AUTOMOTIVE RELAY

1 POLE x 2 - 12A (28VDC) for 24V battery automotive applications

FBR572, 582 Series

RoHS Compliant

■ FEATURES

- Two independent relays mounted in a single package
- High current contact capacity
  (carrying current: 40A/2 minutes, 30A/1 hour)
- Suitable for controlling 24V motors in trucks and other large vehicles
- High heat resistance and extended operating voltage
- Two types of contact gap
  (FBR572: 0.8 mm, FBR582: 1.4 mm)
- RoHS compliant

■ APPLICATIONS

Body control (power window, door lock etc.)

■ PART NUMBERS

[Example] FBR572 N D24 - W1 **
(a) (b) (c) (d) (e)

(a)	Relay type	FBR572 : FBR572 series (contact gap 0.8mm) FBR582 : FBR582 series (contact gap 1.4mm)
(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: FBR572ND24-W1 Actual marking: 572ND24-W1

■ SPECIFICATIONS

Item			Specifications		Remarks/Conditions
			FBR572	FBR582	
Contact Data	Configuration		1c (1 form C, SPDT) x 2		
	Material		Silver-tin oxide indium (-W1 type) Silver-tin oxide (-Y type)		
	Voltage drop		Max. 100mV		Initial at 1A, 12VDC
	Contact rating		12A, 28VDC (locked motor load) Inrush 15A, break 2.5A, 28VDC (motor free load)		
	Max. carrying current		40A / 2 minutes (at 25°C, 100% rated coil voltage)		
	Max. inrush current		60A		Reference
	Max. switching voltage		28VDC	32VDC	Reference
	Max. switching current		12A	14A	Reference
	Min. switching load *1		1A, 6VDC		Reference
Coil	Operating temperature range		-40°C to +85°C		No frost
	Storage temperature range		-40°C to +100°C		No frost
Time	Operate		Max. 10 ms		At nominal voltage
	Release		Max. 5 ms		At nominal voltage
Life	Mechanical		Min. 10 x 10^6 operations	Min. 1 x 10^6 operations	
	Electrical	Locked motor load	Min. 100 x 10^3 operations	Min. 100 x 10^3 operations	
		Motor free load	Min. 500 x 10^3 operations	-	
Others	Vibration resistance	Misoperation	10 to 200Hz acceleration 44m/s^2 (4.5G), constant acceleration		Coil ON/OFF, 3 axis, total 6 cycles
		Endurance	10 to 200Hz acceleration 44m/s^2 (4.5G), constant acceleration		Coil OFF, 3 axis, total 6 hours
	Shock resistance	Misoperation	100m/s^2 (11±1ms)		Coil ON/OFF, 3 axis, total 36 operations
		Endurance	1,000m/s^2 (6±1ms)		Coil OFF, 3 axis, total 18 operations
	Dimensions / Weight		20.0 x 26.0 x 16.2mm / Approx. 18g		

*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.

■ COIL DATA

Series	Coil Code	Rated Coil Voltage (VDC)	Coil Resistance ±10% (Ω)	Must Operate Voltage*1 (VDC)	Must Release Voltage*1 (VDC)
FBR572	D24	24	384	14.4 (at 20°C)	1.9 (at 20°C)
				18.0 (at 85°C)	2.4 (at 85°C)
FBR582	D24	24	170	14.4 (at 20°C)	2.0 (at 20°C)
				18.0 (at 85°C)	2.6 (at 85°C)

