

# COMPACT POWER 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 (43% of the volume of the two FRL-270 relays)
- High current 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
- Two types of contact gap (FBR572: 0.8 mm, FBR582: 1.4 mm)
- RoHS compliant since date code: 0627  
Please see page 9 for more information



#### ■ ORDERING INFORMATION

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

|     |                    |  |
|-----|--------------------|--|
| (a) | Series Name        | FBR572: FBR572 Series relay (contact gap 0.8 mm)<br>FBR582: FBR582 Series relay (contact gap 1.4 mm) |
| (b) | Structure          | N       : Plastic sealed type  |
| (c) | Nominal Voltage    | D24     : 24 VDC   |
| (d) | Contact Material   | W1       : Silver-tin oxide indium<br>Y         : Silver-tin oxide                                   |
| (e) | Custom Designation | To be assigned custom specification  |

# FBR572, 582 SERIES

## ■ SPECIFICATIONS

| Item       |  | FBR570 Series  | FBR580 Series  |
|------------|--|--|--|
| Contact    | Arrangement                                      | 1 form C × 2 (SPDT ×2)   |  |
|            | Material   | Silver-tin oxide indium (-W1 type)   | Silver-tin oxide (-Y type)                                 |
|            | Voltage Drop (Resistance)                        | Maximum 100 mV (at 12 VDC 2 A)   |  |
|            | Ratings  | 28 VDC 12 A (locked motor load)<br>28 VDC inrush 15 A, break 2.5 A (motor free load)                                   |  |
|            | Maximum Carrying Current* <sup>1</sup>           | 40 A/2 minutes, 30 A/ 1 hour<br>(25°C, 100% rated coil voltage)  |  |
|            | Maximum Inrush Current (Reference)               | 60 A   |  |
|            | Max. Switching Current (Reference)               | 12 A 28 VDC  | 14 A 32 VDC  |
|            | Minimum Switching Load* <sup>2</sup> (Reference) | 1A, 6 VDC  |  |
| Coil       | Operating Temperature                            | -40°C to +85°C (no frost)  |  |
|            | 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>7</sup> operations minimum   | 1 × 10 <sup>6</sup> operations minimum                     |
|            | Electrical                                       | 1 × 10 <sup>5</sup> operations minimum (locked motor load)<br>5 × 10 <sup>5</sup> operations minimum (motor free load) | 1 × 10 <sup>5</sup> operations minimum (locked motor 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 18 g   |

\*1 Refer to 'Operating Coil Voltage Range' (page 5)

\*2 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

| ORDERING CODE                 | Rated coil voltage | Coil resistance (±10%) | Must operate voltage | Thermal resistance |
|-------------------------------|--------------------|------------------------|----------------------|--------------------|
| FBR572ND24-W1<br>FBR572ND24-Y | 24 VDC             | 384 Ω                  | 67°C/W               | 14.4 VDC (at 20°C) |
| FBR582ND24-W1<br>FBR582ND24-Y |                    | 170 Ω                  | 56°C/W               | 18.0 VDC (at 85°C) |

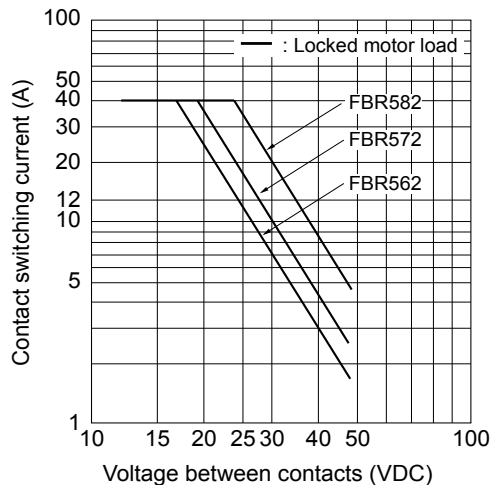
# FBR572, 582 SERIES

## ■ SUITABLE APPLICATIONS

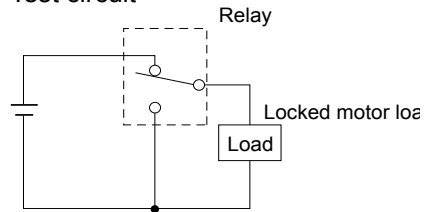
| Application         | Normal load current                     | Life x 10 <sup>3</sup> | Recommended model (example) |
|---------------------|---|------------------------|-----------------------------|
| Power Windows       | 10 to 12 A (switching at motor locking) | 100                    | FBR582ND24-W1               |
| Automatic Door Lock | 5 A/2 door (switching at motor locking) | 100                    | FBR572ND24-W1               |

