

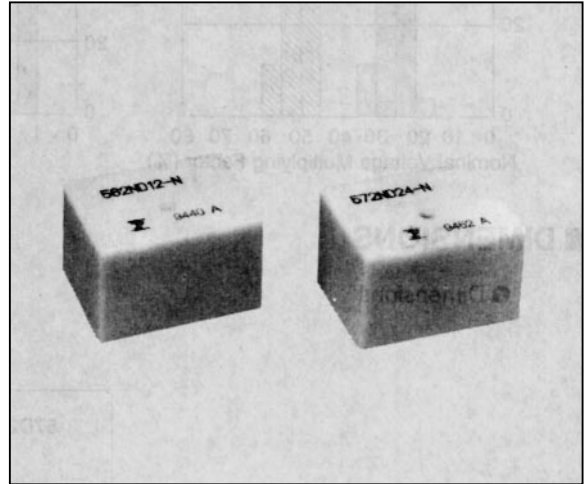
HIGH POWER TWIN RELAY

1 POLE × 2–30 A (FOR AUTOMOTIVE APPLICATIONS)

FBR560, 570 SERIES

■ FEATURES

- Two independent relays mounted in a single package
(43% the volume as compared with two FRL-270 relays)
- High current contact capacity
(carrying current: 40 A/2 min. 30 A/1 Hr)
- Available for controlling 24 V motors in trucks and other large vehicles (FBR570)
- High heat resistance and extended operating voltage



■ ORDERING INFORMATION

[Example] $\frac{\text{FBR562}}{\text{(a)}} \frac{\text{N}}{\text{(b)}} \frac{\text{D12}}{\text{(c)}} - \frac{\text{W}}{\text{(d)}} \frac{\text{**}}{\text{(e)}}$

(a)	Series Name	FBR562: FBR560 Series Relay for 12 V battery (Contact Gap 0.4 mm) FBR572: FBR570 Series Relay for 24 V battery (Contact Gap 0.8 mm)
(b)	Enclosure	N : Plastic Sealed Type
(c)	Nominal Voltage	D06 : 6 VDC D09 : 9 VDC D12 : 12 VDC D24 : 24 VDC
(d)	Contact Material	W : Silver-Tin oxide indium N : Silver copper nickel
(e)	Custom Designation	To be assigned custom specification

FBR560, 570 SERIES

■ SPECIFICATIONS

Item		FBR560 Series	FBR570 Series
Contact	Arrangement	1 Form C × 2 (SPDT × 2)	
	Material	Silver-Tin oxide indium (-W Type) Silver copper nickel (-N Type)	
	Voltage Drop (Resistance)	Max. 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)	28 VDC 12 A (Locked Motor Load) 28 VDC Inrush 15 A, Break 2.5 A (Motor Free Load)
	Max. Carrying Current	40 A/2 min. 30 A/ 1 Hr. (25°C, Nominal Voltage)	
	Max. Inrush Current (Reference)	-W Type: 60 A -N Type: 40 A	
	Max. Switching Current (Reference)	40 A 16 VDC	12 A 28 VDC
	Min. Switching Load* ¹ (Reference)	-W Type: 6 VDC 1 A -N Type: 6 VDC 2 A	
Coil	Operating Temperature	-30°C ~ +85°C (No frost) (Refer to the CHARACTERISTIC DATA)	
	Storage Temperature	-40°C ~ +100°C (No frost)	
Time Value	Operate (at nominal voltage)	Max. 10 ms	
	Release (at nominal voltage)	Max. 5 ms	
Life	Mechanical	10 × 10 ⁶ ops. min.	
	Electrical	100 × 10 ³ ops. min. (Locked Motor Load) 1 × 10 ⁶ ops. min. (Motor Free Load)	100 × 10 ³ ops. min. (Locked Motor Load) 500 × 10 ³ ops. min. (Motor Free Load)
Other	Vibration Resistance		10 to 55 Hz (double amplitude of 1.5 mm)
	Shock Resistance	Misoperation	100 m/s ² (11 ± ¹ ms)
		Endurance	1,000 m/s ² (11 ± ¹ ms)
	Unit Mass		Approx. 18 g

*1 Values when switching a resistive load at normal room temperature and humidity and in a clean atmosphere.
The minimum switching load varies with the switching frequency and operating environment.

