

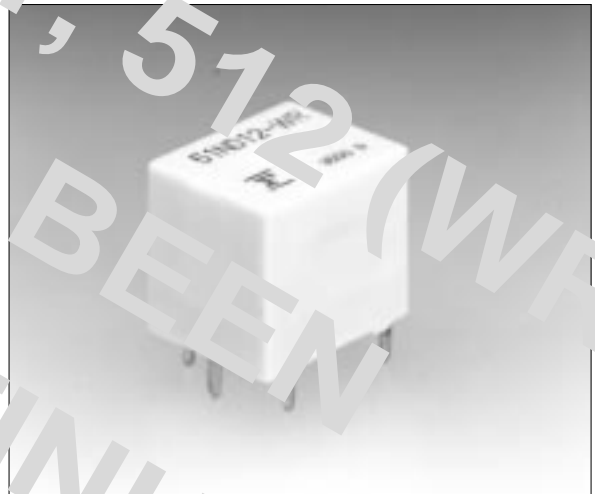
# COMPACT POWER RELAY

## 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 10 VDC, 500 mA inrush, rated 135 W.



#### ■ ORDERING INFORMATION

[Example]      FBR51    N    D12    – WR    \*\*  
                         (a)    (b)    (c)    (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 <sup>7</sup> operations minimum
	Electrical		4× 10 <sup>6</sup> 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 <sup>2</sup>
		Endurance	1,000 m/s <sup>2</sup>
	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.

