

# COMPACT HIGH POWER RELAY

## 1 POLE—12 A (28 VDC)

### (FOR 24 V BATTERY AUTOMOTIVE APPLICATIONS)

## FBR57 SERIES

#### ■ FEATURES

- High power contact capacity  
(carrying current: 40 A/2 minutes, 30 A/1 hour)
- Suitable for controlling 24 V motors in trucks and other large vehicles
- High heat resistance and extended operating voltage



#### ■ ORDERING INFORMATION

[Example]     $\frac{\text{FBR57}}{\text{(a)}} \frac{\text{N}}{\text{(b)}} \frac{\text{D24}}{\text{(c)}} - \frac{\text{W}}{\text{(d)}} \frac{\text{**}}{\text{(e)}}$

(a)	Series Name	FBR57 : FBR57 Series relay for 24 V battery (contact gap 0.8 mm)
(b)	Enclosure	N    : Plastic sealed type
(c)	Nominal Voltage	D24   : 24 VDC
(d)	Contact Material	W    : Silver-tin oxide indium N    : Silver copper nickel
(e)	Custom Designation	To be assigned custom specification

# FBR57 SERIES

## ■ SPECIFICATIONS

Item		Specifications	
Contact	Arrangement	1 form C	
	Material	Silver-tin oxide indium (-W type) Silver copper nickel (-N type)	
	Voltage Drop (resistance)	Maximum 100 mV (at 2 A 12 VDC)	
	Ratings	28 VDC 12 A (locked motor load) 28 VDC inrush 15 A, break 2.5 A (motor free load)	
	Maximum Carrying Current	40 A/2 minutes, 30 A/1 hour (25°C, 100% rated coil voltage)	
	Maximum Inrush Current	-W type: 60 A (reference) -N Type: 40 A	
	Maximum Switching Current	12 A 28 VDC (reference)	
	Minimum Switching Load*1	-W type: 6 VDC, 1 A -N type: 6 VDC, 2 A (reference)	
Coil	Operating Temperature	-40°C to +85°C (no frost) (refer to the CHARACTERISTIC DATA)	
	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>6</sup> operations minimum	
	Electrical	1 × 10 <sup>5</sup> operations minimum (locked motor load) 5 × 10 <sup>5</sup> operations minimum (motor free load)	
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 9.4 g

\*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
W contact	N contact				
FBR57ND24-W	FBR57ND24-N	24 VDC	384 Ω	14.4 VDC (at 20°C) 18.0 VDC (at 85°C)	67°C/W

