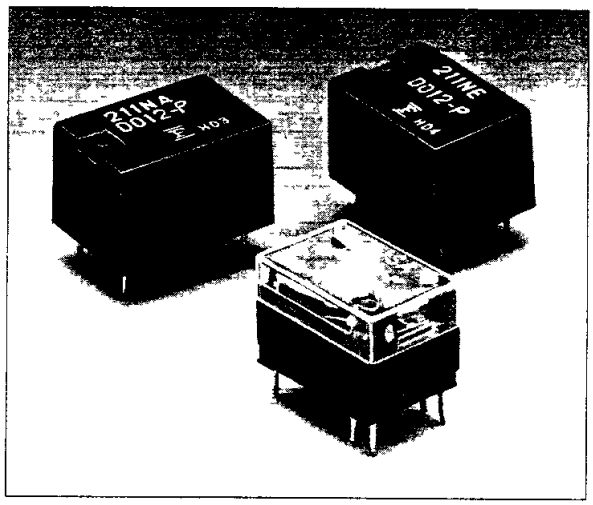
MINIATURE RELAY 103-063/4/5

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

FBR210 SERIES

■ FEATURES



- 2 A maximum carrying current
  Capable of 2 A maximum continuous carrying current in the contact
- Superior sensitive gold-overlay contacts
  P type Gold-overlay silver-palladium contacts
- International terminal pitch of one inch grid terminal layout
- High sensitive, low power dissipation types also available
  Standard types 0 45 W (A or B type)
  High sensitivity types. 0 2 W (C or E type)
- Conforms to FCC 68.302 (High Dielectric Strength type)
- UL recognized (File number E63615)
- CSA recognized (File number LR64026)

■ ORDERING INFORMATION

[Example] FBR211 (a) S (b) A (c) D012 (d) U (e) – P (f) 2 (g) (–CSA) (h)

(a)	Series Name	FBR211 FBR210 Series
(b)	Enclosure	S Flux Free Type N Plastic Sealed Type
(c)	Coil power and Schematics	A Standard A type } (Nominal power 0 4 W type) B Standard B type } C High sensitive C type } (Nominal power 0 2 W type) E High sensitive E type }
(d)	Nominal Voltage	(Example) D003 3 VDC D012 12 VDC (Refer to the COIL DATA CHART)
(e)	UL Standard	Nil Standard U UL114 Recognized
(f)	Contact Material	P Gold-overlay silver-palladium M Gold-overlay silver
(g)	Special Type	Nil Standard 2 High Dielectric Strength Type
(h)	CSA Standard	Nil Standard -CSA UL114 + CSA Recognized (e) is U

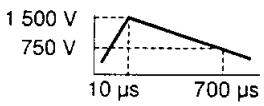
Note The designation name is stamped on the top of the relay case as follows.
(Example) Designation ordered FBR211SAD005-P
Stamp 211SAD005-P

■ SAFETY STANDARD & FILE NUMBERS

UL114 (File No. E63615)
C22.2 No 0, No 1, No. 14 (File No LR40304 or LR64026)

Nominal voltage	Contact rating
1 5 to 24 VDC	1 A 28 VDC Resistive 0 5 A 30 VAC Resistive

■ SPECIFICATIONS

Item			Standard (A or B type)	High sensitive (C or E type)
Contact	Arrangement		1 Form C (SPDT)	
	Material		Gold-overlay silver-Palladium or Gold-overlay silver	
	Resistance (initial)		Max 100 mΩ (at 0 1 A 6 VDC)	
	Rating (resistive)		0 5 A 120 VAC or 1 A 28 VDC	
	Max Carrying Current		2 A	
	Max Switching Power		60 VA or 28 W	
	Max Switching Voltage*1		220 VAC or 150 VDC	
	Max Switching Current		1 25 A (AC) or 2 A (DC)	
	Min Switching load*2 (Reference)		Prastic sealed 1 mA 1 VDC Flux free 1 mA 5 VDC	
Coil	Nominal power (at 20°C)		Approx 0 45 W	Approx 0 2 W
	Operate power (at 20°C)		Approx 0 315 W Max	Approx 0 14 W Max
	Operating Temperature		–25°C to +55°C (No frost)	–25°C to +75°C (No frost)
	Operating Humidity		45 to 85%RH	
Time Value	Operate (at Nominal voltage)		Max 5 ms	
	Release (at Nominal voltage)		Max 5 ms	
Insulation	Resistance (initial)		Min 100 MΩ (at 500 VDC)	
	Dielectric Strength	between coil and contacts	500 VAC 1 minute (Standard) 1,000 VAC 1 minute (High dielectric strength type)	
		between open contacts	500 VAC 1 minute	
	Surge Strength (High dielectric strength type)		1,500 V (10 × 700 μs) 	
Life	Mechanical		5×10^6 ops min	
	Electrical (Refer to the REFERENCE DATA)		300×10^3 ops min (at 1 A/ 28 VDC resistive load) 100×10^3 ops min (at 2 A/ 12 VDC resistive load) 100×10^3 ops min (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)	
	Unit Mass		Approx 4 g	