## ■ CHARACTERISTIC DATA

### 1. MAXIMUM BREAK CAPACITY



#### • Test circuit



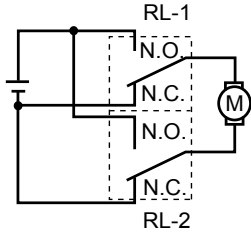
# FBR572, 582 SERIES

## 2. LIFE TEST (EXAMPLE)

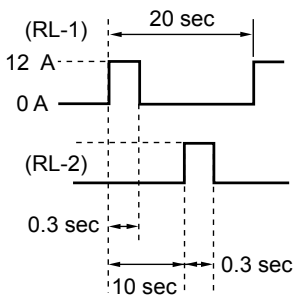
### [FBR572 type]

- Test item  
28 VDC-12 A  
Motor lock  
100,000 operations minimum  
(FBR572 □-W type)

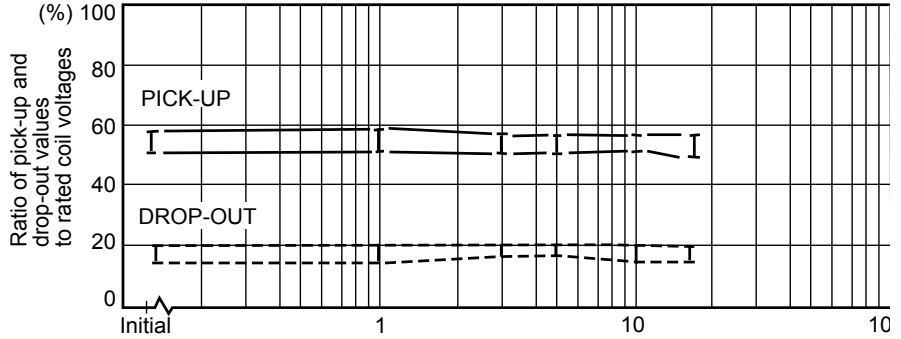
• Test circuit



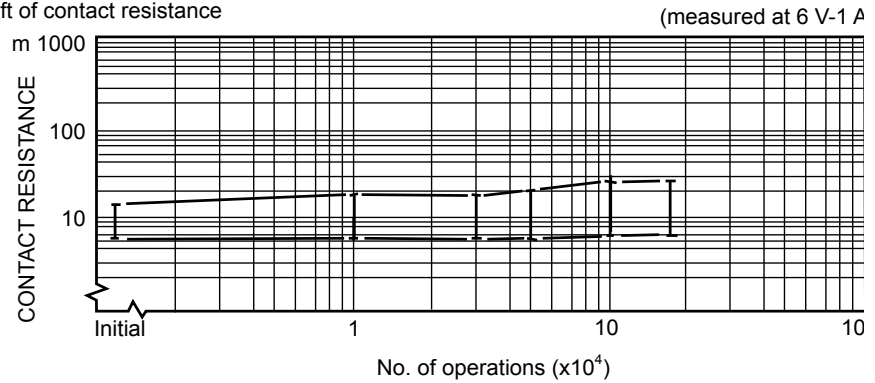
• Current wave form



• Shift of pick-up drop-out voltage



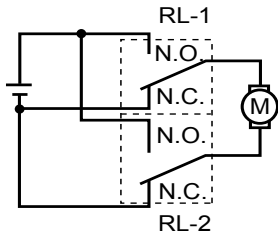
• Shift of contact resistance



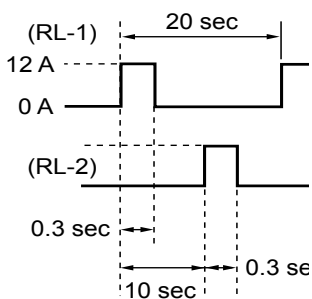
### [FBR582 type]

- Test item  
28 VDC-12 A  
Motor lock  
100,000 operations minimum  
(FBR582 □-W type)

