

POWER RELAY

1, 2 POLES—5, 10, 16 A

FBR610, 620 SERIES

■ FEATURES

- Maximum switching capacity of 30 VDC, 16 A and 240 VAC, 16 A (single pole, K type)
- 5 kV AC minimum dielectric strength (between coil and contacts)
- 10 kV minimum surge strength (between coil and contacts)
- Coil terminal separated from output terminals to allow easy PC board design
- High reliability design conforming to safety standards Japan Electrical Appliance Control Law (150–300 V)
- UL 508



■ ORDERING INFORMATION

[Example] FBR6 1 3 N D012 -K -CSA
 (a) (b) (c) (d) (e) (f) (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 (1 pole ONLY)
(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, without -K or does not apply to -K type (refer to the SAFETY AND 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 AND FILE NUMBERS

UL508, (File No. E63614)

C 22.2 No. 0, No. 14 (File No. LR40304 or LR64026)

VDE 0435, 0860 (File No. 5304UG)

Type		Safety Standard			Nominal voltage		Contact ratings
		UL	CSA	VDE			
1 Pole K type Standard	1 form C, 1 form A	recognized	recognized	recognized	5 to 60 VDC	UL CSA	10 A 240 VAC resistive 10 A 30 VDC resistive 1/2 HP 240 VAC, 1/3 HP 120 VAC
	1 form B			—			
	1 form C	recognized	recognized	—			
	1 form A, 1 form B						
2 Poles	standard	recognized	recognized	—	UL CSA	10 A 240 VAC resistive 10 A 30 VDC resistive 1/2 HP 240 VAC, 1/3 HP 120 VAC	
				CSA			6 A 240 VAC resistive 6 A 30 VDC resistive

NOT FOR NEW DESIGNS

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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)	Maximum 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
	Maximum Carrying Current	14 A	16 A		7 A
	Maximum Switching Power	2,400VA or 300W	3,840VA or 480W	2,400 VA or 300W	1,200 VA or 150 W
	Max. Switching Voltage* ¹	250 VAC or 125 VDC			
	Minimum Switching Load* ²	0.5 W (5 V, 100 mA)			
Coil	Power Consumption	Rated	Approximately 0.5 W (at 20°C)		
		Operate	Approximately 0.35 W (at 20°C)		
	Operating Temperature	-40°C to +70°C (no frost) (refer to the CHARACTERISTIC DATA) * ³			
	Operating Humidity	45 to 85%RH			
Time Value	Operate (at nominal voltage)	Maximum 15 ms			
	Release (at nominal voltage)	Maximum 5 ms			
Insulation	Resistance (initial)	Minimum 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 operations minimum			
	Electical (refer to the REFERENCE DATA)	DC	1 × 10 ⁵ operations minimum (at contact rating)		
		AC	2 × 10 ⁵ ops. min.	1 × 10 ⁵ operations minimum (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)		
	Weight	Approximately 16 g			

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

*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.

*³ Based on UL Class A coil insulation system.

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■ COIL DATA CHART

MODEL			Nominal voltage	Coil resistance ($\pm 10\%$)	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								
<input type="checkbox"/> FBR611, 611N <input type="checkbox"/> FBR613, 613N <input type="checkbox"/> 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					

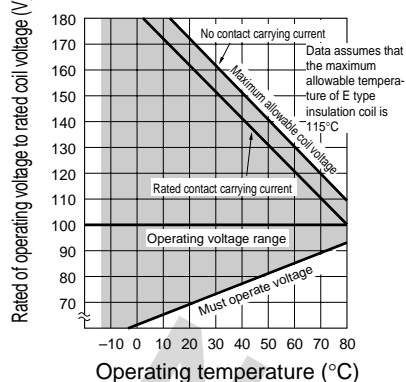
Note: All values in the table are measured at 20°C.

