

# HIGH POWER TWIN RELAY

## 1 POLE x 2—30A

### (FOR AUTOMOTIVE APPLICATIONS)

# FBR562 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)
- High heat resistance and extended operating voltage
- RoHS compliant since date code: 0627  
Please see page 9 for more information



#### ■ ORDERING INFORMATION

[Example]      FBR562   N   D12   -   W1   \*\*  
                   (a)    (b)   (c)        (d)   (e)

(a)	Series Name	FBR562: FBR562 Series relay for 12 V battery (contact gap 0.4 mm)
(b)	Enclosure	N : Plastic sealed type
(c)	Nominal Voltage	D06 : 6 VDC D09 : 9 VDC D12 : 12 VDC
(d)	Contact Material	

# FBR562 SERIES

## ■ SPECIFICATIONS

Item		Specifications	
Contact	Arrangement	1 form C × 2 (SPDT × 2)	
	Material	Silver-tin oxide indium (–W1 type)	
	Voltage Drop (resistance)	Maximum 100 mV (at 2 A 12 VDC)	
	Ratings	14 VDC 20 A (locked motor load) 14 VDC inrush 20 A, break 4 A (motor free load)	
	Maximum Carrying Current	40 A/2 minutes, 30 A/ 1 hour (25°C, 100% rated coil voltage)	
	Maximum Inrush Current (reference)	–W1 type: 60 A	
	Max. Switching Current (reference)	40 A 16 VDC	
	Minimum Switching Load*1 (reference)	–W1 type: 6 VDC 1 A	
Coil	Operating Temperature	–40°C to +85°C (no frost) (refer to the CHARACTERISTIC DATA)	
	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	
	Electrical	1 × 10 <sup>5</sup> operations minimum (locked motor load) 1 × 10 <sup>6</sup> operations minimum (motor free 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>

\*1 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

MODEL	Nominal voltage	Coil resistance (±10%) (at 20°C)	Must operate voltage	Thermal resistance
W1 contact				
FBR562ND06-W1	6 VDC	42 Ω	3.6 VDC (at 20°C) 4.5 VDC (at 85°C)	77°C/W
FBR562ND09-W1	9 VDC	95 Ω	5.4 VDC (at 20°C) 6.8 VDC (at 85°C)	
FBR562ND12-W	112 VDC	170 Ω	7.3 VDC (at 20°C) 9.2 VDC (at 85°C)	