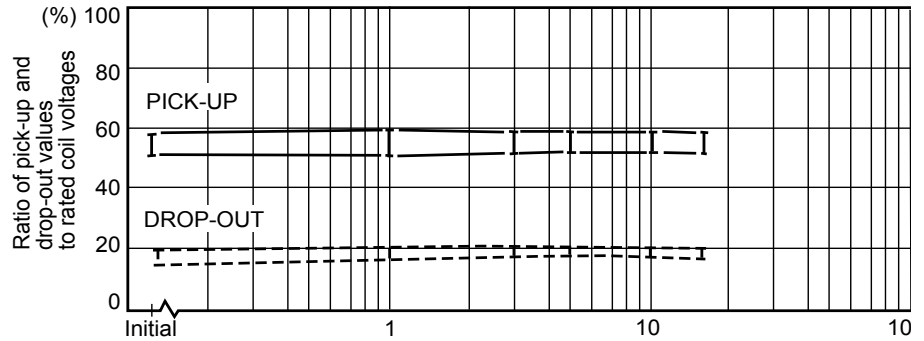
• Test circuit



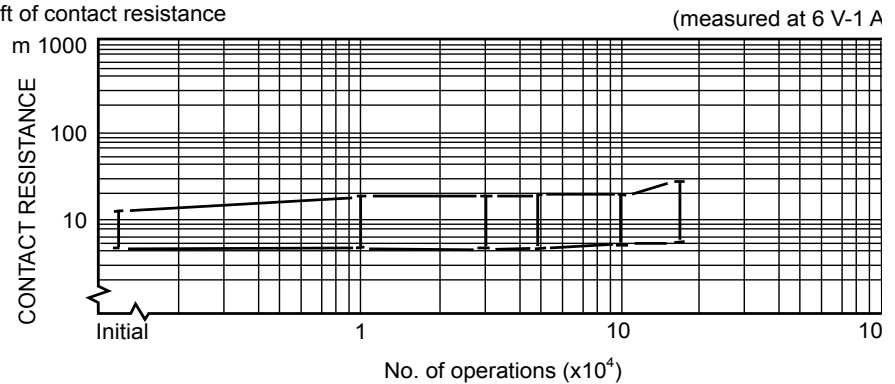
• Current wave form



• Shift of pick-up drop-out voltage



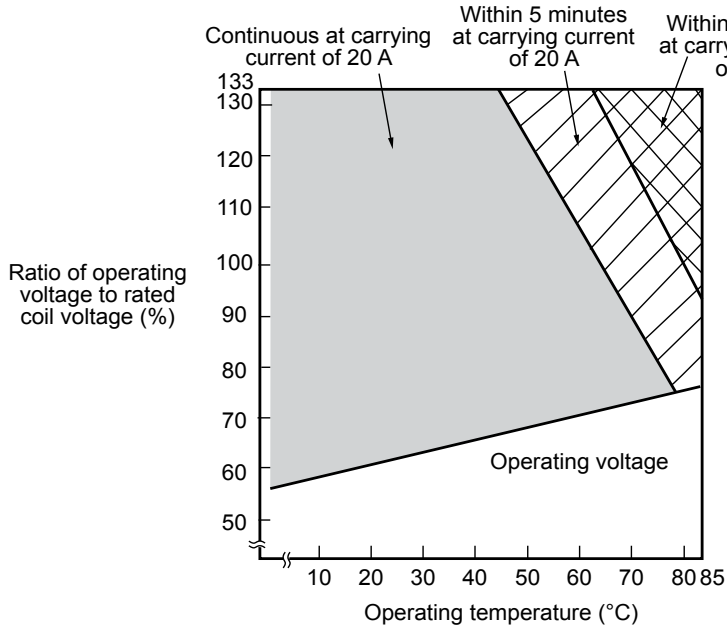
