switch ON Time Max, 25°C	Power Dissipation Typ, 25°C
HI1-5044-2		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5044-5		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5044-7		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns	1.5 mW
HI1-5044-8		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI3-5044-5		0°C to +75°C	16-pin epoxy dip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-0381-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0381-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0381-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0381-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI2-0381-2		-55°C to +125°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI2-0381-5		0°C to +75°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI2-0381-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI2-0381-8		-55°C to +125°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI3-0381-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0200-2		-55°C to +125°C	14-pin cerdip	100 Ω	500 nA	240 ns*	15 mW
HI1-0200-4		-25°C to +85°C	14-pin cerdip	100 Ω	500 nA	240 ns*	15 mW
HI1-0200-5		0°C to +75°C	14-pin cerdip	100 Ω	500 nA	240 ns*	15 mW
HI1-0200-7		0°C to +75°C	14-pin cerdip	100 Ω	500 nA	240 ns*	15 mW
HI1-0200-8		-55°C to +125°C	14-pin cerdip	100 Ω	500 nA	240 ns*	15 mW
HI2-0200-2		-55°C to +125°C	TO-100 can	100 Ω	500 nA	240 ns*	15 mW
HI2-0200-4		-25°C to +85°C	TO-100 can	100 Ω	500 nA	240 ns*	15 mW
HI2-0200-5		0°C to +75°C	TO-100 can	100 Ω	500 nA	240 ns*	15 mW
HI2-0200-7		0°C to +75°C	TO-100 can	100 Ω	500 nA	240 ns*	15 mW
HI2-0200-8		-55°C to +125°C	TO-100 can	100 Ω	500 nA	240 ns*	15 mW
HI3-0200-5		0°C to +75°C	14-pin epoxy dip	100 Ω	500 nA	240 ns*	15 mW
HI1-0302-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0302-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0302-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI3-0302-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0303-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0306-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0306-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0306-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0306-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI3-0306-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0384-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0384-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0384-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0384-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI3-0384-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	300 ns	1.5 mW
HI1-5045-2		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5045-5		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5045-7		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns	1.5 mW
HI1-5045-8		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI3-5045-5		0°C to +75°C	16-pin epoxy dip	75 Ω	500 nA	370 ns*	1.5 mW
HI4-5045-8		-55°C to +125°C	0.35" Sq LCC pack	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5049-2		-55°C to +125°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5049-5		0°C to +75°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5049-7		0°C to +75°C	16-pin cerdip	50 Ω	500 nA	370 ns	1.5 mW
HI1-5049-8		-55°C to +125°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI3-5049-5		0°C to +75°C	16-pin epoxy dip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5046-2		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5046-5		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5046-7		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns	1.5 mW
HI1-5046-8		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI3-5046-5		0°C to +75°C	16-pin epoxy dip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5046A-2		-55°C to +125°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5046A-5		0°C to +75°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5046A-7		0°C to +75°C	16-pin cerdip	50 Ω	500 nA	370 ns	1.5 mW
HI1-5046A-8		-55°C to +125°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI3-5046A-5		0°C to +75°C	16-pin epoxy dip	50 Ω	500 nA	370 ns*	1.5 mW

*TYPICAL VALUE

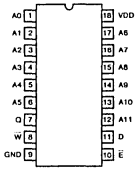
ANALOG SWITCHES

Part Number	Switch Type	Temperature Range °C	Package	R_{on}Max, Full Temp	Off Output Leakage Max, Full Temp	Switch ON Time Max, 25°C	Power Dissipation Typ, 25°C
HI1-5047-2		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5047-5		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5047-7		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns	1.5 mW
HI1-5047-8		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI3-5047-5		0°C to +75°C	16-pin epoxy dip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5047A-2		-55°C to +125°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5047A-5		0°C to +75°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5047A-7		0°C to +75°C	16-pin cerdip	50 Ω	500 nA	370 ns	1.5 mW
HI1-5047A-8		-55°C to +125°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI3-5047A-5		0°C to +75°C	16-pin epoxy dip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-0201-2		-55°C to +125°C	16-pin cerdip	100 Ω	500 nA	185 ns*	15 mW
HI1-0201-4		-25°C to +85°C	16-pin cerdip	100 Ω	250 nA	185 ns*	15 mW
HI1-0201-5		0°C to +75°C	16-pin cerdip	100 Ω	250 nA	185 ns*	15 mW
HI1-0201-7		0°C to +75°C	16-pin cerdip	100 Ω	250 nA	185 ns*	15 mW
HI1-0201-8		-55°C to +125°C	16-pin cerdip	100 Ω	500 nA	185 ns*	15 mW
HI3-0201-5		0°C to +75°C	16-pin epoxy dip	100 Ω	250 nA	185 ns*	15 mW
HI4-0201-8		-55°C to +125°C	0.35" Sq LCC pack	100 Ω	500 nA	185 ns*	15 mW
HI1-0201 HS-2		-55°C to +125°C	16-pin cerdip	75 Ω	100 nA	50 ns	120 mW
HI1-0201 HS-4		-25°C to +85°C	16-pin cerdip	75 Ω	50 nA	50 ns	120 mW
HI1-0201 HS-5		0°C to +75°C	16-pin cerdip	75 Ω	50 nA	50 ns	120 mW
HI1-0201 HS-8		-55°C to +125°C	16-pin cerdip	75 Ω	100 nA	50 ns	120 mW
HI3-0201 HS-4		-25°C to +85°C	16-pin epoxy dip	75 Ω	50 nA	50 ns	120 mW
HI3-0201 HS-5		0°C to +75°C	16-pin cerdip	75 Ω	50 nA	50 ns	120 mW
HI4-0201 HS-5		0°C to +75°C	16-pin epoxy dip	75 Ω	50 nA	50 ns	120 mW
HI1-5040-2		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5040-5		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5040-7		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns	1.5 mW
HI1-5040-8		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI3-5040-5		0°C to +75°C	16-pin epoxy dip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-0222-2		-55°C to +125°C	14-pin cerdip	60 Ω	200 nA	150 ns	120 mW
HI1-0222-4		-25°C to +85°C	14-pin cerdip	60 Ω	200 nA	150 ns	120 mW
HI1-0222-5		0°C to +75°C	14-pin cerdip	40 Ω	200 nA	150 ns	120 mW
HI1-0222-7		0°C to +75°C	14-pin cerdip	40 Ω	200 nA	150 ns	120 mW
HI1-0300-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0300-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0300-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0300-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI2-0300-2		-55°C to +125°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI2-0300-5		0°C to +75°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI2-0300-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	300 ns	1.5 mW
HI2-0300-8		-55°C to +125°C	TO-100 can	75 Ω	100 nA	300 ns	1.5 mW
HI3-0300-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	300 ns	1.5 mW
HI1-0304-2		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0304-5		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0304-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI1-0304-8		-55°C to +125°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI2-0304-2		-55°C to +125°C	TO-100 can	75 Ω	100 nA	250 ns	1.5 mW
HI2-0304-5		0°C to +75°C	TO-100 can	75 Ω	100 nA	250 ns	1.5 mW
HI2-0304-7		0°C to +75°C	14-pin cerdip	75 Ω	100 nA	250 ns	1.5 mW
HI2-0304-8		-55°C to +125°C	TO-100 can	75 Ω	100 nA	250 ns	1.5 mW
HI3-0304-5		0°C to +75°C	14-pin epoxy dip	75 Ω	100 nA	250 ns	1.5 mW
HI1-5041-2		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5041-5		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5041-7		0°C to +75°C	16-pin cerdip	75 Ω	500 nA	370 ns	1.5 mW
HI1-5041-8		-55°C to +125°C	16-pin cerdip	75 Ω	500 nA	370 ns*	1.5 mW
HI3-5041-5		0°C to +75°C	16-pin epoxy dip	75 Ω	500 nA	370 ns*	1.5 mW
HI1-5048-2		-55°C to +125°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5048-5		0°C to +75°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI1-5048-8		-55°C to +125°C	16-pin cerdip	50 Ω	500 nA	370 ns*	1.5 mW
HI3-5048-5		0°C to +75°C	16-pin epoxy dip	50 Ω	500 nA	370 ns*	1.5 mW

*TYPICAL VALUE

RAD-HARD
CMOS STATIC RAMs 1K, 4K

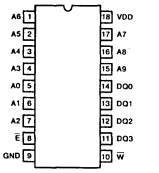
4096 x 1 — 4K
HS-6504RH

Features	Radiation Effects	
• Specifically designed for radiation hardness • Low standby power (max): — 1100 μW • Low operating power (max): — 38.5 mW/MHz • TTL compatible output • Three-state output • On-chip address register • Standard JEDEC pinout • Full military temperature range	• Each lot screened for total dose hardness • Parametrics guaranteed to 1 x 10^5 RADs (Si) • Post rad standby current (max): — 200 μA • Post rad access time (typical): 120 ns (max): 200 ns • Latch-up free> 1 x 10^{12} RADs (Si)/sec • Upset: > 10^8 RADs (Si)/sec • SEU immune option available	

RAD-HARD CMOS STATIC RAMs 4K & 16K

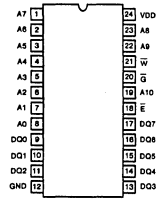
1024 x 4 — 4K
HS-6514RH

Features	Radiation Effects
• Specifically designed for radiation hardness • Low standby power (max): — 1100 μW • Low operating power (max): — 38.5 mW/MHz • TTL compatible output • Three-state output • Common data in/out • Standard JEDEC pinout • Full military temperature range	• Each lot screened for total dose hardness • Parametrics guaranteed to 1 x 10^5 RADs (Si) • Post rad standby current (typ): — 6 μA • Post rad access time: (typical): 120 ns (max): 225 ns • Latch-up free> 1^{12} RADs (Si)/sec • Upset: > 10^8 RADs (Si)/sec • SEU immune option available



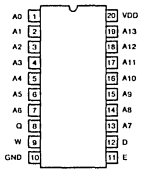
(2048 x 8)—16K
HS-65C162RH, HS-65T162RH

Features	Radiation Effects
• Specifically designed for radiation hardness • Asynchronous operation • CMOS or TTL compatible input/output • Low standby power (max): CMOS: 1100 μW • Low operating current (max): 40 mA + 4mA/MHz • Three-state outputs • Full military temperature range	• Each lot screened for radiation hardness • Parametrics guaranteed to 2 x 10^5 RADs (Si) • Functional to 1 x 10^6 RADs (Si) • Access time (max., CMOS): 120 ns • Access time (typ., CMOS): 80 ns • Access time (typ., TTL): 100 ns • Transient upset > 1 x 10^9 RADs (Si)/s • Latch-up free > 1 x 10^{12} RADs (Si)/s • SEU immune option available

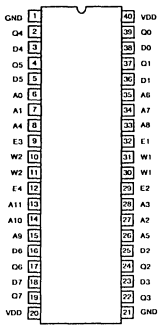


RAD-HARD CMOS STATIC RAMs/RAM MODULES 16K & 64K

(16384 x 1) 16K HS-65C262RH, HS-65T262RH

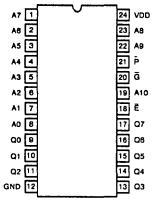
Features	Radiation Effects	
• Specifically designed for radiation hardness • Asynchronous • TTL/CMOS compatible input/output • Low standby power (CMOS): 1 mW max. • Low operating power (max): 2.8 mW + 33 mW/MHz • Three-state output • Standard JEDEC pinout • Full military temperature range	• Each lot screened for radiation hardness • Parametrics guaranteed to 2 x 10^5 RADs (Si) • Access time (CMOS input): 150ns max., 80ns (typ) • Access time (TTL inputs): 175ns max., 100ns typ. • Data upset > 5 x 10^8 RADs (Si)/sec • Latch-up free> 1 x 10^{12} RADs (Si)/sec • SEU hardening option available	

LCC RAM Module — 16384 x 4 or 8192 x 8 — 64K HS-6564RH

Features	Radiation Effects	
• Specifically designed for radiation hardness • Low standby power (max): — 8.8 μW • Low operating power (max): — 308 mW/MHz • TTL compatible input/output • Three-state output • On-chip address register • Full military temperature range	• Each lot screened for total dose hardness • Total dose guaranteed to 1 x 10^5 RADs (Si) • Post rad standby current (typ): — 96 μA • Post rad access time (max): 250ns • Latch-up free> 10^{12} RADs (Si)/sec • Upset > 10^9 RADs (Si)/sec	

RAD-HARD CMOS PROM — 16K

(2048 x 8) — 16K
HS-6617RH

Features	Radiation Effects	
• Specifically designed for radiation hardness • Low standby power (max): — 550 μW • Low operating power (max): — 37.5 mW/MHz • TTL compatible input/output • Synchronous Operation • On-chip address latches • Three-state output • NiChrome fuse links • Full military temperature range	• Each lot screened for total dose hardness • Total dose guaranteed to 1 x 10^5 RADs (Si) • Access time (max): — 120ns • Latch-up free > 10^{12} RADs (Si)/sec	

