

# COMPACT HIGH POWER RELAY

## 1 POLE - 30A (28VDC)

### For 24V battery automotive applications

## FBR57 Series

RoHS Compliant

### ■ FEATURES

- High power contact capacity  
(carrying current: 40A/10 minutes, 30A/1 hour)
- Suitable for controlling 24V motors in trucks and other large vehicles
- High heat resistance and extended operating voltage
- Contact gap 0.8mm
- RoHS compliant



### ■ APPLICATIONS

Silver tin oxide contact (-Y): Door lock for truck, bus etc.

Silver tin oxide indium contact (-W1): Wiper for track, bus etc.

### ■ PART NUMBERS

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

(a)	Relay type	FBR57 series
(b)	Enclosure	N : Plastic sealed type
(c)	Coil rated voltage	D24 : 24VDC Please refer to coil rating table
(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

## ■ SPECIFICATIONS

Item		Specifications	Remarks/Conditions
Contact Data	Configuration	1c (1 Form C)	
	Material	Silver tin oxide indium (-W1 type) Silver tin oxide (-Y type)	
	Voltage drop	Max. 100mV	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 <sup>*1</sup>	1A, 6VDC	
Coil data	Operating temperature range	-40°C to +85°C	No frost
	Storage temperature range	-40°C to +100°C	No frost
Time	Operate (at nominal voltage)	Max. 10ms	Without bounce
	Release (at nominal voltage)	Max. 5ms	Without bounce
Life	Mechanical	Min. 10 x 10 <sup>6</sup> operations	
	Electrical (resistive)	Min. 100 x 10 <sup>3</sup> operations (locked motor load) Min. 500 x 10 <sup>3</sup> operations (motor free load)	
Others	Vibration resistance	Misoperation	10 to 200Hz, acceleration 44m/s <sup>2</sup> (4.5G), constant acceleration
		Endurance	10 to 200Hz, acceleration 44m/s <sup>2</sup> (4.5G), constant acceleration
	Shock resistance	Misoperation	100m/s <sup>2</sup>
		Endurance	1,000m/s <sup>2</sup>
	Dimensions / Weight		14.4 x 20.0 x 16.2mm / Approximately 9.4 g

\*1: 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.

! Care shall be taken on the heat generated on PC board when maximum carrying current exceeds 10A. Please perform the confirmation test with actual conditions.. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental conditions.

## ■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance ±10% (Ω)	Must Operate Voltage <sup>*1</sup> (VDC)	Must Release Voltage <sup>*1</sup> (VDC)
D24	24	384	14.4 (at 20°C) 18 (at 85°C)	1.9 (at 20°C) 2.4 (at 85°C)

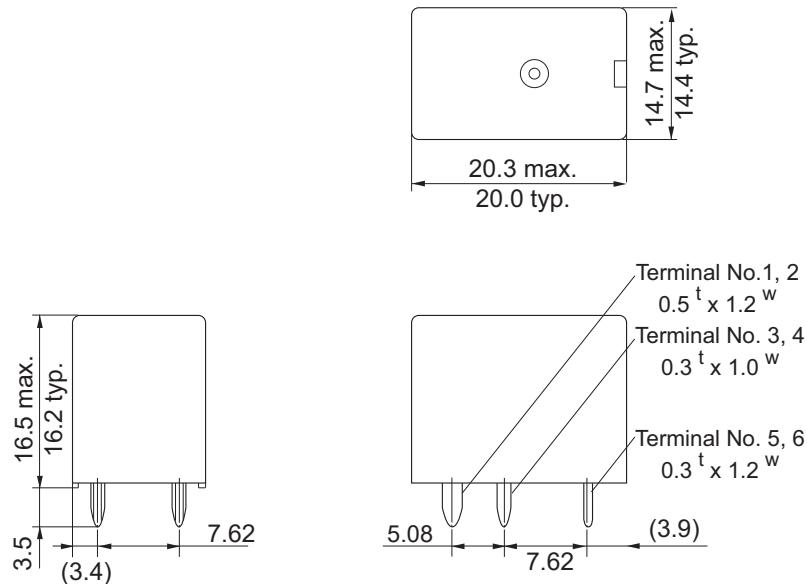
Note: All values in the table are valid at 20°C and zero contact current, unless otherwise specified.

Note: Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

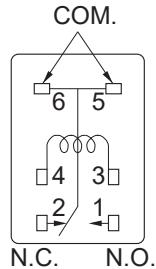
\*1: Specified operated values are valid for pulse wave voltage.

## ■ DIMENSIONS

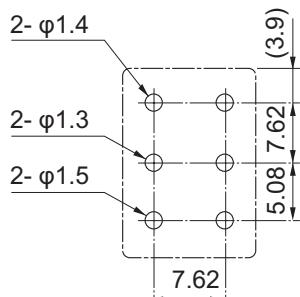
### • Dimensions



### • Schematics (BOTTOM VIEW)



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



\* Dimensions do not include tolerances. Please ask specification in case you need tolerances.