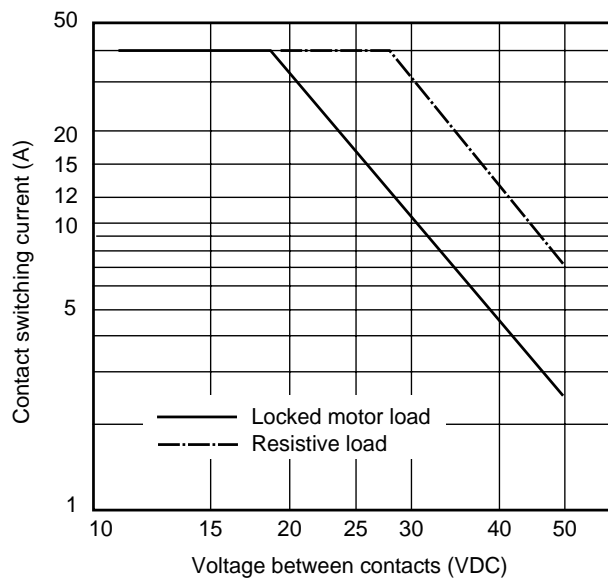
# FBR57 SERIES

## ■ PRINCIPAL APPLICATIONS

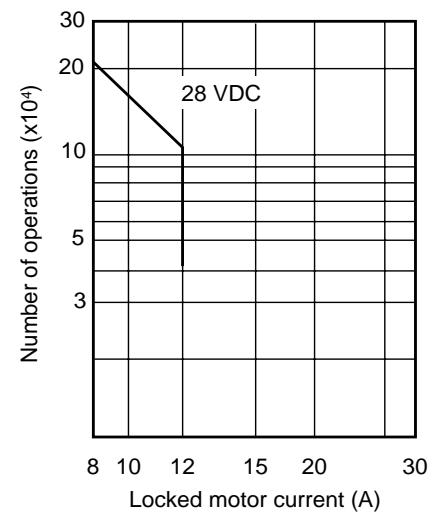
Application		Normal load current	Life x 10 <sup>3</sup>	Recommended model (example)
For 24 V battery	Power Windows	10 to 12 A (switching at motor locking)	100	FBR57N□-W
	Automatic Door Lock	5 A/2 door (switching at motor locking)	100	FBR57N□-W
	Intermittent Wipers	INRUSH 15 to 30 A BREAK 2 to 8 (motor free)	300	FBR57N□-N

## ■ CHARACTERISTIC DATA

### 1. MAXIMUM BREAK CAPACITY



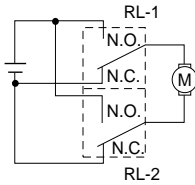
### 2. LIFE



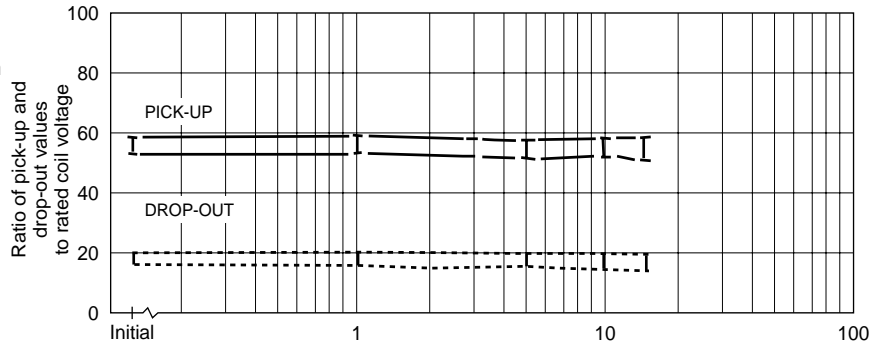
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## 3. LIFE TEST (EXAMPLE)

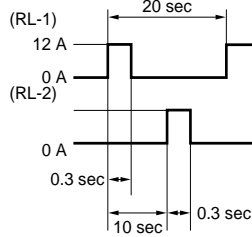
- Test item  
28 V DC-12 A INRUSH  
Motor lock  
100,000 operations minimum  
(FBR57 □-W type)
- Test circuit