■ COIL DATA CHART

1. FBR560 Series

MODEL		Nominal Voltage	Coil resistance (±10%) (at 20°C)	Must Operate Voltage	Thermal Resistance
W contact	N contact				
FBR562ND06-W	FBR562ND06-N	6 VDC	42 Ω	3.6 VDC (at 20°C) 4.5 VDC (at 85°C)	77°C/W
FBR562ND09-W	FBR562ND09-N	9 VDC	95 Ω	5.4 VDC (at 20°C) 6.8 VDC (at 85°C)	
FBR562ND12-W	FBR562ND12-N	12 VDC	170 Ω	7.3 VDC (at 20°C) 9.2 VDC (at 85°C)	

FBR560, 570 SERIES

2. FBR570 Series

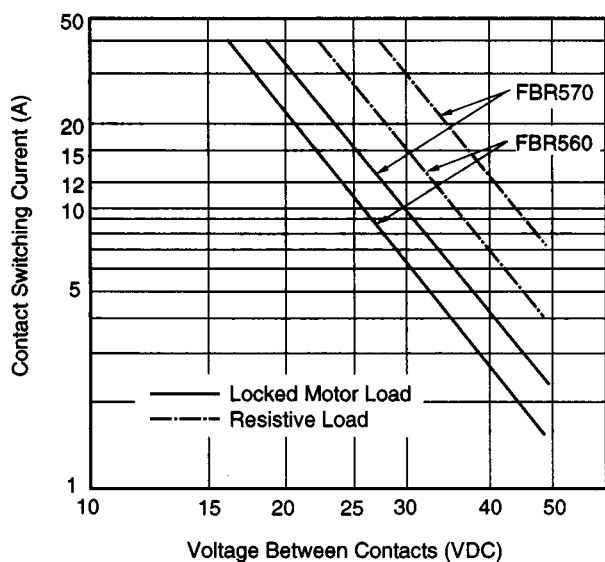
MODEL		Nominal Voltage	Coil resistance (±10%) (at 20°C)	Must Operate Voltage	Thermal Resistance
W contact	N contact				
FBR572ND24-W	FBR572ND24-N	24 VDC	384 Ω	14.4 VDC (at 20°C) 18.0 VDC (at 85°C)	67°C/W

■ SUITABLE APPLICATION

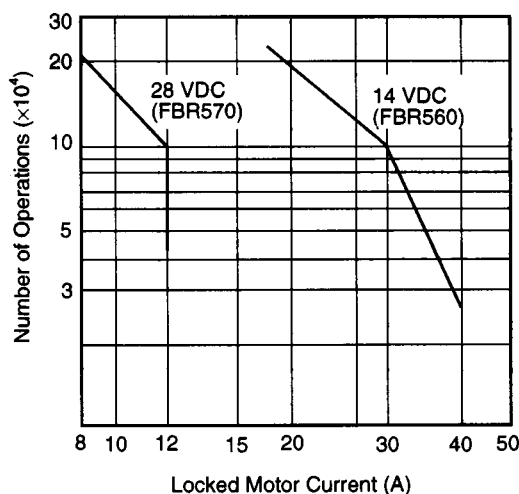
Application		Normal Load Current	Life × 10 ³	Recommendable Model (Example)
For 12 V battery	Power Winows	20 to 30 A (switching at motor lockig)	100	FBR562N□-W
	Automatic Door Lock	18 to 30 A/4 to 5 door (switching at motor locking)	100	FBR562N□-W
	Intermittent Wipers	INRUSH 15 to 30 A BREAK 2 to 8 A (motor free)	300	FBR562N□-N
	Tilt-Lock Wheel	INRUSH 15 A BREAK 2.5 A (motor free)	100	FBR562N□-W
	Sunroof	20 to 30 A (switching at motor locking)	100	FBR562N□-W
	Others	Car Audio System, etc	—	
For 24 V battery	Power Windows	10 to 12 A (switching at motor locking)	100	FBR572N□-W
	Automatic Door Lock	5 A/2 door (switching at motor locking)	100	FBR572N□-W
	Intermittent Wipers	INRUSH 15 to 30 A BREAK 2 to 8 A (motor free)	300	FBR572N□-W