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

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

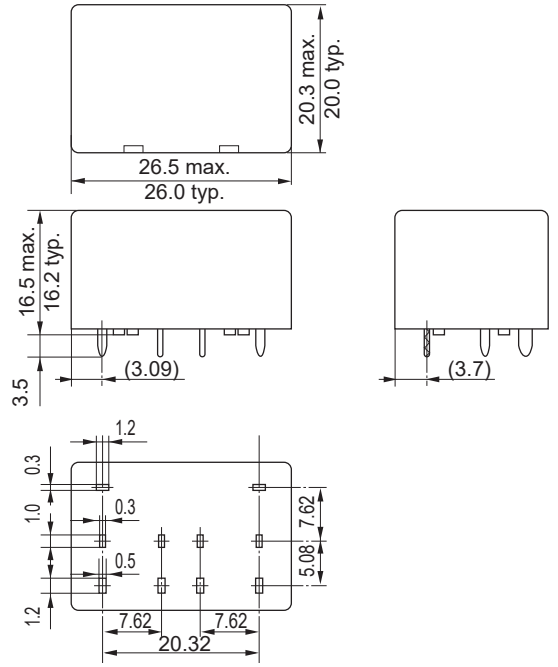
Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

■ PART NUMBER LIST

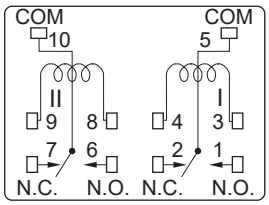
Part Number	Contact Gap	Enclosure	Contact Material	Contact Arrangement
FBR572ND24-W1	0.8mm	Plastic sealed	Silver-tin oxide indium	1c (1 Form C, SPDT) x 2
FBR572ND24-Y			Silver-tin oxide	
FBR582ND24-W1	1.4mm	Plastic sealed	Silver-tin oxide indium	
FBR582ND24-Y			Silver-tin oxide	

■ DIMENSIONS

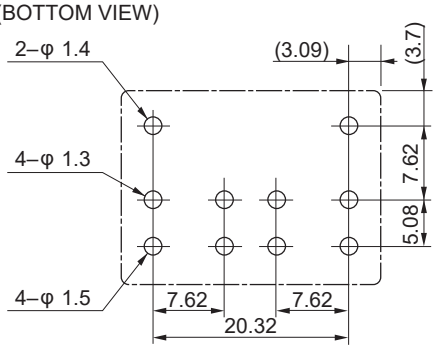
● Dimensions



● Schematics
(BOTTOM VIEW)



● PC board mounting hole layout
(BOTTOM VIEW)



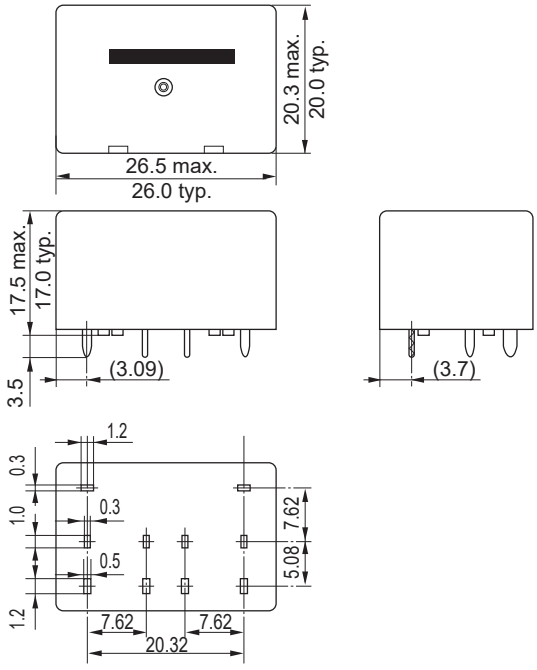
Dimensions do not include tolerances.
Dimensions of the terminals do not include thickness of pre-soldering.

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

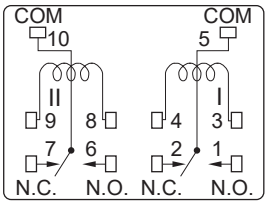
( ): Reference
Unit: mm

[FBR580]

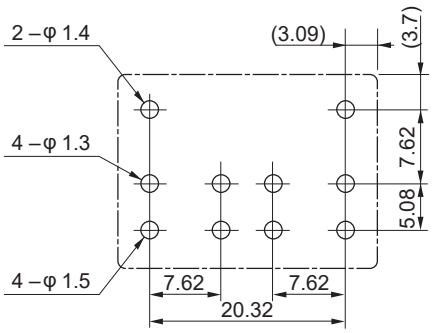
● Dimensions



● Schematics
(BOTTOM VIEW)