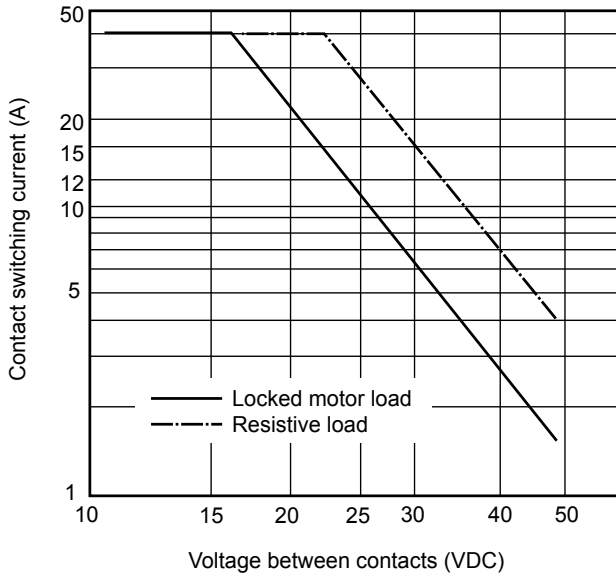
# FBR562 SERIES

## ■ SUITABLE APPLICATIONS

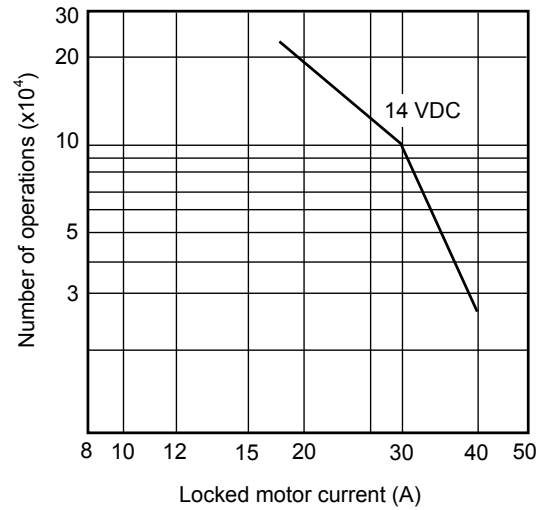
Application		Normal load current	Life x 10 <sup>3</sup>	Recommended model (example)
For 12 V battery	Power Windows	20 to 30 A (switching at motor locking)	100	FBR562N□ -W1
	Automatic Door Lock	18 to 30 A/4 to 5 door (switching at motor locking)	100	FBR562N□ -W1
	Intermittent Wipers	INRUSH 15 to 30 A BREAK 2 to 8 A (motor free)	300	FBR562N□ -W1
	Tilt-Lock Wheel	INRUSH 15 A BREAK 2.5 A (motor free)	100	FBR562N□ -W1
	Sunroof	20 to 30 A (switching at motor locking)	100	FBR562N□ -W1
	Others	Car audio system, etc	—	FBR562N□ -W1

## ■ CHARACTERISTIC DATA

### 1. MAXIMUM BREAK CAPACITY



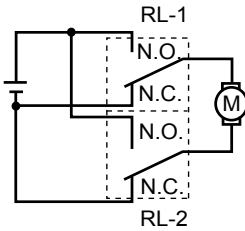
### 2. LIFE



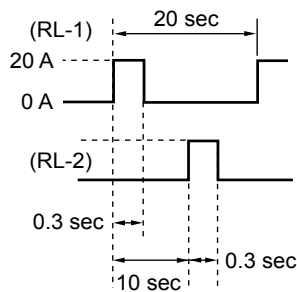
## 3. LIFE TEST (EXAMPLE)

- Test item  
14 VDC-20 A  
Motor lock  
200,000 operations minimum  
(FBR562 □-W type)

- Test circuit

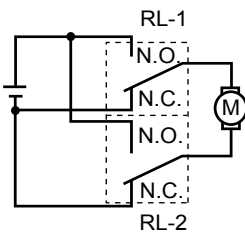


- Current Wave Form

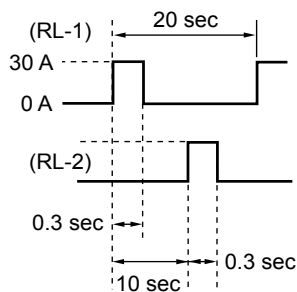


- Test item  
14 VDC-30 A  
Motor lock  
100,000 operations minimum  
(FBR562 □-W type)

