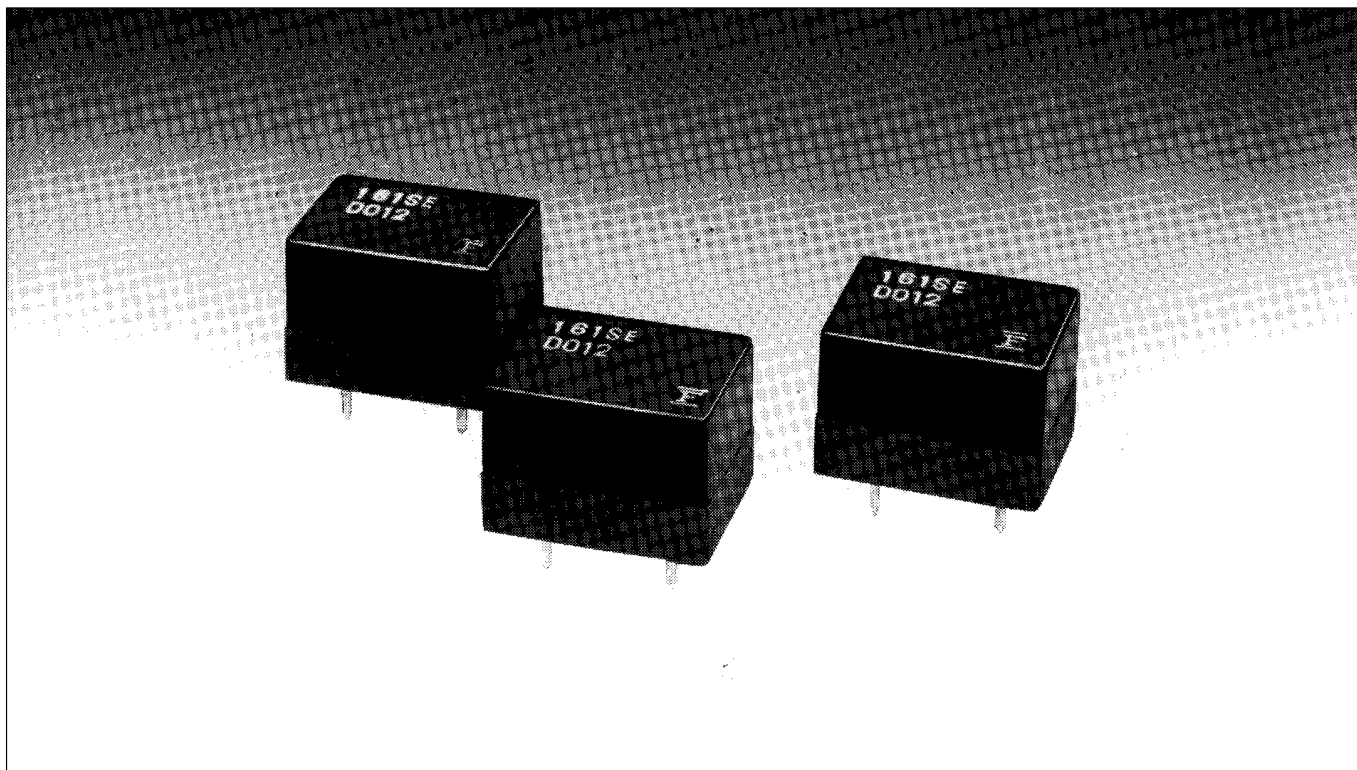


FBR160 SERIES

1 POLE – 3, 5, 10 A, POWER RELAY COMPACT RELAY FOR POWER CONTROL

FEATURES

- Same terminal layout as FBR100 series relays.
Low profile (7 mm) design with same terminal layout as FBR100 series relays.
- Compact with high power (3A to 10A)
- 6 types of contact materials available for home electronics and automotive applications.
- Design conforms to the following safety standards.
 - UL114 No. E63615
 - UL508 No. E63614
 - CSA No. LR64026Japan Electric Appliance Control Law conformance
- For automatic assembly
Tube packages that are suitable for automatic insertion equipment are available.