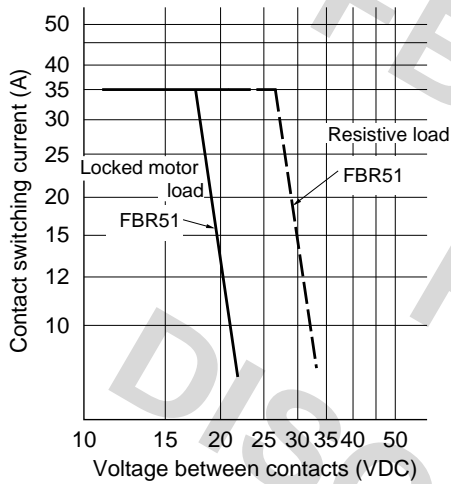
## ■ COIL DATA CHART

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

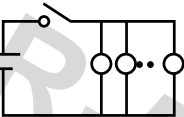
### 1. MAXIMUM BREAK CAPACITY



### 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

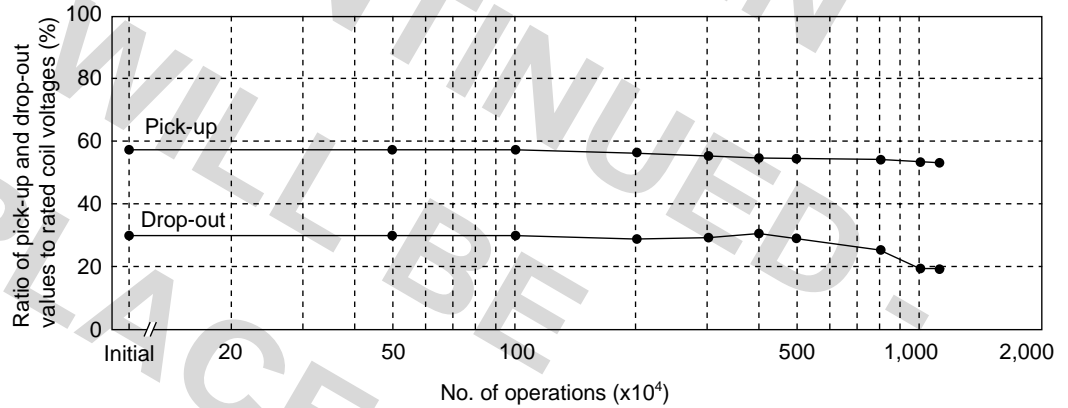
- Test circuit



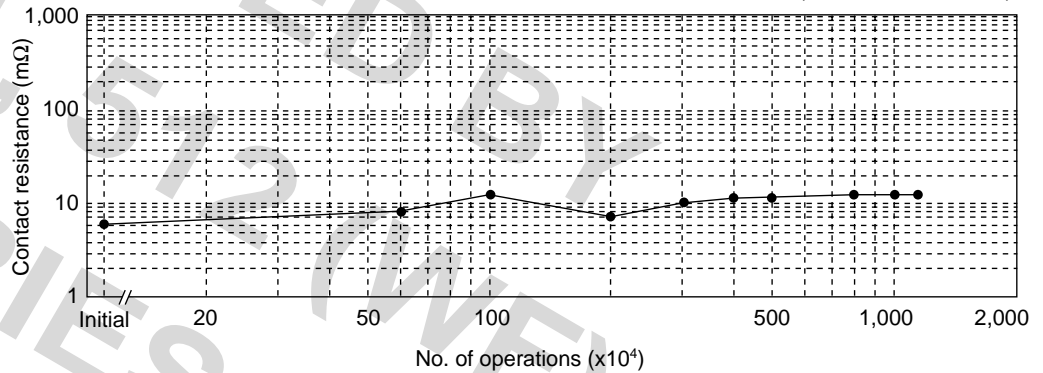
- Circuit wave form



- Shift of pick-up and drop-out voltage



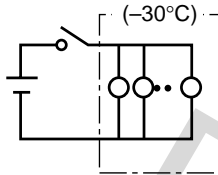
- Shift of contact resistance



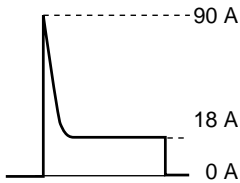
# FBR51 (-WR) SERIES

- 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

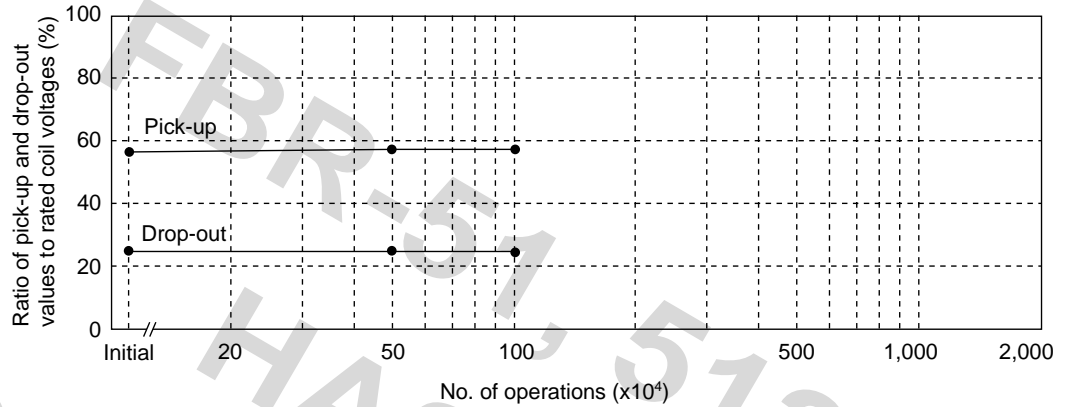
- Test circuit



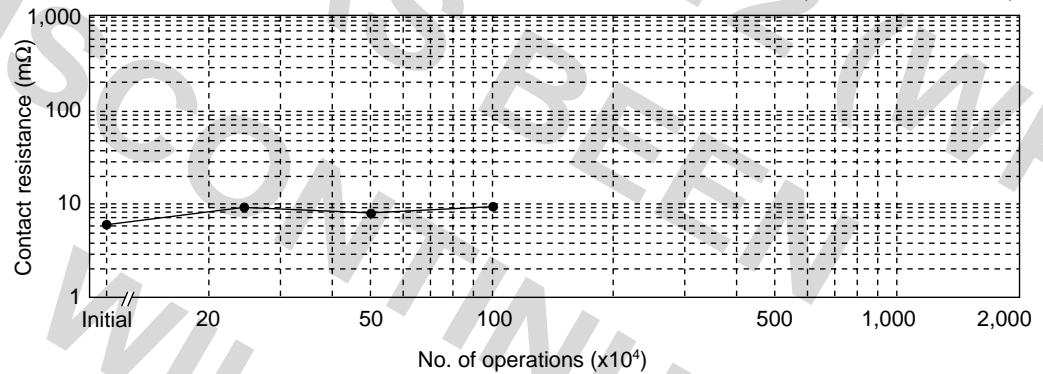
- Circuit wave form