● PC board mounting hole layout
(BOTTOM VIEW)



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

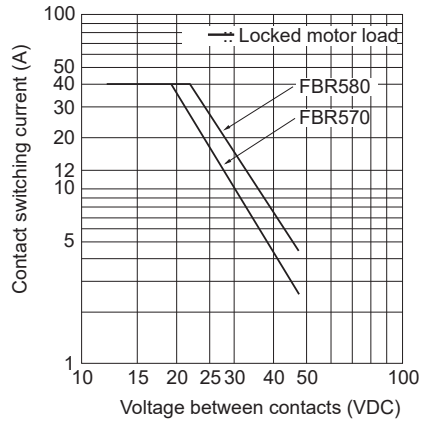
Tolerance of PC board mounting hole layout :
±0.1 unless otherwise specified.

( ): Reference
Unit: mm

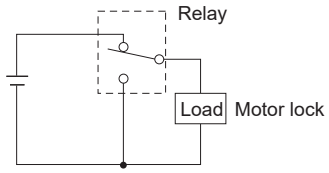
■ CHARACTERISTIC DATA

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

Maximum break capacity

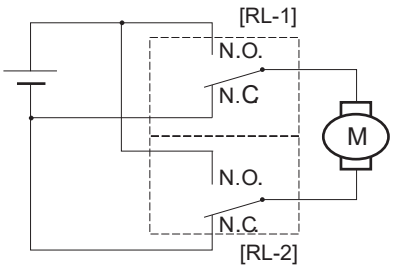
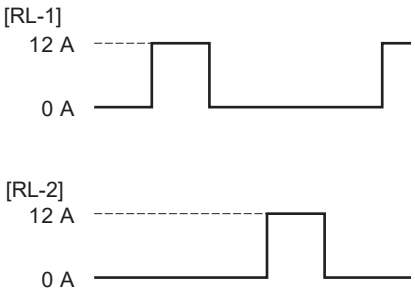


Test circuit

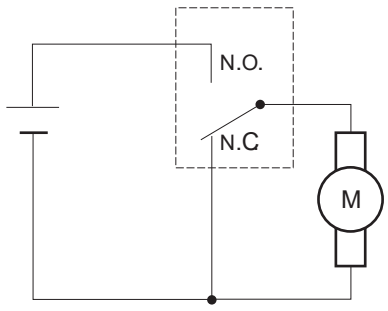
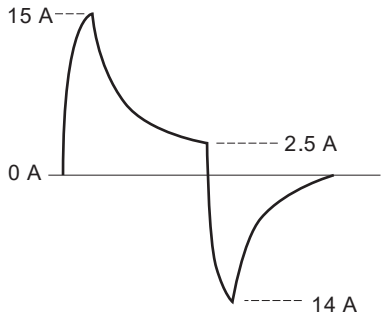


Life Test

(1) Motor lock

Test Item	Test Circuit	Current Wave Form
12V 28VDC Motor lock 100,000 operations minimum Contact material: Silver tin oxide indium		

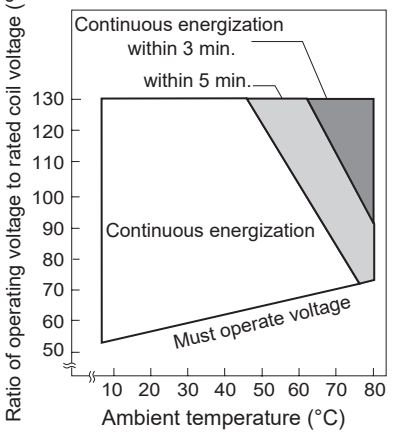
(2) Motor free

Test Item	Test Circuit	Current Wave Form
Inrush 15A, Break 2.5A 28VDC Motor free 500,000 operations minimum Contact material: Silver tin oxide indium		