\* Dimensions of the terminals do not include thickness of pre-soldering.

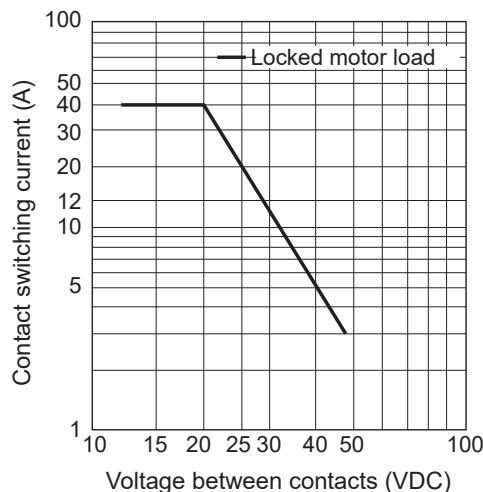
\* Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

( ): Reference  
Unit: mm

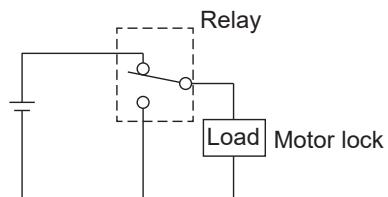
## ■ CHARACTERISTIC DATA

(Characteristic data is not guaranteed value but measured values of samples from production line.)

### Maximum break capacity



Test circuit



### Life test (example)

#### (1) Motor lock

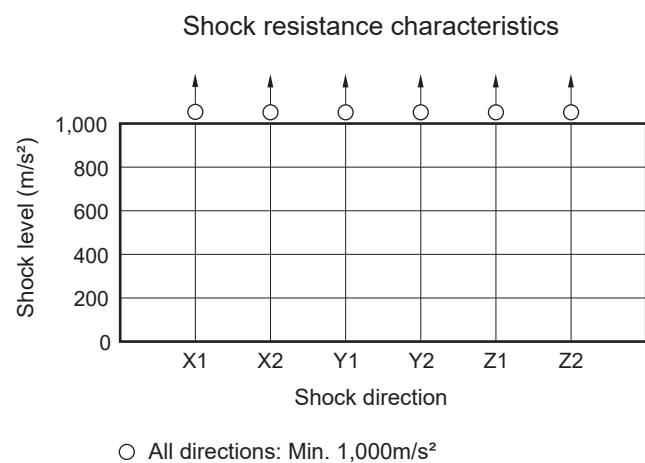
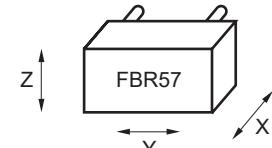
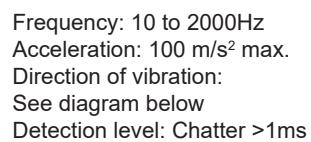
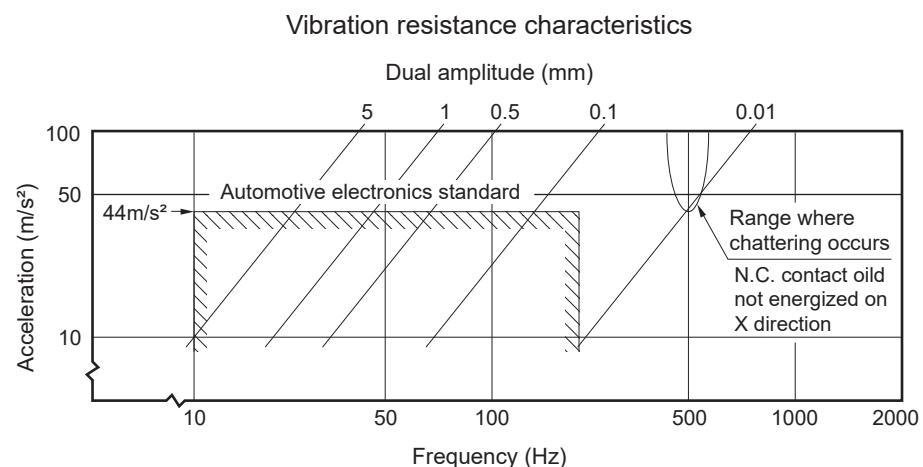
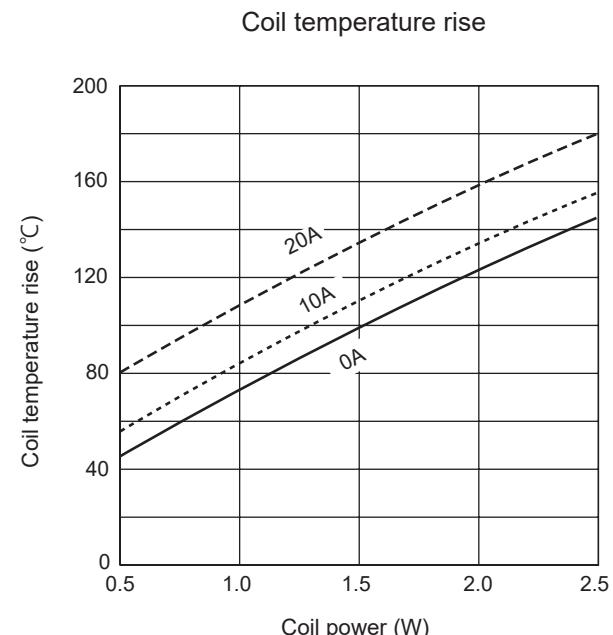
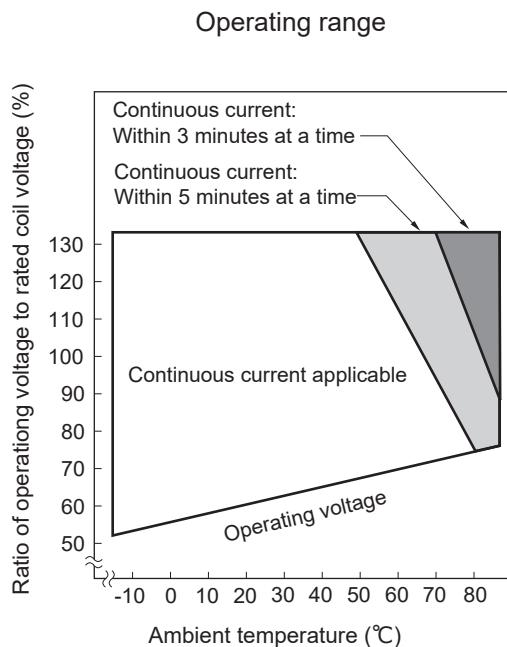
Test item	Test circuit	Current wave form
12A, 28VDC Motor lock 100,000 operations minimum Contact material: Silver tin oxide indium		