RAD-HARD
CMOS MICROPROCESSOR PRODUCTS

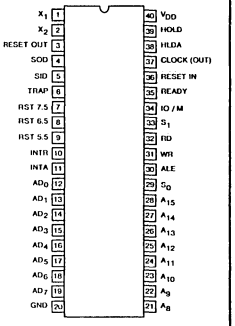
8-Bit Microprocessor
HS-80C85RH

Features

- Specifically designed for radiation hardness
- Low standby power: 2.7 mW max.
- Low operating power: 26 mW/MHz max.
- Multiplexed address/data bus
- 5 Volt operation
- Software and pin compatibility with Intel 8085
- Equivalent to Sandia SA3000
- Full military temperature range

Radiation Effects

- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free > 10^{12} RADs (Si)/sec
- Upset: > 10^8 RADs (Si)/sec



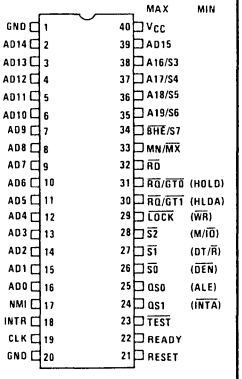
16-Bit Microprocessor
HS-80C86RH

Features

- Specifically designed for radiation hardness
- Pin compatible with Harris 80C86
- Completely static design
  - ▶DC to 5 MHz
- Low-power operation
  - ▶ICCSB = 500 μA maximum
  - ▶ICCOP = 12 mA/MHz max.
- 1 Mbyte of direct memory addressing capability
- 24 operand addressing modes
- Bit, byte, word, and block move operations
- 8 and 16-bit signed/unsigned arithmetic
  - ▶Binary or decimal
  - ▶Multiply and divide
- Single 5V power supply
- Military temperature range

Radiation Effects

- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free
- Upset: > 10^8 RADs (Si)/sec



RAD-HARD
CMOS MICROPROCESSOR PRODUCTS

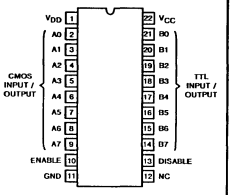
8-Bit Bidirectional CMOS/TTL Level Converter
HS-3374RH

Features

- Specifically designed for radiation hardness
- Static operation for low power consumption
- Non-inverting outputs
- Low propagation delay
- Full military temperature range
- Equivalent to Sandia SA2996

Radiation Effects

- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free > 10^{12} RADs (Si)/sec
- Upset: > 10^8 RADs (Si)/sec



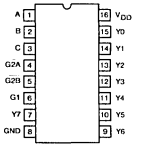
3-Line to 8-Line Decoder/Demultiplexer
HS-54C138RH

Features

- Specifically designed for radiation hardness
- Static operation for low power consumption
- High noise immunity
- Active low outputs
- 5 Volt operation
- Full military temperature range
- Equivalent to Sandia SA2995

Radiation Effects

- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free > 10^{12} RADs (Si)/sec
- Upset: > 10^8 RADs (Si)/sec



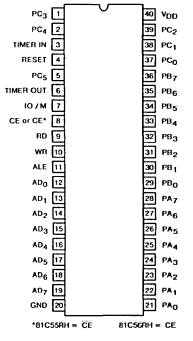
2K (256x8) RAM with I/O and Timer
HS-81C55RH, HS-81C56RH

Features

- Specifically designed for radiation hardness
- Static operation for low power consumption
- Pin compatible with Intel 8155/56
- Equivalent to Sandia SA3001
- 5 Volt operation
- 3 programmable I/O ports
- 14-Bit programmable timer
- Multiplexed address and data bus
- Full military temperature range

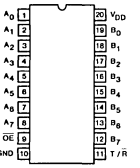
Radiation Effects

- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free > 10^{12} RADs (Si)/sec
- Upset: > 10^8 RADs (Si)/sec

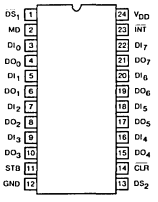


RAD-HARD
CMOS MICROPROCESSOR PRODUCTS

8-Bit Bus Transceiver
HS-82C08RH

Features	Radiation Effects	
• Specifically designed for radiation hardness • Static operation for low power consumption • Bidirectional three-state input/outputs • Low propagation delay • 5 Volt operation • Full military temperature range • Equivalent to Sandia SA2997	• Each lot screened for total dose hardness • Parametrics guaranteed to 1 x 10^5 RADs (Si) • Latch-up free > 10^{12} RADs (Si)/sec • Upset: > 10^8 RADs (Si)/sec • Increased tolerance to cosmic radiation	

8-Bit Input/Output Port
HS-82C12RH

Features	Radiation Effects	
• Specifically designed for radiation hardness • Static operation for low power consumption • Asynchronous register clear • 8-bit data register and buffer • Service request flip-flop • Three-state outputs • Full military temperature range • Equivalent to Sandia SA3026	• Each lot screened for total dose hardness • Parametrics guaranteed to 1 x 10^5 RADs (Si) • Latch-up free > 10^{12} RADs (Si)/sec • Upset: > 10^8 RADs (Si)/sec	

RAD-HARD
CMOS MICROPROCESSOR PRODUCTS

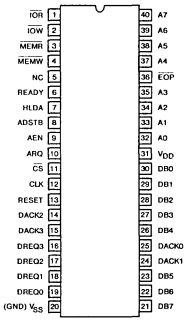
Programmable DMA Controller
HS-82C37ARH

Features

- Specifically designed for radiation hardness
- Pin compatible with Harris 82C37A
- High-speed data transfers up to 2.5 MBPS with 5 MHz clock
- Four independent maskable channels with autoinitialization capability
- Expandable to any number of channels
- Memory-to-memory transfer capability
- Software-accessible internal registers
- Single 5V power supply
- Low power consumption
  >IDDOP = 20 mA/MHz maximum
  >IDDSB = 20 μA maximum
- Full military temperature range

Radiation Effects

- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free
- Upset: > 10^8 RADs (Si)/sec
- Functional after 1 x 10^6 RADs (Si) total dose



Serial Controller Interface
HS-82C52RH

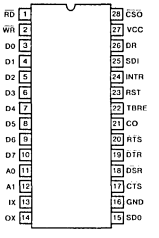
COMING SOON

Features

- Specifically designed for radiation hardness
- Pin compatible with Harris 82C52
- Uses either parallel mode crystal circuit or external frequency source
- DC to 16 MHz operation (DC to 1M Baud rate)
- Microprocessor bus oriented interface
- Modem interface
- Line break generation and detection
- Loopback and echo modes
- Interrupt mode with mask capability
- TTL/CMOS compatible inputs/outputs
- Single 5V supply
- Low power consumption: 1 mA/MHz typical
- Full military temperature range

Radiation Effects

- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free
- Upset: > 10^8 RADs (Si)/sec
- Total dose capabilities above look RADs available; contact factory for details



RAD-HARD
CMOS MICROPROCESSOR PRODUCTS

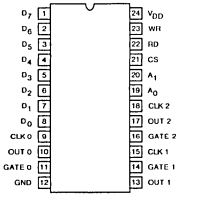
Programmable Interval Timer
HS-82C54RH

Features

- Specifically designed for radiation hardness
- Pin compatible with Harris 82C54A and NMOS 8254A
- High speed, no "wait state" operation with 5MHz HS-80C86RH
- Three independent 16 bit counters
- Six programmable counter modes
- Binary or BCD counting
- Status read back command
- Fully TTL compatible
- Single 5V power supply
- Low power consumption
  >IDDSB = 20 μA
  >IDDOP = 10 mA/MHz
- Full military temperature range

Radiation Effects

- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free
- Upset: > 10^8 RADs (Si)/sec
- Functional after 1 x 10^6 RADs (Si) total dose



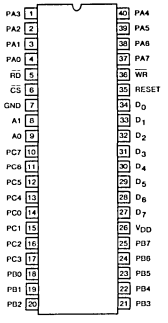
Programmable Peripheral Interface
HS-82C55ARH

Features

- Specifically designed for radiation hardness
- Pin compatible with Harris 82C55A and NMOS 8255A
- High speed, no "wait state" operation with 5 MHz HS-80C86 RH
- Fully TTL compatible
- 24 programmable I/O pins
- Direct bit set/reset capability
- Enhanced control word read capability
- Single 5V power supply
- 2.0 mA drive capability on all I/O port outputs
- Low standby power
  >ICCSB = 10 μA
- Full military temperature range

Radiation Effects

- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free
- Upset: > 10^8 RADs (Si)/sec
- Functional after 1 x 10^6 RADs (Si) total dose



RAD-HARD
CMOS MICROPROCESSOR PRODUCTS

Programmable Interrupt Controller
HS-82C59ARH

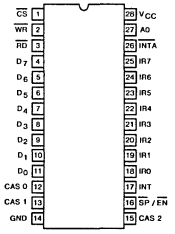
COMING SOON

Features

- Specifically designed for radiation hardness
- Pin compatible with Harris 82C59A and NMOS 8259A
- High speed, no "wait state" operation with 5 MHz HS-80C86RH
- Eight level priority controller
- Expandable to 64 priority levels
- Fully TTL compatible
- Programmable interrupt modes
- HS-80C85RH and HS-80C86RH compatible operation
- Individual request mask capability
- Fully static design
- Single 5V power supply
- Low standby power 20 μA
- Full military temperature range

Radiation Effects

- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free
- Upset: > 10^8 RADs (Si)/sec



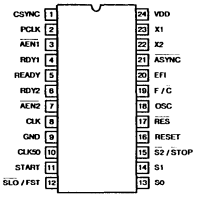
Static Clock Controller/Generator
HS-82C85RH

Features

- Specifically designed for radiation hardness
- Pin compatible with Harris 82C85
- Generates system clocks for microprocessors and peripherals
- Complete control over system clock operation for very low system power
  - ▶Stop-oscillator
  - ▶Stop-clock
  - ▶Low-frequency (slo) mode
  - ▶Full-speed operation
- DC to 15 MHz operation (DC to 5 MHz system clock)
- Uses either parallel mode crystal circuit or external frequency source
- TTL/CMOS compatible inputs/outputs
- Single 5V power supply
- Very low power consumption
- Full military temperature range

Radiation Effects

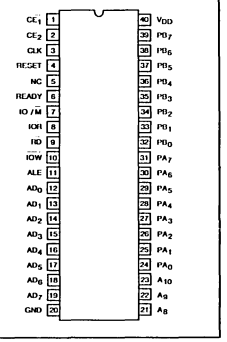
- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free
- Upset: > 10^8 RADs (Si)/sec
- Functional after 1 x 10^6 RADs



RAD-HARD
CMOS MICROPROCESSOR PRODUCTS

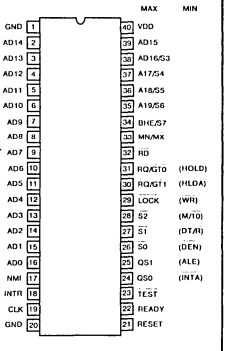
16K (2Kx8) ROM with I/O Ports
HS-83C55RH

Features	Radiation Effects
• Specifically designed for radiation hardness • Static operation for low power consumption • Pin compatible with Intel 8355 • Equivalent to Sandia SA3002 • 5 Volt operation • 2 programmable I/O ports • Multiplexed address and data bus • Full military temperature range	• Each lot screened for total dose hardness • Parametrics guaranteed to 1 x 10^5 RADs (Si) • Latch-up free > 10^{12} RADs (Si)/sec • Upset: >10^8 RADs (Si)/sec



Radiation Hardened CMOS 16 Bit Microprocessor
HS-80C86RRH

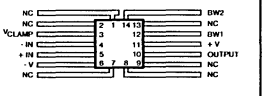
Features	
• Pin compatible with NMOS 8086 and Harris 80C86 • Radiation hardened (guaranteed) > Latch up free Epi-CMOS > Total dose > 100K Rad(Si) > Transient upset >10^8Rad(Si)/sec > Single event upset hardened • Completely static design > DC to 5MHz • Low power operation > ICCSB = 500μA maximum > ICCOP = 12 mA/MHz typical • 1 Mbyte of direct memory addressing capability	• 24 Operand Addressing Modes • Bit, byte, word, and block move operations • 8 and 16 bit signed/unsigned arithmetic > Binary or decimal > Multiply and divide • Bus-hold circuitry eliminates pull-up resistors for CMOS Interfacing • Hardened field, self aligned, Junction Isolated CMOS Process Single 5V power supply • Military temperature range



RAD-HARD ANALOG
OPERATIONAL AMPLIFIERS, COMPARATOR, AND REGULATOR

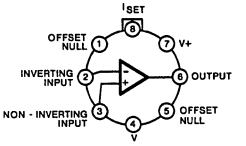
High Slew Rate/Wide band Operational Amplifier
HS-3516RH