DESIGNS FOR NEW

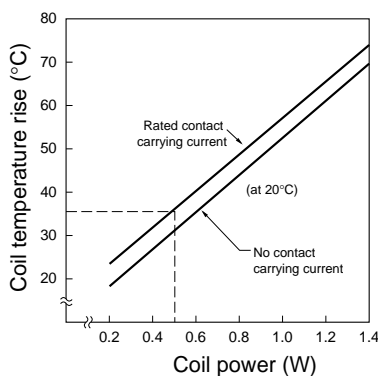
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CHARACTERISTIC DATA

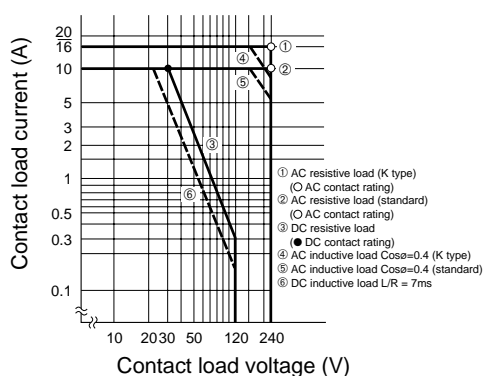
Range of operation temperature and voltage



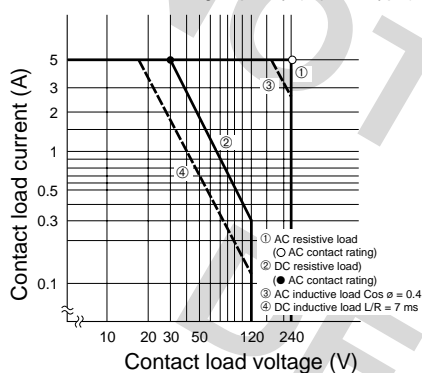
Coil temperature rise data



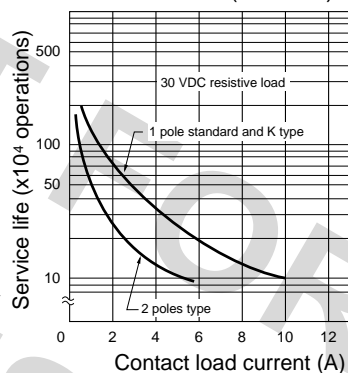
Maximum switching capacity (1 pole type)



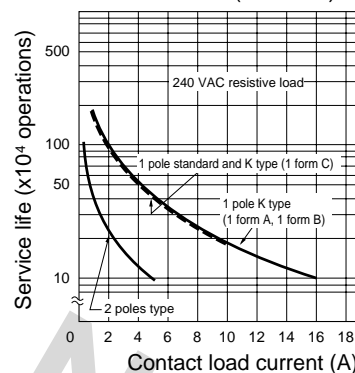
Maximum switching capacity (2 poles type)



Life curves (DC load)

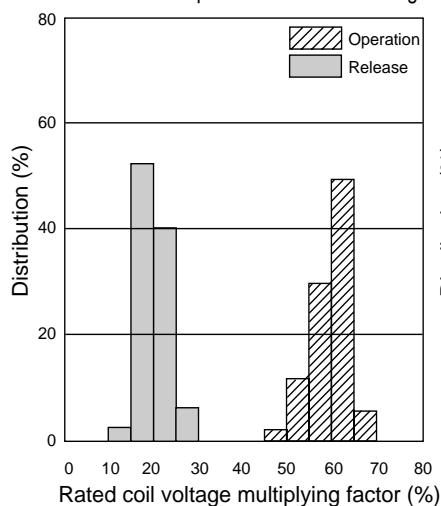


Life curves (AC load)

