

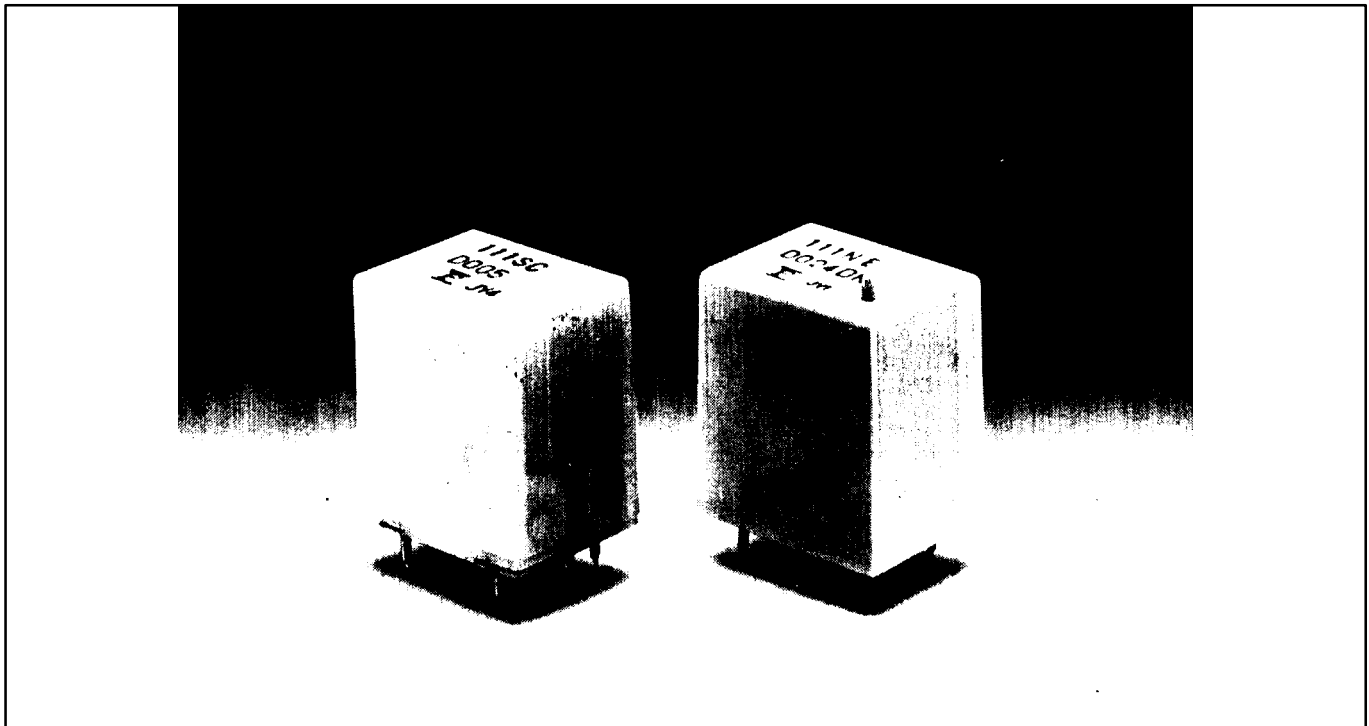
FBR111*****

FBR100 SERIES RELAYS

POWER RELAY, 1 POLE 3, 5, 6A (MEDIUM LOAD CONTROL)

FEATURES

- **10 A maximum contact carrying current**
The -B type can switch up to 10 A because of its beryllium-copper contact spring.
- **Meets TV-5 standards**
The -Q type with its special silver alloy contacts meets TV-5 standards (120 V AC, 5 A tungsten lamp load).
- **Conforms to various standards**
Japan Electric Appliance Control Low (JEACL)
Japan Electronic Components Reliability Center (RCJ)
Certified No. 50-095
UL recognized (file number E63615)
CSA certified (file number LR64026)