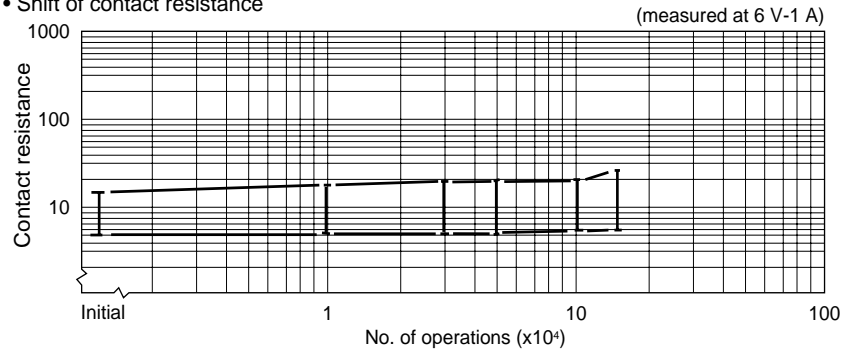
- Shift of pick-up and drop-out voltage



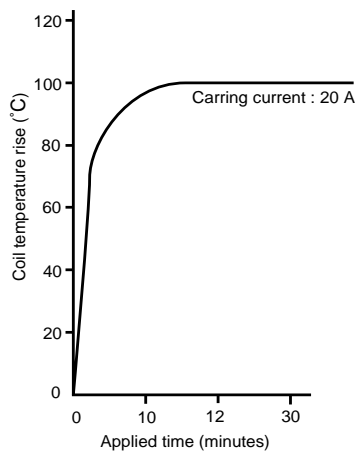
- Current wave form



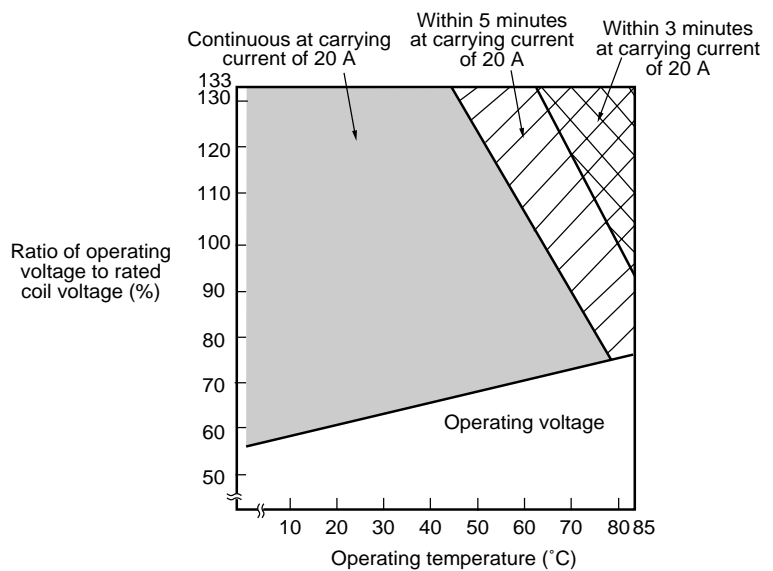
- Shift of contact resistance