• Shift of contact resistance



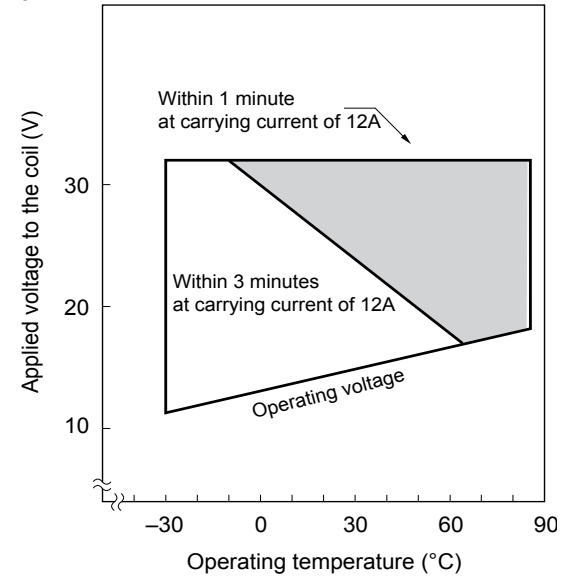
# FBR572, 582 SERIES

## 3. OPERATING COIL VOLTAGE RANGE

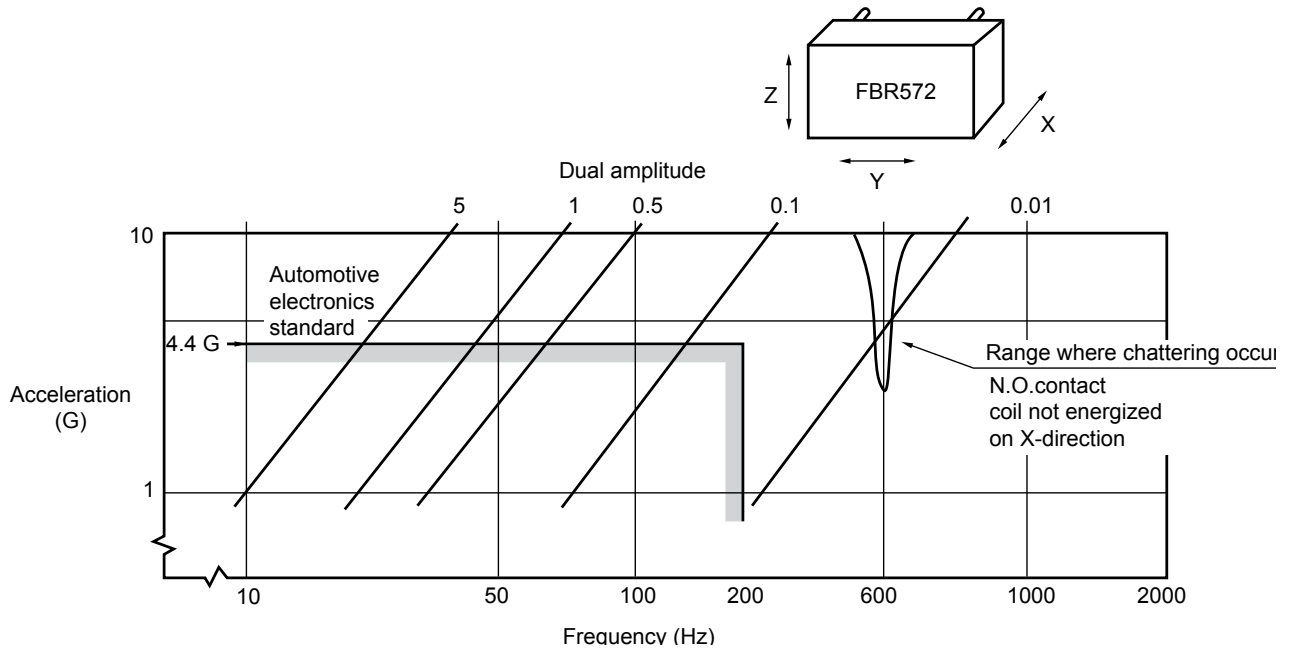
[FBR572 type]



[FBR582 type]