FBR160 SERIES

SPECIFICATIONS

Item	Specification
Contact Arrangement	1 form C, 1 form A (single contact)
Contact Material	See CONTACT CAPACITIES
Contact Resistance	100 mΩ max. Silver contacts : at 6 V DC–0.5 A Other contacts : at 6 V DC–1.0 A
Insulation Resistance	100 MΩ min. at 500 V DC
Dielectric Withstand Voltage	Between open contacts : 500 V AC for 1 minute Between coil and contact : 1,500 V AC for 1 minute
Vibration	10 to 55 Hz (1.5 mm double amplitude)
Shock	No contact opening : 10 G (11 msec) No damage : 100 G (11 msec)
Operate Time	10 msec max. (Not including bounce time)
Release Time	5 msec max. (Not including bounce time)
Service Life	Mechanical : 10 x 10 ⁶ ops. min. Electrical : 100 x 10 ³ ops. min. at rated contact load (FBR160 series)
Maximum Switching Frequency	Mechanical : 18 x 10 ³ ops./hr Electrical : 1,800 ops./hr (at rated contact load)
Operating Temperature	–30 to +80°C (No frost) (See REFERENCE DATA)
Operating Humidity	45 to 85% RH
Weight	Approx. 11 g

CONTACT CAPACITIES

Contact Material	Standard (3~5 A Series)					High Power (10 A Series)	
	Silver	Silver cadmium oxide		Silver copper	Special silver alloy	Special silver alloy	Silver cadmium oxide
Contact Material Designation	No designation	−K	−H	−C	−W	−WB	−HB
Contact Rating (Resistive Load)	DC 28 V~3 A AC 120 V~3 A	DC 28 V~5 A		DC 28 V~5 A	DC 28 V~10 A	—	
		AC 120 V~5 A	—	—	—	AC 120 V ~10 A(Make) AC 120 V~7 A(Break)	
Maximum Carrying Current	5 A					10 A	
Maximum Switching Voltage*1	DC 125 V, AC 250 V						
Maximum Switching Power	84 W, 360 V A	140 W, 600 V A		140 W	140 W	280 W	1,200 V A
Minimum Applicable Load*2 (Reference)	0.3 W (5 V, 30 mA)			0.3 W (5 V, 50 mA)		0.5 W (5 V, 100 mA)	

*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 atmosphere. The minimum applicable load varies with the switching frequency and operating environment.

COIL RATINGS

• E TYPE (RATED POWER CONSUMPTION 0.36 W TYPE)

Voltage designation	Rated coil voltage	Coil resistance ($\pm 10\%$)	Rated current (at rated voltage)	Pick-up voltage	Drop-out voltage	Maximum allowable voltage	Rated power consumption	Coil temperature rise
ED005	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 (at rated voltage)	Approx. 25 deg (at rated voltage)
ED006	6 V DC	100 Ω	Approx. 60 mA					
ED009	9 V DC	225 Ω	Approx. 40 mA					
ED012	12 V DC	400 Ω	Approx. 30 mA					
ED024	24 V DC	1,600 Ω	Approx. 15 mA					

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

• C TYPE (RATED POWER CONSUMPTION 0.5 W TYPE)

Voltage designation	Rated coil voltage	Coil resistance ($\pm 10\%$)	Rated current (at rated voltage)	Pick-up voltage	Drop-out voltage	Maximum allowable voltage	Rated power consumption	Coil temperature rise
CD005	5 V DC	50 Ω	Approx. 100 mA	75% max. of rated coil voltage	10% min. of rated coil voltage	210% of rated coil voltage	Approx. 500 mW (at rated voltage)	Approx. 25 deg (at rated voltage)
CD006	6 V DC	72 Ω	Approx. 83 mA					
CD009	9 V DC	162 Ω	Approx. 56 mA					
CD012	12 V DC	288 Ω	Approx. 42 mA					
CD024	24 V DC	1,152 Ω	Approx. 21 mA					

