

POWER RELAY

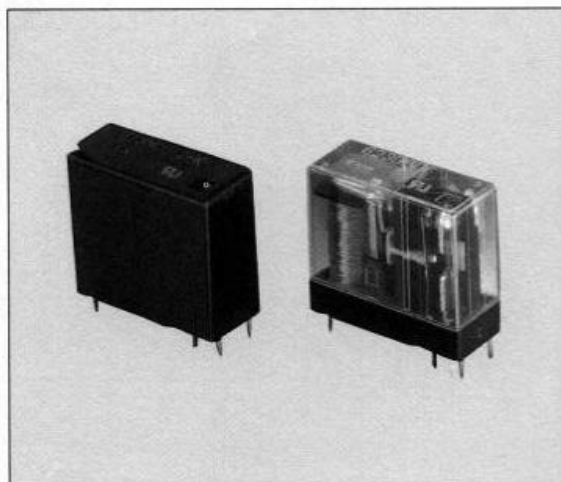
1, 2 POLES—5, 10, 16 A

FBR610, 620 SERIES

MEMO

■ FEATURES

- Maximum switching capacity of 30 VDC, 16 A and 240 VAC, 16 A (Single pole, K type)
- 5 kV AC min. dielectric strength (between coil and contacts)
- 10 kV min. surge strength (between coil and contacts)
- Coil terminal apart from output ones allows easy PC board design
- High reliability design conforming to safety standards Japan Electrical Appliance Control Law (150–300 V)



■ ORDERING INFORMATION

[Example] $\frac{\text{FBR6}}{\text{(a)}}$ $\frac{1}{\text{(b)}}$ $\frac{3}{\text{(c)}}$ $\frac{\text{N}}{\text{(d)}}$ $\frac{\text{D012}}{\text{(e)}}$ $\frac{-\text{K}}{\text{(f)}}$ $\frac{-\text{CSA}}{\text{(g)}}$

(a)	Series Name	FBR6: FBR600 Series
(b)	Number of Contacts	1 : 1 Pole 2 : 2 Poles
(c)	Contact Arrangement	1 : Form C 3 : Form A 5 : Form B
(d)	Enclosure	Nil : Flux Free Type N : Plastic Sealed Type
(e)	Nominal Voltage	(Example) 012: 12 VDC 024: 24 VDC (Refer to the COIL DATA CHART)
(f)	Contact Rating	Nil : Standard -K : K Type (Refer to the SPECIFICATIONS)
(g)	Safety Standards	Nil : UL 508 Recognized -CSA: UL 508 + CSA Recognized -T : VDE + UL 508 + CSA Recognized Only for 1 form C and 1 form A Standard Types. (Refer to the SAFETY & FILE NUMBERS)

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

(Example) Designation ordered: FBR611ND024

Stamp: 611ND024

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■ SAFETY STANDARD & FILE NUMBERS

UL508, (File No. E63614)

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

VDE0435, 0860 (File No. 5304UG)

Type		Safety Standard			Nominal voltage		Contact ratings
		UL	CSA	VDE			
1 Pole	Standard	1 form C, 1 form A	Recognized	Recognized	5 to 60 VDC	UL	10 A 240 VAC Resistive
		1 form B					Recognized
	K type	1 form C	Recognized	Recognized		UL	10 A 240 VAC Resistive
		1 form A, 1 form B					Recognized
2 Poles	Standard		Recognized	Recognized	UL	10 A 240 VAC Resistive	
						10 A 30 VDC Resistive	
					CSA	6 A 240 VAC Resistive 6 A 30 VDC Resistive	

■ COIL DATA CHART

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
1 Pole type		2 Poles type								
Standard	K type	Standard								
FBR611, 611N FBR613, 613N FBR615, 615N		FBR621, 621N FBR623, 623N FBR625, 625N								
FBR61: D005	FBR61: D005-K	FBR62: D005	5 VDC	50 Ω	100 mA	70% max. of nominal voltage	10% min. of nominal voltage	Refer to the REFERENCE DATA	Approx. 500 mW (at nominal voltage)	Approx. 35 deg (at nominal voltage)
FBR61: D006	FBR61: D006-K	FBR62: D006	6 VDC	72 Ω	83 mA					
FBR61: D009	FBR61: D009-K	FBR62: D009	9 VDC	160 Ω	56 mA					
FBR61: D012	FBR61: D012-K	FBR62: D012	12 VDC	285 Ω	42 mA					
FBR61: D018	FBR61: D018-K	FBR62: D018	18 VDC	640 Ω	28 mA					
FBR61: D024	FBR61: D024-K	FBR62: D024	24 VDC	1,150 Ω	21 mA					
FBR61: D048	FBR61: D048-K	FBR62: D048	48 VDC	4,600 Ω	10 mA					
FBR61: D060	FBR61: D060-K	FBR62: D060	60 VDC	7,200 Ω	8 mA					

