

# COMPACT HIGH POWER RELAY

## 1 POLE - 30A (28VDC)

### (For 24V 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
  - Contact gap 0.8mm
  - RoHS compliant
- Please see page 6 for more information



#### ■ PARTNUMBER INFORMATION

[Example]     FBR57     N     D24     -     W1     -     \*\*  
                   (a)        (b)        (c)        (d)        (e)

(a)	Relay type	FBR57 : FBR57 Series
(b)	Enclosure	N : Plastic sealed type
(c)	Coil rated voltage	D24 : 24 VDC Coil rating table at page 2
(d)	Contact material	W1 : Silver-tin oxide indium Y : Silver-tin oxide
(e)	Special type	To be assigned custom specification

Actual marking does not carry the type name: "FBR"  
 E.g.: Ordering code: FBR57ND24-W1    Actual marking: 57ND24-W1

# FBR57 SERIES

## ■ SPECIFICATION

Item	FBR57		
Contact Data	Configuration		1 form C
	Material		Silver-tin oxide indium (-W1 type) Silver-tin oxide (-Y type)
	Voltage drop		Max. 100 mV at 1A, 12VDC
	Contact rating		28VDC, 12A (locked motor load) 28VDC, Inrush 15A, break 2.5A (motor free load)
	Max. carrying current		40A/10 minutes, 30A/1 hour (25 °C, 100% rated coil voltage)
	Max. inrush current		70A (reference)
	Max. switching voltage		28VDC (reference)
	Max. switching current		12A (reference)
	Min. switching load *		6 VDC, 1A
Life	Mechanical		Min. 1 x 10 <sup>6</sup> operations
	Electrical		Min. 100 x 10 <sup>3</sup> operations (locked motor load) Min. 500 x 10 <sup>3</sup> operations (motor free load)
Coil Data	Operating temperature range		-40 °C to +85 °C (no frost)
	Storage temperature range		-40 °C to +100 °C (no frost)
Timing Data	Operate (at nominal voltage)		Max. 10 ms
	Release (at nominal voltage)		Max. 5 ms
Other	Vibration resistance		10 to 55Hz double amplitude 1.5mm
	Shock	Misoperation	100m/s <sup>2</sup>
		Endurance	1,000m/s <sup>2</sup>
Weight		Approximately 9.4 g	

\* Minimum switching loads mentioned above are reference values. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

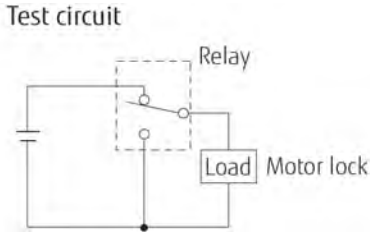
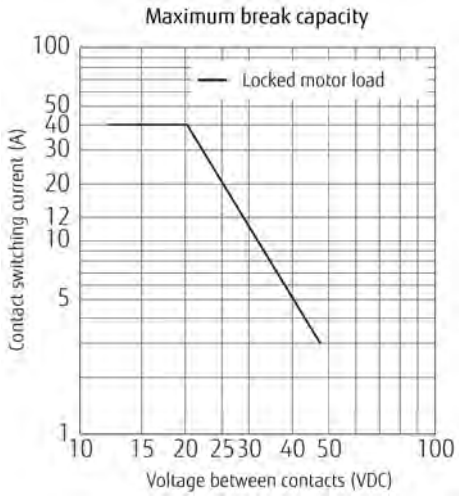
## ■ COIL RATING

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Thermal resistance (°C / W)
D24	24	384	14.4 (at 20 °C)	67
			18 (at 85 °C)	

Note: All values in the table are valid for 20°C and zero contact current, unless otherwise stated.

\* Specified operate values are valid for pulse wave voltage.

## CHARACTERISTIC DATA



Life test (example)

