FUJITSU THE POSSIBILITIES ARE INFINITE

MINIATURE RELAY

1 POLE—1 to 2 A (FOR SIGNAL SWITCHING)

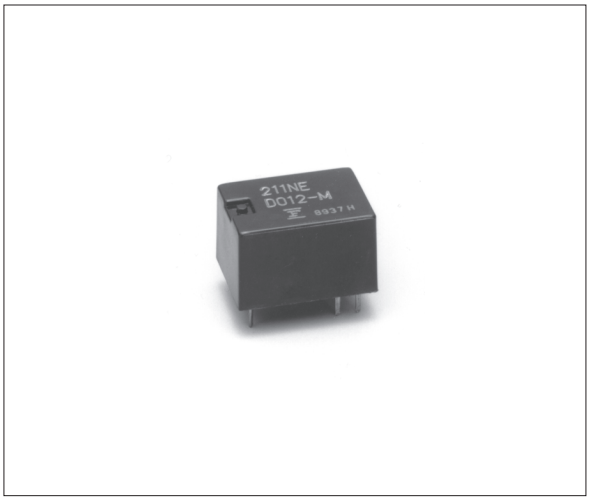
FBR211 SERIES

RoHS compliant

DISCONTINUED (1998)

■ FEATURES

- 2 A maximum carrying current
  Capable of 2 A maximum continuous carrying current in the contact
- Super[r] reli[a]ility gold-overlay contacts
  P t[y]e: Gol[d] ove[r]y silver-palladium contacts
- Inter[n]al te[r]minal pitch of one inch grid terminal layout
- High sensiti[v]y, low power dissipation types also available
  Standard types: 0.4[5] W (A or B type)
  High sensitivity [ty]pe: 0.[2] W (C or E type)
- Conforms to FCC 68.3[0] 2 (high di[e]ctric strength type)
- UL recognized (File nu[m]ber E[6]5615)
- CSA recognized (File numb[e] LR64[3]16)
- RoHS compliant since date c[o]de [0]432[A]
  Please see page 5 for more information



■ ORDERING INFORMATION

[Example] FBR211 (a) S (b) A (c) D012 (d) U (e) – P (f) [ ] (g) (CSA) (h)

(a)	Series Name	FBR211
(b)	Enclosure	S: Flux free type N: Plastic sealed type
(c)	Coil Power and Schematics	A: Standard A type } (nominal power 450 mW type) B: Standard B type C: High sensitivity C type } (nominal power 200 mW type) E: High sensitivity E type
(d)	Nominal Voltage	(Example) D003: 3 VDC D012: 12 VDC (refer to the COIL DATA CHART)
(e)	UL Marking on Cover	Nil : No UL marking U : UL marking
(f)	Contact Material	P : Gold-overlay silver-palladium M : Gold-overlay silver
(g)	Special Type	Nil : Standard 2 : High dielectric strength type
(h)	CSA Marking	Nil : Standard -CSA : UL + CSA marking (valid when (e) is U)

Note: The designation name is stamped on the top of the relay case as follows:
(Example) Designation ordered: FBR211SAD005-P
Stamp: 211SAD005-P

■ COIL DATA CHART

1. STANDARD (A or B type)

MODEL				Nominal voltage	Coil resistance (±10%)	Nominal current (at nominal voltage) approx.	Must operate voltage	Must release voltage	Maximum allowable voltage	Nominal power	Coil temperature rise
A type		B type									
Flux free	Plastic sealed	Flux free	Plastic sealed								
FBR211SAD001-n	FBR211NAD001-n	FBR211SBD001-n	FBR211NBD001-n	1.5 VDC	5 Ω	300 mA	70% max. of nominal voltage	10% min. of nominal voltage	150% of nominal voltage	Approx. 450 mW (at nominal voltage)	Approx. 45 deg (at nominal voltage)
FBR211SAD003-n	FBR211NAD003-n	FBR211SBD003-n	FBR211NBD003-n	3 VDC	20 Ω	150 mA					
FBR211SAD005-n	FBR211NAD005-n	FBR211SBD005-n	FBR211NBD005-n	5 VDC	56 Ω	89 mA					
FBR211SAD006-n	FBR211NAD006-n	FBR211SBD006-n	FBR211NBD006-n	6 VDC	80 Ω	75 mA					
FBR211SAD009-n	FBR211NAD009-n	FBR211SBD009-n	FBR211NBD009-n	9 VDC	180 Ω	50 mA					
FBR211SAD012-n	FBR211NAD012-n	FBR211SBD012-n	FBR211NBD012-n	12 VDC	320 Ω	38 mA					
FBR211SAD024-n	FBR211NAD024-n	FBR211SBD024-n	FBR211NBD024-n	24 VDC	1,280 Ω	19 mA					