SPECIFICATIONS

Item	Specifications
Contact arrangement	1 form A (SPST NO) : FBR101 1 form C (SPDT) : FBR111
Contact material	See ORDERING INFORMATION and CONTACT PERFORMANCE table
Contact resistance	100 mΩ max. initial value (Silver- or gold-plated contacts measured at 6 V DC, 0.5 A Other contacts measured at 6 V DC, 1.0 A)
Insulation resistance	100 MΩ min. (500 V DC) initial value
Dielectric withstand voltage	Between open contacts : 500 V AC for 1 min. Between coil and contacts : See PART NUMBER LIST
Vibration	10 to 55 Hz (1.5 mm dual amplitude)
Shock	No contact opening : 10 G (11 ms) No damage : 100 G (11 ms)
Operate time	20 ms max. (at rated voltage)
Release time	10 ms max. (after rated voltage operation)
Service life Mechanical Electrical	1 x 10 ⁷ ops. min. 1 x 10 ⁵ ops. min. at rated contact loads listed in ORDERING INFORMATION) 5 x 10 ⁴ ops. min. for the Q type at AC load
Switching frequency Mechanical Electrical	18,000 ops./hr 1,800 ops./hr (at rated load)
Operating temperature	-30°C to +60°C (No frozen)
Operating humidity	45% to 85% RH
Weight	Approx. 15 g

CONTACT PERFORMANCE

Contact material	Silver	Silver cadmium oxide		Special silver alloy	
Contact material designation	No designation	K	H	W	Q
Contact rating	28 V DC, 3 A 120 V AC, 3 A		28 V DC, 6 A 120 V AC, 6 A		28 V DC, 5 A 120 V AC, 5 A
Maximum carrying current	See ORDERING INFORMATION				
Maximum switching voltage *1	125 V DC, 250 V AC (Follow UL AND CSA MAXIMUM CONTACT RATINGS when applying safety standards.)				
Maximum power switching	84 W, 360 VA		168 W, 720 VA		140 W, 600 VA
Minimum applicable load (Reference) *2	0.3 min. (5 V min. 30 mA min.)		0.3 W min. (5 V min. 50 mA min.)		

*1 If the switching voltage exceeds the rated contact voltage, reduce the current. Current values vary according to the type of load.

*2 Values when switching a resistive load at normal room temperature and humidity and in a clean atmosphere. The minimum applicable load varies with the switching frequency and operating environment.

UL AND CSA MAXIMUM CONTACT RATINGS

Contact material symbol	Contact material	UL recognized maximum contact rating		CSA certified maximum contact rating	
		DC load	AC load	DC load	AC load
No designation	Silver	28 V, 3 A resistive load	120 V, 3 A resistive load	28 V, 3 A resistive load	120 V, 3 A resistive load
K	Silver cadmium oxide	28 V, 3 A resistive load	120 V, 3 A resistive load	28 V, 3 A resistive load	120 V, 3 A resistive load
W	Special silver alloy	28 V, 8.5 A resistive load	120 V, 10 A resistive load 120 V, 3 A tungsten lamp load	28 V, 6 A resistive load 20 V, 8.5 A resistive load	120 V, 8.5 A resistive load
Q	Special silver alloy	28 V, 5 A resistive load	120 V, 5 A resistive load 120 V, 5 A tungsten lamp load	Approval pending	Approval pending

COIL RATINGS

• Coil power consumption 0.36 W type

Voltage designation	Rated coil voltage	Coil resistance ($\pm 10\%$)	Rated current (at rated voltage)	Pickup voltage	Dropout voltage	Maximum allowable voltage	Coil power consumption	Coil temperature rise
D005	5 V DC	70 Ω	Approx. 71 mA	80% max. of rated coil voltage	10% min. of rated coil voltage	210% of rated coil voltage	Approx. 360 mW max. (at rated coil voltage)	Approx. 25°C max. (at rated coil voltage)
D006	6 V DC	100 Ω	Approx. 60 mA					
D009	9 V DC	225 Ω	Approx. 40 mA					
D012	12 V DC	400 Ω	Approx. 30 mA					
D018	18 V DC	900 Ω	Approx. 20 mA					
D024	24 V DC	1,600 Ω	Approx. 15 mA					
D048	48 V DC	5,100 Ω	Approx. 9 mA			170%	Approx. 450 mW	Approx. 35°C

Note: All values in the table are measured at 20°C.