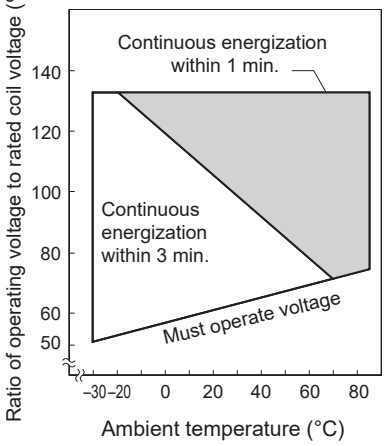
■ CHARACTERISTIC DATA

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

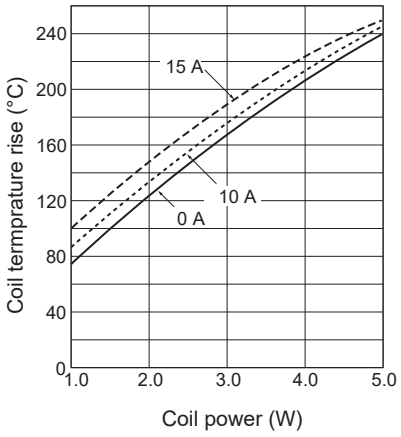
Operating coil voltage range (FBR572)



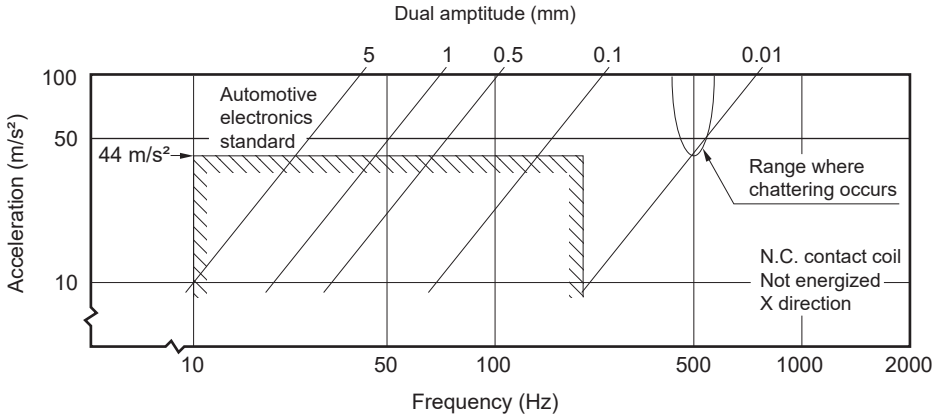
Operating coil voltage range (FBR582)



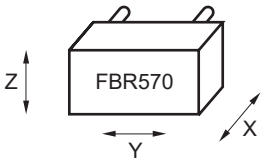
Operating Coil temperature rise



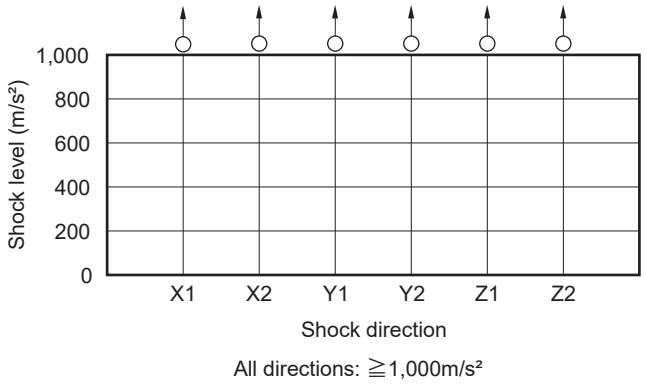
Vibration resistance characteristics



Frequency: 10 to 2000 Hz
Acceleration: 100 m/s² max.
Direction of vibration;
See diagram below
Detection level:
chatter >1ms

