

COMPACT POWER RELAY

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

FBR51,512 (-WR) 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 4 million operation at flasher lamp load of 12 VDC, 500 inrush, rated 135 W.



■ ORDERING INFORMATION

[Example] FBR51 (a) N (b) D12 (c) - WR (d) ** (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	WR : Special contact *
(e)	Custom Designation	To be assigned custom designation

* 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 (-WR) SERIES

■ SPECIFICATIONS

Item		FBR51 Series	
Contact	Arrangement	1 form A	
	Material	Special contact	
	Voltage Drop (resistance)	Maximum 100 mV (at 1 A 12 VDC)	
	Ratings	14 VDC–135 W (load: tungsten lamp)	
	Maximum Carrying Current	25 A/ 1 hour (25°C, 100% rated coil voltage)	
	Max. Inrush Current (reference)	60 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	4 × 10 ⁶ operations minimum 16 VDC inrush 28 A (0.5s ON, 0.5s OFF), 135 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.

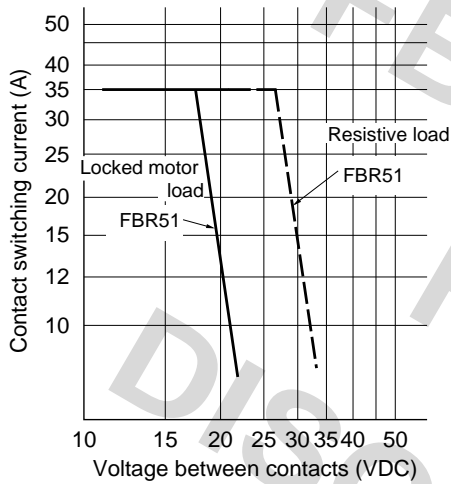
■ COIL DATA CHART

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

FBR51 (-WR) SERIES

CHARACTERISTIC DATA

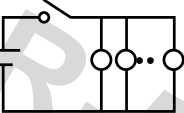
1. MAXIMUM BREAK CAPACITY



2. LIFE TEST (EXAMPLES)

- Test item
16 VDC, inrush 28 A
Tungsten lamp load
(12 V 23 Wx5 pieces+
12 V 10 Wx2 pieces)
0.5s ON, 0.5s OFF