Features	Radiation Effects
• Specifically designed for radiation hardness • High slew rate: — ≥ ±22 V/μs • Fast settling time: — ≤ 450 ns • Unity gain bandwidth: — 12 MHz • Low offset voltage @ 25°C: — ≤ ±5 mV • Short circuit protection • Full military temperature range	• Dielectric Isolation technology • Each lot screened for total dose hardness • Parametrics guaranteed to 1 x 10^6 RADs (Si) • Latch-up free • Tolerant to neutron fluence > 5 x 10^{12} n/cm^2 (E ≥ 10 KeV) • Tolerant to gamma rate > 1 x 10^9 RADs (Si)/sec

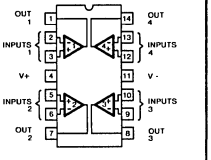


RAD-HARD
OPERATIONAL AMPLIFIERS, COMPARATOR AND REGULATOR

Low-Power/Programmable Operational Amplifier
HS-3530RH

Features	Radiation Effects	
• Specifically designed for radiation hardness • Wide range AC programming: — Slew rate: 0.06 to 3 V/μs — Gain x bandwidth: 100 kHz to 5 MHz • Wide range DC programming: — Power supply: $\pm$ 1.5 to $\pm$ 18 V — Supply current: 10 μA to 1.2 mA • Short circuit protection • Full military temperature range	• Dielectric Isolation technology • Each lot screened for total dose hardness • Parametrics guaranteed to 1 x 10^6 RADs (Si) • Latch-up free • Tolerant to neutron fluence > 5 x 10^{12} n/cm^2 (E $\geq$ 10 KeV) • Tolerant to gamma rate > 1 x 10^9 RADs (Si)/sec	

High Performance Quad Operational Amplifier
HS-5104RH

Features	Radiation Effects	
• Specifically designed for radiation hardness • Low offset voltage: $\leq$ 3.0 mV • High slew rate: $\geq$ 1.0 V/μs • Unity gain bandwidth 6.5 MHz • Single 5V supply capability • Short circuit protection • Full military temperature range	• Dielectric Isolation technology • Each lot screened for total dose hardness • Parametrics guaranteed to 1 x 10^5 RADs (Si) • Latch-up free • Tolerant to neutron fluence > 5 x 10^{12} n/cm^2 (E $\geq$ 10 KeV) • Tolerant to gamma rate > 1 x 10^9 RADs (Si)/sec	

RAD-HARD
CMOS ANALOG MULTIPLEXERS

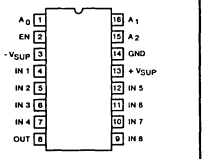
8-Channel Multiplexer — Overvoltage Protection
HS-508ARH

Features

- Specifically designed for radiation hardness
- Analog/digital overvoltage protection
- Fail-safe with power loss (no latch-up)
- Break-before-make switching
- DTL/TTL/CMOS compatible
- Analog signal range: — ± 15 V
- Access time (typical): — 500 ns
- Supply current @ 1 MHz address toggle (typical): — 4 mA
- Standby power (typical): — 7.5 mW
- Full military temperature range

Radiation Effects

- Dielectric Isolation technology
- Each lot screened for total dose hardness
- Parametrics guaranteed to 1 x 10^5 RADs (Si)
- Latch-up free
- Tolerant to neutron fluence > 1 x 10^{13} n/cm² (E ≥ 10 KeV)
- Tolerant to gamma rate > 1 x 10^9 RADs (Si)/sec



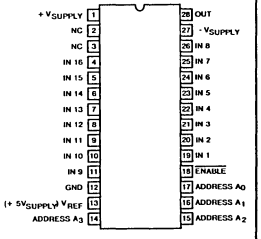
16-Channel Multiplexer-High-Z Analog Input Protection
HS-1840RH

Features

- Analog signal range: -5 V to + 15 V
- Specifically designed for radiation hardness
- High analog input impedance during power loss (open): — 500 MΩ
- Low standby power consumption (typical): — 600 μW
- Access time (typical): — 500 ns
- Excellent in hi-rel redundant systems
- Full military temperature range
- Break-before-make switching

Radiation Effects

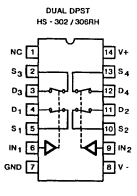
- Dielectric Isolation technology
- Each lot screened for total dose hardness
- Parametrics guaranteed to 2 x 10^5 RADs (Si)
- Latch-up free
- Tolerant to neutron fluence > 1 x 10^{13} n/cm² (E ≥ 10 KeV)
- Tolerant to gamma rate > 1 x 10^9 RADs (Si)/sec

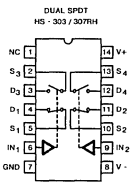


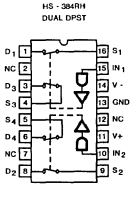
RAD-HARD
CMOS ANALOG SWITCHES

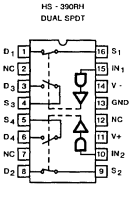
Radiation Hardened CMOS Analog Switches
HS-302RH, HS-303RH, HS-306RH, HS-307RH, HS-384RH, HS-390RH

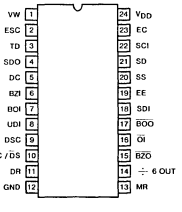
Features	Radiation Effects
• Pin for pin compatible with Harris HI-3XX series analog switches • Analog signal range: ± 15 V • Low leakage (pre RAD typical at 25°C): 90 pA • Low R_{ON} (pre RAD typical at 25°C): 30Ω • Break-before-make delay (typical): 65 ns • Full military temperature range • Low operating power	• Dielectric Isolation technology • Each lot screened for total dose hardness • Parametrics guaranteed to 1 x 10^5 RADs (Si) • Latch-up free • Tolerant to neutron fluence > 5 x 10^{13} n/cm² (E ≥ 10 KeV) • Tolerant to gamma rate > 1 x 10^9 RADs (Si)/sec







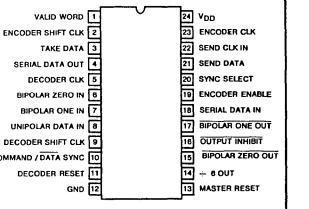




RAD-HARD CMOS
COMMUNICATION PRODUCTS

Manchester Encoder/Decoder (MED)
HS-15530RH

Features	Radiation Effects
• Specifically designed for radiation hardness • Support of MIL-STD-1553 • 1.0 Mbit/sec data rate • Sync identification and lock-in • Clock recovery • Manchester II encode, decode • Separate encode and decode • Low operating power: 50 mW @ 5 V • Full military temperature range	• Each lot screened for total dose hardness • Parametrics guaranteed to 1 x 10^5 RADs (Si) • Latch-up free • Upset: > 10^8 RADs (Si)/sec

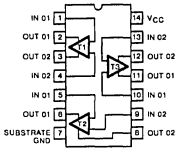


RAD-HARD CMOS COMMUNICATION PRODUCTS

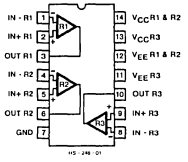
HS-245 Triple Line Transmitter, HS-246/249 Triple Line Receivers, HS-248 Triple Party-Line Receiver

Features

- High speed: 15 MHz with 50-ft. cable, 2 MHz with 1,000-ft. cable
- Tolerates -2.0 V to +20.0 V ground differential (transmitter with respect to receiver)
- Current mode operation
- High common mode rejection
- Transmitter and receiver party-line capability
- Transmitter input/receiver output TTL/DTL compatible
- Low power dissipation
- Low EMI generation
- High noise immunity
- Replaces HD-245/246/248/249



HS-245 Transmitter



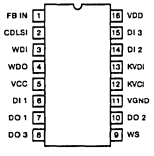
HS-246/248/249 Receivers

SECURE DATA COMMUNICATIONS

CYPHER-I™ CMOS DATA ENCRYPTION DEVICE HS-3447

Features

- Endorsed by National Security Agency for protecting unclassified national security related information (UNSR)
- Per DoD drawing ON304455
- Alternative to WD 2001/2002 and MC6859 NMOS devices
- Uses single 5V power supply
- Operating range -55°C to +125°C
- Lower power operation 250 mW at 10 MHz
- Maximum transfer rate:
  20 MHz at 7 Volts
  10 MHz at 5 Volts
  20 MHz at 5 Volts (-55°C to +85°C)
- Encrypts/decrypts via serial data stream
- Available to Class B and Class S equiv. screening
- Inputs TTL compatible
- Key variable stored on chip is not externally accessible
- Available in special configurations

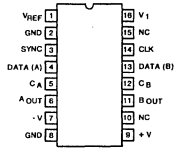


SPECIALIZED PRODUCTS

ARINC 429 Bus Interface Line Driver Circuit HS-3182

Features

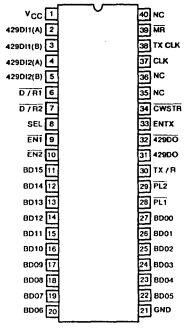
- Inputs TTL and CMOS compatible
- Adjustable rise and fall times via two external capacitors
- Programmable output differential range via voltage reference input (V_{REF})
- Outputs are inhibited (0 V) if data (A) and data (B) inputs are both in the "logic one" state
- Can operate up to a 100-Kbit data rate
- Output short circuit proof and contains overvoltage protection
- Data "A" and Data "B" signals are "AND'D" with clock and sync signals
- Full military temperature range



ARINC 429 Bus Interface Circuit HS-3282

Features

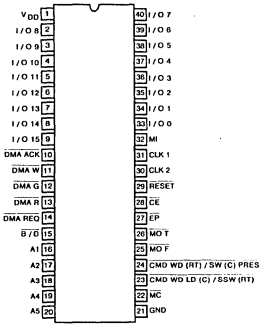
- ARINC specification 429 compatible
- Data rates of 100 Kbits or 12.5 Kbits
- Separate receiver and transmitter section
- Dual and independent receivers, connecting directly to ARINC bus
- Serial to parallel receiver data conversion
- Parallel to serial transmitter data conversion
- Word lengths of 25 or 32 bits
- Parity status of received data
- Generate parity of transmitter data
- Automatic word gap timer
- Single 5 V supply
- Low power dissipation
- Full military temperature range



MIL-STD-1553B Bus Interface Circuit HS-3273

Features

- MIL-STD-1553C compatible
- Up to 5 MHz data rate for non-MIL-STD-1553C applications
- Parallel to serial transmitter data conversion
- 8/16 bits host I/O interface
- Error interception and recognition
- DMA capability
- Single 5 V power supply
- Full military temperature range



SEMICUSTOM CELL LIBRARY

HSC1000RH Radiation Hardened Dual Level Metal CMOS Standard Cell Library

Features

- Low power CMOS process
- 2.0 micron channel lengths (1.25 micron effective)
- Dual level metal interconnect
- Guaranteed hardened against radiation
  - > Total dose. . . . . > 2 x 10^5 RAD-Si
  - > Data upset. . . . . > 1 x 10^9 RAD-Si/s
  - > Latch-Up free to. . . . . > 1 x 10^{12} RAD-Si/s
  - > Functional after 10^6 total dose radiation
- 800ps typical 2-input nand gate delay with a fanout = 2
- 100MHz Flip-Flop Toggle Frequency
- Supports gate counts to 13K
- Over 200 primitive and macrocell functions
- Complex function megacells
- Supported on Harris Architect™, Daisy™ and Mentor Graphics™ Design Systems
- CMOS/TTL compatible I/O's
- Military temperature ranges
- Proven reliable and manufacturable process
- Extensive packaging options
- Screening and qualification to Mil-Std-883C Method 5004/5005, Class B
- Space lend class 'S' screens and qualifications
- Function compatible with the HSC1000 Non-Radiation Hardened Library

Dual Level Metal CMOS Standard Cell Library HSC1000

Features

- Low power CMOS process
- 1.5 micron channel lengths (1.0 micron effective)
- Dual level metal interconnect
- 800ps typical 2-input nand gate delay with a fanout = 2
- 100MHz flip-flop toggle frequency
- Supports gate counts to 25K
- Over 200 primative and macrocell functions
- Complex function megacells
- RAM and ROM Module Compilers
- Supported on Harris Architect™, Daisy™ and Mentor Graphics® Design Systems
- CMOS/TTL compatible I/O's
- Commercial-Industrial-Military Temperature Ranges
- Proven reliable and manufacturable process
- Extensive packaging options
- Screening and qualification to Mil-Std-883C Method 5004/5005, Class B
- Space lend class 'S' screens and qualifications
- Function compatible with the HSC 1000RH Radiation Hardened Library

SEMICUSTOM CELL LIBRARY

CMOS/Analog/Digital Cell Library

Features

- Fast turn, low risk ASIC with high performance
- High level of integration provides "system on a chip" capability
- Switched-capacitor methods provide wide variety of analog circuit functions.
- Low power — CMOS technology
- ±5 volt or 0-10 volt power supply operation
- Available now for Custom Applications
- CMOS and TTL inputs and outputs
- 32 analog cells — operational amplifiers, comparators, voltage references and bias circuits, switch cells
- Multiple packaging options
- Military Class B or S equivalent flow

HARRIS SEMICONDUCTOR CICD

Harris Custom/Semicustom IC capabilities are outlined in this section for your high performance systems designs.