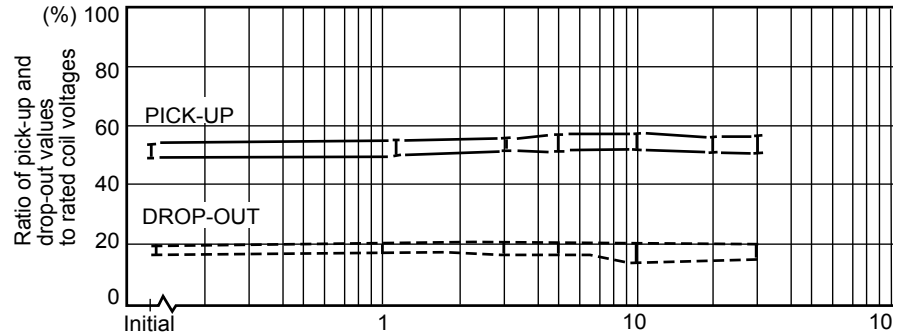
- Test circuit



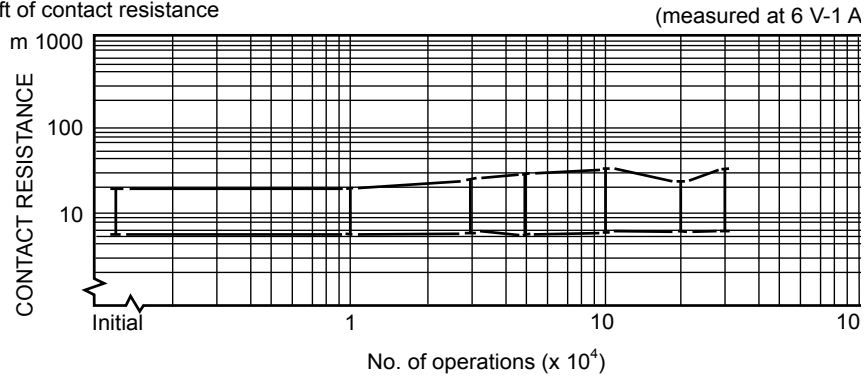
- Current wave form



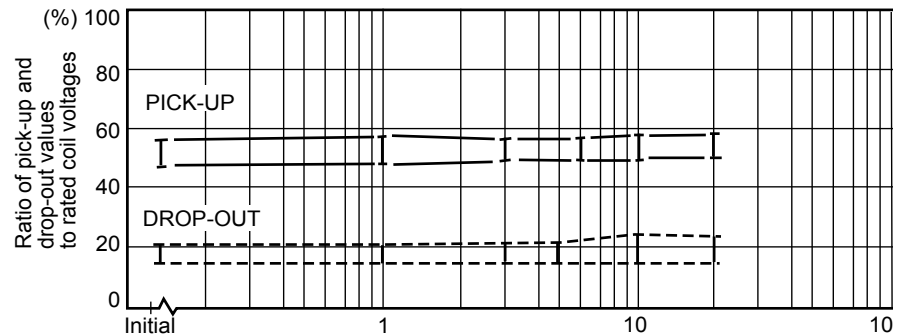
- Shift of pick-up drop-out voltage



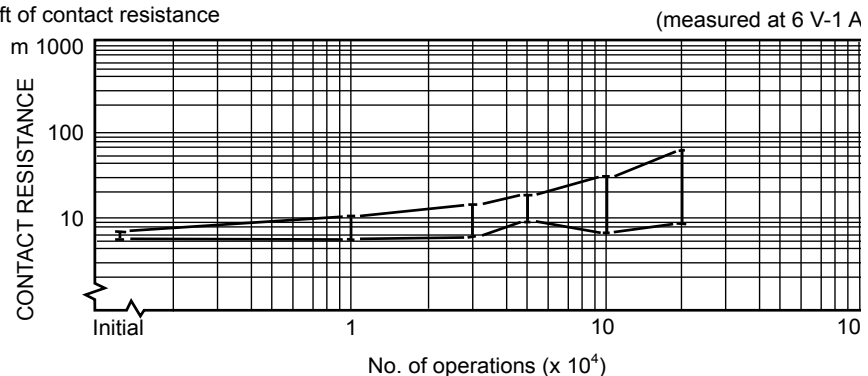
- Shift of contact resistance



- Shift of pick-up drop-out voltage



- Shift of contact resistance

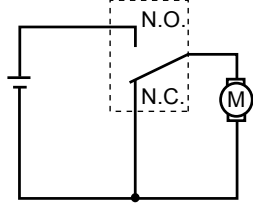


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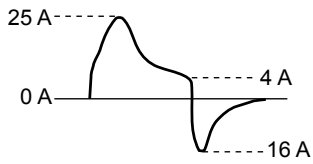
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- Test item  
16 VDC-25 A INRUSH  
Motor Free  
400,000 operations minimum  
(FBR562 □-N type)