■ CHARACTERISTIC DATA

1. MAXIMUM BREAK CAPACITY



2. LIFE

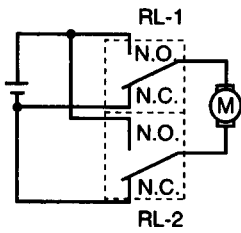


FBR560, 570 SERIES

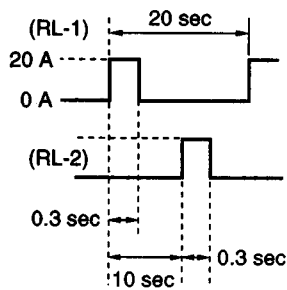
3. LIFE TEST (EXAMPLE)

- Test Item
14 VDC-20 A
Motor Lock
200,000 ops. MIN.
(FBR562 □-W type)

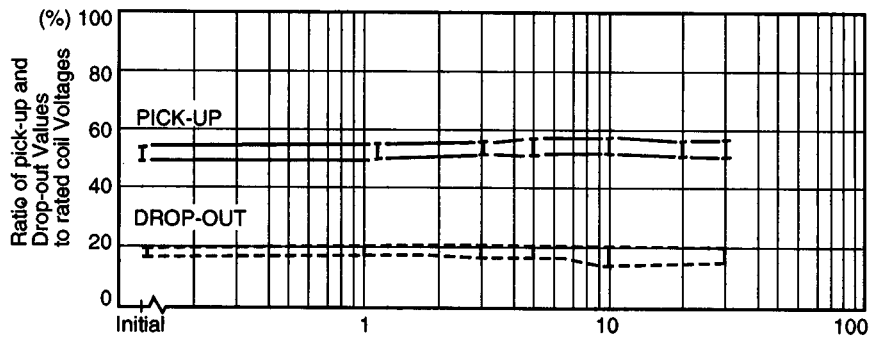
- Test Circuit



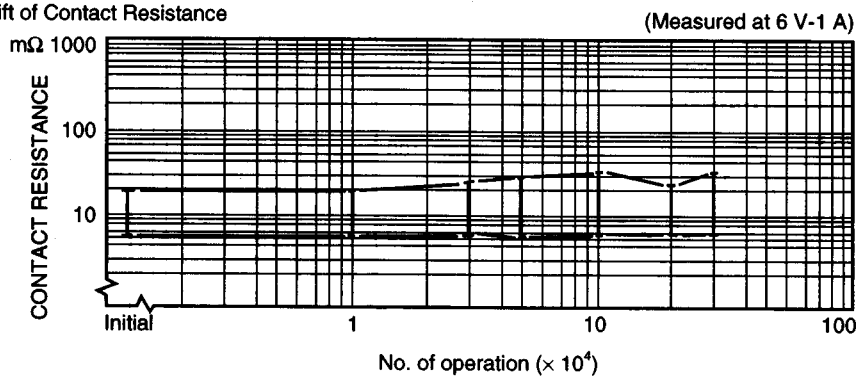
- Current Wave Form



- Shift of Pick-up Drop-out Voltage

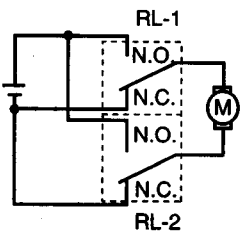


- Shift of Contact Resistance

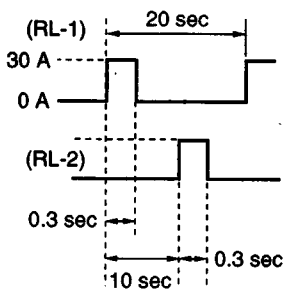


- Test Item
14 VDC-30 A
Motor Lock
100,000 ops. MIN.
(FBR562 □-W type)