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

2. HIGH SENSITIVITY (C type, E type)

MODEL				Nominal voltage	Coil resistance (±10%)	Nominal current (at nominal voltage) approx.	Must operate voltage	Must release voltage	Maximum allowable voltage	Nominal power	Coil temperature rise
C type		E type									
Flux free	Plastic sealed	Flux free	Plastic sealed								
FBR211SCD001-n	FBR211NCD001-n	FBR211SED001-n	FBR211NED001-n	1.5 VDC	12 Ω	125 mA	70% max. of nominal voltage	10% min. of nominal voltage	225% of nominal voltage	Approx. 200 mW (at nominal voltage)	Approx. 25 deg (at nominal voltage)
FBR211SCD003-n	FBR211NCD003-n	FBR211SED003-n	FBR211NED003-n	3 VDC	45 Ω	67 mA					
FBR211SCD005-n	FBR211NCD005-n	FBR211SED005-n	FBR211NED005-n	5 VDC	120 Ω	42 mA					
FBR211SCD006-n	FBR211NCD006-n	FBR211SED006-n	FBR211NED006-n	6 VDC	180 Ω	33 mA					
FBR211SCD009-n	FBR211NCD009-n	FBR211SED009-n	FBR211NED009-n	9 VDC	400 Ω	23 mA					
FBR211SCD012-n	FBR211NCD012-n	FBR211SED012-n	FBR211NED012-n	12 VDC	700 Ω	17 mA					
FBR211SCD024-n	FBR211NCD024-n	FBR211SED024-n	FBR211NED024-n	24 VDC	2,800 Ω	9 mA					

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

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■ SPECIFICATIONS

Item			Standard (A or B type)	High sensitive (C or E type)
Contact	Arrangement		1 form C (SPDT)	
	Material		Gold-overlay silver-palladium / gold-overlay silver	
	Resistance (initial)		Maximum 100 mΩ (at 0.1 A 6 VDC)	
	Rating (resistive)		0.5 A 120 VAC or 1 A 28 VDC	
	Maximum Carrying Current		2 A	
	Maximum Switching Power		60 VA or 28 W	
	Max. Switching Voltage*1		220 VAC or 150 VDC	
	Maximum Switching Current		1.25 A (AC) or 2 A (DC)	
	Minimum Switching load*2 (reference value)		Plastic sealed 1 mA, 1V Flux free 1 mA, 5V	
Coil	Nominal Power (at 20°C)		Approximately 450 mW	Approximately 200 mW
	Operate Power (at 20°C)		Approximately 315 mW maximum	Approximately 140 mW maximum
	Operating Temperature		–25°C to +55°C (no frost)	–25°C to +75°C (no frost)
	Operating Humidity		5 to 85%RH	
Time Value	Operate (at nominal voltage)		Maximum 5 ms	
	Release (at nominal voltage)		Maximum 5 ms	
Life	Mechanical		5 × 10⁶ operations minimum	
	Electrical (Refer to the REFERENCE DATA)		3 × 10⁴ operations minimum (at 1 A/ 28 VDC resistive load) 1 × 10⁵ operations minimum (at 2 A/ 12 VDC resistive load) 1 × 10⁵ operations minimum (at 0.5 A/120 VDC resistive load)	
Other	Vibration Resistance		10 to 55 Hz (double amplitude of 1.5 mm)	
	Shock Resistance	Misoperation	100 m/s² (11±¹ ms)	60 m/s² (11±¹ ms)
		Endurance	1,000 m/s² (11±¹ ms)	
	Weight		Approximately 4 g	

*1 If the switching voltage exceeds the rated contact voltage, reduce the current. The 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 environment. The minimum switching load varies with the switching frequency and operation environment.

