

COMPACT POWER RELAY

1 POLE-20 A (FOR AUTOMOTIVE FLASHER LAMP LOAD APPLICATIONS)

FBR51(-WF) SERIES

■ FEATURES

- Relay for flasher lamp load (automotive application) newly added to our compact power relay, FBR51 Series.
- Long life
Special contact allows more than 250k operations at flasher lamp load of 14 V DC, 11 A inrush, rated 80 W.



■ ORDERING INFORMATION

[Example] $\frac{\text{FBR51}}{\text{(a)}} \frac{\text{N}}{\text{(b)}} \frac{\text{D12}}{\text{(c)}} - \frac{\text{WF}}{\text{(d)}} \frac{\text{-**}}{\text{(e)}}$

(a)	Series Name	FBR51 : FBR51 Series (contact gap 0.3 mm)
(b)	Structure	N : Plastic sealed type
(c)	Nominal Voltage	D09 : 9 VDC D10 : 10 VDC D12 : 12 VDC
(d)	Contact Material	WF : Special contact *
(e)	Custom Designation	To be assigned custom specification

* The contact materials of the movable and stationary contacts are different. Therefore, the specified load polarity must be observed to achieve rated life. Refer to life test examples and schematic.

FBR51 (–WF) SERIES

■ SPECIFICATIONS

Item		FBR51 Series	
Contact	Arrangement	1 form A	
	Material	Special contact	
	Voltage Drop (resistance)	Maximum 100 mV (at 2 A 12 VDC)	
	Ratings	14 VDC–80 W (load: tungsten lamp)	
	Maximum Carrying Current	30 A/ 1 hour (25°C, 100% rated coil voltage)	
	Max. Inrush Current (reference)	80 A	
	Max. Switching Current (reference)	35 A 16 VDC	
	Min. Switching Load*1 (reference)	6 VDC, 1 A	
Coil	Operating Temperature	–40°C to + 85°C (no frost)	
	Storage Temperature	–40°C to +100°C (no frost)	
Time Value	Operate (at nominal voltage)	Maximum 10 ms	
	Release (at nominal voltage)	Maximum 5 ms	
Life	Mechanical	1 × 10 ⁷ operations minimum	
	Electrical	250k operations minimum 14 VDC inrush 11 A (0.35s ON, 0.35s OFF), 80 W (load: tungsten lamp)	
Other	Vibration Resistance		10 to 55 Hz (double amplitude of 1.5 mm)
	Shock Resistance	Misoperation	100 m/s ²
		Endurance	1,000 m/s ²
	Weight		Approximately 6 g
Polarity		N.O. Terminal: (+)side COM. Terminal: (–)side	

*1 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 operating environment.