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

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■ SPECIFICATIONS

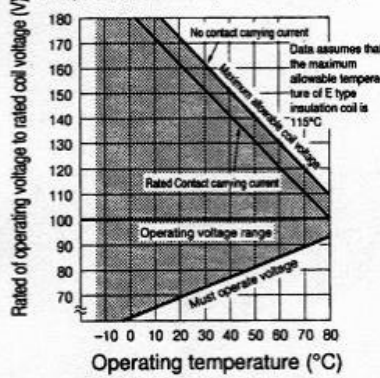
Item		1 Pole type			2 Poles type
		Standard	K type		
			1 form A, B	1 form C	
Contact	Arrangement	1 form C, A, B	1 form A, B	1 form C	2 form C, A, B
	Material	Silver-cadmium oxide			
	Resistance (initial)	Max. 100 mΩ (at 1 A 6 VDC)			
	Ratings (resistive load)	10 A 240 VAC 10 A 30 VDC	16 A 240 VAC 16 A 30 VDC	10 A 240 VAC 10 A 30 VDC	5 A 240 VAC 5 A 30 VDC
	Max. Carrying Current	14 A	16 A		7 A
	Max. Switching Power	2,400 VA or 300 W	3,840 VA or 480 W	2,400 VA or 300 W	1,200 VA or 150 W
	Max. Switching Voltage* ¹	250 VAC or 125 VDC			
	Min. Switching Load* ²	0.5 W (5 V, 100 mA)			
Coil	Power Consumption	Rated	Approx. 0.5 W (at 20°C)		
		Operate	Approx. 0.35 W (at 20°C)		
	Operating Temperature	-40°C to +70°C (No frost) (Refer to the CHARACTERISTIC DATA)			
	Operating Humidity	45 to 85%RH			
Time Value	Operate (at Nominal voltage)	Max. 15 ms			
	Release (at Nominal voltage)	Max. 5 ms			
Insulation	Resistance (initial)	Min. 100 MΩ (at 500 VDC)			
	Dielectric Strength	Between open contacts	1,000 VAC 1 minute		
		Between coil and contacts	5,000 VAC 1 minute		
		Between adjacent contacts	—		3,000 VAC 1 minute
Surge Strength	10,000 V (at 1.2 × 50 μs)				
Life	Mechanical	20 × 10 ⁶ ops. min.			
	Electrical (Refer to the REFERENCE DATA)	DC	100 × 10 ³ ops. min. (at contact rating)		
		AC	200 × 10 ³ ops. min.	100 × 10 ³ ops. min. (at contact rating)	
Other	Vibration Resistance	Misoperation	10 to 55 Hz (double amplitude of 1.5 mm)		
		Endurance	10 to 55 Hz (double amplitude of 1.5 mm)		
	Shock Resistance	Misoperation	100 m/s ² (11 ± ¹ ms)		
		Endurance	500 m/s ² (11 ± ¹ ms)		
	Unit Mass	Approx. 16 g			

*¹ If the switching voltage exceeds the rated contact voltage.

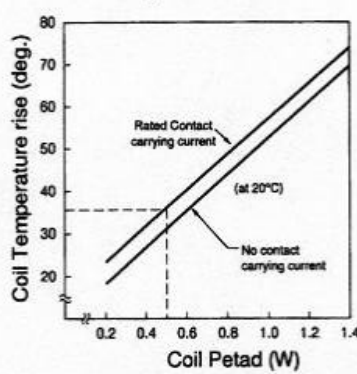
*² Values when switching a resistive load at normal room temperature and

CHARACTERISTIC DATA

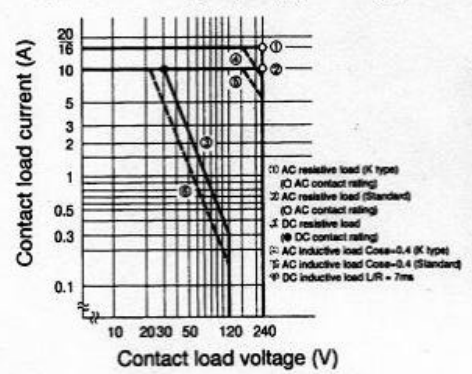
Range of operation temperature and voltage