■ INSULATION

Item		Standard (A or B)	High sensitive (C or E)
Isolation (initial)		Minimum 100 MΩ (at 500VDC)	
Dielectric Strength		500VAC 1 min. (standard) 1,500VAC 1 min. (high isolation coil and contact)	

■ SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL 110 E63615	Flammability: UL 94-V0 (plastics) 0.5A, 120VAC (resistive) 1A, 28VDC (resistive)
CSA	C22.2 No. 14 LR 40304, LR 46016	

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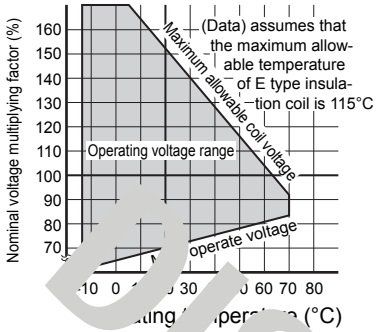
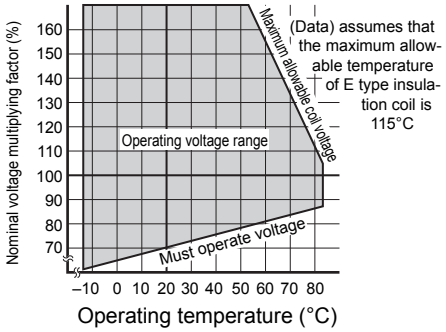
■ CHARACTERISTIC DATA

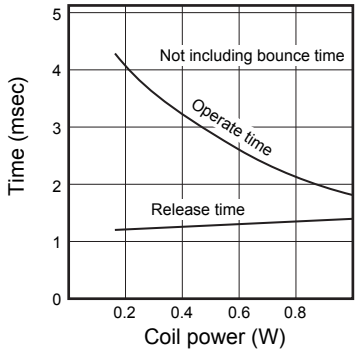
Range of operation temperature and voltage
(Standard 0.45 W type)



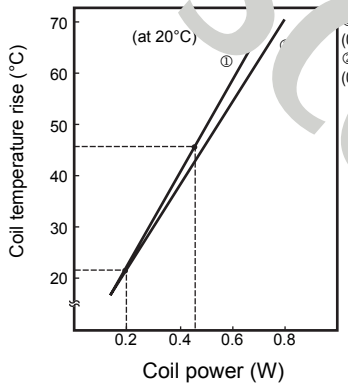
Range of operation temperature and voltage
(high sensitive 0.2 W type)