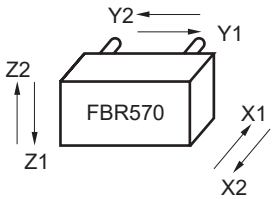


Shock resistance characteristics



All directions: ≧1,000m/s²

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

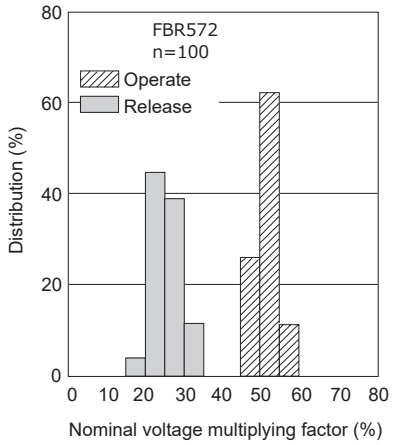


■ CHARACTERISTIC DATA

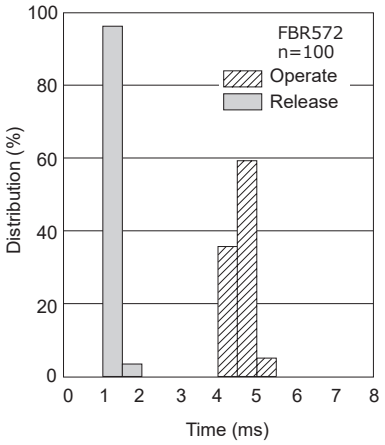
(Characteristic data is not guaranteed value but measured values of samples from production line.)

[FBR572]

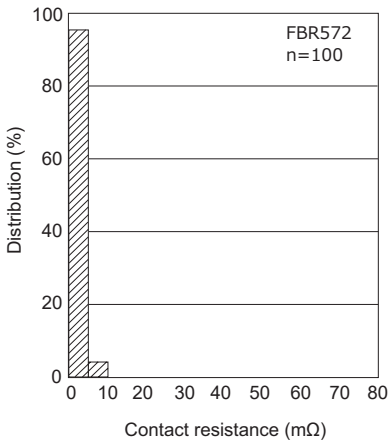
Distribution of operate/release voltage



Distribution of operate/release time

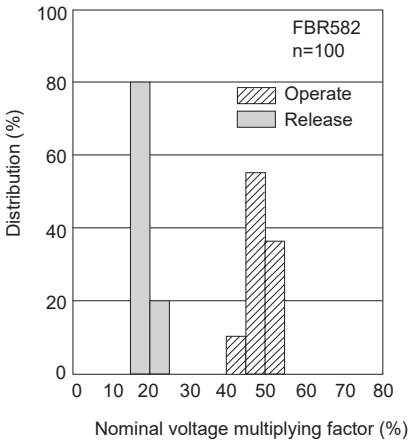


Distribution of contact resistance

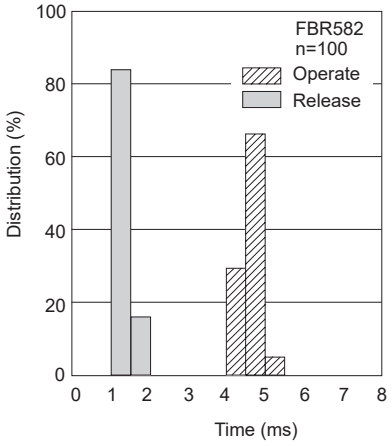


[FBR582]

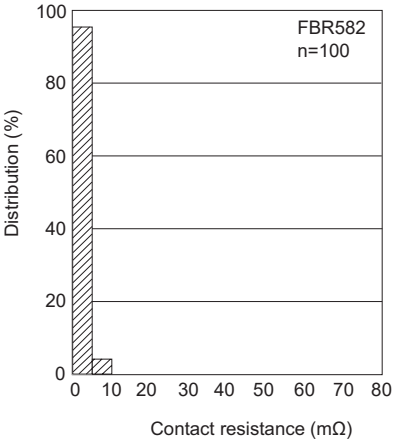
Distribution of operate/release voltage



Distribution of operate/release time



Distribution of contact resistance



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.