• Coil power consumption 0.5 W type

Voltage designation	Rated coil voltage	Coil resistance ($\pm 10\%$)	Rated current (at rated voltage)	Pickup voltage	Dropout voltage	Maximum allowable voltage	Coil power consumption	Coil temperature rise
D005	5 V DC	50 Ω	Approx. 100 mA	75% max. of rated coil voltage	10% min. of rated coil voltage	170% of rated coil voltage	Approx. 500 mW max. (at rated coil voltage)	Approx. 35°C max. (at rated coil voltage)
D006	6 V DC	72 Ω	Approx. 83 mA					
D009	9 V DC	160 Ω	Approx. 56 mA					
D012	12 V DC	290 Ω	Approx. 41 mA					
D018	18 V DC	650 Ω	Approx. 28 mA					
D024	24 V DC	1,150 Ω	Approx. 21 mA					
D048	48 V DC	4,600 Ω	Approx. 10 mA					

Note: All values in the table are measured at 20°C.

PART NUMBER LIST

	Part number	Contact material	Contact rating (resistive load)		Maximum carrying current	Coil power consump- tion	Dielectric withstand voltage (between coil and contacts)
			DC load	AC load			
Standard type	FBR111C □□□□	Silver	28 V 3A	120 V 3 A	5 A	0.36 W	500 V AC 1 minute
	FBR111C □□□□ -K	Silver cadmium oxide			8 A		
	FBR111C □□□□ -H		28 V 6 A	120 V 6 A	10 A		
	FBR111C □□□□ -H-B	8 A					
	FBR111C □□□□ -W	Special silver alloy	10 A				
	FBR111C □□□□ -W-B						
High withstand voltage type	FBR111E □□□□	Silver	28 V 3A	120 V 3 A	5 A	0.36 W	1,500 V AC 1 minute
	FBR111E □□□□ -K	Silver cadmium oxide			8 A		
	FBR111E □□□□ -H		28 V 6 A	120 V 6 A	10 A		
	FBR111E □□□□ -H-B	8 A					
	FBR111E □□□□ -W	Special silver alloy	10 A				
	FBR111E □□□□ -W-B						
Standard model - JEACL conformance	FBR111C □□□□ D	Silver	28 V 3A	120 V 3 A	5 A	0.5 W	1,000 V AC 1 minute
	FBR111C □□□□ DK	Silver cadmium oxide			8 A		
	FBR111C □□□□ DH		28 V 6 A	120 V 6 A	10 A		
	FBR111C □□□□ DH-B	8 A					
	FBR111C □□□□ DW	Special silver alloy	10 A				
	FBR111C □□□□ DW-B						
High withstand voltage - JEACL conformance	FBR111E □□□□ D	Silver	28 V 3A	120 V 3 A	5 A	0.36 W	1,500 V AC 1 minute
	FBR111E □□□□ DK	Silver cadmium oxide			8 A		
	FBR111E □□□□ DH		28 V 6 A	120 V 6 A	10 A		
	FBR111E □□□□ DH-B	8 A					
	FBR111E □□□□ DW	Special silver alloy	10 A				
	FBR111E □□□□ DW-B						
150 V to 300 V circuit load - JEACL conformance	FBR111E □□□□ G	Silver	28 V 3A	240 V 1 A	5 A	0.5 W	1,500 V AC 1 minute
	FBR111E □□□□ GK	240 V 2 A					
	FBR111E □□□□ GH	28 V 6 A	240 V 3 A	8 A			
	FBR111E □□□□ GH-B		10 A				
	FBR111E □□□□ GW	Special silver alloy	240 V 2 A	8 A			
	FBR111E □□□□ GW-B		10 A				
UL recognized (standard type)	FBR111U □□□□ -CSA	Silver	28 V 3A	120 V 3 A	5 A	0.5 W	1,500 V AC 1 minute
	FBR111U □□□□ -K -CSA	Silver cadmium oxide			8 A		
	FBR111U □□□□ -W -CSA	Special silver alloy	28 V 6 A	120 V 6 A	10 A		
	FBR111U □□□□ -W-B				8 A		
	FBR111U □□□□ -Q		28 V 5 A	120 V 5 A	10 A		
	FBR111U □□□□ -Q-B						
UL recognized (0.36 W type)	FBR111U □□□□ -1 -CSA	Silver	28 V 3A	120 V 3 A	5 A	0.36 W	1,500 V AC 1 minute
	FBR111U □□□□ -K1 -CSA	Silver cadmium oxide			8 A		
	FBR111U □□□□ -W1 -CSA	Special silver alloy	28 V 6 A	120 V 6 A	10 A		
	FBR111U □□□□ -W1-B						