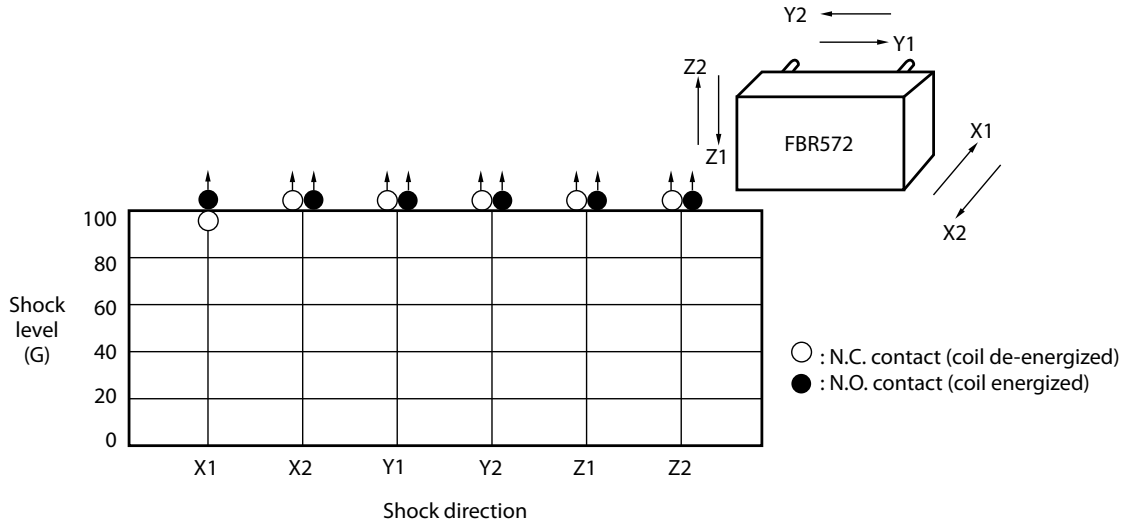


## 4. VIBRATION RESISTANCE CHARACTERISTICS



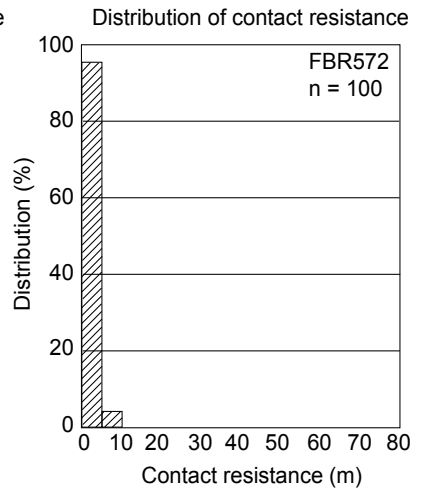
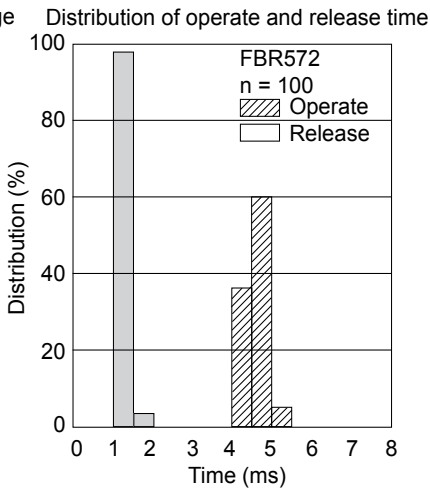
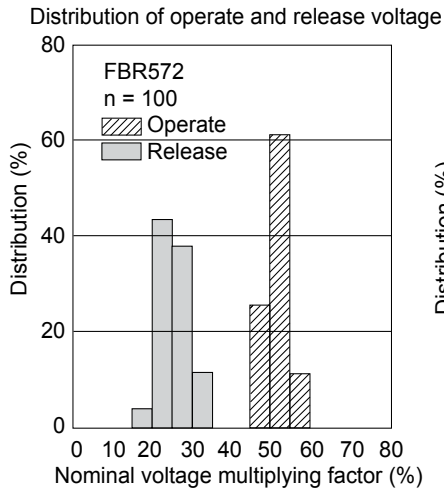
# FBR572, 582 SERIES