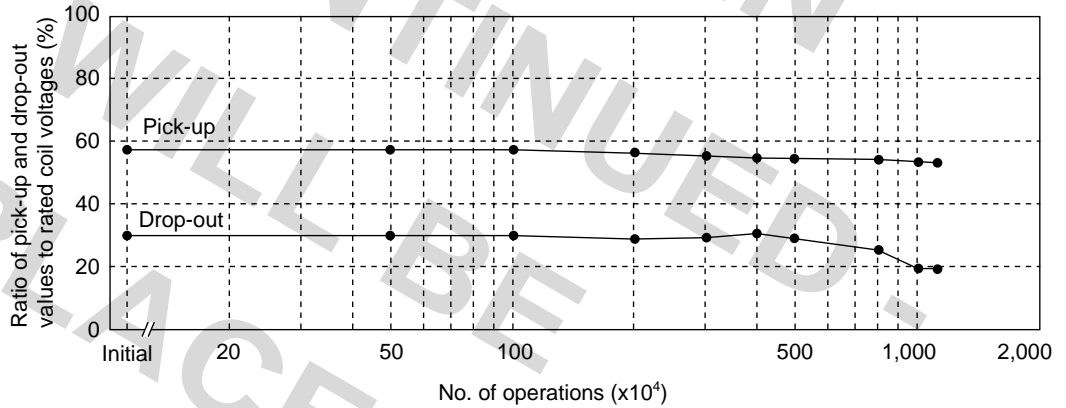
- Test circuit



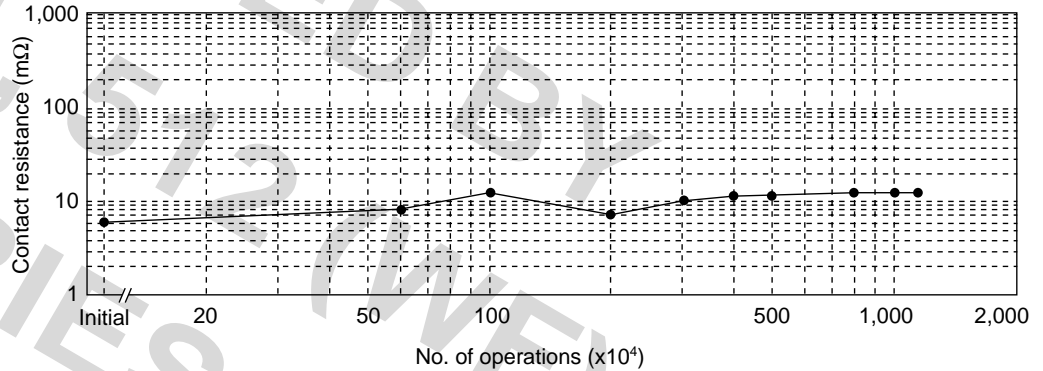
- Circuit wave form



- Shift of pick-up and drop-out voltage



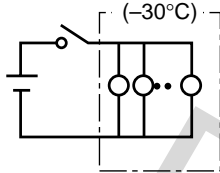
- Shift of contact resistance



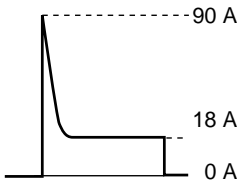
FBR51 (-WR) SERIES

- Test item
16 VDC, inrush 90 A
Tungsten lamp load
(12 V 23 Wx5 pieces+
12 V 10 Wx2 pieces)
0.25s ON. 4.75s OFF