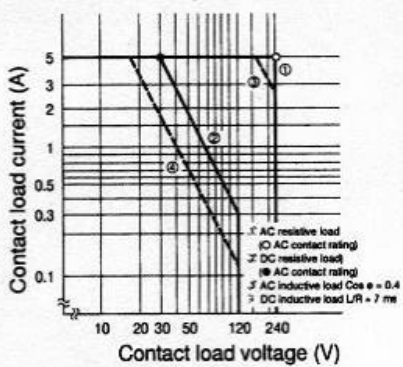
Coil temperature rise data



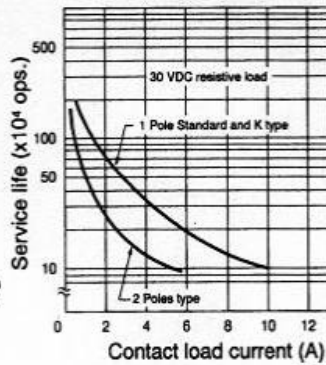
Maximum switching capacity (1 Pole type)



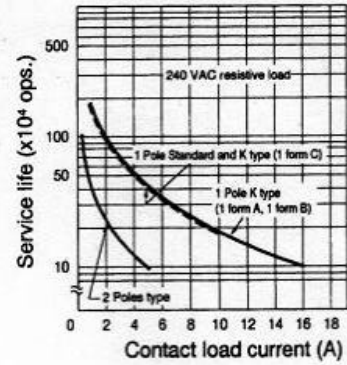
Maximum switching capacity (2 Poles type)



Life curves (DC load)

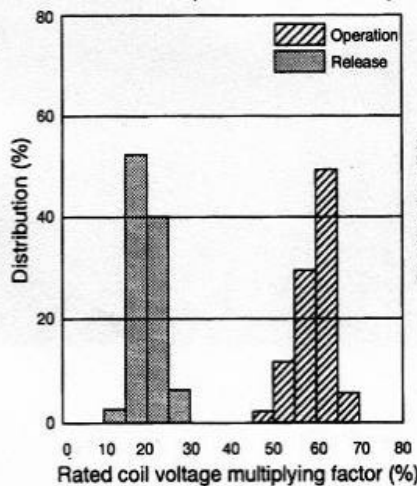


Life curves (AC load)

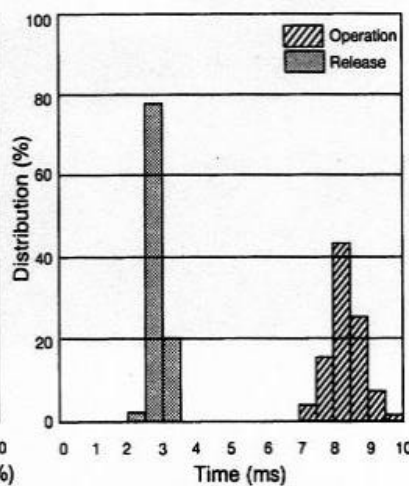


REFERENCE DATA

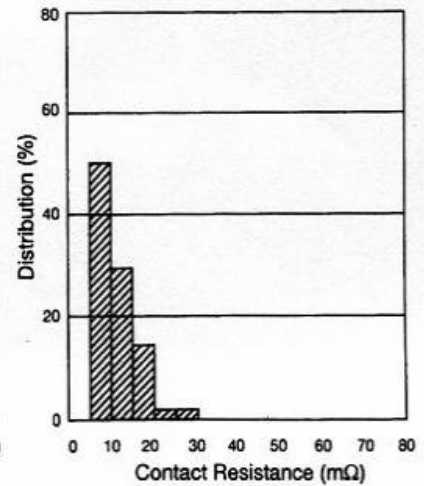
Distribution of Operate & Release Voltage



