FUJITSU THE POSSIBILITIES ARE INFINITE

POWER RELAY

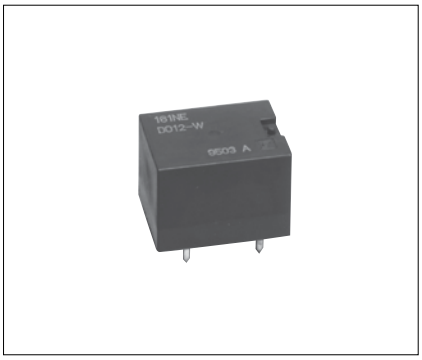
1 POLE—3, 5, 10 A (Medium Load Control)

FBR160 SERIES

NOT RECOMMENDED FOR NEW DESIGN
PLEASE DISCONTINUED

■ FEATURES

- Compact with high power (3 A to 10 A)
- 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. LR64026
  Japan Electric Appliance Control Law (150–300 V)
- For automatic assembly
  Tube packaging suitable for automatic insertion equipment is available



■ ORDERING INFORMATION

[Example] FBR16 (a) 1 (b) S (c) E (d) D (e) 012 (f) UH (g) –CSA (h) –*** (i) –S (j)

(a)	Series Name	FBR16: FBR160 Series		
(b)	Contact Arrangement	1 : 1 form C (SPDT) 3 : 1 form A (SPST-NO)		
(c)	Enclosure	S : Flux free N : Plastic sealed		
(d)	Coil Rating	E : 360 mW type C : 500 mW type (refer to the SPECIFICATIONS)		
(e)	Coil	D : DC Coil		
(f)	Nominal Voltage	(Example) 012: 12 VDC coil 024: 24 VDC coil (refer to the COIL DATA CHART)		
(g)	UL Standard and Contact Material	UL 114 recognized	UL508 recognized	Material / Rating
		U	R	Silver (3A)
		UK	RK	Silver-cadmium oxide (3 A)
		UH	RH	Silver-cadmium oxide (5 A)
		UW	RW	Silver tin oxide alloy (5 A)
		UHB	RHB	Silver-cadmium oxide (AC 10 A)
		UWB	RWB	Silver tin oxide alloy (DC 10 A

(Continued)

(h)	CSA Standard	Nil : Non- CSA -CSA: CSA recognized, but only UL 114 or UL 508 types
(i)	Custom Designation	Suffix number for custom design
(j)	Package Style	Nil : Standard tray -S : Tube carrier

Note: The designation name is stamped on the top of the relay case as follows:
(Example) Designation ordered: FBR161NED012-H
Stamp: 161NED012-H

TO BE DISCONTINUED

■ COIL RATINGS

1. E (360 mW Coil 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
1 Form C type		1 Form A type									
Flux free	Plastic sealed	Flux free	Plastic sealed								
FBR161SED005□	FBR161NED005□	FBR163SED005□	FBR163SED005□	5 VDC	70 Ω	71 mA	80% max. of nominal voltage	10% min. of nominal voltage	210% of nominal voltage	Approx. 360 mW (at nominal voltage)	Approx. 30 deg (at nominal voltage)
FBR161SED006□	FBR161NED006□	FBR163SED006□	FBR163SED006□	6 VDC	100 Ω	60 mA					
FBR161SED009□	FBR161NED009□	FBR163SED009□	FBR163SED009□	9 VDC	225 Ω	40 mA					
FBR161SED012□	FBR161NED012□	FBR163SED012□	FBR163SED012□	12 VDC	400 Ω	30 mA					
FBR161SED024□	FBR161NED024□	FBR163SED024□	FBR163SED024□	24 VDC	1,600 Ω	15 mA					

Note: All values in the table are measured at 20°C.
*: Specified values are subject to puls wave voltage.

2. C (50 mW Coil 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
1 Form C type		1 Form A type									
Flux free	Plastic sealed	Flux free	Plastic sealed								
FBR161SCD005□	FBR161NCD005□	FBR163SCD005□	FBR163SCD005□	5 VDC	50 Ω	100 mA	75% max. of nominal voltage	10% min. of nominal voltage	210% of nominal voltage	Approx. 500 mW (at nominal voltage)	Approx. 35 deg (at nominal voltage)
FBR161SCD006□	FBR161NCD006□	FBR163SCD006□	FBR163SCD006□	6 VDC	72 Ω	83 mA					
FBR161SCD009□	FBR161NCD009□	FBR163SCD009□	FBR163SCD009□	9 VDC	162 Ω	56 mA					
FBR161SCD012□	FBR161NCD012□	FBR163SCD012□	FBR163SCD012□	12 VDC	288 Ω	42 mA					
FBR161SCD024□	FBR161NCD024□	FBR163SCD024□	FBR163SCD024□	24 VDC	1,152 Ω	21 mA					
FBR161SCD048□	FBR161NCD048□	FBR163SCD048□	FBR163SCD048□	48 VDC	4,600 Ω	10 mA					

Note: All values in the table are measured at 20°C.
*: Specified values are subject to puls wave voltage.