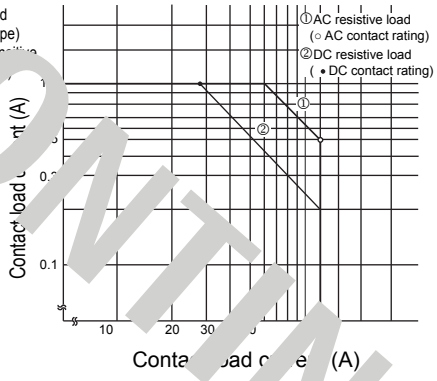
Operate and release time data



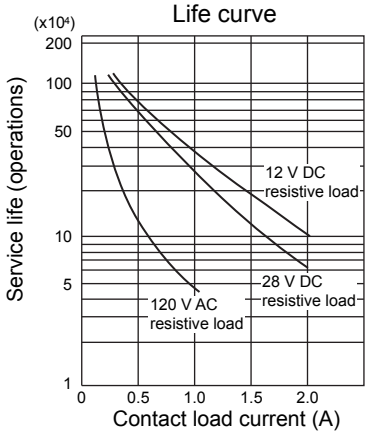
Coil temperature rise data



Maximum switching capacity

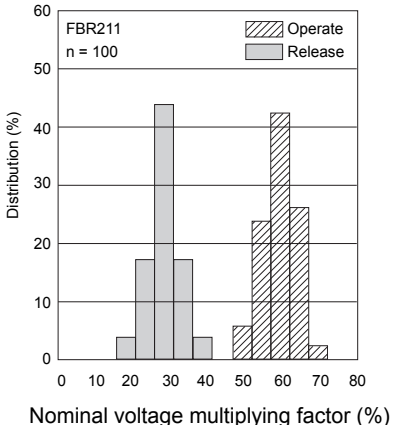


Life curve

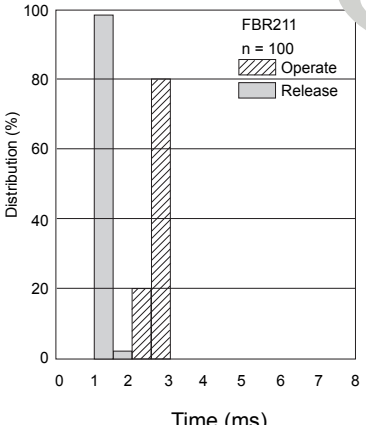


■ REFERENCE DATA

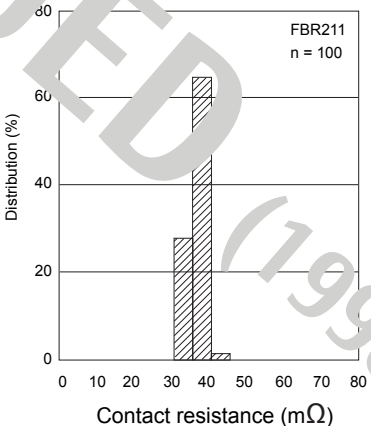
Distribution of operate and release voltage



Distribution of operate and release time



Distribution of contact resistance



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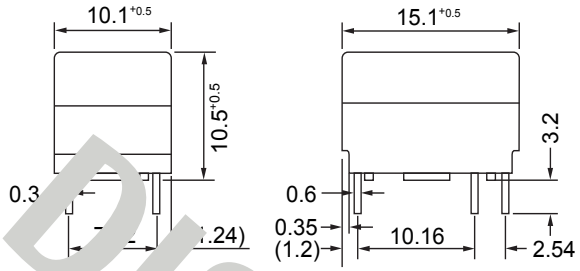
■ DIMENSIONS

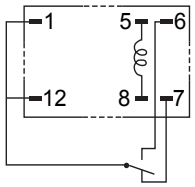
1. STANDARD (Flux free type)

●Dimensions

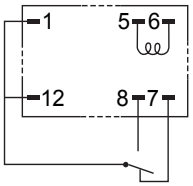


●Schematics (BOTTOM VIEW)

(A type or C type)

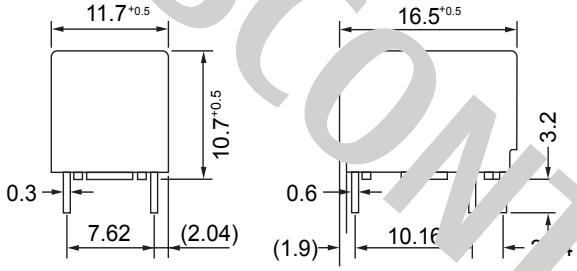


(B type or E type)



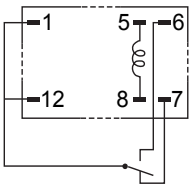
2. N-TYPE (Plastic sealed type)

●Dimensions

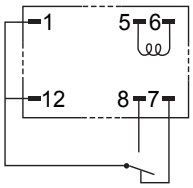


●Schematics (BOTTOM VIEW)

(A type or C type)