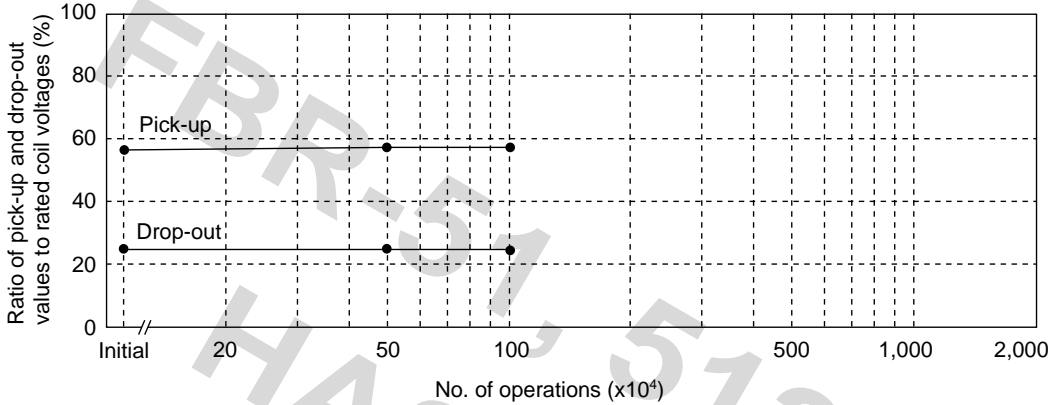
•Test circuit



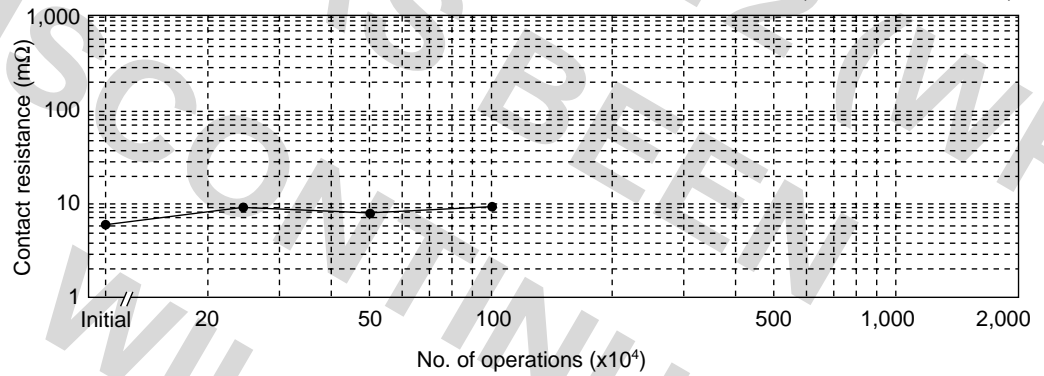
•Circuit wave form



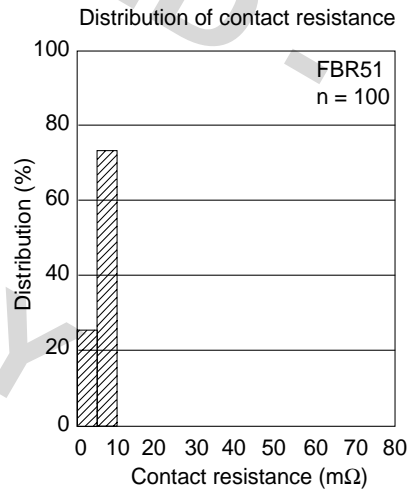
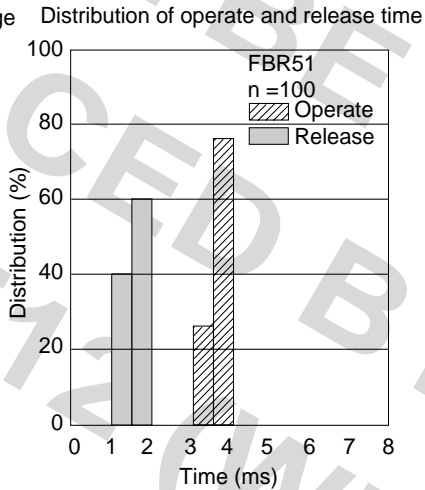
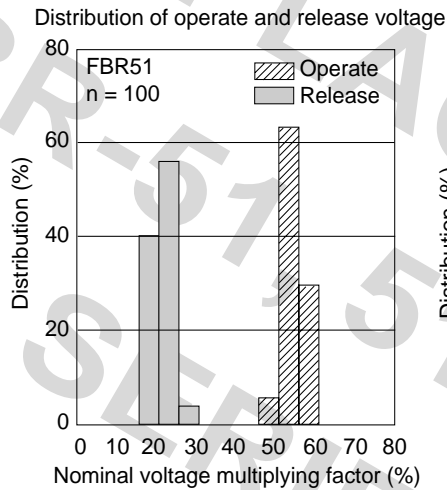
•Shift of pick-up and drop-out voltage



•Shift of contact resistance



REFERENCE DATA

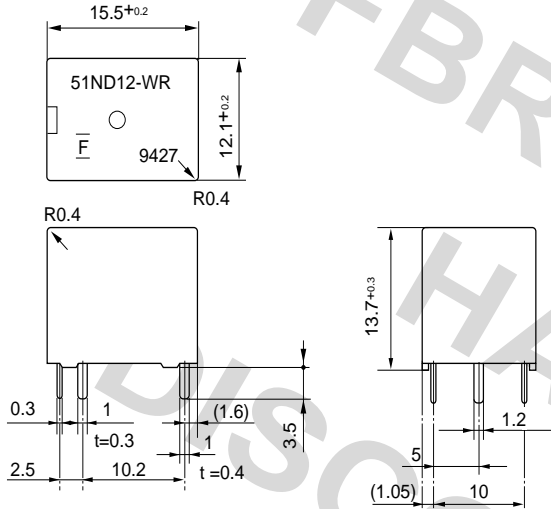


FBR51 (-WR) SERIES

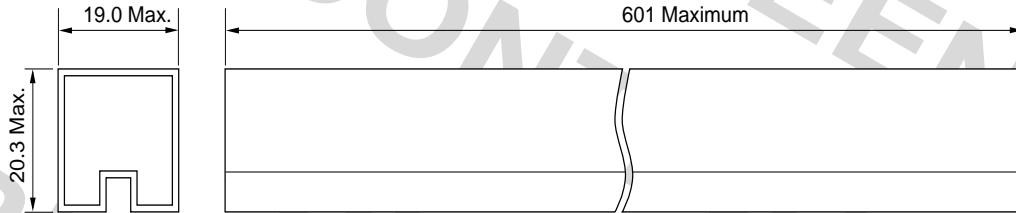
■ DIMENSIONS

• FBR51 type

● Dimensions



● Tube carrier

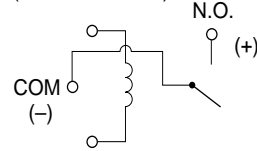


45 pieces/tube

Unit : mm

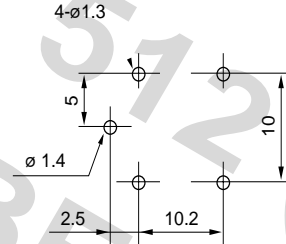
• FBR512 type

I Schematics * (BOTTOM VIEW)



* Observe polarity
for rated life with
lamp loads.

● PC board mounting hole layout (BOTTOM VIEW)



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