■ SPECIFICATIONS

Item			—	-K	-H	-W	-HB	-WB
Contact	Arrangement and Style		1 form C or 1 form A, single contact					
	Material		Silver	Silver-cadmium oxide		Silver tin oxide alloy	Silver-cadmium oxide	Silver tin oxide alloy
	Resistance (initial)		Maximum 100 mΩ (silver contact at 0.5 A 6 VDC/other contacts at 1 A 6 VDC)					
	Ratings (resistive load)		3 A 120 VAC		5 A 120 VAC		10 A 120 VAC (N.O.) 7 A 120 VAC (N.C.)	
			3 A 28 VDC		5 A 28 VDC	5 A 28 VDC		10 A 28 VDC
	Maximum Carrying Current		5 A				10 A	
	Maximum Switching Power		360 VA or 84 W		600 VA or 140 W	140 W	1,200 VA	280 W
	Max. Switching Voltage*1		250 VAC or 125 VDC					
	Minimum Switching Load*2		0.3 W (30 mA 5 V)			0.3 W (50 mA 5 VDC)	0.5 W (10 mA 5 VDC)	0.5 W (10 mA 5 VDC)
Coil	Nominal Power		Approx. 360 mW (E coil type)/0.5 W (C coil type) (at 20°C)					
	Operating Temperature		–30°C to +80°C (no frost) *3					
	Operate Humidity		45 to 85% RH					
Time Value	Operate (at nominal voltage)		Maximum 10 msec					
	Release (at nominal voltage)		Maximum 5 msec					
Life	Mechanical		1×10^7 operations minimum					
	Electrical (refer to the REFERENCE DATA)	DC	1×10^5 operations minimum (at contact rating)					
		AC	1×10^5 operations minimum (at contact rating)					
Other	Vibration Resistance		10 to 55 Hz (double amplitude of 1.5mm)					
	Shock Resistance	No contact opening	100 m/s^2 (11 ±^{1}ms)					
		No damage	1,000 m/m^2 (6 ±^{1}ms)					
	Weight		Approximately 11 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.
*3 Based on UL Class A coil insulation system.

TO BE DISCONTINUED

■ INSULATION

Item	FBR160 Series
Resistance (500VDC)	Min. 100MΩ
Dielectric Strength	Open contacts: 500VAC 1 min. Coil and contacts: 1,500VAC 1 min.

■ SAFETY STANDARD AND FILE NUMBERS

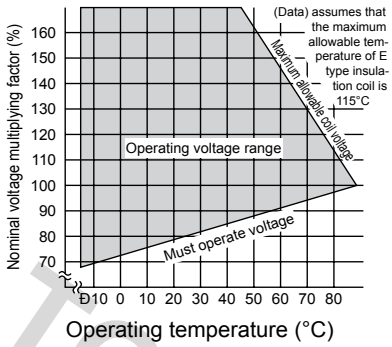
Type	Compliance	Contact rating
UL	UL 114 E 63615 (U, UK, UH, UW, UHB, UWB) UL 508 E 63614 (R, RK, RH, RW, RHB, RWB)	Flammability: UL 94-V0 (plastics) [U, UK, R, RK] 3A, 120VAC/30VDC (resistive) 1/10 HP, 120VAC [UH, UW, RH, RW] 5A, 120 VAC/30VDC (resistive) 1/6 HP, 120VAC [UHB, UWB, RHB, RWB] 10A, 250 VAC/125VAC (N.O. resistive) 7A, 250 VAC / 125VAC (N.C. resistive) 10A, 30 VDC (resistive) 1/8HP, 250VAC/125VAC
CSA	C22.2 No. 14 LR 40304, LR61320 or LR 64026 (U, UK, UH, UW, UHB, UWB, R, RK, RH, RW, RHB, RWB)	