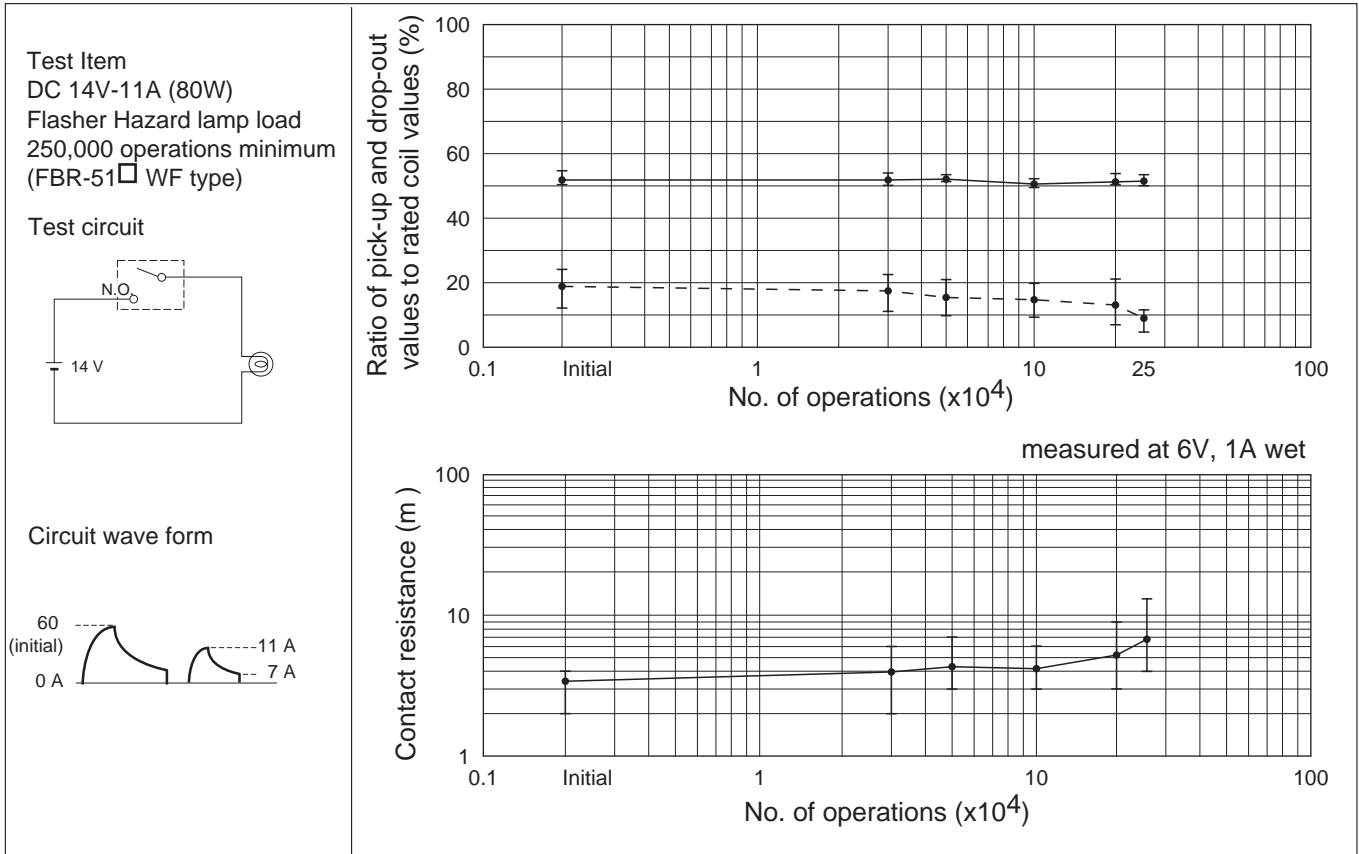
■ COIL DATA CHART

MODEL	Nominal voltage	Coil resistance (±10%) (at 20°C)	Must operate voltage	Thermal resistance
FBR51 Series				
FBR51ND09-WF	9 VDC	135 Ω	5.4 VDC (at 20°C) 6.8 VDC (at 85°C)	73°C/W
FBR51ND10-WF	10 VDC	180 Ω	6.3 VDC (at 20°C) 7.9 VDC (at 85°C)	
FBR51ND12-WF	12 VDC	240 Ω	7.3 VDC (at 20°C) 9.2 VDC (at 85°C)	

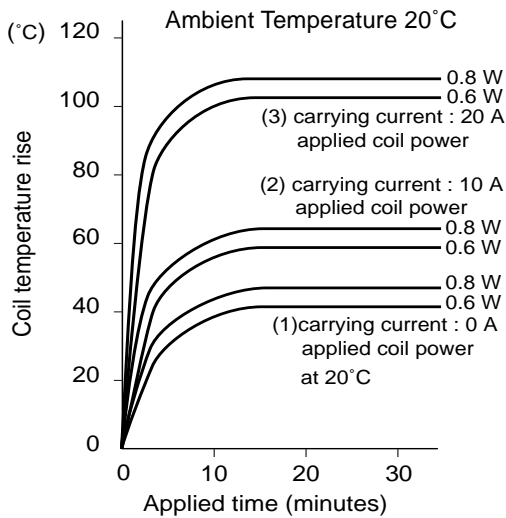
FBR51 (-WF) SERIES

CHARACTERISTIC DATA

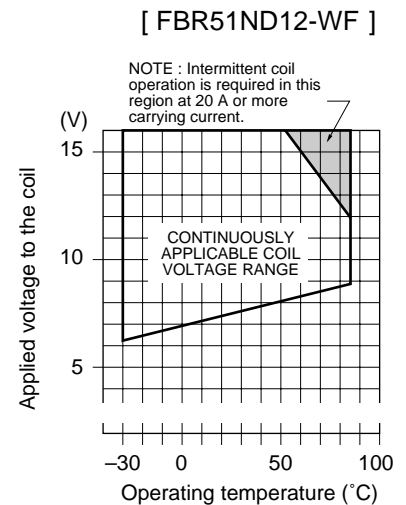
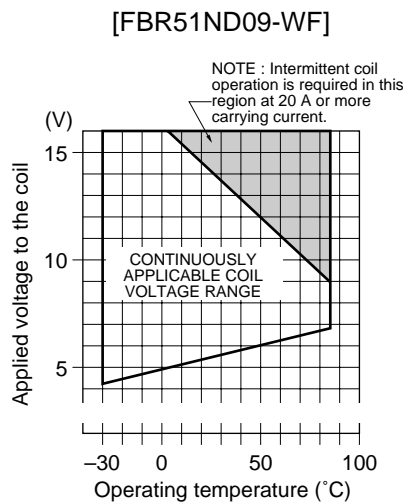
1. LIFE TEST (EXAMPLES)