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

FBR160 SERIES

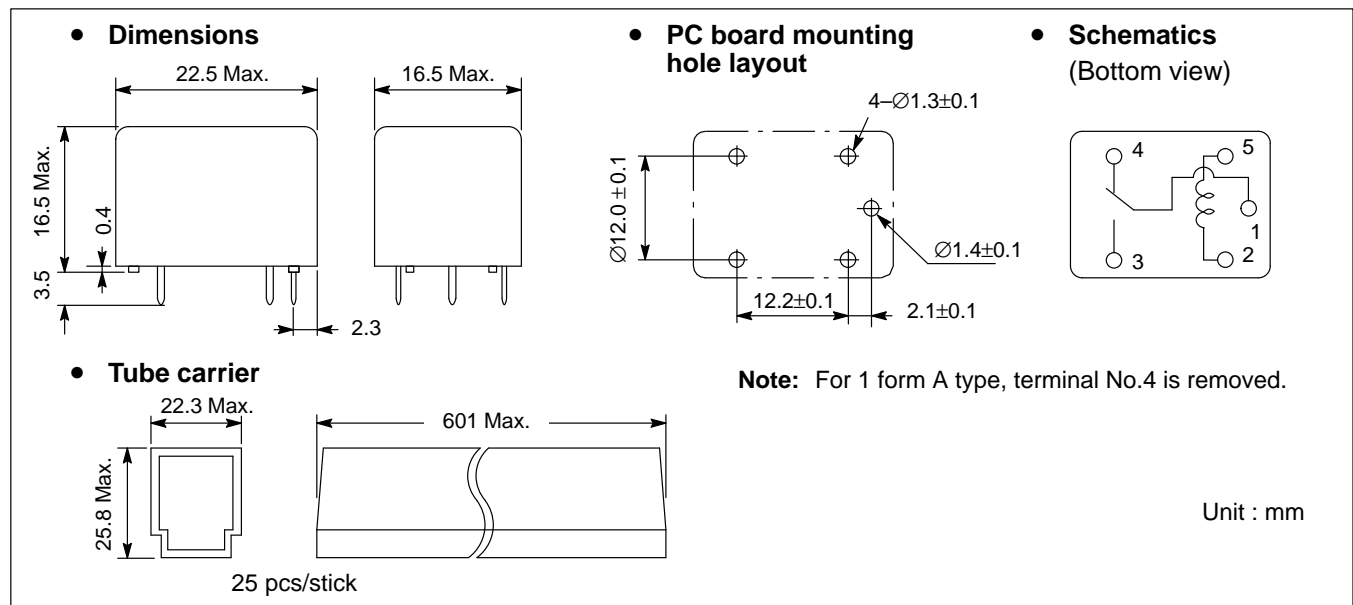
ORDERING INFORMATION

[Example] $\frac{\text{FBR16}}{\text{(a)}} \frac{1}{\text{(b)}} \frac{\text{S}}{\text{(c)}} \frac{\text{E}}{\text{(d)}} \frac{\text{D}}{\text{(e)}} \frac{012}{\text{(f)}} \frac{\text{UH}}{\text{(g)}} - \frac{\text{CSA}}{\text{(h)}} \frac{(-^{**})}{\text{(i)}} \frac{-\text{S}}{\text{(j)}}$

(a)	Series Name	FBR16 : FBR16 Series	
(b)	Contact Arrangement	1 : 1 form C 3 : 1 form A	
(c)	Structure	S : Automatic soldering N : Immersion-cleanable N type	
(d)	Coil Ratings	E : Rated power consumption 0.36 W C : Rated power consumption 0.5 W	
(e)	Coil	D : DC drive	
(f)	Rated Coil Volgate	(ex.) 005 : 5 V DC 012 : 12 V DC See COIL RATINGS	
(g)	UL Standard/ Contact Materials	UL114	UL508
		U : Silver (3A) UK : Silver-cadmium oxide (3A) UH : Silver-cadmium oxide (5A) UW : Silver tin oxide alloy (5A) UHB : Silver-cadmium oxide (AC 10A) UWB : Silver tin oxide alloy (DC 10A)	R : Silver (3A) RK : Silver-cadmium oxide (3A) RH : Silver-cadmium oxide (5A) RW : Silver tin oxide alloy (5A) RHB : Silver-cadmium oxide (AC 10A) RWB : Silver tin oxide alloy (DC 10A)
		Standard	
(h)	CSA Standard	- : Silver (3A) -K : Silver-cadmium oxide (3A) -H : Silver-cadmium oxide (5A) -C : Silver copper (Low voltage DC circuits 5A) -W : Silver tin oxide alloy (5A) -HB : Silver-cadmium oxide (AC 10A) -WB : Silver tin oxide alloy (DC 10A)	
		- : Standard -CSA : CSA certified	
(i)	Custom Designation	Suffix number for custom design	
(j)	Tube Carrier	- : Standard tray package -S : Tube carrier package	

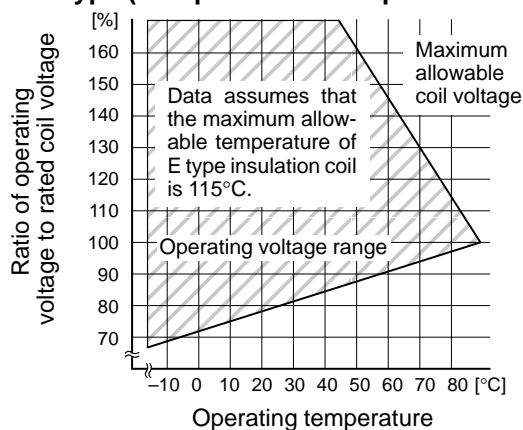
Note: The part number is stamped on top of the relay as follows:
(Example) Ordered part number : FBR161D012
Stamp : 161D012