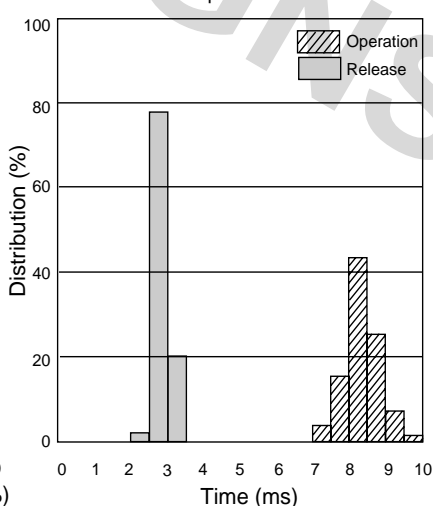


REFERENCE DATA

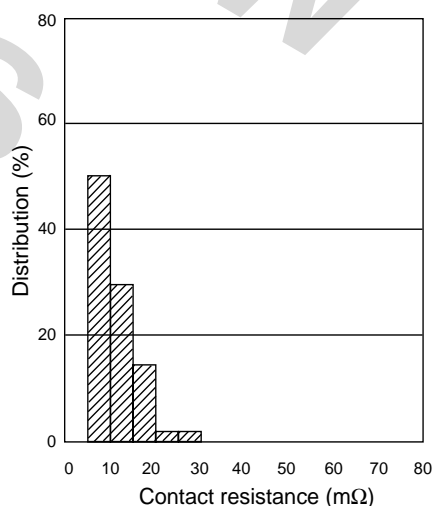
Distribution of operate and release voltage