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

FBR210 SERIES

■ 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-	FBR211NAD001-	FBR211SBD001-	FBR211NBD001-	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-	FBR211NAD003-	FBR211SBD003-	FBR211NBD003-	3 VDC	20 Ω	150 mA					
FBR211SAD005	FBR211NAD005-	FBR211SBD005-	FBR211NBD005-	5 VDC	56 Ω	89 mA					
FBR211SAD006-	FBR211NAD006-	FBR211SBD006-	FBR211NBD006-	6 VDC	80 Ω	75 mA					
FBR211SAD009-	FBR211NAD009-	FBR211SBD009	FBR211NBD009-	9 VDC	180 Ω	50 mA					
FBR211SAD012-	FBR211NAD012-	FBR211SBD012-	FBR211NBD012	12 VDC	320 Ω	38 mA					
FBR211SAD024-	FBR211NAD024-	FBR211SBD024-	FBR211NBD024-	24 VDC	1,280 Ω	19 mA					

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

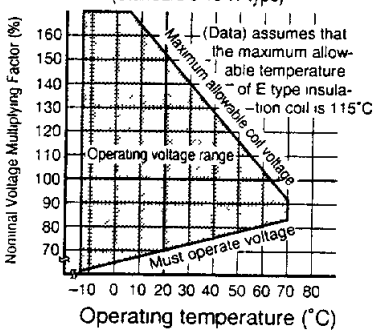
2. HIGH SENSITIVE (C or E type)

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-	FBR211NCD001-	FBR211SED001-	FBR211NED001-	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-	FBR211NCD003-	FBR211SED003-	FBR211NED003-	3 VDC	45 Ω	67 mA					
FBR211SCD005-	FBR211NCD005-	FBR211SED005-	FBR211NED005-	5 VDC	120 Ω	42 mA					
FBR211SCD006-	FBR211NCD006-	FBR211SED006-	FBR211NED006-	6 VDC	180 Ω	33 mA					
FBR211SCD009-	FBR211NCD009-	FBR211SED009-	FBR211NED009-	9 VDC	400 Ω	23 mA					
FBR211SCD012-	FBR211NCD012-	FBR211SED012-	FBR211NED012-	12 VDC	700 Ω	17 mA					
FBR211SCD024-	FBR211NCD024-	FBR211SED024	FBR211NED024	24 VDC	2,800 Ω	9 mA					

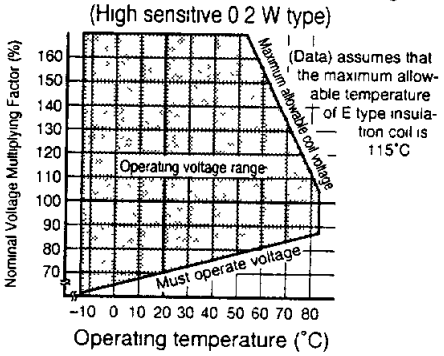
Note All values in the table are measured at 20°C

■ CHARACTERISTIC DATA

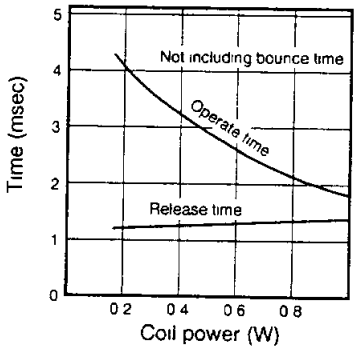
Range of operation temperature and voltage
(Standard 0 45 W type)



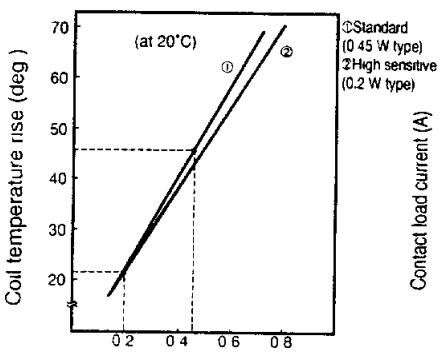
Range of operation temperature and voltage
(High sensitive 0 2 W type)