DIMENSIONS

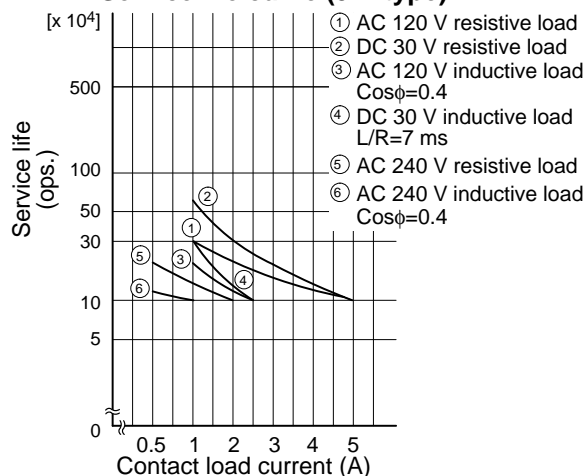


REFERENCE DATA

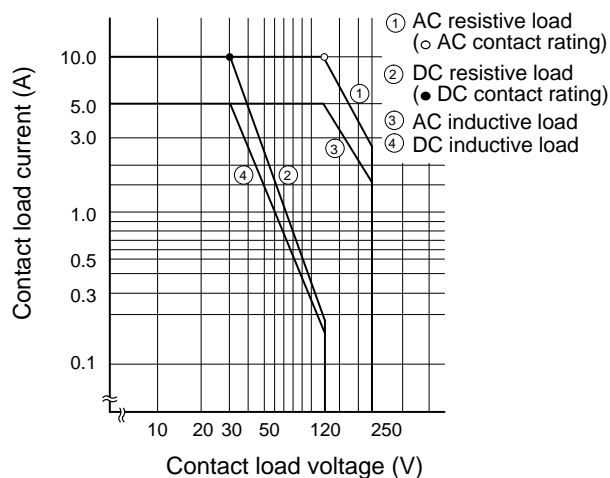
Range of operating temperature and voltage
E type (Coil power consumption 0.36 W)



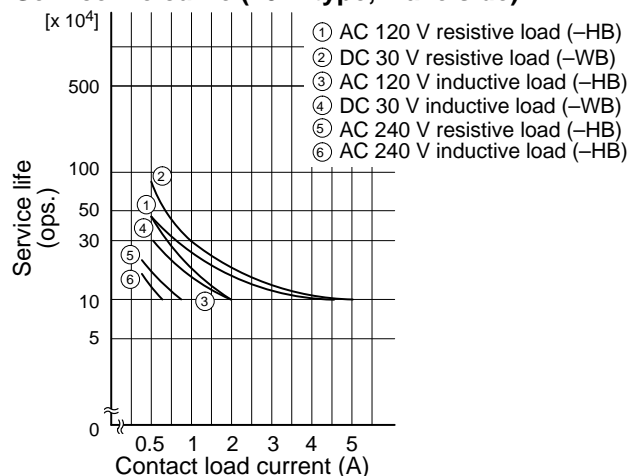
Service life curve (5 A type)



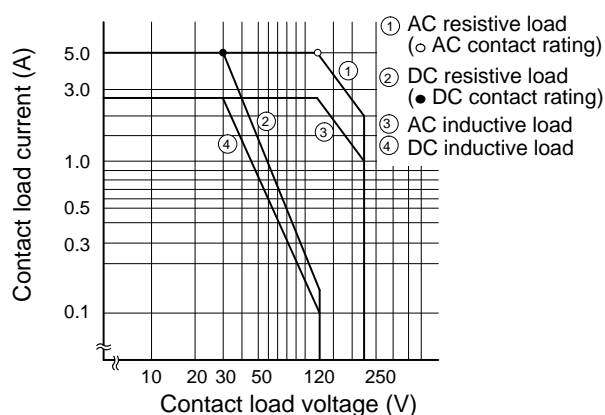
Maximum switching capacity (10 A type)



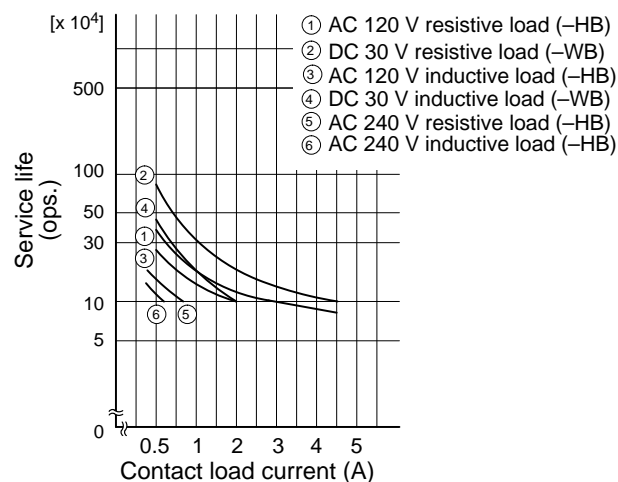
Service life curve (10 A type, Make side)



Maximum switching capacity (5 A type)



Service life curve (10 A type, Break side)



MEMO

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