

COMPACT HIGH POWER RELAY

1 POLE - 30A (28VDC)

(For 24V battery automotive applications)

FBR57 Series

■ FEATURES

- High power contact capacity
(carrying current: 40 A/10 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

■ 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. 10 x 10 ⁶ operations | |
| | Electrical | Min. 100 x 10 ³ operations (locked motor load) Min. 500 x 10 ³ 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 | Misoperation | 10 to 200Hz, acceleration 44m/s ² (4.5G), constant acceleration |
| | | Endurance | 10 to 200Hz, acceleration 44m/s ² (4.5G), constant acceleration |
| | Shock | Misoperation | 100m/s ² |
| | | Endurance | 1,000m/s ² |
| | 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.

Note: 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.

■ COIL RATING

| Coil Code | Rated Coil Voltage (VDC) | Coil Resistance +/- 10% (Ohm) | Must Operate Voltage (VDC) * | Must Release Voltage (VDC)* |
|-----------|--------------------------|-------------------------------|------------------------------|-----------------------------|
| D24 | 24 | 384 | 14.4 (at 20 °C) | 1.9 (at 20 °C) |
| | | | 18 (at 85 °C) | 2.4 (at 85 °C) |

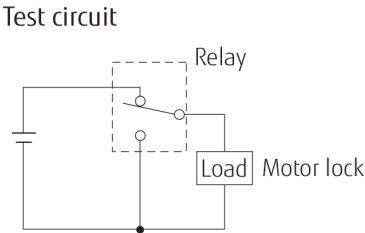
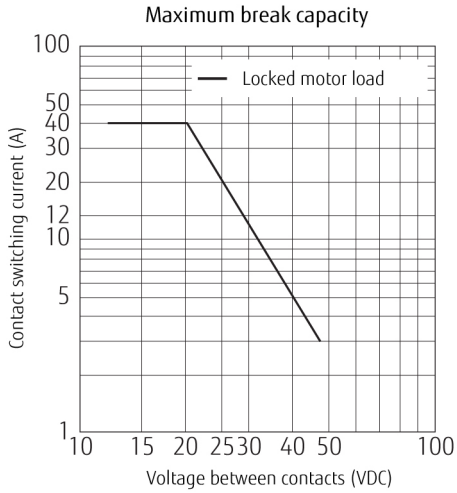
Note: All values in the table are valid for 20°C and zero contact current, unless otherwise stated.

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

* Specified operate values are valid for pulse wave voltage.

CHARACTERISTIC DATA

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



Life test (example)

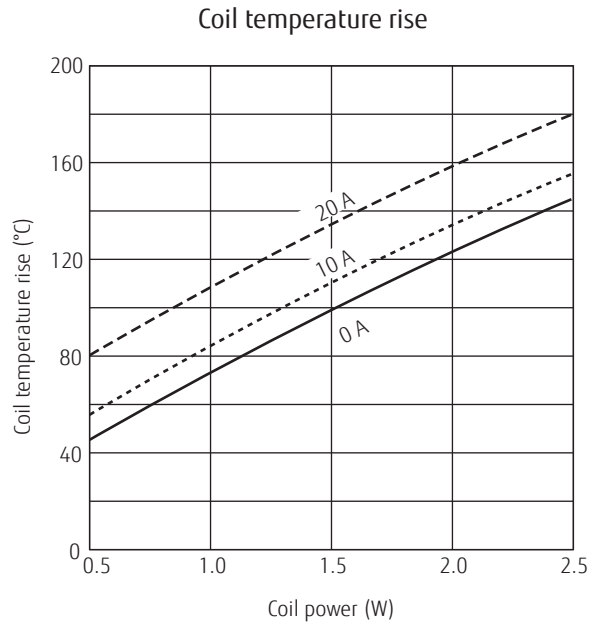
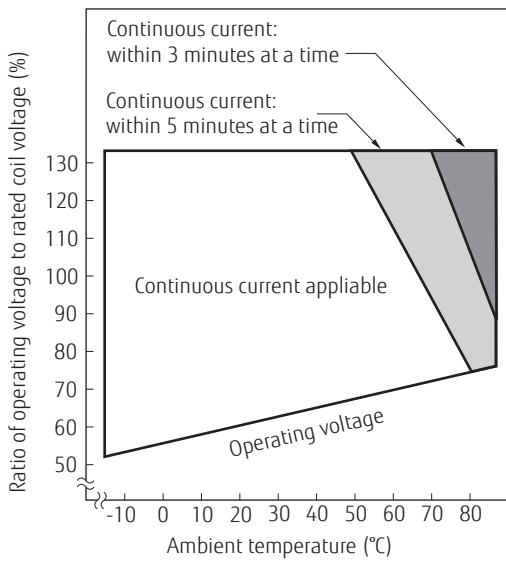
(1) Motor lock