## 5. SHOCK RESISTANCE CHARACTERISTICS

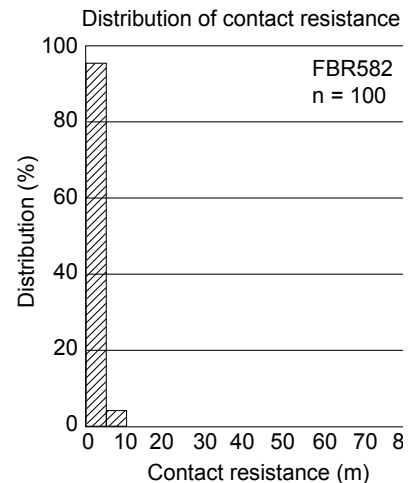
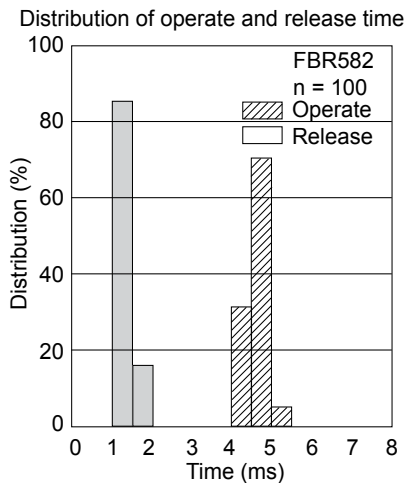
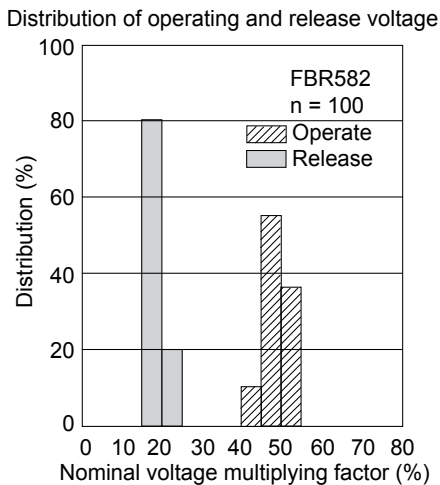


### ■ REFERENCE DATA

#### [FBR572 type]



#### [FBR582 type]

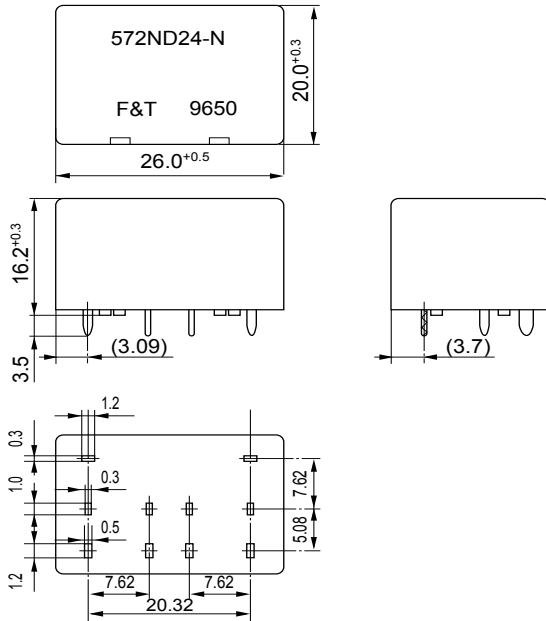


# FBR572, 582 SERIES

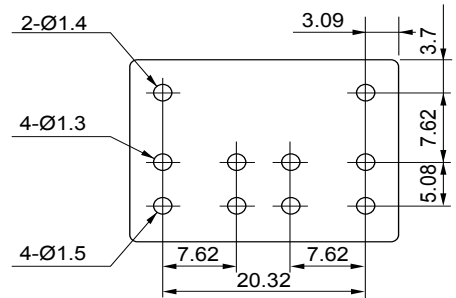
## ■ DIMENSIONS

[FBR572 type]

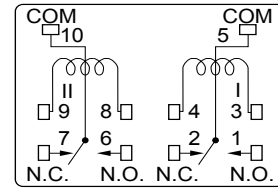
- Dimensions



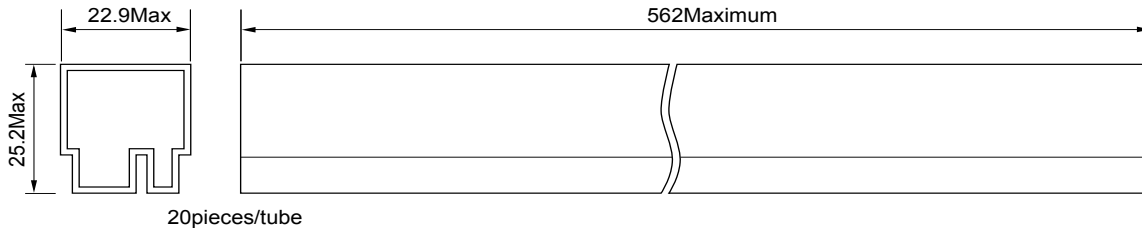
- PC board mounting hole layout (BOTTOM VIEW)