## 4. COIL TEMPERATURE RISE

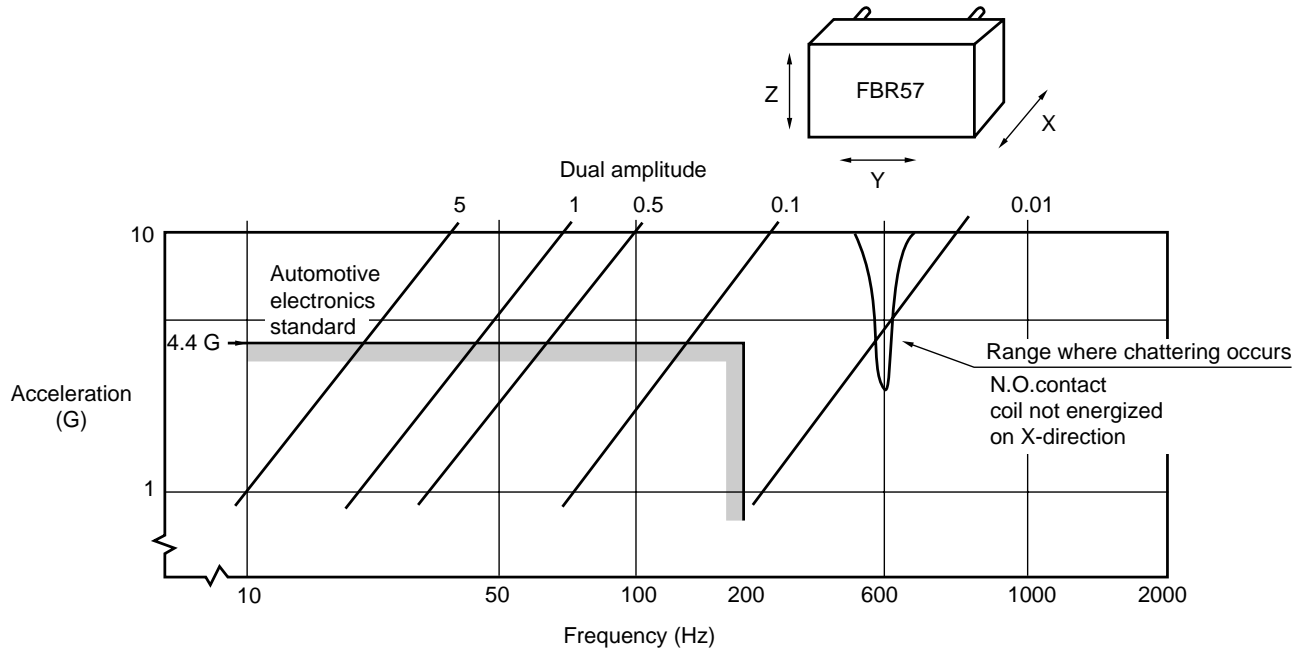


## 5. OPERATING COIL VOLTAGE RANGE (EXAMPLE)

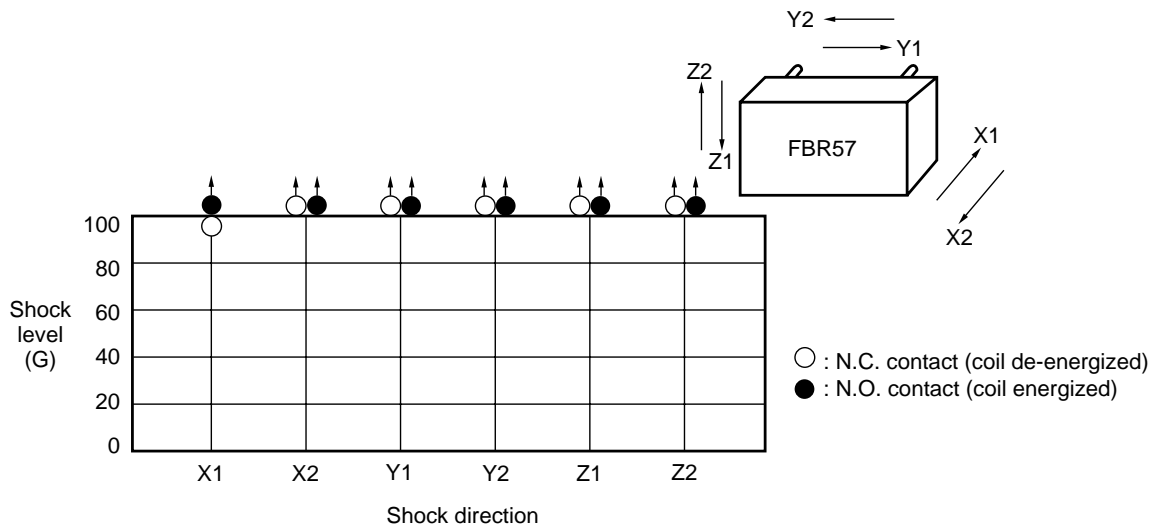


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## 6. VIBRATION RESISTANCE CHARACTERISTICS