#### (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		

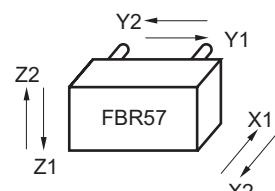
## ■ CHARACTERISTIC DATA

(Characteristic data is not guaranteed value but measured values of samples from production line.)



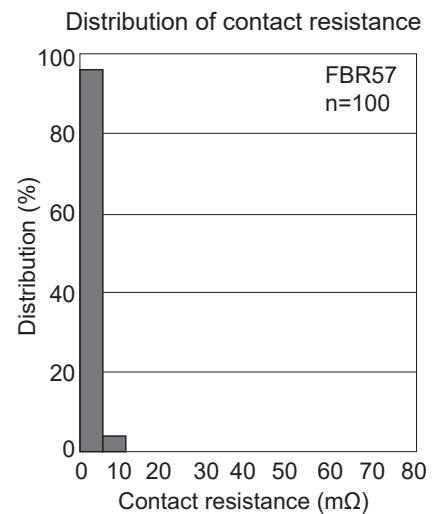
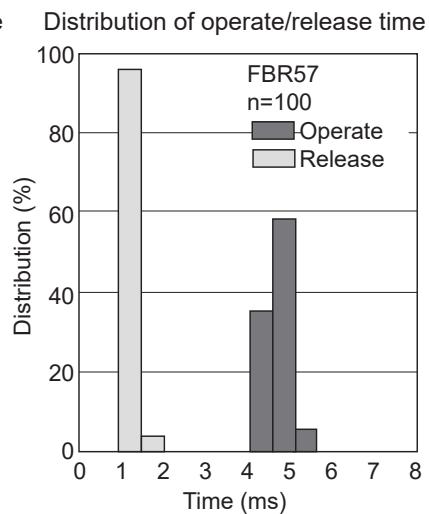
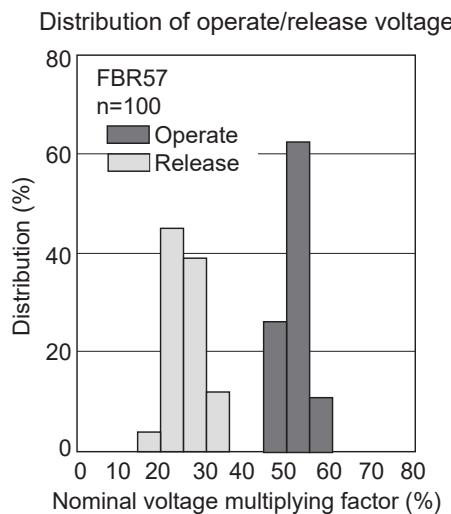
- All directions: Min. 1,000m/s<sup>2</sup>

Shock application time: 6±1ms, half-sine wave  
Test conditions: Coil energized and de-energized  
Shock direction: See diagram below  
Detection level: Chatter >1ms



## ■ CHARACTERISTIC DATA

(Characteristic data is not guaranteed value but measured values of samples from production line.)



## CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited.
- Do not use relays in the atmosphere with sulfide gas, chloride gas or nitric oxide. Contact resistance may increase.
- Do not use silicon or silicon-containing product or materials near relays. It may cause contact failure.

## GENERAL INFORMATION

### 1. ROHS Compliance

- All relays produced by FCL Components are compliant with RoHS directive 2011/65/EU, including commission delegated directive 2015/863.

### 2. Recommended lead free solder condition

- 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.
- Recommended solder for assembly: Sn-3.0Ag-0.5Cu.

#### Flow Solder Condition:

Pre-Heating: Maximum 120°C within 90 sec.

Soldering: Dip within 5 sec. at 255°C±5°C solder bath

Relay must be cooled by air immediately after soldering

#### Solder by Soldering Iron:

Soldering Iron: 30-60W

Temperature: Maximum 340-360°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.

## Contact

### Japan

FCL COMPONENTS LIMITED  
Shinagawa Seaside Park Tower  
12-4, Higashi-shinagawa 4-chome,  
Tokyo 140 0002, Japan  
Tel: +81-3-3450-1682  
Email: fcl-contact@cs.fcl-components.com

### North and South America

FCL COMPONENTS AMERICA, INC.  
2055 Gateway Place Suite 480,  
San Jose, CA 95110 USA  
Tel: +1-408-745-4900  
Email: contact@fcl-components.us

### Europe

FCL COMPONENTS EUROPE B.V.  
Diamantlaan 25  
2132 WV Hoofddorp, Netherlands  
Tel: +31-23-556-0910  
Email: info@fcl-components.eu

### Asia Pacific

FCL COMPONENTS ASIA PTE LTD.  
51 Changi Business Park Central 2, #06-07  
The Signature Singapore 486066  
Singapore 117612  
Tel: +65-6375-8560  
Email: fcsl@fcl-components.com

### China

FCL COMPONENTS (SHANGHAI) CO.,LTD.  
Unit 1105, Central Park - Jing An,  
No.329 Heng Feng Road, Shanghai  
200070, China  
Tel: +86-21-3253 0998  
Email: fcsh@fcl-components.com

### Hong Kong

FCL COMPONENTS HONG KONG CO.,  
LIMITED  
Unit 2313, Seapower Tower, Concordia  
Plaza, No.1 Science Museum Road,  
TST, Kowloon, Hong Kong  
Tel: +852-2881-8495  
Email: fcsl@fcl-components.com

Web: [www.fcl-components.com/en/](http://www.fcl-components.com/en/)

© 2025 FCL Components Limited. All rights reserved. All trademarks or registered trademarks are the property of their respective owners.

FCL Components Products are intended for general use, including without limitation, in personal, household and office environments, in buildings and for ordinary use in the industry. FCL Components Products are not intended to be used in applications where extremely high safety is required ("High Safety Required Applications"), such as, but not limited to, applications in nuclear facilities, in aircraft automatic flight control, in air traffic control, in mass transit system control, in missile launch system, in weapon systems, in medical equipment for life support or any application involving a direct serious risk of physical injury or death.

Please do not use FCL Components Products without securing the sufficient safety and reliability required for the High Safety Required Applications.

In addition, FCL Components shall not be liable against the customer and/or any third party for any claims or damages arising in connection with the use of FCL Components Products in the High Safety Required Applications.

FCL Components warrants that its Products, if properly used and services, will conform to their specification and will be free from defects in material and workmanship for twelve months from delivery.

The implied warranties of merchantability and fitness for a particular purpose and all other warranties, representations and conditions, express or implied by statute, trade usage or otherwise, except as set forth in this warranty, are excluded and shall not apply to the Products delivered.

The contents, data and information in this datasheet are provided by FCL Components Limited as a service only to its user and only for general information purposes. The use of the contents, data and information provided in this datasheet is at the users' own risk.

FCL Components has assembled this datasheet with care and will endeavor to keep the contents, data and information correct, accurate, comprehensive, complete and up to date.

FCL Components Limited and affiliated companies do however not accept any responsibility or liability on their behalf, nor on behalf of its employees, for any loss or damage, direct, indirect or consequential, with respect to this datasheet, its contents, data, and information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof. Nor do FCL Components Limited and affiliated companies accept on their behalf, nor on behalf of its employees, any responsibility or liability with respect to these datasheets, its contents, data, information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof. Rev. December 24, 2025.