Also complies with VDE

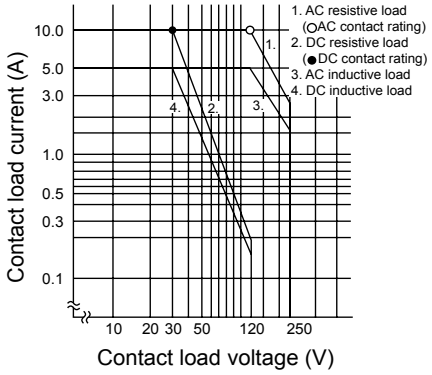
TO BE DISCONTINUED

■ CHARACTERISTIC DATA

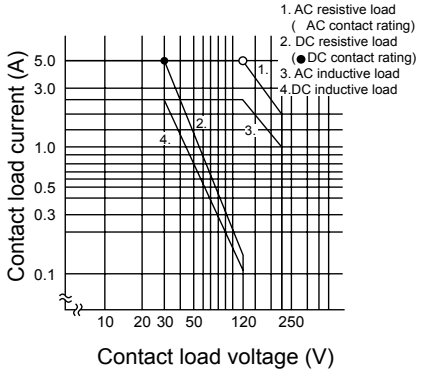
Range of operation temperature and voltage
E type [0.36 W type]



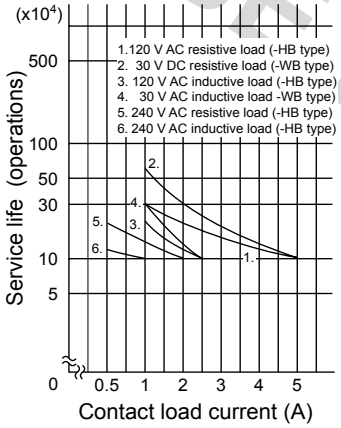
Maximum switching capacity (10 A type)



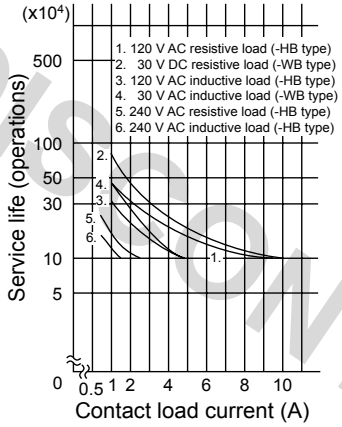
Maximum switching capacity (5 A type)



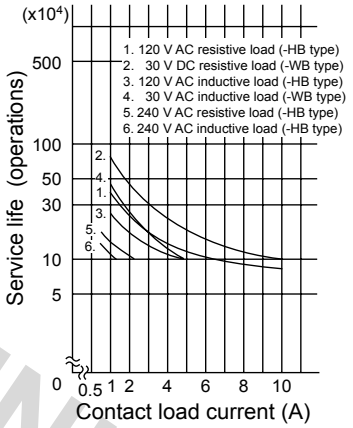
Life curve (5 A type)



Life curve
(10 A type, make side (N.O.))

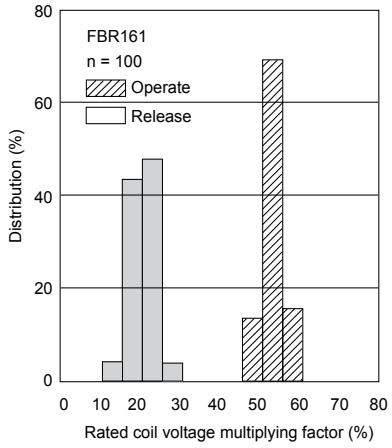


Life curve
(10 A type, breake side (N.C.))

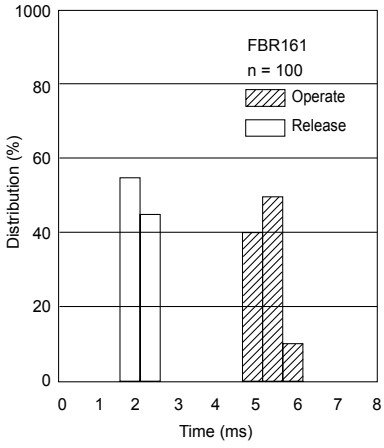


■ REFERENCE DATA

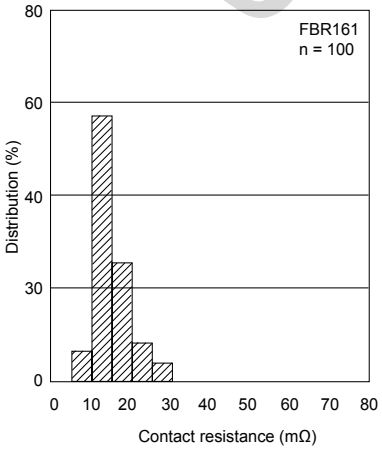
Distribution of operate and release voltage