- Schematic (BOTTOM VIEW)



- Tube carrier



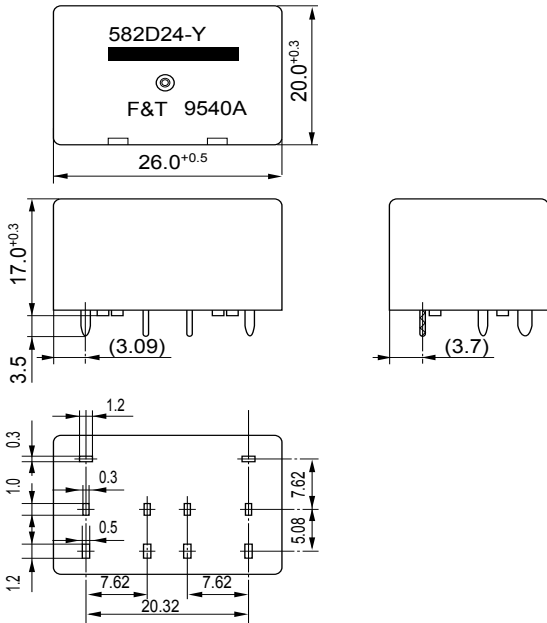
Unit: mm

# FBR572, 582 SERIES

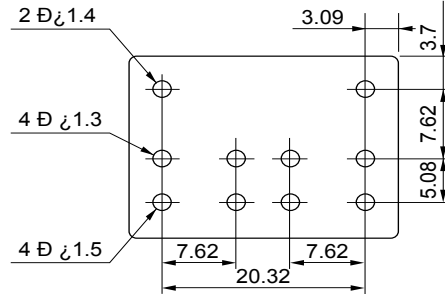
## ■ DIMENSIONS

[FBR582 type]

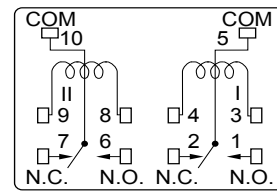
● Dimension



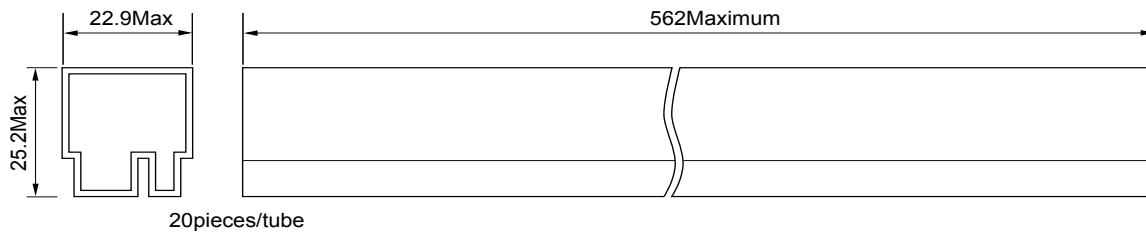
● PC board mounting hole layout (BOTTOM VIEW)



● Schematic (BOTTOM VIEW)



● Tube carrier



Unit: mm



## RoHS Compliance and Lead Free Relay Information

### 1. General Information

- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. Most of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (<http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>)
- Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu.
- All signal and most power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 5 hazardous materials that are restricted by RoHS directive (lead, mercury, chromium IV, PBB, PBDE).
- It has been verified that using lead-free relays in lead assembly process will not cause any problems (compatible).
- "LF" is marked on each outer and inner carton. (No marking on individual relays).
- To avoid leaded relays (for lead-free sample, etc.) please consult with area sales office.
- We will ship leaded relays as long as the leaded relay inventory exists.

Note: Cadmium was exempted from RoHS on October 21, 2005. (Amendment to Directive 2002/95/EC)

### 2. Recommended Lead Free Solder Profile

- Recommended solder paste Sn-3.0Ag-0.5Cu.

#### Reflow Solder condition

**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.

### 4. Tin Whisker

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

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