FOCUS

- Serve the high-rel strategic and tactical government ASIC systems, high-performance commercial and industrial systems, and commercial secure communications systems.

LEADERSHIP

- Top supplier of custom and semicustom analog and digital rad hard and non-rad hard ICs
- Stable government supplier with long-term commitment to served markets. Part of Harris Corporation, major vertically integrated defense contractor
- Authority on military standards, certification, and testing issues — class "B" and class "S" facilities — QML support
- Radiation Hardened Custom/Semicustom Leader
- Secure Communications leader
- Proven knowledge-based, front-to-back CAE tools based on open system framework concept, as well as Daisy™, Mentor™, CAE systems
- Macros for 8- and 16-bit Intel families, non-future: RISC, ARINC
- SOI process leadership - next generation hardness technology
- VHSIC process capabilities
- Mixed analog/digital for custom/semicustom applications
- Multiple CMOS, Bipolar and BIMOS processing capabilities
- Leadership in strategic programs — value engineering program management
- High-performance commercial ASICS — high voltage, high temperature, harsh environment experience

Contact CICD Marketing for more information (407) 729-4570

SEMICUSTOM DESIGN TOOLS

Toolkit for Daisy™

Features

- Compatible with standard Daisy platforms — supports standard Daisy Tools
- Supports Harris Standard Cell, Gate Array* and Compiled Functions*
- Schematic capture, simulation and netlisting for SSI, MSI, LSI Macrofunctions and RAM/ROM Compilers
- 1.5 micron Non-rad Hard (HSC1000) and 2.0 micron Rad Hard (HSC1000RH) Libraries are available today
- Simulation capabilities include min/typ/max delays for all functions. Post radiation simulation supported for HSC1000RH
- Back annotation of fanout and routed delays
- Supports DED II and ACE Schematic Capture — DeMorgan Symbols for many functions
- Additional Harris tools enhance Daisy productivity
  - > Chip Statistics
  - > Design Plotting
  - > Som Maker
  - > Fanout Checker
  - > PinLister
  - > TCAL
- Classified design area with Daisy available at Harris

*Gate Array support planned for Q2, CY 1989, Compiler Support provided as a Harris custom service.

Toolkit For Mentor Graphics®

Features

- Supports Harris Standard Cell, Gate Array* and Compiled Functions*
- Schematic capture, simulation and netlisting for SSI, MSI, LSI Macrofunctions and RAM/ROM Compilers
- Accurate, efficient behavioral models
- Ability to integrate with Mentor Graphics Board-Level Simulations
- 1.5 micron Non-rad Hard (HSC1000) and 2.0 micron Rad Hard (HSC1000RH) Libraries are available today
- Simulation capabilities include min/typ/max delays for all functions
- Post radiation simulation supported for HSC1000RH
- Back annotation of fanout delays
- Additional Harris Design Management Tools enhance Mentor Graphics productivity:
  - > Comprehensive Electrical Rule Checking (ERCs)
  - > Design Statistics Generation
  - > Tester Interface
  - > Design Status (Audit Trail)
  - > Design Transfer

*Gate Array support planned for Q2, CY 1989, Compiler Support provided as a Harris custom service.

CUSTOM/SEMICUSTOM CIRCUIT TECHNOLOGY

Process	Minimum Feature Size (Drawn Microns)	Rad Tol/Rad-Hard	Levels of Metal
MOS			
PMOS (Digital)	7.5		1
MGCMOS (metal gate)(Digital)	7.5		1
SAJI I (Digital)	5.0	RT/RH	1
SAJI IV (Digital)	3.0	RT/RH	1
Scaled SAJI IV (Digital)	2.5	RT/RH	1
SAJI VH (Digital)	2.0	RH	2
SAJI IVA (Analog/Digital)	3.0	RT	1
RH-7 (VHSIC-LIKE) (Analog/Digital)	1.2	RH	2
L7	1.5	RT	2
Gamma III (Digital)	1.2	RH	2
S7 (Digital)	1.2	RT	2
BIPOLAR			
High Freq. Process (HFP) (Analog)	5.0	RH	1
Linear ALPS (Analog)	4.0	RH	1
High Current Linear (HCL) (Analog)	5.0	RH	1
Advanced Low Power Schottky (Digital)	4.0	RH	1
BIMOS* (Digital)	2.0		1
Very High Freq. Process (VHFP) (Analog/Digital)	4.0	RH	2
GaAs			
DIGI-1,-11	1.0		
MMIC	.5		

CUSTOM BIPOLAR ANALOG PROCESSES

CUSTOM BIPOLAR LINEAR PROCESSES

Process	Type	h_{fe}		F_T(MHz)		BVCEO		Rad-Hard Option	Applications
		NPN	PNP	NPN	PNP	NPN	PNP		
Junction Isolation	—	150	50	300	2	40	40	No	• Low-to-medium frequency amplifiers • Low Speed, non-saturated logic
Dielectric Isolation	Switching NPN	50	—	500	—	7	—	Yes	• Mixed digital/analog switching • Sense amplifiers • Line drivers • Line receivers
Dielectric Isolation	BiFET*	150	100	600	300	40	40	Yes	• Analog switches • Operational amplifiers • Sample-and-holds
Dielectric Isolation	High Frequency	150	100	600	300	40	40	Yes	• High-frequency amplifiers • Rad-hard amplifiers • Comparators
Dielectric Isolation	High Current	150	100	500	250	40	40	Yes	• Power relay drivers • Clock drivers • Voltage regulators
Dielectric Isolation	High Voltage	225	50	200	25	100	90	Yes	• High-voltage amplifiers
Dielectric Isolation	CMOS/ Bipolar	150	100	600	300	35†	35**	Yes	• Analog switches • High-performance amplifiers • Data conversion • Pin diode driver
Dielectric Isolation	NPN Schottky	50	—	500	—	8	—	Yes	• Flash converters • Sense amplifiers
Dielectric Isolation	VHFP	100	100	1.5 GHz	1.0 GHz	15V	15V	Yes	• High Speed amplifiers • Mixed analog/digital

*V_P = 1V to 2V, BV_{DSS} = 20V, **VTP = 1V to 3V, BV_{DSS} = 40V, †VTN = 1V to 3V, BV_{DSS} = 40V

CUSTOM INTERFACE PROCESSES

CUSTOM INTERFACE PROCESSES

Process	Features	Isolation	Operating Voltage	Output Drive	Rad-Hard Option	Applications
SLIC	NPN; PNP	Dielectric	>65 Volts	25MA	Yes	• Subscriber Line • Interface Ckts.
High-Current Linear	NPN; PNP NiCr Resistors Schottky Diodes	Dielectric	>40 Volts	500MA	Yes	• Power Mosfet Driver • Bubble Memory Function Driver • Voltage Regulators
Std. Lin.	NPN; PNP NiCr Resistors	Dielectric	>35 Volts	50MA	Yes	• Current Booster
JI JFET	NPN; PNP JFETs NiCr Resistors	Junction	>35 Volts	50MA	Yes	• Amp. with JFET input
High Freq. Linear	NPN; PNP NiCr Resistors JFETs	Dielectric	>30 Volts	100MA	Yes	• Amplifiers • Precision J-FET Op-Amps
MSIA (Gold Doped)	NPN; NiCr Resistors	Dielectric	>20 Volts	200MA	Yes	• CCD clock driver
LCMOS	P-Channel P-Channel	Dielectric	>30 Volts	80MA	Yes	• Interface Switches • Analog Multiplexers
BIPMOS	N-Channel P-Channel NPN; PNP	Dielectric	>35 Volts	50MA	Yes	• Op-Amps • Comparators • Sample and Hold
CMOS Si-Gate	N-Channel P-Channel NPN; PNP NiCr Resistors	Dielectric	>25 Volts	25MA	Yes	• Analog Multiplexer • D-to-A Converters

HARRIS ARCHITECT DESIGN SYSTEM

CMOS Digital Design Package

Features

- Supports Harris Standard Cell, Gate Array* and Compiled Functions*
- Schematic capture and simulation for SSI, MSI, LSI Macrofunctions and RAM/ROM Compilers available now
- Complete system including place and route and layout verification planned for 1989
- Based on the CADENCE Design Framework™, providing consisten, menu-driven interfaces for all tools
- 1.5 Micron (HSC1000) and 2.0 Micron Rad Hard (HSC1000RH) Libraries are available today
- CADAT™ Logic and fault Simulation capabilities include min/typ/max delays for all functions. Post radiation simulation supported for HSC1000RH
- Back annotation of fanout and routed delays
- Harris-customized CADENCE Design Framework™ allows use on most UNIX platforms
- Scheduled for QML (Generic Qualification) in calendar year 1990
- Supports EDIF netlist input

CMOS Analog Design Package

Features

- Provides a path to quick-turn, high confidence Analog ASICs
- Supports switched capacitor design techniques allowing a wide range of analog functions
- Supported by the Harris HCAD 10-volt Analog and Digital Cell Family
- SWITCAP™ and SLICE™ simulations allow accurate prediction of final circuit performance
- Typical level of integration is 50 Op-Amps
- Available as a Harris Custom Capability
- Harris-customized CADENCE Design Framework™ allows use on most UNIX platforms

Bipolar Analog Design Package

Features

- Full custom bipolar transitor-level Analog IC design capability
- Runs on industry standard workstation platforms
- Menu-driven Interface
- Hierarchical Schematic Capture
- Coupled electrical and physical design features
- Electrical design rules checking and layout vs. schematic checking
- Continuously variable diffused and thin film resistors
- Automatic device model parameter determination
- Self-contained statistical process/device data bases
- A variety of high performance bipolar analog processes
- Continuously variable transistor geometries
- Based on the CADENCE Design Framework™
- Powerful electrical statistical simulation capability
- Automatic layout generation
- Layout modifications and parasitics automatically back annotated to schematics
- Unprobed wafers with untested packaged prototypes
- Tested dice
- Tested packaged parts
- All wafers delivered in unprobed circuit form are probed for conformance to process/device parameter limits
- Complementary vertical bipolar transistors
- Dielectrically isolated
- Various diffused resistors
- High quality capacitor
- P Channel JFET
- Laser trimmable NiCr Resistors
- Double level metal interconnect

GaAs FET PRODUCTS

Products And Services	GaAs FET Products
Gallium Arsenide-based standard and custom products are available from Harris Microwave Semiconductor (HMS), located in Milpitas, CA. Standard products include: 1. GaAs Field Effect Transistors (GaAs FETs) for RF and microwave applications. 2. GaAs Monolithic Microwave Integrated Circuits (MMICs) for broadband amplification of RF and microwave signals in receive, transmit, and IF stage applications. Custom design and fabrication services are available whereby customers can design or specify specialized MMIC or FET products for manufacture at HMS. Analysis, testing, packaging, and screening options are available for all standard and custom products.	Microwave GaAs FETs from Harris Microwave Semiconductor have been designed and built for performance, reliability and consistency. To achieve these objectives, Harris employs extremely low defect gallium arsenide substrates of its own manufacture, ion implantation, a Ti/Pt/Au metallization system, large cross-section "T" gate structure and integral dielectric scratch and short circuit protection. Each wafer undergoes an extensive reliability and performance qualification procedure exceeding the element evaluation requirements of MIL-STD-883C, Method 5008, Class B. Each die is DC tested and visually inspected prior to packaging and shipment. To accommodate specialized requirements, Harris can provide selections tailored to meet these needs. High-reliability screening and qualification testing are available on all Harris GaAs FET Products.