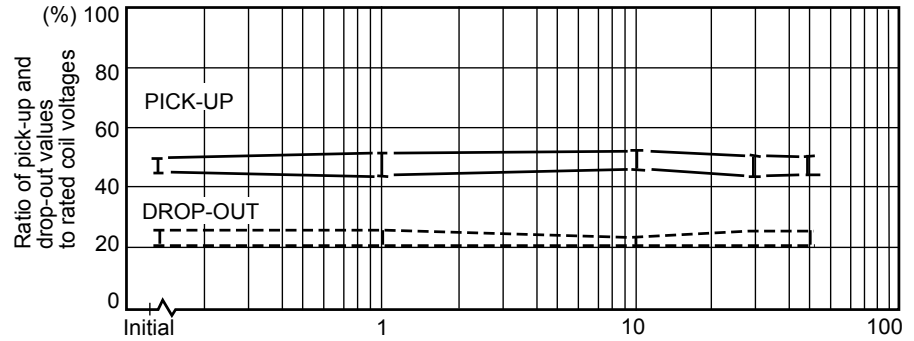
• Test circuit



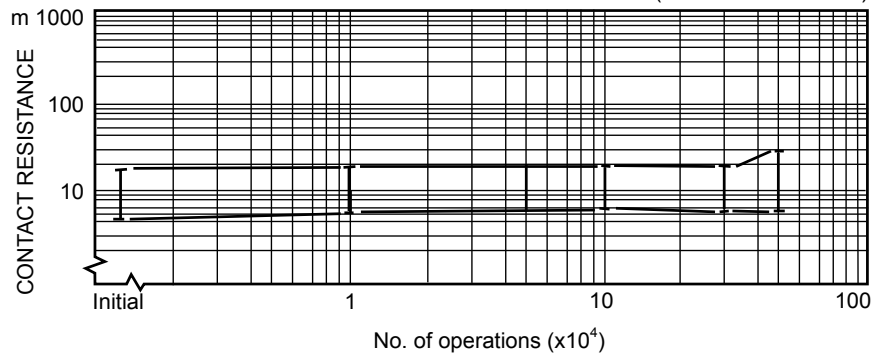
• Current wave form



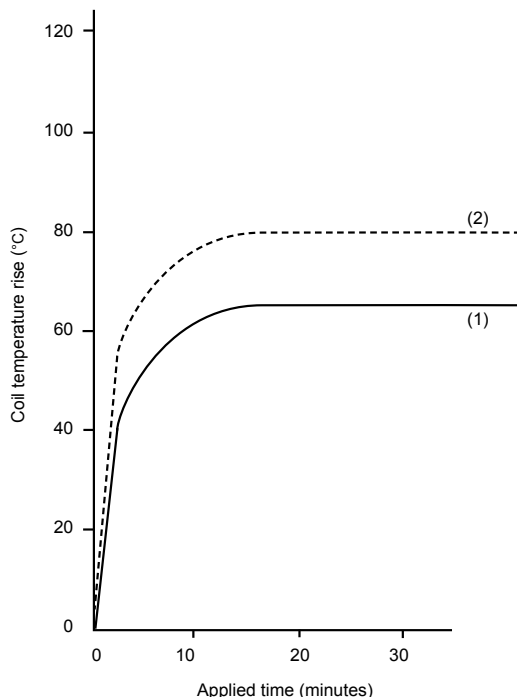
• Shift of pick-up drop-out voltage



• Shift of contact resistance