	Part number	Contact material	Contact rating (resistive load)		Maximum carrying current	Coil power consump- tion	Dielectric withstand voltage (between coil and contacts)
			DC load	AC load			
JEACL conformance, UL recognized (standard type)	FBR111V □□□□ -CSA	Silver	28 V 3 A	120 V 3 A	5 A	0.5 W	1,500 V AC 1 minute
	FBR111V □□□□ -K -CSA	Silver cadmium oxide					
	FBR111V □□□□ -W -CSA	Special silver alloy	28 V 6 A	120 V 6 A	8 A		
	FBR111V □□□□ -W-B				10 A		
	FBR111V □□□□ -Q		28 V 5 A	120 V 5 A	8 A		
	FBR111V □□□□ -Q-B				10 A		
JEACL conformance, UL recognized (0.36 W type)	FBR111V □□□□ -1 -CSA	Silver	28 V 3 A	120 V 3 A	5 A	0.36 W	1,500 V AC 1 minute
	FBR111V □□□□ -K1 -CSA	Silver cadmium oxide					
	FBR111V □□□□ -W1 -CSA	Special silver alloy	28 V 6 A	120 V 6 A	8 A		
	FBR111V □□□□ -W1-B				10 A		

- Notes:**
1. The blanks in the eighth to eleventh positions of the designations should be filled in with the voltage designation listed in the COIL RATINGS table.
 2. When ordering CSA certified type, use the -CSA designations in UL recognized parts.
 3. When ordering automatic soldering (S type), add the letter S between the sixth and seventh positions of the part number.
 4. When ordering automatic soldering + immersion-cleanable (N type), add the letter N between the sixth and seventh positions of the part number.

ORDERING INFORMATION

[Example] FBR111 S E D 012 D W - B -CSA - S
 (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K)

(A) Series name

FBR101: FBR100 series (1 form A)

FBR111: FBR100 series (1 form C)

(B) Construction

No designation: Standard structure

S: Automatic soldering

N: Automatic soldering + immersion-cleanable N type

(C) Usage

C: Standard usage

E: High withstand voltage

U: UL recognized

V: JEACL conformance, UL recognized (Specify “-” or “No designation” for (F) position.)

(D) Coil drive

D: DC power supply coil drive

(E) Rated coil voltage

Indicate rated voltage as a three-digit number

(Example) 005: 5 V DC

012: 12 V DC

(F) JEACL specification

D: JEACL conformance (Specify “-” or “No designation” when V is in the (C) position.)

-: Use hyphen when JEACL conformance is not needed.

(G) Contact material

No designation: Silver

H: Silver cadmium oxide (rated contact current 6 A)

K: Silver cadmium oxide (rated contact current 3 A)

Q: Special silver alloy (TV-5 standard)

W: Special silver alloy (TV-3 standard)

(H) 0.36 W UL recognized

-1: 0.36 W coil power dissipation UL recognized (only indicated when (C) position is U or V)

-: Use hyphen when 0.36 W UL type is not needed.

(I) 10-A type

-B: 10 A maximum contact carrying current

(J) CSA certified

No designation: Standard

-CSA: CSA certified

(K) Stick packaging

No designation: Standard package

-S: Stick packaging

Note: The designation is stamped on the top of the relay case as follows.