HIGH GAIN FET PRODUCTS

P/N HMF-	MAG* (dB)		P_{MAG} (dBm)	G_{1dB} (dB)	P_{1dB}* (dBm)		FREQ (GHz)	BIAS V_{DS}, I_{DS}	APPLICATION/ DESCRIPTION
	MIN	TYP			MIN	TYP			
03100-100	6.0	7.5	11	4.5	13	15	18	4 V, 20 mA	2-20 GHz Low Noise
03100-200	6.0	7.5	13.5	4.5	18	19	18	6 V, 50% I_{DSS}	2.20 GHz Gain/Drive
03100-300	6.0	7.5	14.5	4.5	20	21	18	6 V, 50% I_{DSS}	2-20 GHz Drive
0330	—	7.5	13.5	5.0	—	14	18	4 V, 20 mA	2-20 GHz Low Noise, Low Current
0610	5.0	6.0	19.5	4.0	21.5	23.5	18	6 V, 50% I_{DSS}	2-20 GHz Power
0620	—	10	17	7.0	—	20	12	4 V, 50% I_{DSS}	2-14 GHz High Transconductance
1210	—	6.0	22	4.0	—	25	18	6 V, 50% I_{DSS}	2-20 GHz Power

HIGH POWER FET PRODUCTS

P/N HMF-	G_{1dB} (dB)	P_{1dB}* (dBm)		η (%)	FREQ (GHz)	MAG* (dB)		PMAG (dBm)	FREQ (GHz)	BIAS V_{DS}, I_{DS}	APPLICATION/ DESCRIPTION
		MIN	TYP			MIN	TYP				
0300	8.5	—	21.5	35	8	—	12	18	8	8 V, 50% I_{DSS}	2-18 GHz, 125 mW
0600	8	—	24.5	35	8	—	10	22	8	8 V, 50% I_{DSS}	2-18 GHz, 250 mW
12000-100	7.5	25.5	27	30	8	9	10	25.0	8	8 V, 50% I_{DSS}	2-16 GHz, 500 mW
12000-200	7.5	27.5	28.5	35	8	8	9	25.5	8	8 V, 50% I_{DSS}	2-16 GHz, 650 mW
24000-100	5.0	28.5	29.5	25	8	6.0	8.0	27.0	8	8 V, 50% I_{DSS}	2-14 GHz, 800 mW
24000-200	5.0	30.0	31.0	30	8	6.0	8.0	28.5	8	8 V, 50% I_{DSS}	2-14 GHz, 1.2 mW

*Compliance with microwave performance limits for MAG and P1 dB is confirmed by qualifying wafers on sample evaluation basis.

GaAs MMIC STANDARD PRODUCTS

HMM Series

Our half-micron (gate length) family of fully integrated MMIC amplifiers is intended for broadband applications where noise figure, gain or output power are key specifications in a system design.

HMM Product Family — Electrical Specifictions

Model No.	Frequency Band (GHz)	Small Signal Gain (dB)		Gain Flatness (Over full BW) (dB) Max	1dB Gain Compression Output Power (dBm) Typ	Noise Figure (dB) Typ	VSWR	
		Min	Typ					Max
HMM-10610 HMM-10620	2 — 6 2 — 6 (Low Current)	10	12 11.5	±.5	+19 +13	6 5.5	Input Output	2:1 1.75:1 1.75:1
HMM-11810 HMM-11820	6 — 18 6 — 18 (Low Current)	4.5	5 5	±.75	+16.5 +12	6.5 5.5	Input Output	2:1 2:1 2:1

V_{DD} = 5V, I_{DD} = 120 mA (typical/HMM-10610)/ 100 mA (typical/HMM-11810)

HMR Series

For lower frequency application, specify the Harris HMR one-micron (gate length) MMIC family. Distributed as gain blocks throughout your system, they often permit relaxing the specifications of other cost-critical components.

HMR Product Family — Electrical Specifictions

Model No.	Frequency Band (GHz)	Small Signal Gain (dB) Typ	Gain Flatness (Over full BW) (dB) Max	1dB Gain Compression Output Power (dBm) Typ	Noise Figure (dB) Typ	VSWR	
						Typ	Max
HMR-10502	0.5 — 5	9.5	±.75	+10	7	1.7:1	2:1
HMR-10503	1 — 5	9.5	±.75	+10	7	1.7:1	2:1

V_{DD} = 10V, I_{DD} = 100 mA

GaAs Custom MMIC Programs

Custom and Fabrication Services	
KEY FEATURES	**MMIC PROGRAM OPTIONS**
• Fully Documented Design Rule Book Includes Microwave and Physical Layout Rules • 0.5 Micron Plated "T"-Gate Technology Based Upon Our Line of Discrete FETs (HMF-0310, -0610, etc.) • Reliable Ti/Pt/Au Metallization • Ion Implantation Processing for Uniformity, Consistency • Circuit Elements ▸ "n+" Type (Low Sheet RHO) Resistors ▸ "n" Type (High Sheet RHO) Resistors ▸ Diodes ▸ FETs ▸ Dual Gate FETs ▸ Transmission Lines ▸ Inductors ▸ Capacitors ▸ Through Substrate Via Holes	• Gain, Power or Low Current FET Models and Processing • Circuit Design from Customer Specs • "Layout" from Customer-Supplied Design • Computer Simulation of Design • Generation of Digitized Data From Customer Drawing • RF Screening of Selected Parts *(i.e., #/Wafer)* • Special Packaging/Assembly • Specialized DC Testing • Volume Quotations on Qualified Wafers • High Reliability Screening • Supplementary Consultation/Training

TABLE 2. PROCESSES FOR CUSTOM MMICs

PROCESS TYPE (GATE LENGTH)	PRATICAL OPERATING FREQUENCIES	f_t	f_{max}	PROCESS OPTIONS
0.5 Micron	0.5 to 20 GHz	18 GHz	40 GHz	High Gain, Low Current High Power
1.0 Micron	0.1 to 12 GHz	12 GHz	26 GHz	High Gain

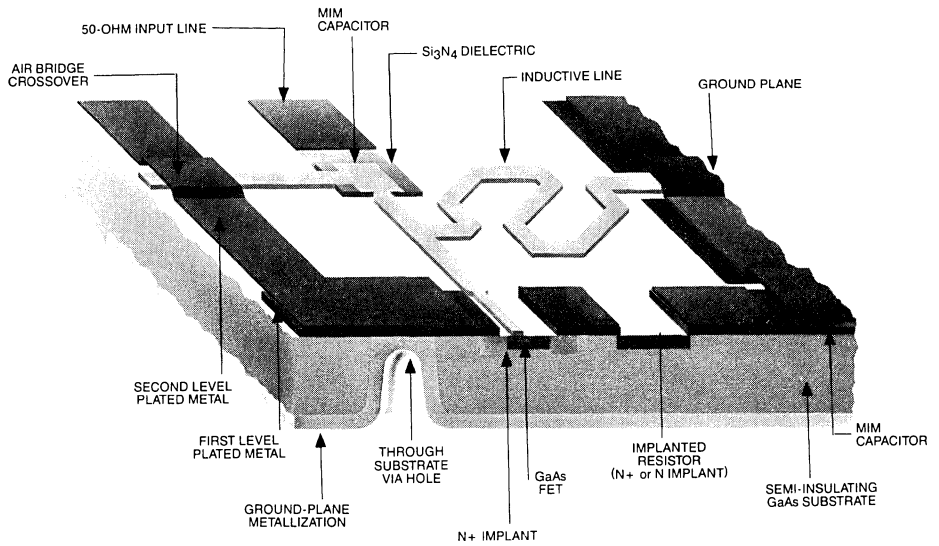
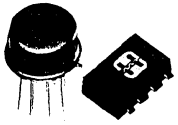


FIGURE 2. FEATURES OF A TYPICAL MMIC CHIP

Give your industrial controls a lift with our high-performance analog ICs.



When you put industry-proven Harris linear and data acquisition ICs into your control designs, you always come out ahead — in design time, cost, and product performance.

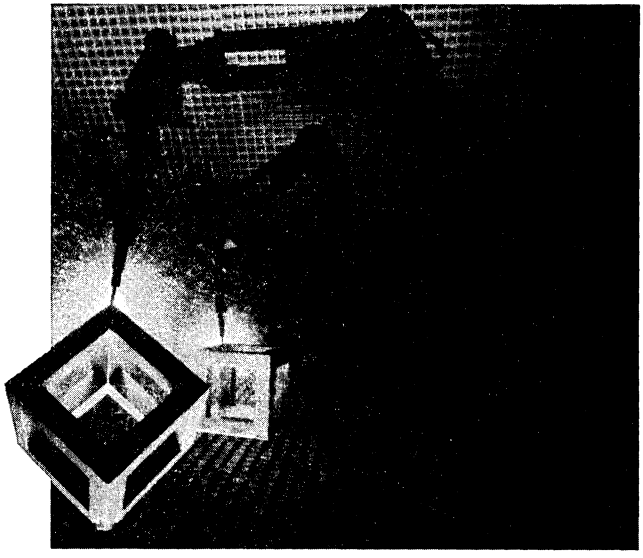
Just specify the functions you need. If it's industrial, we're in control. With a complete line of op amps — high-speed, low-power, precision or general purpose. Comparators. And analog switches.

For data acquisition, choose our A/D and D/A converters, sample-and-hold amplifiers, and analog multiplexers.

Our Dielectric Isolation (DI) process means no latch-up, plus higher speed and performance characteristics.

Get Harris into your system.

Call us at 1-800-4-HARRIS, Ext. 1800 (in Canada, 1-800-344-2444, Ext. 1800). Or write: Harris Semiconductor Products Division, P.O. Box 883, MS 53-035, Melbourne, Florida 32902-0883. We'll help handle your load.

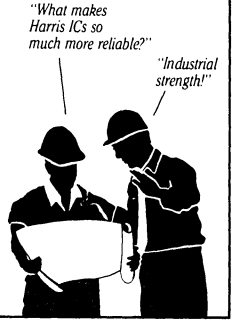


FOR YOUR INFORMATION, OUR NAME IS

HARRIS

Harris Semiconductor: Analog - CMOS Digital
Gallium Arsenide - Semicustom - Custom

HARRIS



Manufacturer	Part Number	Harris Pin-for-Pin Replacement	Harris Closest Replacement	Harris Advantages
AMD	AM118		HA-2510	Unity gain stable
	AM1408		HI-5618-5	Faster, application resistors
	AM1508		HI-5618-2	Faster, application resistors
	AM318		HA-2515	Unity gain stable
	AM6012		HI-562A	Faster, application resistors, int. linearity
			HI-5660	Int. linearity, application resistors
	AM6420		HA-5320	
			HA-5330	
	LF198		HA-2420	Improved performance
	LF398		HA-2425	Improved performance
	SSS1408		HI-5618-5	Faster, application resistors
	SSS1508		HI-5618-2	Faster, application resistors
ANALOG DEV	52		HA-5180	Monolithic
	AD1408		HI-5618-5	Faster, application resistors
	AD1508		HI-5618-2	Faster, application resistors
	AD380,AD382		HA-2542	Monolithic
	AD381		HA-2541	Monolithic
	AD389		HA-5320	Faster, monolithic
	AD507	HA-2620		Identical
	AD509	HA-2520	HA-2529	Identical
	AD515		HA-5180	Monolithic
	AD518	HA-2510		
	AD542L		HA-5170	Better AC
	AD545		HA-5180	Monolithic
	AD547J		HA-5170	Better AC
	AD562		HI-562A	Faster
			HI-5660	Faster
	AD563		HI-565A	Faster
	AD565	HI-565A		Faster
	AD565A	HI-565A		
	AD566		HI-5660	
			HI-562	
	AD566A		HI-5660	
			HI-562A	
	AD574A	HI-574A,HI-674A		Digital timing, 674A is 2.3 times faster
	AD582		HA-2425	Acquisition time
	AD583K	HA-2425-5		Identical
	AD611		HA-5320	Faster, better accuracy
	AD667		HI-5811	
	AD7501		HI-508	DI process
	AD7502	HI-1828A		DI process
	AD7503	HI-1818A		DI process
	AD7506	HI-506		DI process
	AD7507	HI-507		DI process
	AD7511		HI-201	
	AD7512		HI-5043	
	ADADC80		HI-574A	Power, smaller pkg.
			HI-674A	Faster, power, smaller pkg.
	ADADC84/85		HI-674A	Power, smaller pkg.
	ADDAC 08		HI-5618	Faster, application resistors
	DAC 80	HI-5680,HI-5690		5690 is 2.67 times faster
	DAC 85	HI-5685,HI-5695		5695 is 2.67 times faster
	DAC 87	HI-5687,HI-5697		5697 is 2.67 times faster
	ADG200		HI-200	
	ADLH0032		HA-5190,HA-2542	Monolithic
	H0S050		HA-2542	Monolithic
	H0S100		HA-5033	Monolithic
ANALOGIC	MN4708		HI-508	
			HI-1818A	
	MP1812A		HI-5680V	Faster, monolithic, power, smaller pkg.
	MP250M		HA-2420/25	Faster, monolithic, smaller
	MP260		HA-2420/25	Monolithic, smaller pkg.
	MP261		HA-2420	Monolithic, smaller pkg.
	MP270/271		HA-5320	Monolithic, smaller pkg.
BECKMAN	7556		HI-574A	Faster, smaller pkg.
	7580	HI-5690	HI-5680	Faster, monolithic
BURR-BROWN	3500		HA-2600	Better AC
	3503	HA-2505		Identical
	3506	HA-2605		Identical
	3507	HA-2525	HA-2529	Identical
	3508	HA-2625		Identical