Distribution of operate and release time



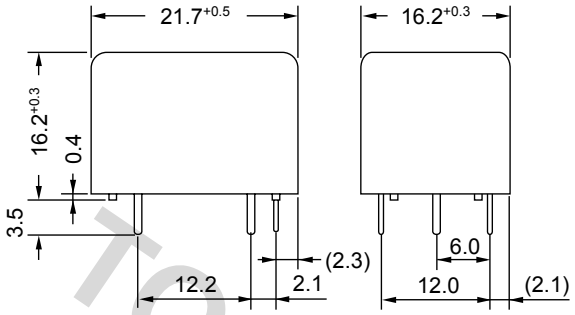
Distribution of contact resistance



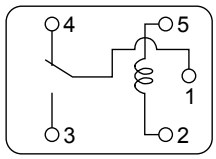
TO BE DISCONTINUED

■ DIMENSIONS

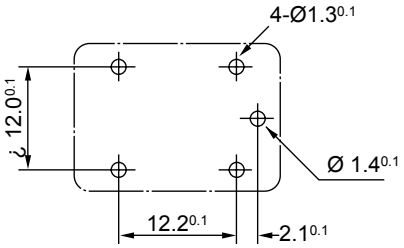
● Dimensions



● Schematic
(BOTTOM VIEW)

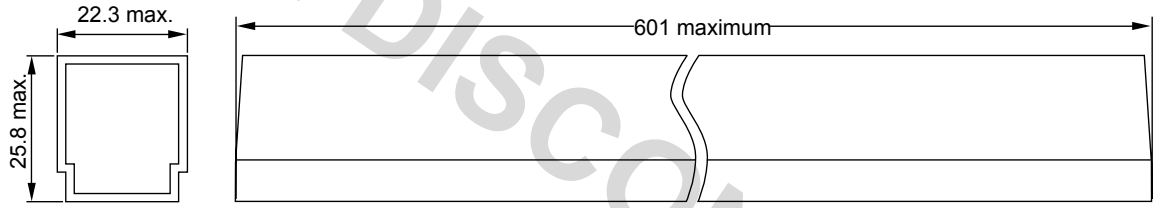


● PC board mounting hole layout
(BOTTOM VIEW)



Note : For 1 form A type, terminal No.4 is removed.

● Tube carrier



25 pieces/tube

Unit: mm

TO BE DISCONTINUED

Fujitsu Components International Headquarter Offices

Japan
Fujitsu Component Limited
Gotanda-Chuo Building
3-5, Higashigotanda 2-chome, Shinagawa-ku
Tokyo 141 8630, Japan
Tel: (81-3) 5449-7010
Fax: (81-3) 5449-2626
Email: promothq@fcl.fujitsu.com
Web: www.fcl.fujitsu.com

North and South America
Fujitsu Components America, Inc.
250 E. Caribbean Drive
Sunnyvale, CA 94089 U.S.A.
Tel: (1-408) 745-4900
Fax: (1-408) 745-4970
Email: components@us.fujitsu.com
Web: http://us.fujitsu.com/components/

Europe
Fujitsu Components Europe B.V.
Diamantlaan 25
2132 WV Hoofddorp
Netherlands
Tel: (31-23) 5560910
Fax: (31-23) 5560950
Email: info@fceu.fujitsu.com
Web: emea.fujitsu.com/components/

Asia Pacific
Fujitsu Components Asia Ltd.
102E Pasir Panjang Road
#01-01 Citilink Warehouse Complex
Singapore 118529
Tel: (65) 6375-8560
Fax: (65) 6273-3021
Email: fcal@fcal.fujitsu.com
Web: http://www.fujitsu.com/sg/services/micro/components/

©2009 Fujitsu Components America, Inc. All rights reserved. All trademarks or registered trademarks are the property of their respective owners.

Fujitsu Components America or its affiliates do not warrant that the content of datasheet is error free. In a continuing effort to improve our products Fujitsu Components America, Inc. or its affiliates reserve the right to change specifications/datasheets without prior notice.
Rev. June 30, 2009.