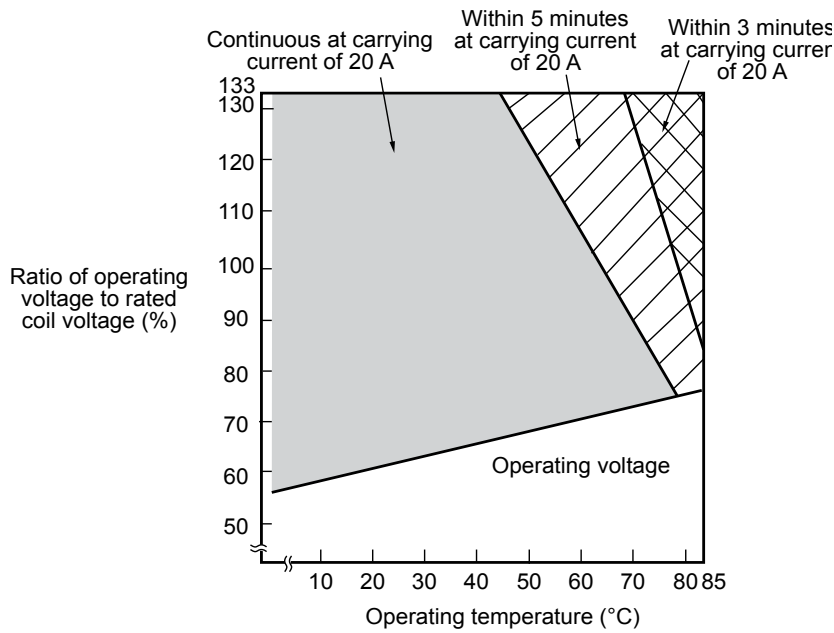
## 4. COIL TEMPERATURE RISE



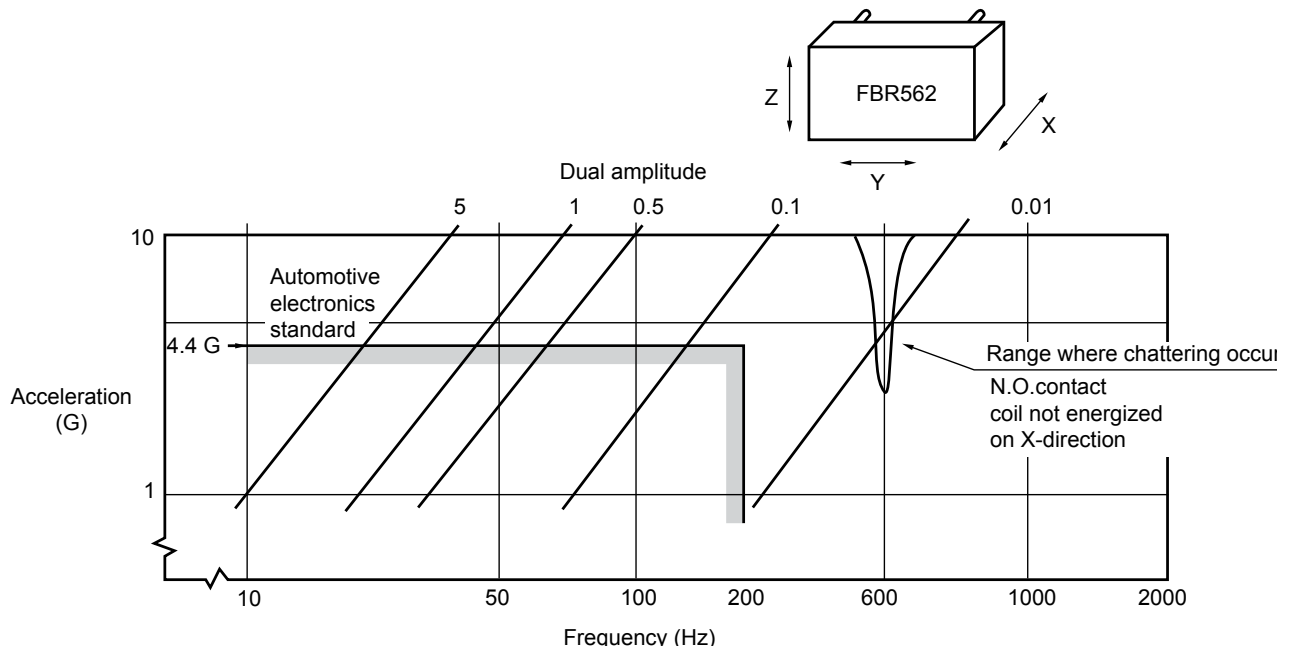
\*: One coil energized at 20°C

If both coils are energized, temperature rise will increase by  
(1) 5°C (0 A carrying current)  
(2) 20°C (10 A carrying current)