Manufacturer	Part Number	Harris Pin-for-Pin Replacement	Harris Closest Replacement	Harris Advantages
BURR-BROWN (cont.)	3521		HA-5170	Better AC
	3523		HA-5180	Better AC
	3527		HA-5180	Better AC and DC
	3528		HA-5180	Better AC
	3550		HA-2541	Monolithic
	3553		HA-5033	Monolithic
	3554		HA-2542	Monolithic
	ADC80		HI-574A	Smaller pkg., power
			HI-674A	Faster, smaller pkg., power
	ADC84/85		HI-674A	Smaller pkg., power
	DAC70		HI-DAC16	Faster, monolithic
	DAC700/701		HI-DAC16	
	DAC702/703		HI-DAC16	
	DAC71/72		HI-DAC16	Monolithic, "I" output
	DAC80	HI-5680,HI-5690		Faster, monolithic, power
	DAC800	HI-5680,HI-5690		5690 is 3.33 times faster, lower power
	DAC811	HI-5811		
	DAC85	HI-5685,HI-5695		Faster, monolithic, power
	DAC850	HI-5685,HI-5695		5695 is 3.33 times faster, lower power
	DAC851	HI-5687,HI-5697		5697 is 3.33 times faster, lower power
	DAC87	HI-5687,HI-5697		Faster, monolithic, power
	MPC16S	HI-546-5		Identical
	MPC4D	HI-549-5		Identical
	MPC800KG	HI-516-5		Identical
	MPC801KG	HI-518-5		Identical
	MPC801SG	HI-518-2		Identical
	MPC8D	HI-547-5		Identical
	MPC8S	HI-548-5		Identical
	OPA103		HA-5180	Better AC
	OPA104		HA-5180	
	OPA11		HA-2600	
	OPA21		HA-5141,HA-5151	
	OPA27		HA-5127	
	OPA37		HA-5137,HA-5147	
	OPA600		HA-2542	
	OPA633		HA-5033	
	SCH298AM		HA-2425	Improved performance
	SCH80/85		HA-2425	Faster, monolithic, power
	SHC85ET		HA-2420	Faster, monolithic, power
	SHM60		HA-5320	Monolithic, smaller pkg.
	ADC574A	HI-574A		Identical
	ADC674A	HI-674A		Identical
	SHC5320	HA-5320		Identical
DATA DEVICE CORP.	ADH051		HA-5330	Monolithic, smaller pkg., power
	ADH8585		HI-674A	Smaller pkg., power
	DDC5200		HI-574A	Faster
	DDC5210/11		HI-674A	
	DDC5212/16		HI-674A	
	DDCADC85		HI-674A	Smaller pkg., power
	DDCDAC85	HI-5680,HI-5690		Faster, smaller pkg., power
	DDCDAC85LD	HI-5685,HI-5695		Monolithic, power
	DDCDAC87	HI-5687,HI-5697		Monolithic, power, 5697 is 3.33 times faster
	DGL13		HA-5320	Monolithic, smaller pkg., power
	THC4460		HA-5320	Monolithic, smaller pkg.
DATEL	ADC52XX		HI-674A	Lower power
	ADC574A	HI-574A,HI-674A		Identical, 674 is 1.67 times faster
	ADC8412		HI-674A	Smaller pkg. power
	ADC85C12		HI-674A	Smaller pkg., power
	ADC8712		HI-674A	Smaller pkg., power
	ADCHX12B		HI-574A	Smaller pkg., power
			HI-674A	Faster, smaller pkg., power
	ADCL12B2		HI-574A	Smaller pkg.
			HI-674A	Faster, smaller pkg.
	ADCM12B2		HI-674A	Smaller pkg.
	ADCMA12B2A		HI-574A	Faster, smaller pkg.
	ADCMA12B2B		HI574A	Smaller pkg.
			HI-674A	Faster, smaller pkg.
	AM450	HA-2505		
	AM452	HA-2525	HA-2529	
	AM460	HA-2605		
	AM462	HA-2625		
	AM464	HA-2645		
	DAC08B		HI-5618	Faster, application resistors
	DAC562	HI-562A		Identical

Manufacturer	Part Number	Harris Pin-for-Pin Replacement	Harris Closest Replacement	Harris Advantages
DATEL (cont.)	DAC71/72		HI-DAC16	Monolithic
	DAC85	HI-5685,HI-5695		Faster, monolithic, power
	DAC85C	HI-5680,HI-5690		Monolithic, power, 5690 is 2 times faster
	DAC87	HI-5687,HI-5697		Faster, monolithic, power
	DACHP16B		HI-DAC16	Monolithic
	DACHR16B		HI-DAC16	Monolithic, smaller pkg.
	DACHZ12B	HI-5690/95/97	HI-5680/85/87	Faster, monolithic
	DACIC10B		HI-5610	Faster, application resistors
	DACIC8B		HI-5618	Faster, application resistors
	MV1606	HI-506		Identical
	MV808	HI-1818A		Identical
	MVD409	HI-1828A		Identical
	MVD807	HI-507		Identical
	MX1606	HI-546		Identical
	MX1616	HI-516		Identical
	MX808	HI-548		Identical
	MX818	HI-518		Identical
	MXD409	HI-549		Identical
	MXD807	HI-547		Identical
	SHM1C-1	HA-2425		Identical
	SHM1C-1M	HA-2420		Identical
	SHM20	HA-5320		Identical
	SHM6M		HA-5320	Monolithic, smaller pkg.
			HA-5330	Faster, monolithic, smaller pkg.
	SHM9M		HA-2420	Faster, monolithic, smaller pkg.
	SHMLM-2		HA-2420	Faster
ELANTEC	EHA2500	HA-2500		
	EHA2502	HA-2502		
	EHA2505	HA-2505		
	EHA2510	HA-2510		
	EHA2512	HA-2512		
	EHA2515	HA-2515		
	EHA2520	HA-2520		
	EHA2522	HA-2522		
	EHA2525	HA-2525		
	EHA2600	HA-2600		
	EHA2602	HA-2602		
	EHA2605	HA-2605		
	EHA2620	HA-2620		
	EHA2622	HA-2622		
	EHA2625	HA-2625		
	ELH0002		HA-5002-2	Monolithic
	ELH0002C		HA-5002-5	Monolithic
	ELH0033		HA-5033-2	Monolithic
	ELH0033C		HA-5033-5	Monolithic
	ELH0041		HA-2542-2	Monolithic
	ELH0041C		HA-2542-5	Monolithic
EXAR	XR4212		HA-4741	
	XR3417			Lower power
	XR3418		HC-55536 or	Fewer external components
	XR3517		HC-55564	Military pkg.
	XR3518			
FAIRCHILD	μA0801/02		HI-5618	Faster, application resistors
	μA1458		HA-5102	Better AC, lower noise
	μA1558		HA-5102	Better AC, lower noise
	μA198		HA-2420	Improved performance
	μA398		HA-2425	Improved performance
	μA565	HI-565A		
	μA702		HA-2620	
	μA709		HA-2620	
	μA714		HA-5135	Better DC
	μA715		HA-2520,HA-2529	Better AC
	μA727		HA-5135	Better DC
	μA740		HA-5170	Better AC
	μA741		HA-2600	Better AC
FAIRCHILD	μA747		HA-5102	Lower noise
	μA748		HA-2600	Better AC
	μA776		HA-2720	Better AC, lower noise
HITACHI	HA17408		HI-5618	Faster, application resistors

USER'S GUIDE
LINEAR, DATA ACQUISITION AND TELECOM PRODUCTS

Manufacturer	Part Number	Harris Pin-for-Pin Replacement	Harris Closest Replacement	Harris Advantages
HYBRID	ADC550		HI-574A	Faster, smaller pkg., power
SYSTEM	ADC581		HI-574A	
			HI-674A	Faster
	DAC3281-16		HI-DAC16	Monolithic, smaller pkg.
	DAC335-12		HI-5687V	Faster, monolithic
	DAC346C-12		HI-5680V	Faster, monolithic
	DAC347LP-12		HI-5687V	Faster, monolithic
	DAC372		HI-5680	Monolithic
	DAC3721-8		HI-5618	Faster, monolithic
	DAC395-8		HI-5618	Monolithic, smaller pkg.
	HS346		HA-5320	Faster, monolithic
	HS5200		HI-674A	
	HS574	HI-574A,HI-674A		Digital timing, 674 is 2 times faster
	HS730		HA-5320	Monolithic, smaller pkg.
			HA-5330	Faster, monolithic, smaller pkg.
	HSDAC80	HI-5680,HI-5690		Faster, monolithic, power, 5690 is 5.56 times faster
	HSDAC87	HI-5687,HI-5697		Faster, monolithic, power
	MUX201	HI-1818A		Lower power, smaller pkg.
	SH725		HA-2420	Faster, monolithic, smaller pkg.
INTECH	1048BIN-P		HI-574A	Smaller pkg., power
			HI-674A	Faster, smaller pkg., power
	416 BIN		HI-DAC16	Smaller pkg.
	A3103		HI-674A	Smaller pkg., power
	A3155		HI-574A	Smaller pkg., power
			HI-674A	Faster, smaller pkg., power
	A880/880-2		HA-5320	Faster, monolithic, power
	A881		HA-5320	Monolithic, smaller pkg., power
	A882/884		HA-2420/25	Faster, monolithic, power
	ADC111		HI-574A	Smaller pkg., power
			HI-674A	Faster, smaller pkg., power
	ADC2812		HI-547A	Smaller pkg., power
			HI-674A	Faster, smaller pkg., power
	ASH240/250		HA-2420/25	Monolithic, smaller pkg., power
	ASH271		HA-5320	Monolithic, smaller pkg., power
	CYAAD12QM		HI-574A	Smaller pkg., power
			HI-674A	Faster, smaller pkg., power
INTEL	D2912	HC-5512		Lower power, lower noise
	D2912A	HC-5512		Lower power, lower noise
		HC-5512A/12D		Lower power, lower noise
	SBC 86/05	HB0-986C05		CMOS micro components. Lower
	NMOS			power 16K static RAM w/full mercury back-up
INTERSIL	DG200	HI-200		Dielectric Isolation
	DG201	HI-201		Dielectric Isolation
	ICL7541			Identical
	ICL7611		HA-5141	Lower noise
	ICL7615		HA-5141	Better AC, lower noise
	ICL7621		HA-5142	Better AC, lower noise
	ICL7642		HA-5144	Better AC, lower noise
	ICL8017		HA-2520,HA-2529	
	ICL8021		HA-5141	Better AC
	ICL8075			
	ICL8211			
	IH201	HI-201		More stable over temp.
	IH5040	HI-5040		More stable over temp.
	IH5041	HI-5041		More stable over temp.
	IH5042	HI-5042		More stable over temp.
	IH5043	HI-5043		More stable over temp.
	IH5044	HI-5044		More stable over temp.
	IH5045	HI-5045		More stable over temp.
	IH5046	HI-5046		More stable over temp.
	IH5047	HI-5047		More stable over temp.
	IH5048	HI-5048		More stable over temp.
	IH5049	HI-5049		More stable over temp.
	IH5050	HI-5050		More stable over temp.
	IH5051	HI-5051		More stable over temp.
	IH5108	HI-548		Signal range, same pinout
	IH5110/11		HA-2420/25	
	IH5112/13		HA-2420/25	
	IH5114/15		HA-2420/25	
	IH5200	HI-200		Constant Ron
	IH5201	HI-201		Constant Ron
	IH5208	HI-509A		Vin range, same pinout
	IH6108	HI-508		Ron, DI, same pinout