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

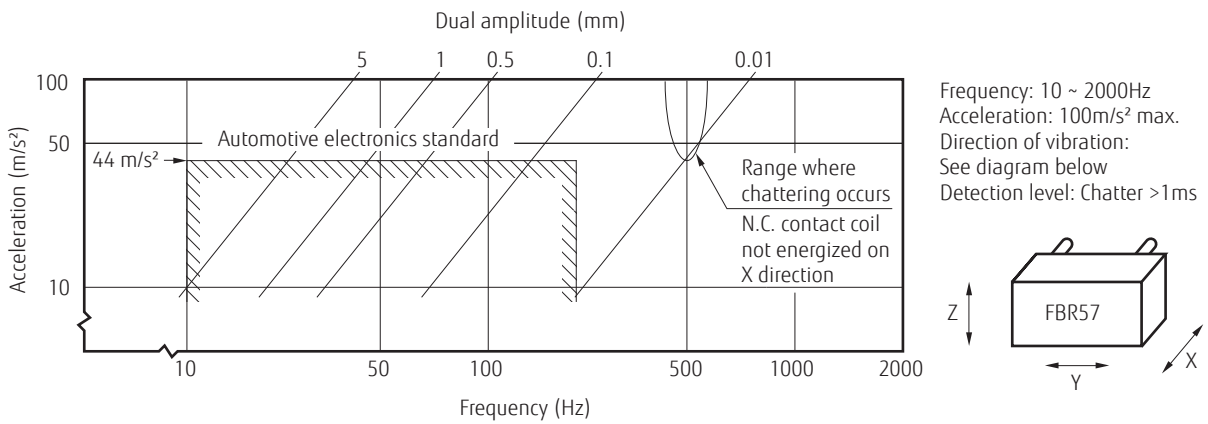
(2) Motor free

| 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 | | |

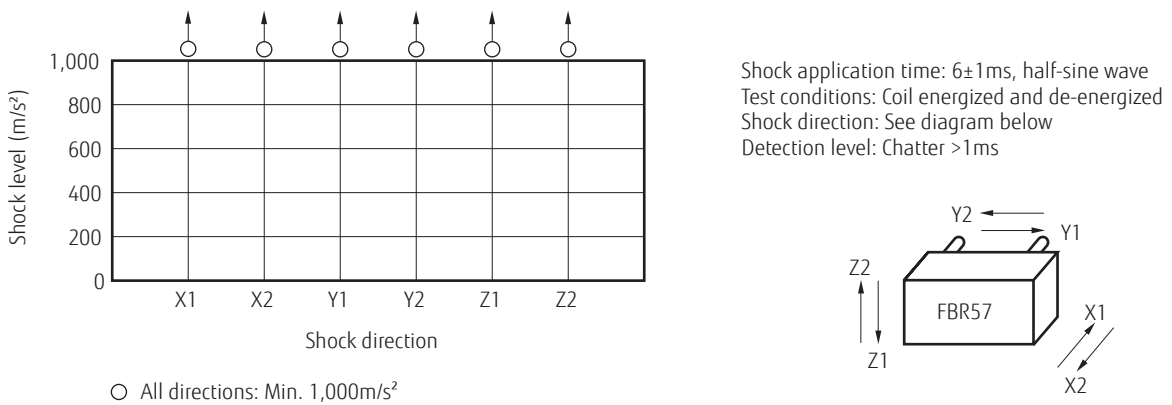
FBR57 SERIES



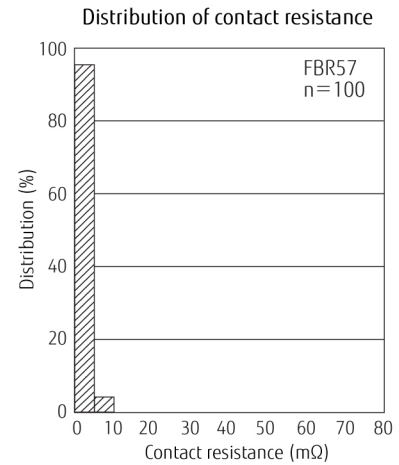
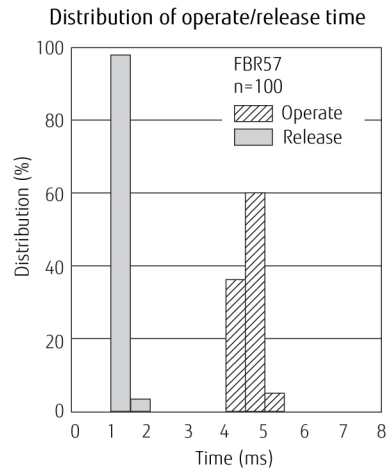
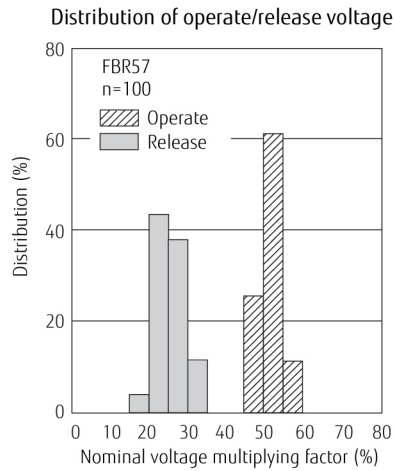
Vibration resistance characteristics



Shock resistance characteristics

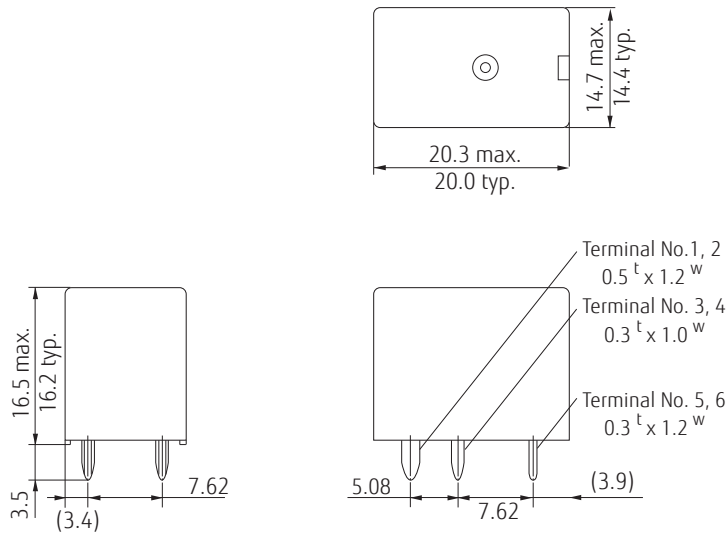


FBR57 SERIES

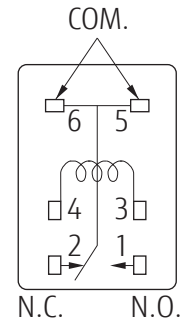


■ DIMENSIONS

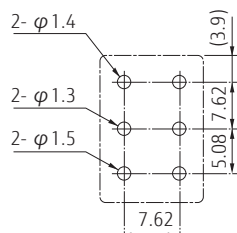
● Dimensions



● Schematics (BOTTOM VIEW)



● PC board mounting hole layout (BOTTOM VIEW)



- * Dimensions of the terminals do not include thickness of pre-solder.
- * Tolerance of PC board mounting hole layout : ± 0.1 unless otherwise specified.
- * Dimensions do not include tolerances. Please ask specification in case you need tolerances.

() : Reference
Unit: mm

Cautions

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited for standard type.
- 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.

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
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 350-360°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

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