(Example) Designation ordered : FBR111SED024-W

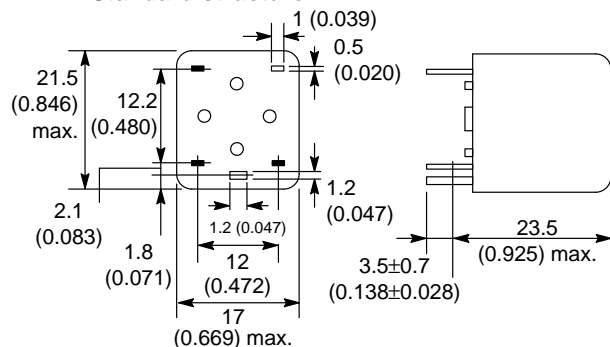
Stamp : 111SED024-W

DIMENSIONS AND SCHEMATICS

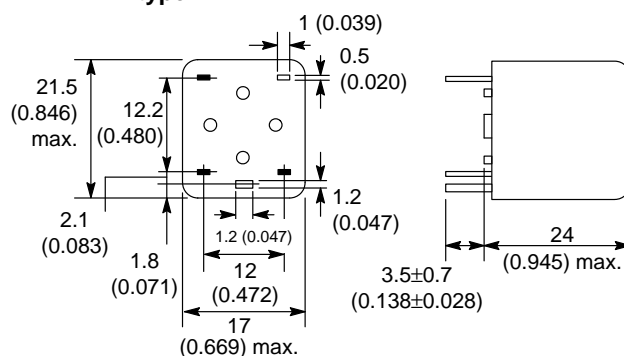
Unit: mm (in.)

• Dimensions

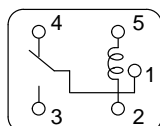
• Standard structure



• N type

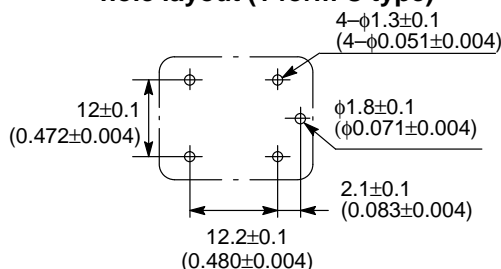


• Schematics (1 form C type)

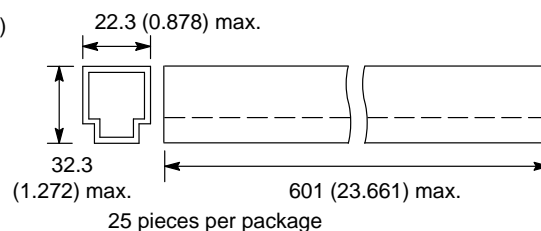


(Bottom view)

• PC board mounting hole layout (1 form C type)

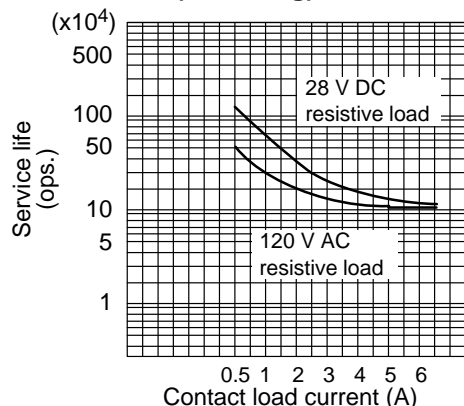


• Tube dimensions

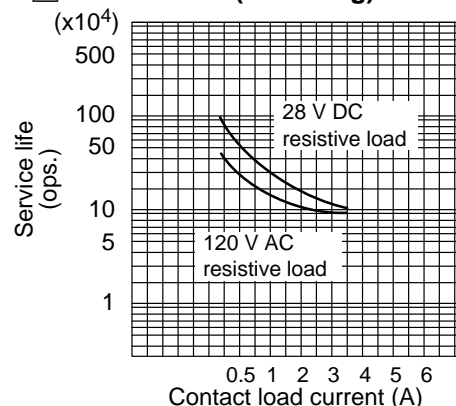


REFERENCE DATA

① Service life (6 A rating)



② Service life (3 A rating)



All Rights Reserved.

Circuit diagrams utilizing Fujitsu products are included as a means of illustrating typical electronic components applications. Complete information sufficient for construction purposes is not necessarily given.

The information contained in this document has been carefully checked and is believed to be reliable. However, Fujitsu assumes no responsibility for inaccuracies.

The information contained in this document does not convey any license under the copyrights, patent rights or trademarks claimed and owned by Fujitsu.

No part of this publication may be copied or reproduced in any form or by any means, or transferred to any third party without prior written consent of Fujitsu.