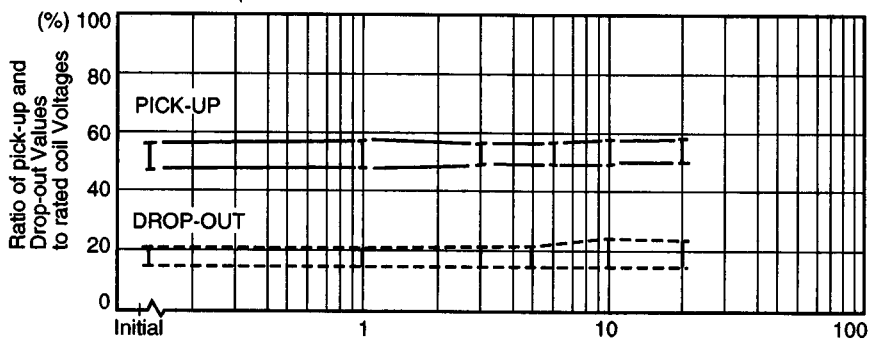
- Test Circuit



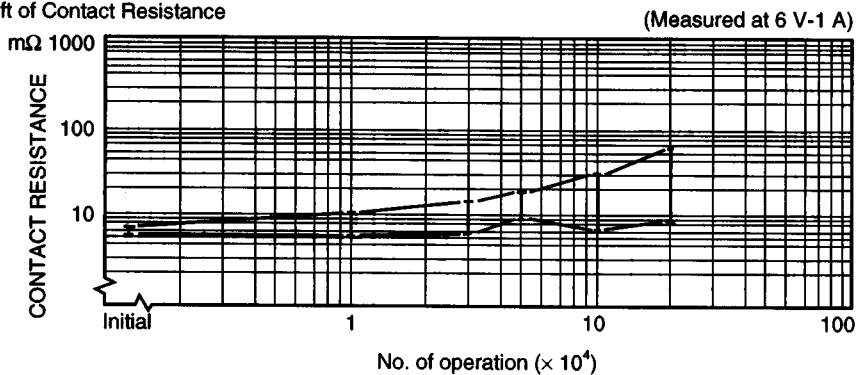
- Current Wave Form



- Shift of Pick-up Drop-out Voltage



- Shift of Contact Resistance



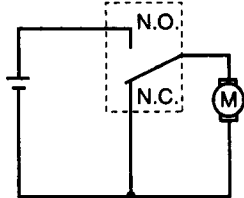
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FBR560, 570 SERIES

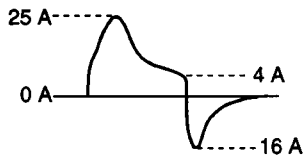
(Continued)

- Test Item
16 VDC-25 A INRUSH
Motor Free
400,000 ops. MIN.
(FBR562 □-N type)