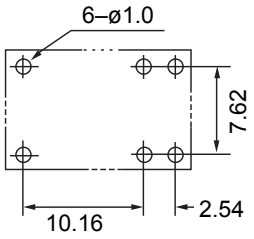


(B type or E type)



3. PC BOARD MOUNTING HOLE LAYOUT

●PC board mounting hole layout (BOTTOM VIEW)



Unit: mm

DISCONTINUED (1998)

RoHS Compliance and Lead Free Relay Information

1. General Information

- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. Most of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf)
- Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu.
- All signal and most power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 5 hazardous materials that are restricted by RoHS directive (lead, mercury, chromium IV, PBB, PBDE).
- It has been verified that using lead-free relays in leaded assembly process will not cause any problems (compatible).
- "LF" is marked on each outer and inner carton. (No marking on individual relays).
- To avoid leaded relays (limited lead-free sample, etc.) please consult with area sales office.
- We will ship leaded relays as long as the leaded relay inventory exists.

Note: Cadmium was exempted from RoHS on October 21, 2005. (Amendment to Directive 2002/95/EC)

2. Recommended Lead Free Solder Profile

- Recommended solder paste Sn-3.0Ag-0.5Cu

Reflow Solder condition

Flow Solder condition:

Pre-heating:	maximum 120˚C
Soldering:	dip within 5 sec. at 260˚C soler bath

Solder by Soldering Iron:

Soldering Iron Temperature:	maximum 360˚C
Duration:	maximum 3 sec.

We highly recommend that you confirm your actual solder conditions

3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical realys.

4. Tin Whisker

- Dipped SnAgCu solder is known as low risk tin whisker. No considerable length whisker was found by our in house test.

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Rev. January 18, 2008.

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Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Fujitsu:

FBR211NBD024M FBR211SBD006M FBR211SBD006P FBR211NBD024P FBR211NBD012M FBR211NBD012P FBR211NED005P2 FBR211NBD005P2 FBR211SCD012P FBR211SBD024P FBR211SBD024M FBR211NCD024P FBR211NCD024M FBR211NED024P FBR211NCD003P FBR211NCD005P FBR211NCD001M FBR211NCD006P FBR211NCD003M FBR211NCD005M FBR211NCD009M FBR211NCD006M FBR211NCD001P FBR211NCD009P FBR211NAD024M FBR211NAD024P FBR211SED001M FBR211SBD012P FBR211SED009M FBR211SBD012M FBR211SED005P FBR211SED005M FBR211SED009P FBR211SED001P FBR211SED003M FBR211SED003P FBR211SED006M FBR211SED006P FBR211SCD006P FBR211SCD006M FBR211SCD005P FBR211NED012M FBR211NED012P FBR211NAD024U-MCSA FBR211NED009P FBR211NED009M FBR211NED006M FBR211NED005M FBR211NED001P FBR211NED003P FBR211NED006P FBR211NED003M FBR211NED001M FBR211NED005P FBR211SCD024P FBR211SCD024M FBR211SAD009P FBR211SAD003P FBR211SAD006M FBR211SAD001P FBR211SAD001M FBR211SAD005M FBR211SAD005P FBR211SAD009M FBR211SAD006P FBR211SAD003M FBR211NED024UM FBR211NED024M FBR211NBD003P FBR211NAD001P FBR211NBD009P FBR211NAD005P FBR211NBD003M FBR211NAD005M FBR211NBD001M FBR211NAD009P FBR211NBD009M FBR211NAD001M FBR211NAD009M FBR211NBD001P FBR211SAD012P FBR211SAD012M FBR211NCD012P FBR211NCD012M FBR211NAD024M2/250 FBR211SAD024M FBR211SAD024P FBR211SCD003P FBR211SCD009M FBR211SCD001P FBR211SCD005M FBR211SCD009P FBR211SCD003M FBR211SCD001M FBR211SED012P FBR211SED012M FBR211NAD003P FBR211NAD006P FBR211NAD003M FBR211NAD006M