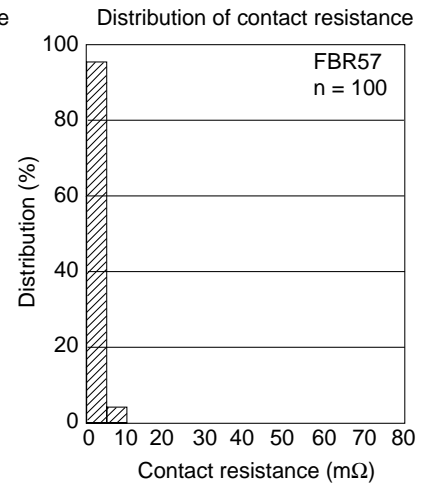
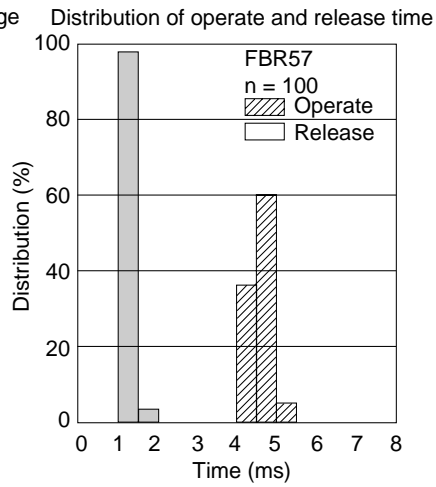
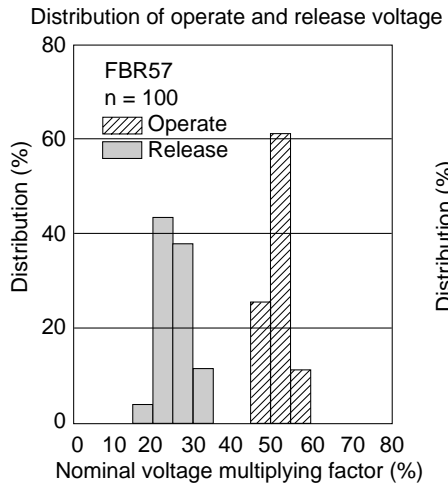


## 7. SHOCK RESISTANCE CHARACTERISTICS



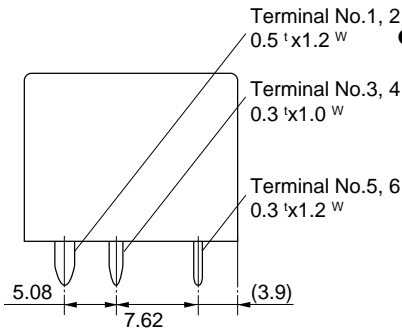
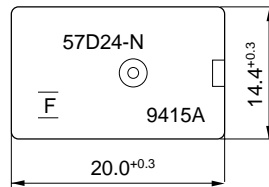
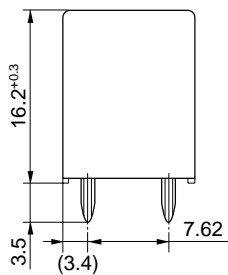
# FBR57 SERIES

## REFERENCE DATA

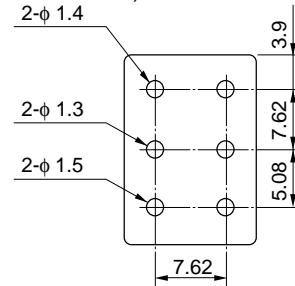


## DIMENSIONS

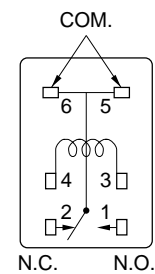
### Dimensions



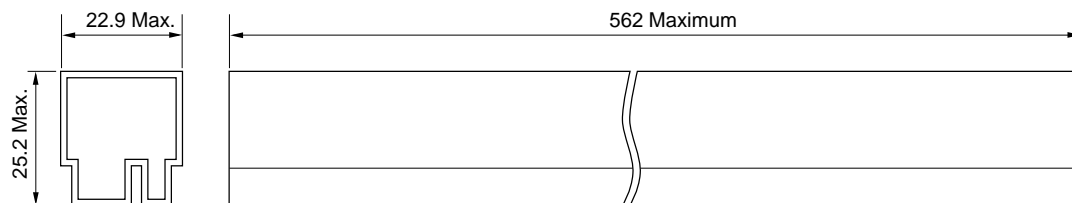
### PC board mounting hole layout (BOTTOM VIEW)



### Schematic (BOTTOM VIEW)



### Tube carrier



35 pieces/tube

Unit : mm

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