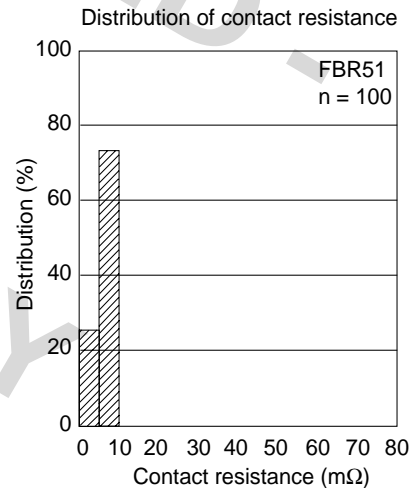
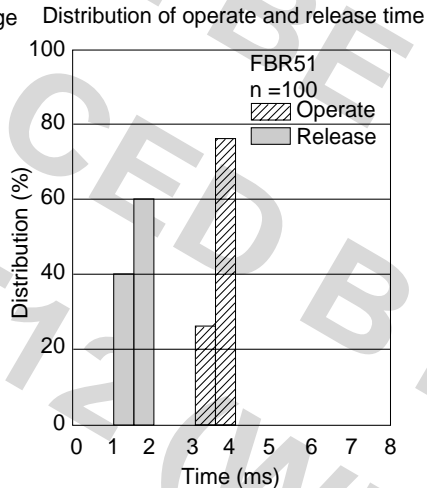
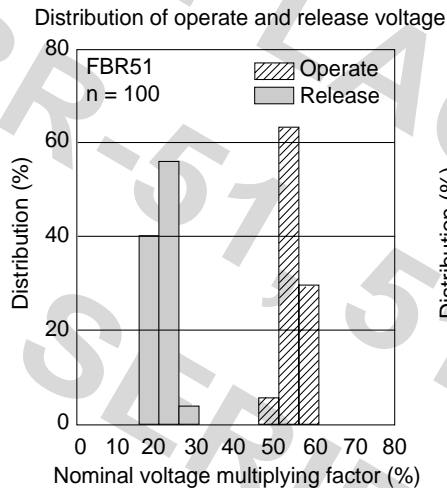
- Shift of pick-up and drop-out voltage



- Shift of contact resistance



## REFERENCE DATA

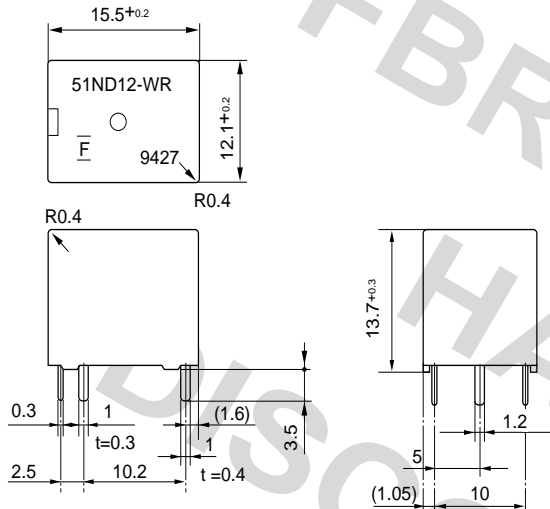


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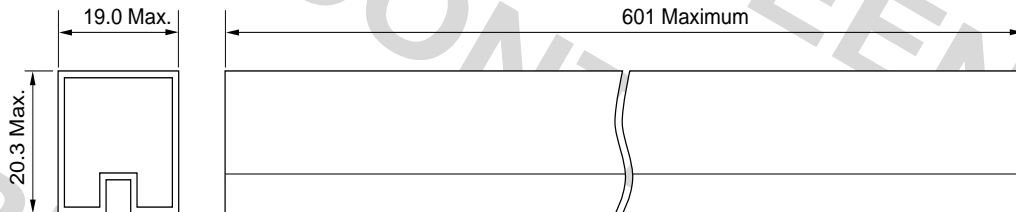
## ■ DIMENSIONS

### • FBR51 type

#### ● Dimensions

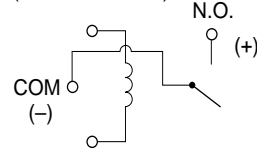


#### ● Tube carrier



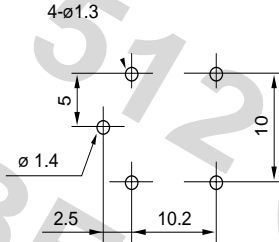
### • FBR512 type

#### I Schematics \* (BOTTOM VIEW)



\* Observe polarity  
for rated life with  
lamp loads.

#### ● PC board mounting hole layout (BOTTOM VIEW)



Unit : mm

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