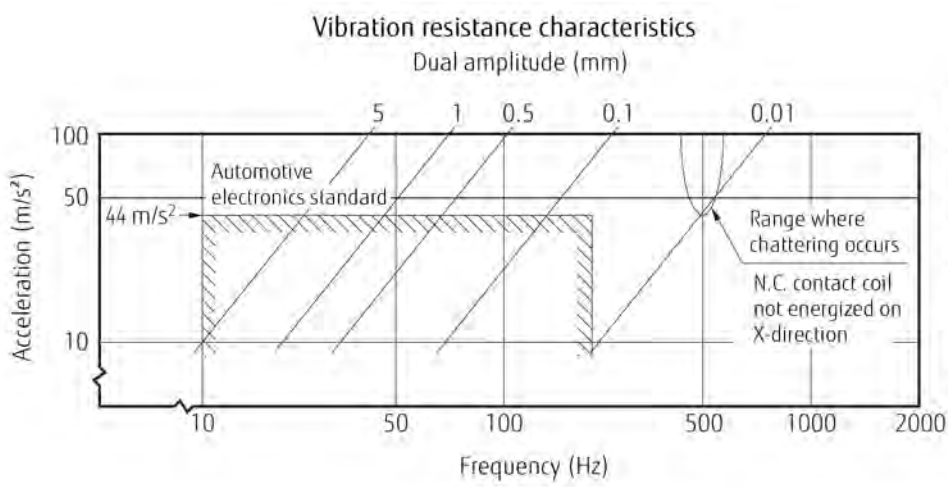
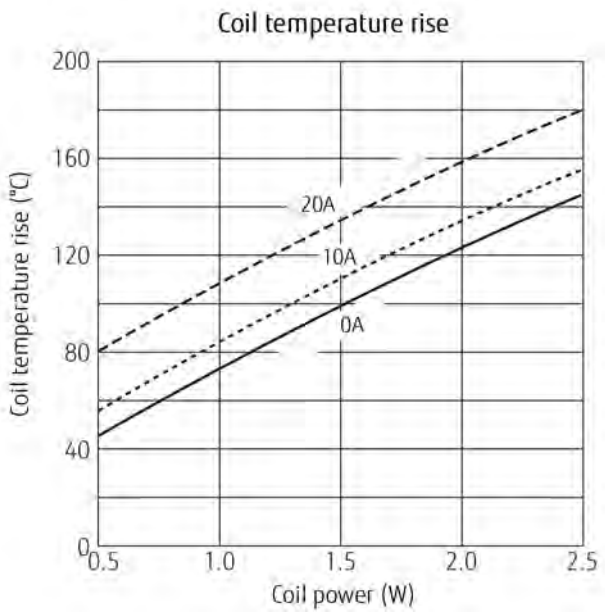
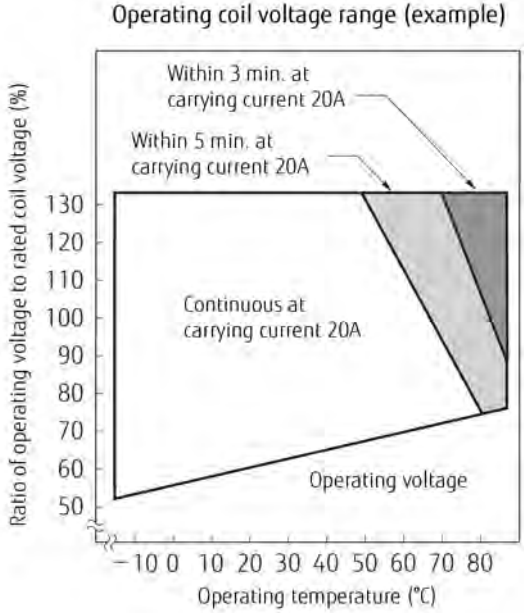
(1) Motor lock

Test item	Test circuit	Current wave form
12A, 28VDC Motor lock 100,000 operations minimum Contact material: Silver tin oxide indium		

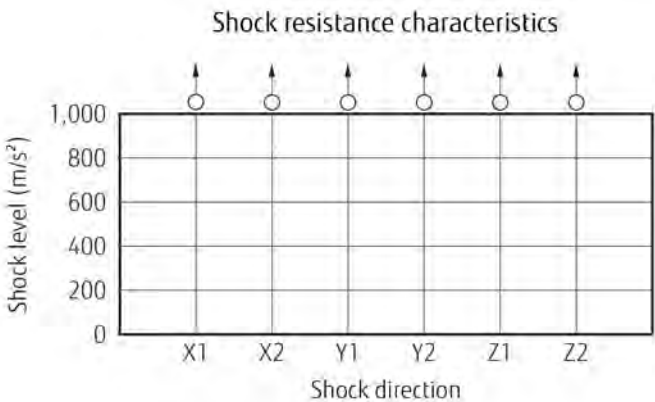
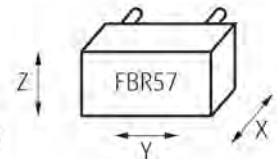
(2) Motor free

Test item	Test circuit	Current wave form
Inrush 15A, Idle 2.5A 28VDC Motor free 500,000 operations minimum Contact material: Silver tin oxide indium		

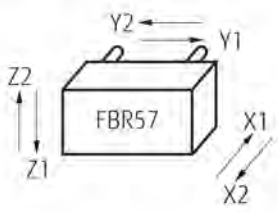
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Frequency: 10~2000 Hz  
 Acceleration: 100 m/s<sup>2</sup> max.  
 Direction of vibration;  
 see diagram below  
 Detection level:  
 chatter > 100 μs