Manufacturer	Part Number	Harris Pin-for-Pin Replacement	Harris Closest Replacement	Harris Advantages
INTERSIL (cont.)	IH6116	HI-506		Ron, DI, same pinout
	IH6208	HI-509		Ron, DI, same pinout
	IH6216	HI-507		Ron, DI, same pinout
	LM4250		HA-2720	Better AC, lower noise
INTRONICS	A-560		HA-2525,HA-2529	
	A-561		HA-2625	
MAXIM	MAX400M		HA-5127-2	
	MAX400C		HA-5127-5	
	MAX460M		HA-5033-2	Lower noise, DI
	MAX460C		HA-5033-5	Lower noise, DI
	BB3553		HA-5033	Monolithic, DI
	BB3554		HA-2542	Monolithic, DI
	LH0033		HA-5033	Monolithic
	OP07		HA-5130	Better AC - DI
	DG201A	HI-201		Dielectric Isolation
	DG211		HI-201	Full Temperature Range Specified
	DG300A	HI-300		Dielectric Isolation
	DG301A	HI-301		Dielectric Isolation
	DG302A	HI-302		Dielectric Isolation
	DG303A	HI-303		Dielectric Isolation
	DG304A	HI-304		Dielectric Isolation
	DG305A	HI-305		Dielectric Isolation
	DG306A	HI-306		Dielectric Isolation
	DG307A	HI-307		Dielectric Isolation
	DG381A	HI-381		Dielectric Isolation
	DG384A	HI-384		Dielectric Isolation
	DG387A	HI-387		Dielectric Isolation
	DG390	HI-390		Dielectric Isolation
	IH5040	HI-5040		Dielectric Isolation
	IH5041	HI-5041		Dielectric Isolation
	IH5042	HI-5042		Dielectric Isolation
	IH5043	HI-5043		Dielectric Isolation
	IH5044	HI-5044		Dielectric Isolation
	IH5045	HI-5045		Dielectric Isolation
	IH5046	HI-5046		Dielectric Isolation
	IH5047	HI-5047		Dielectric Isolation
	IH5048	HI-5048		Dielectric Isolation
	IH5049	HI-5049		Dielectric Isolation
	IH5050	HI-5050		Dielectric Isolation
	IH5051	HI-5051		Dielectric Isolation
MICRO NETWORKS	ADC80		HI-574A	Smaller pkg., power
			HI-674A	Faster, smaller pkg., power
	DAC80	HI-5680,HI-5690		Monolithic, power, 5690 is 5.56 times faster
	DAC85	HI-5685,HI-5695		Monolithic, power, 5695 is 5.56 times faster
	DAC87	HI-5687,HI-5697		Monolithic, power, 5697 is 5.56 times faster
	MN-ADC84/85/87		HI-674A	Smaller pkg., power
	MN3009		HI-5618	Monolithic
	MN3014		HI-5618	Monolithic
	MN3348		HI-5680V/87V	Faster, monolithic, power
	MN3349		HI-5685V/87V	Faster, monolithic
	MN343/344		HA-2420	Faster, monolithic
	MN346/347		HA-5320	Faster, monolithic
	MN370/371		HI-5687V	Monolithic
	MN373	HA-5320		
	MN375		HA-5330	Monolithic, lower power
	MN5200		HI-574A	Faster
	MN5210		HI-674A	Two chip design
	MN565A	HI-565A		
	MN574A	HI-574A,HI-674A		674A is 2.3 times faster
MICRO POWER SYSTEMS	MP200DI	HI-200		Constant Ron
	MP201DI	HI-201		Constant Ron
	MP5527		HA-5127	
	MP5537		HA-5137	
	MP562	HI-562A		Faster
	MP574	HI-574A,HI-674A		Digital timing, 674A is 2 times faster
	MP7501	HI-508		
	MP7503	HI-1818A		
	MP7502	HI-1828A		
	MP7506	HI-506		DI processing
	MP7507	HI-507		DI processing
	MP7508DI	HI-508		
	MP7509DI	HI-509		

Manufacturer	Part Number	Harris Pin-for-Pin Replacement	Harris Closest Replacement	Harris Advantages
MITEL	MT8912	HC-5512		Lower noise, lower cross talk
MOSTEK	MK5912	HC-5512		Lower noise and power
MOTOROLA	LF155		HA-5170	Better DC
	LF155A		HA-5170	Better DC
	LF156		HA-5170	Better DC
	LF156A		HA-5170	Better DC
	LF157		HA-5160	Better DC
	LF157A		HA-5160	Better DC
	LF355		HA-5170	Better DC
	LF355A		HA-5170	Better DC
	LF356		HA-5170	Better DC
	LF356A		HA-5170	Better DC
	LF357		HA-5160	Better DC
	LF357A		HA-5160	Better DC
	MC1408		HI-5618-5	Faster, application resistors
	MC1430		HA-2600	Better AC
	MC1431		HA-2600	Better AC
	MC1436		HA-2640	Better AC and DC
	MC1458		HA-5102	Better AC, lower noise
	MC1508		HI-5618-2	Faster, application resistors
	MC1558		HA-5102	Better AC, lower noise
	MC1748		HA-2600	Better AC and DC
	MC1776		HA-5141	Better AC, lower noise
	MC34002		HA-5102	Better AC
	MC34004		HA-5104	Better AC
	MC3403		HA-4741	Better AC
	AD562A	HI-562A		
	MC3412	HI-565A		
	MC3417		HC-55564 or	Lower power, few external components, military pkg.
	MC3418		HC-55536	
	MC3517			
	MC3518			
	MC3419		HC-5502A	Better longitudinal balance, transhybrid loss. Fewer external components
			HC-5504	Better longitudinal balance, transhybrid loss Fewer external components
	MC35002		HA-5102	Better AC
	MC35004		HA-5104	Better AC
	MC4741	HA-4741		Better AC
NATIONAL SEMICONDUCTOR	ADC1080/1280		HI-574A	Smaller pkg., lower power
			HI-674A	Faster, smaller pkg. power
	ADC1210/11		HI-574A	Faster, complete A/D
	BLC 86/05	HBO-986C05		CMOS micro components, lower power 16K static ram w/full mercury back-up
	DAC0800/0102		HI-5618	Faster, application resistors
	DAC0806/07/08		HI-5618	Faster, application resistors
	DAC1200/01		HI-5685V/87V	Faster, lower power
	DAC1265	HI-565A		
	DAC1266	HI-5660		
	DAC1280	HI-5680,HI-5690		Monolithic, performance, 5690 is 4.44 times faster
	DAC1285	HI-5685/87 HI-5695/97		Monolithic, performance, 5695/97 is 4.44 times faster
	LF0023/43		HA-2420	Monolithic, performance
	LF0053		HA-2420/25	Monolithic
			HA-5320	Faster, monolithic
	LF11201	HI-201		
	LF11508	HI-508-2		Faster, Ron, power
	LF11509	HI-509-2		Faster, Ron, power
	LF13201	HI-201		CMOS Dielectric Isolation
	LF13508	HI-508-5		Faster, Ron, power
	LF13509	HI-509-5		Faster, Ron, power
	LF147		HA-5104	
	LF151		HA-5170	
	LF153		HA-5102	
	LF155		HA-5170	Better DC
	LF155A		HA-5170	Better DC
	LF156		HA-5170	Better DC
	LF156A		HA-5170	Better DC
	LF157		HA-5170	Better DC
	LF157A		HA-5160	Better DC
	LF198		HA-2420	Improved performance
	LF247			
	LF253			

Manufacturer	Part Number	Harris Pin-for-Pin Replacement	Harris Closest Replacement	Harris Advantages
NATIONAL SEMICONDUCTOR (cont.)	LF347			
	LF353			
	LF355		HA-5170	Better DC
	LF355A		HA-5170	Better DC
	LF356		HA-5170	Better DC
	LF356A		HA-5170	Better DC
	LF357		HA-5160	Better DC
	LF357A		HA-5160	Better DC
	LF398		HA-2425	Improved performance
	LF412		HA-5102	
	LF412A		HA-5102	
	LF441		HA-5141	Lower noise
	LF442		HA-5142	
	LF444		HA-5144	
	LH0002		HA-5002	Monolithic, better AC and DC
	LH0003		HA-2520,HA-2529	Monolithic
	LH0004		HA-2640	Monolithic
	LH0005		HA-2620	Monolithic
	LH0022		HA-5180	Monolithic, better AC and DC
	LH0032		HA-2542	Monolithic
	LH0033		HA-5033	Monolithic, better DC
	LH0042		HA-5180	Monolithic, better AC and DC
	LH0052		HA-5180	Monolithic, better AC
	LH0062		HA-5160	Monolithic, better AC
	LM108		HA-5135	Better DC and AC
	LM108A		HA-5135	Better DC and AC
	LM118		HA-2510	Unity gain stable
	LM124		HA-4741	Better AC
	LM143		HA-2640	Higher supply voltage
	LM144		HA-2640	
	LM146		HA-2740	Better AC
	LM148		HA-4741	Better AC
	LM208		HA-5135	Better DC and AC
	LM208A		HA-5135	Better DC and AC
	LM308		HA-5135	Better DC and AC
	LM308A		HA-5135	Better DC and AC
	LM308A		HA-5135	Better DC and AC
	LM318		HA-2510	Unity gain stable
	LM324		HA-4741	Better AC
	LM343		HA-2640	Higher supply voltage
	LM344		HA-2640	
	LM348		HA-4741	Better AC
	LM4250		HA-5141	Lower noise
	TP3040	HC-5512		Identical
	TP3040A	HC-5512A		Identical
		HC-5512D		Military spec
PMI	PM-155		HA-5180	
	PM-156		HA-5170	
	PM-157		HA-5160	
	OP-15		HA-5170	
	OP-16		HA-5160	
	OP-17		HA-5160	
	OP-42		HA-5160	
	OP-43		HA-5170	
	OP-77		HA-5177	
	OP-227		HA-5102	
	OP-400		HA-5134	
	OP-470		HA-5104	
PRECISION MONOLITHICS	DAC-08		HI-5618	Faster, application resistors
	DAC-1408		HI-5618-5	Faster, application resistors
	DAC-1508		HI-5618-2	Faster, application resistors
	DAC-312		HI-562A	Int. linearity, application resistors
	DMX-88	HI-508		V_{IN} range, lower power
	GAP01		HA-2400	4 channels
	MUX-08	HA-508		I_N range, lower power
	MUX-16	HI-506		V_{IN} range, lower power
	MUX-24	HI-509		V_{IN} range, lower power
	MUX-28	HI-507		V_{IN} range, lower power
	MUX-88	HI-508		V_{IN} range, lower power
	OP01		HA-2500	Better AC
	OP05		HA-5135	Better AC and DC
	OP11		HA-4741	
	OP20		HA-5141	Better AC
	OP220		HA-5142	Better AC

Manufacturer	Part Number	Harris Pin-for-Pin Replacement	Harris Closest Replacement	Harris Advantages
PRECISION MONOLITHICS (cont.)	OP27		HA-5127	
	OP37		HA-5137,HA-5147	HA-5147 Superior performance
	OP420		HA-5144	Better AC
	PM-562		HI-562A	Faster
	SMP-10/11	HA-2425		Lower power
			HA-5320	Faster, improved accuracy
	SMP-81		HA-2420/25	Lower power
			HA-5320	Faster, improved accuracy
	SSS1458		HA-5102	Better AC, lower noise
	SS1558		HA-5102	Better AC, lower noise
RAYTHEON	LF155		HA-5170	Better DC
	LF155A		HA-5170	Better DC
	LF156		HA-5170	Better DC
	LF156A		HA-5170	Better DC
	LF157		HA-5160	Better DC
	LF157A		HA-5160	Better DC
	LF355		HA-5170	Better DC
	LF355A		HA-5170	Better DC
	LF356		HA-5170	Better DC
	LF356A		HA-5170	Better DC
	LF357		HA-5160	Better DC
	LF357A		HA-5160	Better DC
	LM108		HA-5135	Better AC and DC
	LM108A		HA-5135	Better AC and DC
	LM118		HA-2510	Unity gain stable
	LM124		HA-4741,HA-5154	Better AC
	LM148		HA-4741,HA-5154	Better AC
	LM208		HA-5135	Better AC and DC
	LM208A		HA-5135	Better AC and DC
	LM308		HA-5135	Better AC and DC
	LM308A		HA-5135	Better AC and DC
	LM318		HA-2515	Unity gain stable
	LM324		HA-4741,HA-5154	Better AC
	LM348		HA-4741,HA-5154	Better AC
	RC1556		HA-2605	Better AC and DC
	RC4131		HA-2605	Better AC
	RC4136		HA-4741	
	RC4531		HA-2505	Dielectric Isolation
	RC4741	HA-4741		Better AC
	RM1556		HA-2600	Better AC and DC
	RM4131		HA-2600	Better AC
	RM4136		HA-4741,HA-5154	
	RM4156		HA-4741,HA-5154	
	RM4531		HA-2500	Dielectric Isolation, Better AC
	RM4741	HA-4741		Better AC
RCA	CA3020			
	CA3100		HA-2620	
	CA6078		HA-5141	
	CD4016		HI-201	Better AC and DC
SIGNETICS	AM6012		HI-562A	Int. linearity, application resistors
			HI-5660	Int. linearity, application resistors
	DAC08		HI-5618	Faster, application resistors
	LF198		HA-2420	Improved performance
	LF398		HA-2425	Improved performance
	MC1408		HI-5618-5	Faster, application resistors
	MC1508		HI-5618-2	Faster, application resistors
	NE531		HA-2515	
	NE5532		HA-5102	Lower noise
	NE5533		HA-5112	Lower noise
	NE5534		HA-5135	
	NE5537		HA-2425-5	Lower power
			HA-5320-5	Faster
	NE5539		HA-2539	Better AC
	SE531		HA-2510	
	SE5532		HA-5102	Lower noise
	SE5533		HA-5112	Lower noise
	SE5534		HA-5135	
	SE5539		HA-2539	Better AC
SILICON-GENERAL	SG741		HA-2500	
SILICONIX	DG181		HI-381	Dielectric Isolation