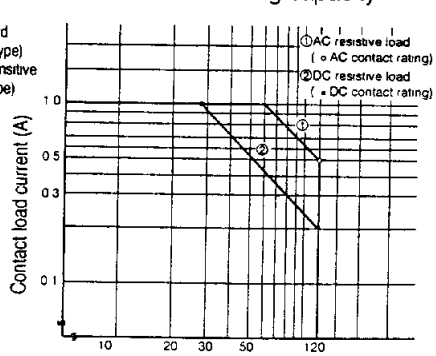
Operate & Release time data



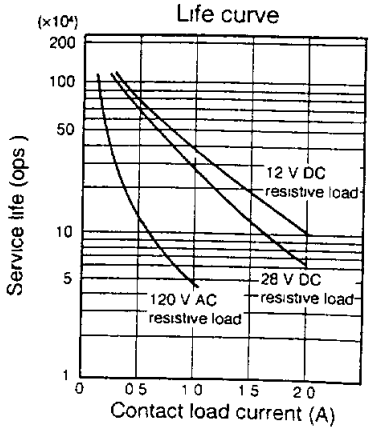
Coil temperature rise data



Maximum switing capacity

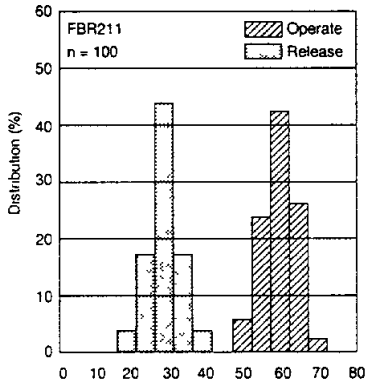


Life curve

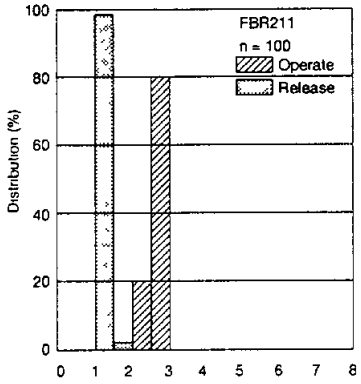


■ REFERENCE DATA

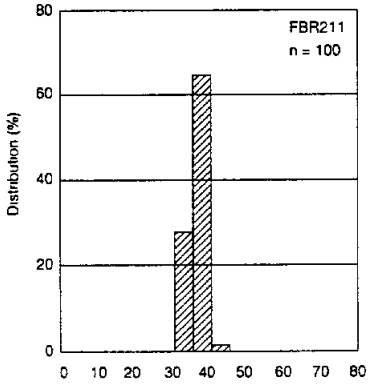
Distribution of Operate &Releae Voltage



Distribution of Operate & Release Time



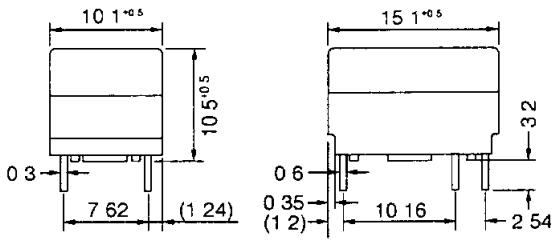
Distribution of Contact Resistance



■ DIMENSIONS

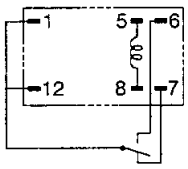
1 STANDARD (Flux Free Type)

●Dimensions

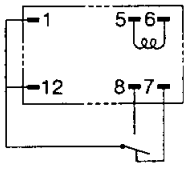


●Schematics (BOTTOM VIEW)

(A type or C type)

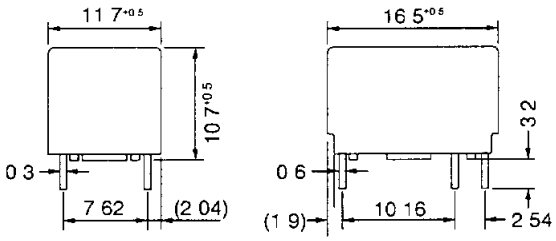


(B type or E type)



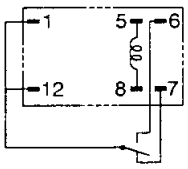
2 N-TYPE (Plastic Sealed Type)

●Dimensions

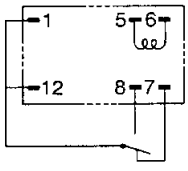


●Schematics (BOTTOM VIEW)

(A type or C type)

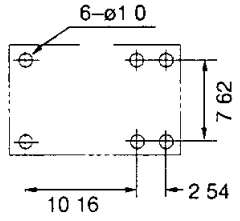


(B type or E type)



3. PC BOARD MOUNTING HOLE LAYOUT

●PC board mounting hole layout (BOTTOM VIEW)



Unit mm