Distribution of Operate & Release Time



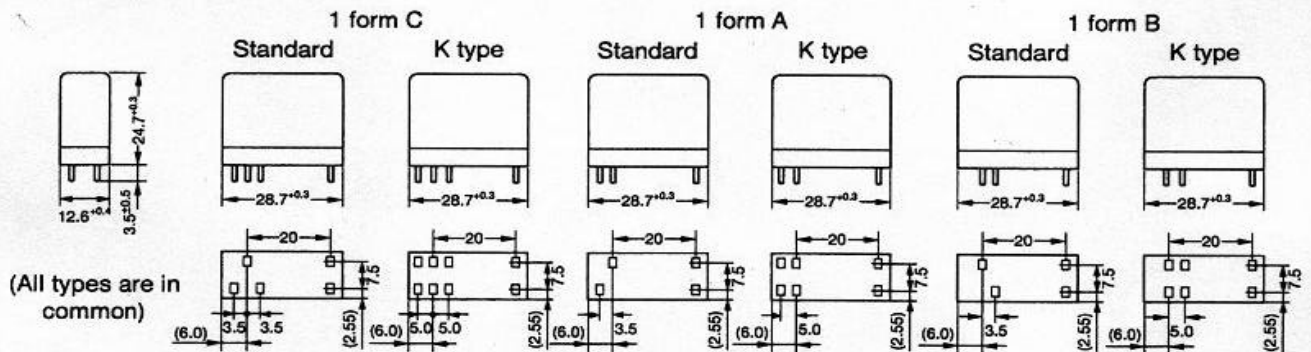
Distribution of Contact Resistance



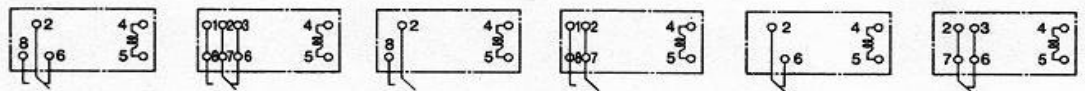
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■ DIMENSIONS

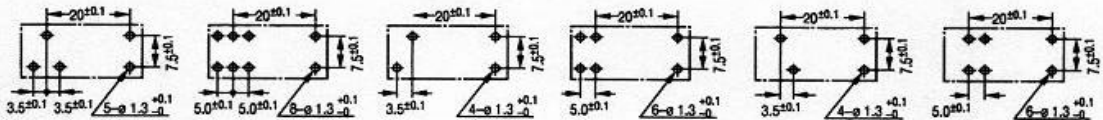
1. 1 Pole type



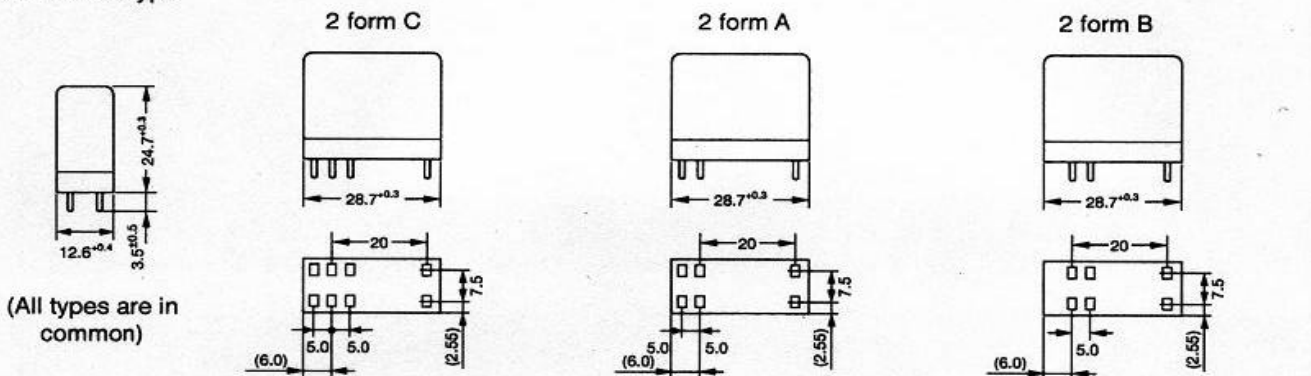
Schematics
(BOTTOM VIEW)
Note: The terminal number is not shown on the relay.



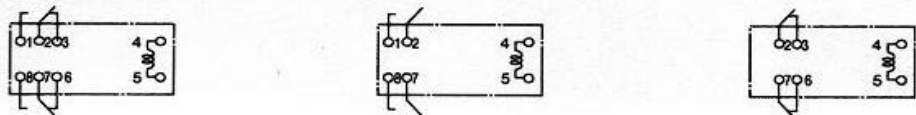
PC board mounting hole layout
(BOTTOM VIEW)



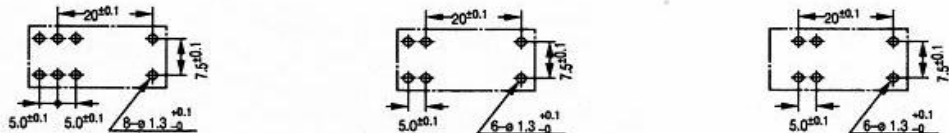
2. 2 Poles type



Schematics
(BOTTOM VIEW)
Note: The terminal number is not shown on the relay.



PC board mounting hole layout
(BOTTOM VIEW)



Unit: mm

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