## 5. OPERATING COIL VOLTAGE RANGE (EXAMPLE)

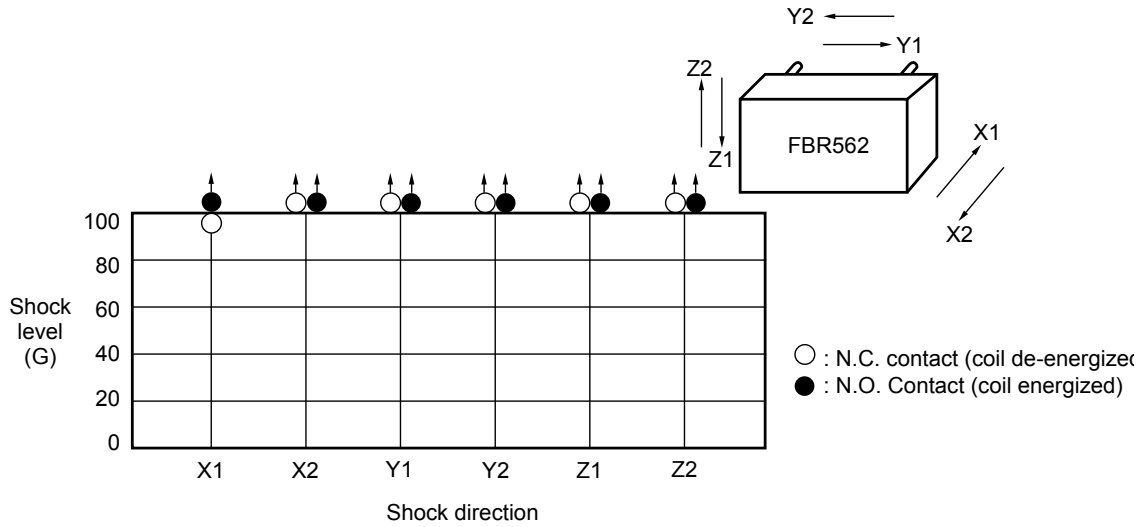


## 6. VIBRATION RESISTANCE CHARACTERISTICS

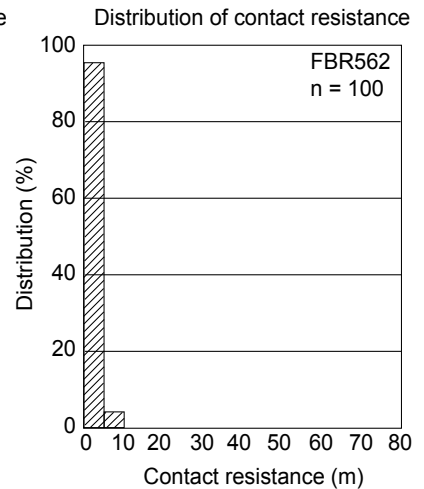
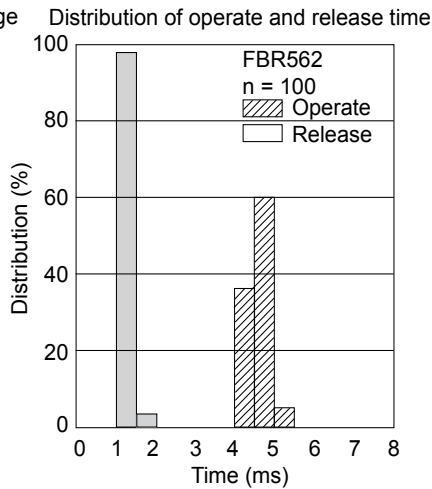
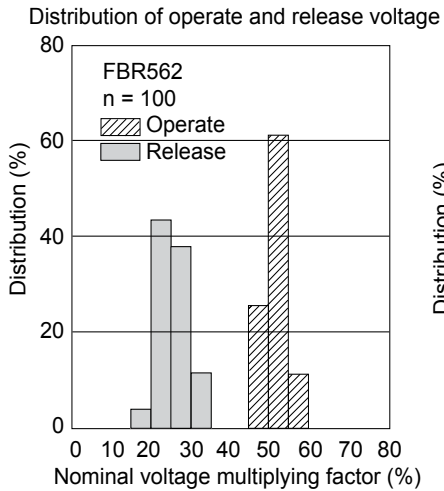