Manufacturer	Part Number	Harris Pin-for-Pin Replacement	Harris Closest Replacement	Harris Advantages
SILICONIX (cont.)	DG182		HI-381	Dielectric Isolation
	DG184		HI-384	Dielectric Isolation
	DG185		HI-384	Dielectric Isolation
	DG187		HI-387	Dielectric Isolation
	DG188		HI-387	Dielectric Isolation
	DG190		HI-390	Dielectric Isolation
	DG191		HI-390	Dielectric Isolation
	DG200A	HI-200		Dielectric Isolation
	DG201A	HI-201		Dielectric Isolation
	DG211		HI-201	Full temp range specified
	DG271		HI-201 HS	Faster
	DG300A	HI-300		Dielectric Isolation
	DG301A	HI-301		Dielectric Isolation
	DG302A	HI-302		Dielectric Isolation
	DG303A	HI-303		Dielectric Isolation
	DG304A	HI-304		Dielectric Isolation
	DG305A	HI-305		Dielectric Isolation
	DG306A	HI-306		Dielectric Isolation
	DG307A	HI-307		Dielectric Isolation
	DG381A	HI-381		Dielectric Isolation
	DG384A	HI-384		Dielectric Isolation
	DG387A	HI-387		Dielectric Isolation
	DG390A	HI-390		Dielectric Isolation
	DG5040	HI-5040		Dielectric Isolation
	DG5041	HI-5041		Dielectric Isolation
	DG5042	HI-5042		Dielectric Isolation
	DG5043	HI-5043		Dielectric Isolation
	DG5044	HI-5044		Dielectric Isolation
	DG5045	HI-5045		Dielectric Isolation
	DG506A	HI-506		Lower power, DI processing
	DG506AA	HI-506-2		Lower power, DI processing
	DG507A	HI-507		Lower power, DI processing
	DG507AA	HI-507-2		Lower power, DI processing
	DG508A	HI-508		Lower power, DI processing
	DG508AA	HI-508-2		Lower power, DI processing
	DG509A	HI-509		Lower power, DI processing
	DG509AA	HI-509-2		Lower power, DI processing
	SD5200		HI-201 HS	Dielectric Isolation
SOLITRON	CM4016A		HI-201	Better AC and DC
	UC4000		HA-2600	
	UC4002		HA-2605	
SPRAGUE	ULN2139		HA-2600	
	ULN2151		HA-2600	
	ULN2156		HA-2600	
	ULN2157		HA-2650	
	ULN2158		HA-2650	
	ULN2171		HA-2600	
	ULN2172		HA-2620	
	ULN2173		HA-2600	
	ULN2174		HA-2620	
	ULN2175		HA-2600	
	ULN2176		HA-2600	
TELEDYNE PHILBRICK	1321	HA-2620		Identical
	1322	HA-2620		Identical
	1332	HA-2645		Identical
	1339		HA-2625	
	1341	HA-2540		Identical
	1342	HA-2539		Identical
	1343	HA-5190		Identical
	1344	HA-5160		Identical
	1345	HA-5162		Identical
	1346	HA-5180		Identical
	1347	HA-5180A		Identical
	1437		HA-2541	Monolithic
	1438		HA-2541	Monolithic
	1460		HA-2542	Monolithic
	1466		HA-2542	Monolithic
	4058		HI-5680	Monolithic
	4058-83		HI-5687	Monolithic
	4068A	HI-562A		Identical
	4084	HI-5618		Identical
	4088	HI-DAC16		Identical

Manufacturer	Part Number	Harris Pin-for-Pin Replacement	Harris Closest Replacement	Harris Advantages
TELEDYNE	4189			
PHILBRICK	4551	HI-547		Identical
(cont.)	4552	HI-546		Identical
	4553	HI-549		Identical
	4554	HI-548		Identical
	4853		HA-5320	Monolithic, smaller pkg.
	4854		HA-2420	Faster, monolithic, smaller pkg.
	4856	HA-2420/25		Identical
	4857		HA-5320	Monolithic, smaller pkg., power
	4866	HA-5320		Identical
	DAC80I/V	HI-5680I/V		Identical
	TP5210		HI-674A	
	TP565A	HI-565A		Identical
	TP574A	HI-574A,HI-674A		Identical, 674A is 1.67 times faster
	TPADC85/87			
TEXAS	MC1458		HA-5102	Lower noise
INSTRUMENTS	MC1558		HA-5102	Lower noise
	TCM2912A	HC-5512		Lower noise, lower cross talk, lower power
	TCM4212+		HC-5502A or	Fewer external components
	TCM4201+		HC-5504	
	TCM4208= 3 chip set			
	TL022		HA-5142	Better DC
	TL044		HA-5144	Better DC
	TL061		HA-5141,HA-5151	Better DC, lower noise
	TL062		HA-5142,HA-5152	MIL range available
	TL064		HA-5144,HA-5154	MIL range available
	TL072		HA-5102	MIL range available
	TL074		HA-5104	MIL range available
	TL082		HA-5102	MIL range available
	TL084		HA-5104	MIL range available
TRANSITRON	T0A7709	HA-2600		
	T0A8709	HA-2605		

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UART Cross-Reference List

HARRIS	Intersil	RCA	Speed	Temp. Range	Voltage
HD1-6402R-8	IM6402-1MDL/88313	—	2.0MHz	-55°C TO +125°C	5.0V ± 10%
HD1-6402R-2	IM6402-1MDL	CDP6402CD	2.0MHz	-55°C TO +125°C	5.0V ± 10%
HD1-6402R-9	IM6402-1IDL	CDP6402CD	2.0MHz	-40°C TO +85°C	5.0V ± 10%
HD3-6402R-9	IM6402-1IPL	CDP6402CE	2.0MHz	-40°C TO +85°C	5.0V ± 10%
HD1-6402B-8	—	—	8.0MHz	-55°C TO +125°C	5.0V ± 10%
HD1-6402B-2	—	—	8.0MHz	-55°C TO +125°C	5.0V ± 10%
HD1-6402B-9	—	—	8.0MHz	-40°C TO +85°C	5.0V ± 10%
HD3-6402B-9	—	—	8.0MHz	-40°C TO +85°C	5.0V ± 10%

Bit Rate Generator Cross-Reference List

HARRIS	Fairchild	Intersil	Temp. Range	Voltage
HD1-4702-8	4702BDMQB	—	-55°C TO +125°C	5.0V ± 10%
HD1-4702-2	4702BDM	—	-55°C TO +125°C	5.0V ± 10%
HD1-4702-9	4702BDC	IM4702IJE	-40°C TO +85°C	5.0V ± 10%
HD3-4702-8	4702BPC	IM4702IPE	-40°C TO +85°C	5.0V ± 10%

HARRIS/INTEL Cross-Reference Guide

HARRIS	INTEL	NEC	OKI	MITSUBISHI	VLSI	OTHER
80C86	80C86	uPD70116D-5	MSM80C86A			
80C88	80C88	uPD70108D-5	MSM80C88A			
80C86-2	80C86-2	uPD70116D-8	MSM80C86A-2			
80C88-2	80C88-2	uPD70108D-8	MSM80C88A-2			
80C286-10	80286-10					AMD 80286-10
80C286-12	80286-12					AMD 80286-12
80C286-16						AMD80286-16
82C37A-5			MSM82C37A-5	M5M82C37A -4,-5	VL82C37-4 -5	
82C37A			MSM82C37A		VL82C37A-8	
82C50A					VL82C50A	INS82C50A WD82C50A
82C52						
82C54	82C54	uPD71054	MSM82C54	M5M82C54 -6	VL82C54-8	AM82C54
82C55A-5			MSM82C55A-5	M5M82C55A-5		
82C55A	82C55A-2	uPD71055	MSM82C55A-2			AM82C55A-2
82C59A-5				M5M82C59A		
82C59A	82C59A-2	uPD71059	MSM82C59A-2		VL82C59A-8	AM82C59A
82C82		uPD71082				MMI82C82
82C83H		uPD71083				MMI82C83
82C84A	82C84A 82C84A-5	uPD71084	MSM82C84A -5,-2		VL82C84A-8	
82C85						
82C86H		uPD71086				MMI82C86
82C87H		uPD71087				MMI82C87
82C88	82C88	uPD71088	MSM82C88,-2		VL82C88-8	

Memory Cross-Reference List

Description	Harris	AMD	AMI	Fujitsu	Hitachi	IDT	Intersil	MPS	Mitsubishi
1Kx1, 16 pin Synchronous	HM-6508		6508	8401			6508	6508	
1Kx1, 18 pin Synchronous	HM-6518		6518				6518		
256x4, 22 pin Synchronous	HM-6551						6551		
256x4, 18 pin Synchronous	HM-6561						6561		
4Kx1, 18 pin Synchronous	HM-6504	92L44	6504	8404	4315 6147		6504	6504	
1Kx4, 18 pin Synchronous	HM-6514	91L14 91L24	6514	8414	4334 6148		6514	6514	58981
2Kx8, 24 pin Synchronous	HM-6516								
2Kx8, 24 pin Asynchronous	HM-65162			8416	6116	6116			5117
16Kx1, 20 pin Asynchronous	HM-65262			8167	6167	6167			
8Kx8, 28 pin Asynchronous	HM-65642 HM-8808A	99C88		8464	6264	7M864			5164
32Kx8, 28 pin Asynchronous	HM-8832				62256	7M856			5256

Description	Harris	Motorola	National	NEC	OKI	RCA	SMOS	Toshiba	NMOS, OTHER
1Kx1, 16 pin Synchronous	HM-6508	6508	6508 74C929	443		6508 1821		5508	2125, 4015
1Kx1, 18 pin Synchronous	HM-6518	6518	6518 74C930						
256x4, 22 pin Synchronous	HM-6551		6551 74C920			1822 5101		5101	2101
256x4, 18 pin Synchronous	HM-6561								2111
4Kx1, 18 pin Synchronous	HM-6504	6504	6504		5104		6504	5504	2141, 2147 315D, 4104 4404
1Kx4, 18 pin Synchronous	HM-6514	6514	6514	444	5114 5115	5114	6514	5514	2114, 2148 2149, 4045 314A
2Kx8, 24 pin Synchronous	HM-6516		6516						
2Kx8, 24 pin Asynchronous	HM-65162	65116	6116	446	5128	6116	2016	5517	4802, 2116 2016, 4016
16Kx1, 20 pin Asynchronous	HM-65262								2167, 8167 1400
8Kx8, 28 pin Asynchronous	HM-65642 HM-8808A	6164	6164	4464		6264	2064	5564 5565	
32Kx8, 28 pin Asynchronous	HM-8832			43256				55256	

Component Ordering Information

Harris Part Number

H M 1 — 65162 — 9

PREFIX:
H (Harris)

FAMILY:
A — Analog
C — Communications
D — Digital
I — Interface
M — Memory
PL — Programmable Logic
S — CICD
V — High Voltage

PACKAGE:
1 — Ceramic DIP
1B — Brazed Seal
2 — TO-5 Type
3 — Epoxy DIP
4 — Leadless Carriers
4P — Plastic Leaded Chip Carrier
5 — Ceramic Substrate
7 — Mini DIP
9 — Flat Pack
0 — Chip Form

PART NUMBER*

TEMPERATURE:
1 — -55°C to +200°C
2 — -55°C to +125°C
4 — -25°C to +85°C
5 — 0°C to +75°C
6 — 100% 25°C Probe (Dice Only)
7 — Dash 7 Program, High Reliability -5 Temp. Range with 96 hr Burn-in
8 — Dash 8 Program (Example Only)
9 — -40°C to +85°C
9+ — -40°C to +85°C with Burn-in
RH — Radiation Hardened
RRH — Radiation Hardened with Seu Immunity

80CXXX Family Product Number

M D 82C59A — 5 /B

TEMPERATURE RANGE
C — 0°C to +70°C
I — -40°C to +85°C
M — -55°C to +125°C
X — 25°C

PACKAGE TYPE
P — Plastic
D — Ceramic
X — Unpackaged Device
R — Leadless Chip Carrier
S — Plastic Leaded Chip Carrier
G — Pin Grid Array

PART NUMBER

SPEED

PERIPHERALS
5 — 5MHz
Blank — 8MHz

80C86/88 CPU
Blank — 5MHz
2 — 8MHz

80C286 CPU
10 — 10MHz
12 — 12.5MHz
16 — 16MHz

B — Dash 8 Program
+ — Plus Program: 96 Hrs Burn-in
883 — 883C Compliant

* Alpha suffix parts are defined in individual data sheets.

Ordering Information

Harris products are designated by Product Code". When ordering, please refer to products by the full code. Harris products will always begin with H, except in the case of Chip products or products which are branded with industry standard part numbers, such as 80C86. Specific device numbers will always be isolated by hyphens. Industry standard part numbers should be ordered as stated in this schedule.

Component Ordering Information

Harris Microwave Products

(Gallium Arsenide)

HM M 11820

PREFIX:
HM (Harris Microwave)

PART NUMBER

FAMILY
F — Field Effect Transistors (GaAs)
M — MMICs
R — RF/Analog MMICs

Harris Sales Locations

For a complete listing of all Harris sales locations throughout the world, or to receive more detailed literature on any Harris product described herein, please call (407) 724-3739.

U.S. HEADQUARTERS
Harris Semiconductor
P.O. Box 883.
Melbourne, Florida 32902
TEL: (407) 724-7000

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HARRIS

NOTES

Harris Semiconductor
Spectrum of Products

Analog D.I.

CMOS Digital

Gallium Arsenide

Radiation Hardened

Semicustom

Custom

HARRIS
SEMICONDUCTOR