Distribution of operate and release time



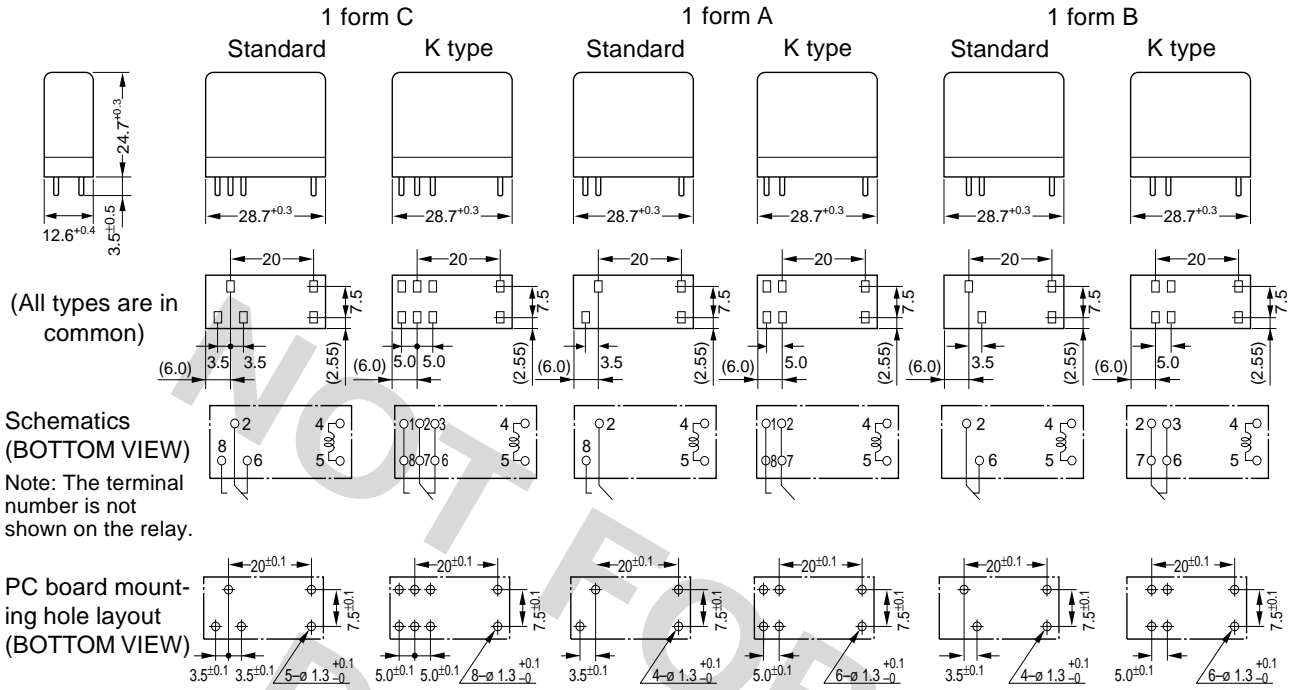
Distribution of contact resistance



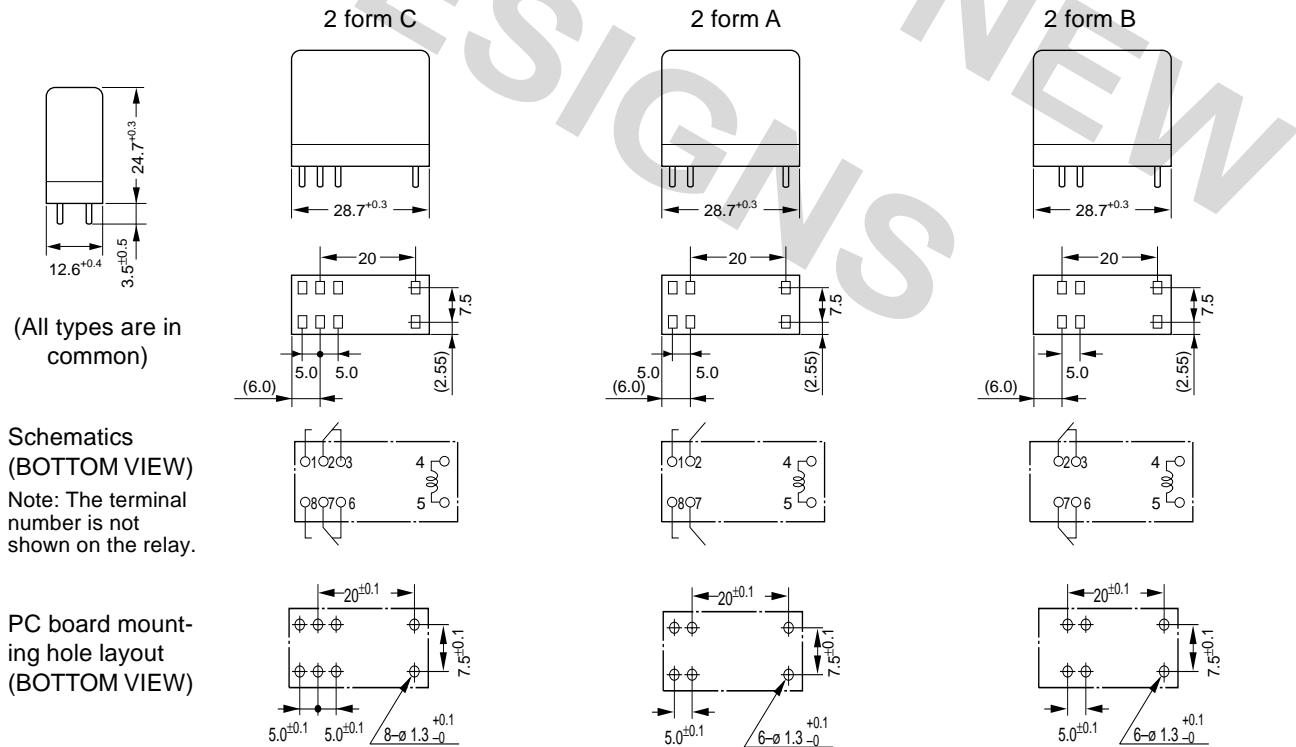
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■ DIMENSIONS

1. 1 Pole type



2. 2 Poles type



Unit: mm

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**Fujitsu Takamisawa
International
Headquarter
Offices**

www.fujitsu.takamisawa.com

Japan

Fujitsu Takamisawa Component Limited
Global Marketing and Sales
Gotanda-Chuo Building
3-5, Higashigotanda 2-chome, Shinagawa-ku
Tokyo 141, Japan
Tel: (81-3) 5449-7010
Fax: (81-3) 5449-2626

North and South America

Fujitsu Takamisawa America, Inc.
250 E. Caribbean Drive
Sunnyvale, CA 94089 U.S.A.
Tel: (1-408) 745-4900
Fax: (1-408) 745-4970

Europe

Fujitsu Takamisawa Europe B.V.
Diamantlaan 25
2132 WV Hoofddorp
Netherlands
Tel: (31-23) 5560910
Fax: (31-23) 5560950

Asia Pacific

Fujitsu Takamisawa Asia Pacific Pte. Ltd.
102E Pasir Panjang Road
#04-01 Citilink Warehouse Complex
Singapore 118529
Tel: (65) 375-8560
Fax: (65) 273-3021

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