# FBR562 SERIES

## 7. SHOCK RESISTANCE CHARACTERISTICS



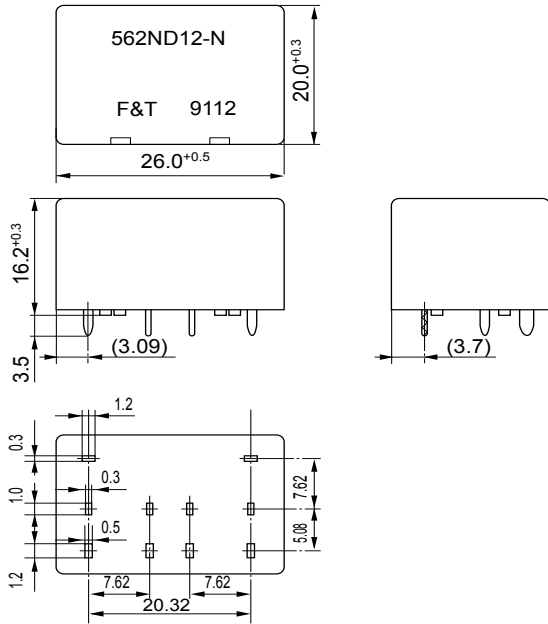
## REFERENCE DATA



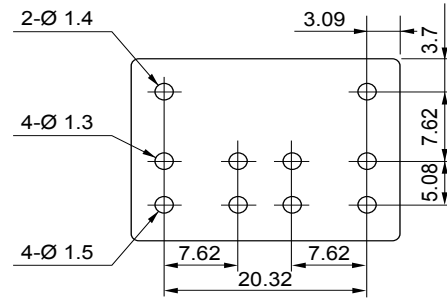
# FBR562 SERIES

## ■ DIMENSIONS

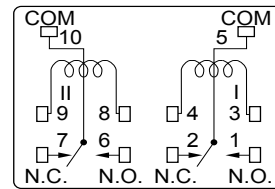
- Dimensions



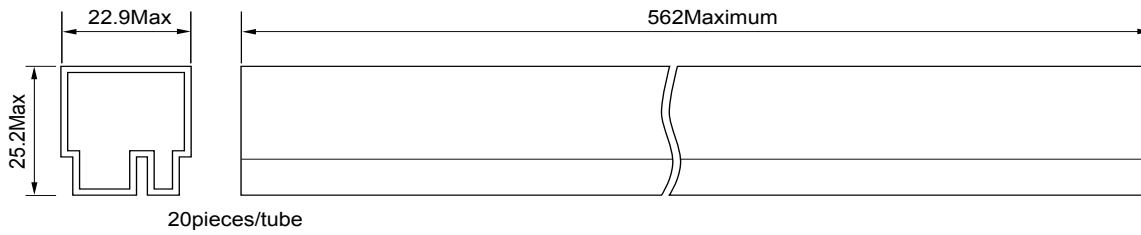
- PC board mounting hole layout (BOTTOM VIEW)



- 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 leaded 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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