2. COIL TEMPERATURE RISE

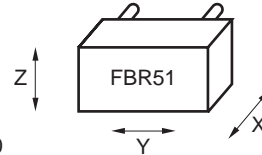
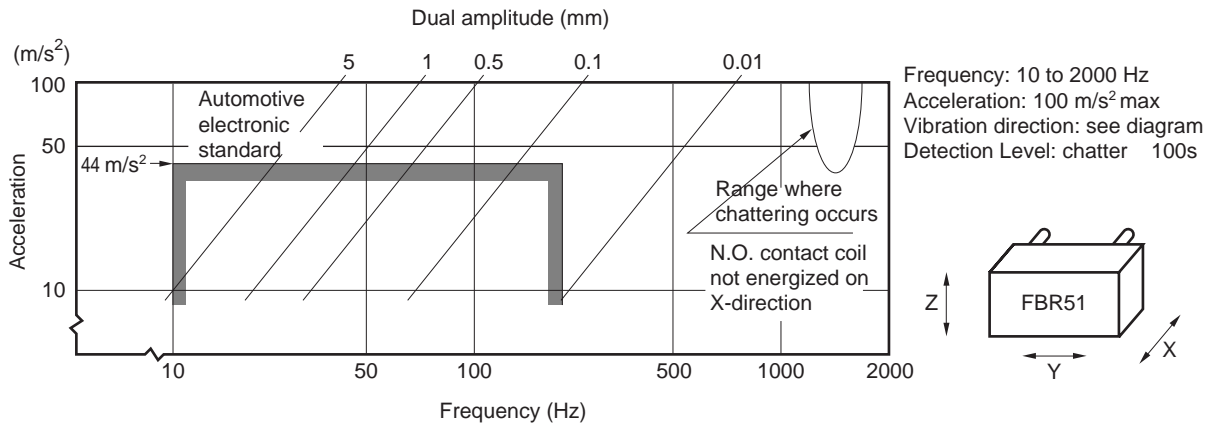


3. OPERATING COIL VOLTAGE RANGE (EXAMPLE)

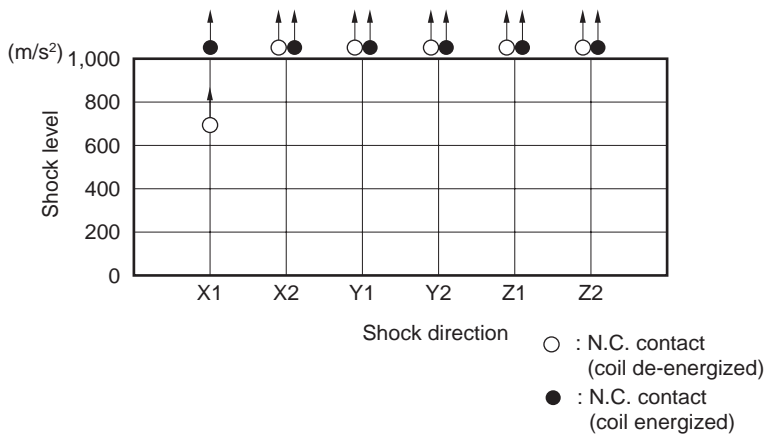


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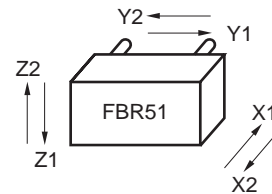
4. VIBRATION RESISTANCE CHARACTERISTICS