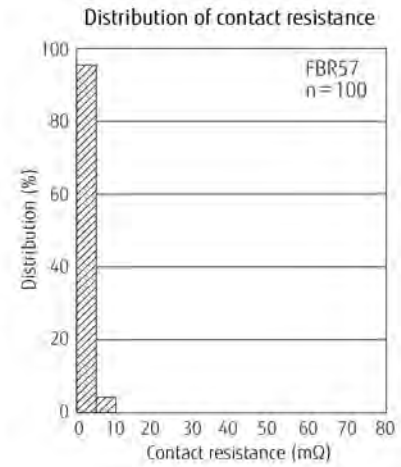
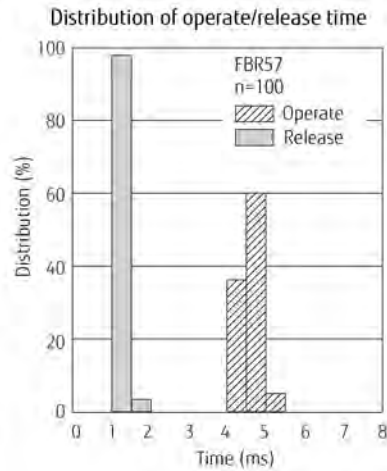
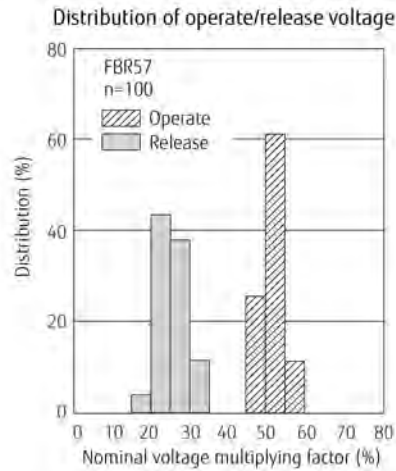


Shock application time: 11 ms, half-sine wave  
 Test material: coil energized and de-energized  
 Shock direction: see diagram below  
 Detection level: chatter > 100 μs



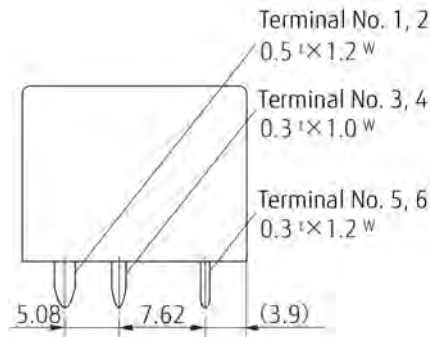
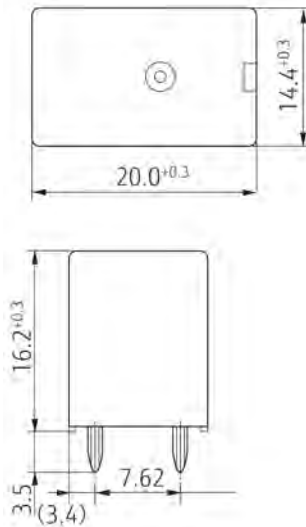
All directions ≥ 1,000 m/s<sup>2</sup>

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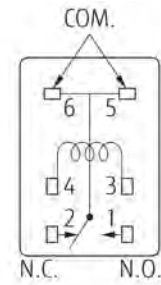


## ■ DIMENSIONS

### ● Dimensions

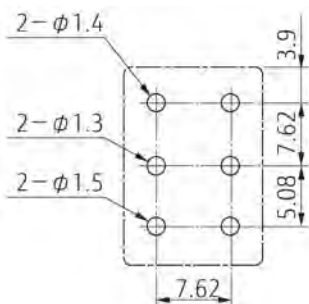


### ● Schematics (BOTTOM VIEW)

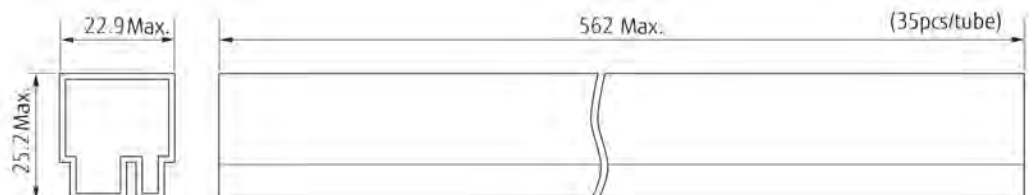


(...) dimension tolerance  $\pm 0.1$  mm

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



### ● Tube carrier



## RoHS Compliance and Lead Free Information

### 1. General Information

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives. As per Annex III of directive 2011/65/EU.
- All relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: <http://www.fujitsu.com/downloads/MICRO/fcai/relays/lead-free-letter.pdf>
- Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.

### 2. Recommended Lead Free Solder Condition

- Recommended solder Sn-3.0Ag-0.5Cu.

**Flow Solder condition:**

Pre-heating: maximum 120° C  
Soldering: dip within 5 sec. at  
260° C solder bath

**Solder by Soldering Iron:**

Soldering Iron  
Temperature: maximum 360° C  
Duration: maximum 3 sec.

**We highly recommend that you confirm your actual solder conditions**

### 3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical relays, unless otherwise indicated.

### 4. Tin Whiskers

- Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. No considerable length whisker was found by our in house test.

## 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](mailto:promothq@ft.ed.fujitsu.com)  
Web: [www.fcl.fujitsu.com](http://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](mailto: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](mailto:info@fceu.fujitsu.com)  
Web: [emea.fujitsu.com/components/](http://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](mailto:fcal@fcal.fujitsu.com)  
Web: <http://www.fujitsu.com/sg/services/micro/components/>

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