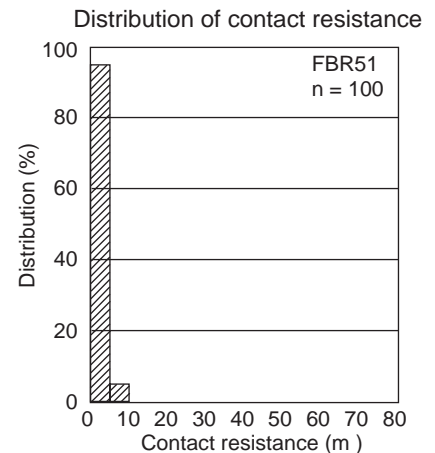
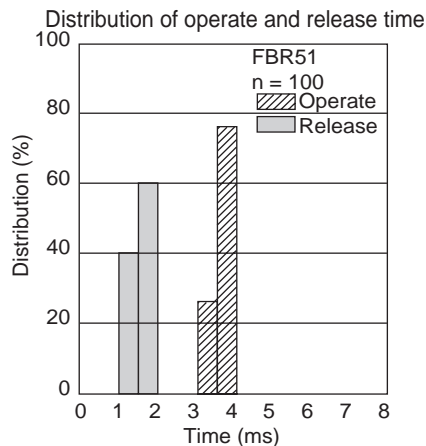
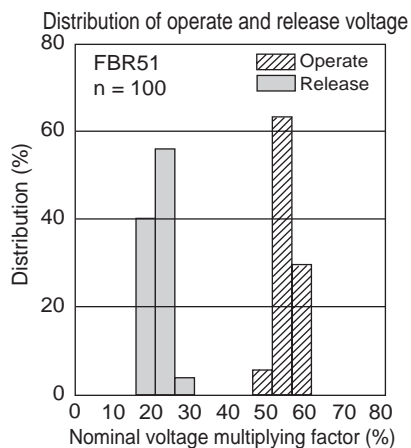
5. SHOCK RESISTANCE CHARACTERISTICS



Shock application time : 11 ms, half-sine wave
 Test material : coil, energized and de-energized
 Shock direction: see diagram
 Detection Level : chatter $\geq 100 \mu s$



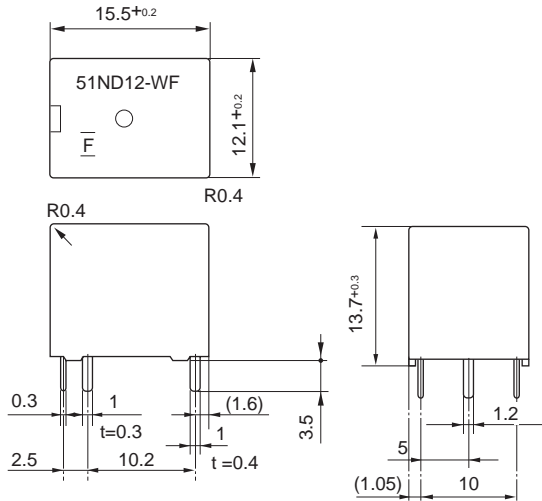
REFERENCE DATA



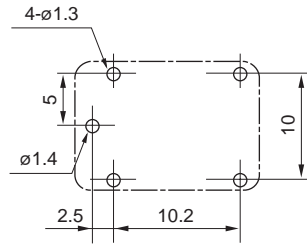
FBR51 (-WF) SERIES

■ DIMENSIONS

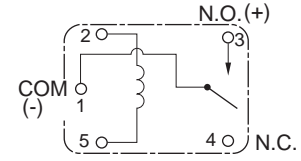
● Dimensions



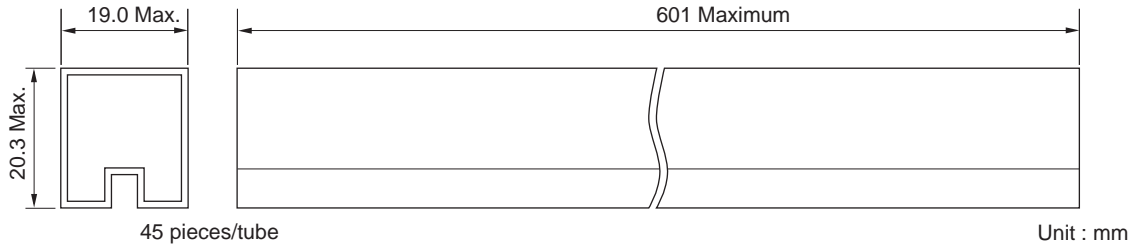
● PC board mounting hole layout BOTTOM VIEW



● Schematics BOTTOM VIEW FBR50-W1, W



● Tube carrier



Fujitsu Components International Headquarter Offices

Japan

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

Europe

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

Asia Pacific

Fujitsu Components Asia Ltd.
102E Pasir Panjang Road
#04-01 Citilink Warehouse Complex
Singapore 118529
Tel: (65) 375-8560
Fax: (65) 273-3021
Email: fcal@fcal.fujitsu.com
www.fcal.fujitsu.com

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