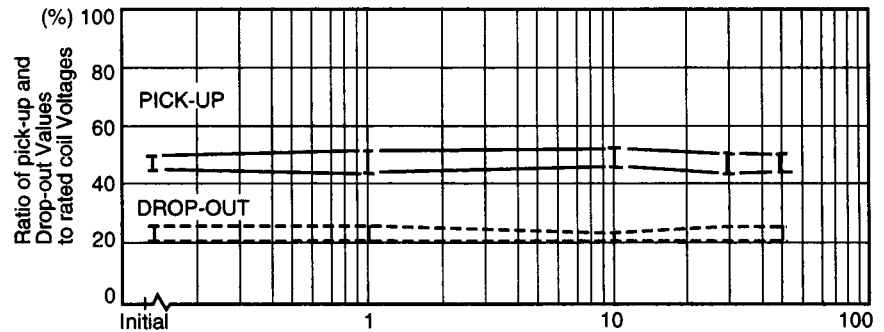
• Test Circuit



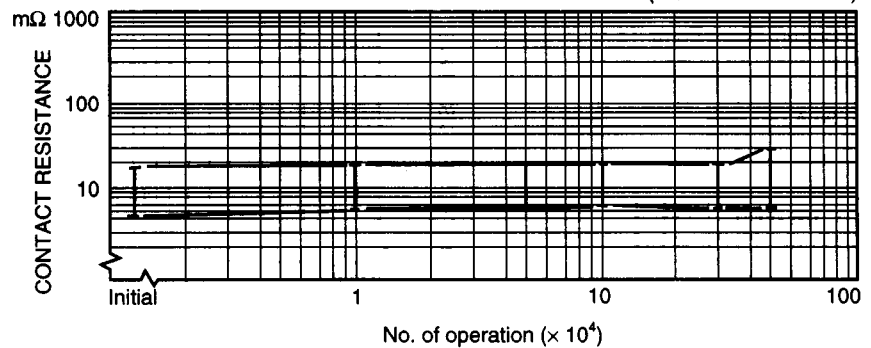
• Current Wave Form



• Shift of Pick-up Drop-out Voltage

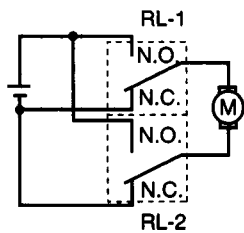


• Shift of Contact Resistance

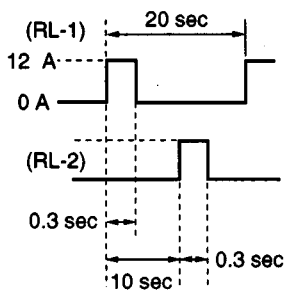


- Test Item
28 VDC-12 A
Motor Lock
100,000 ops. MIN.
(FBR572 □-W type)

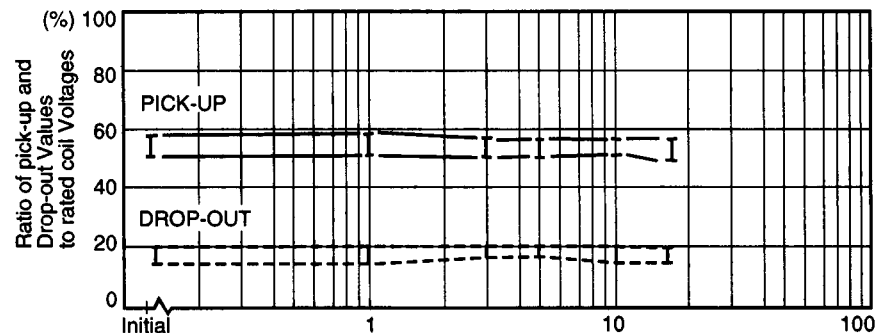
• Test Circuit



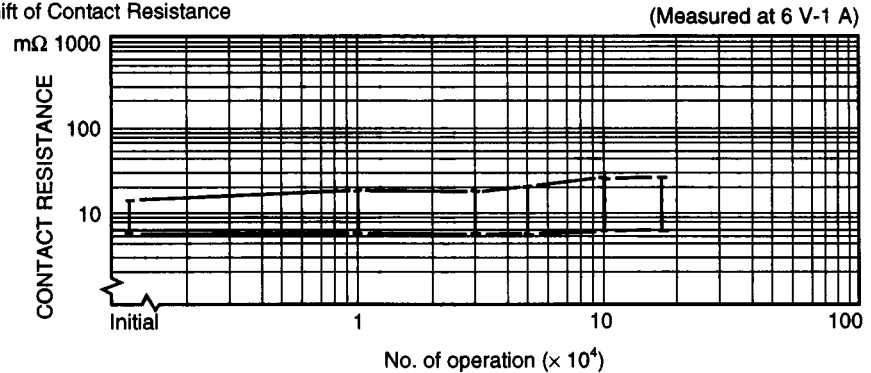
• Current Wave Form



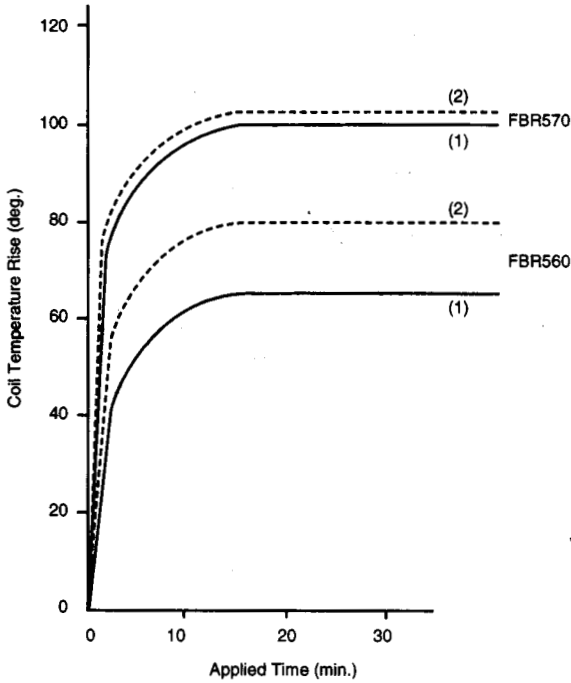
• Shift of Pick-up Drop-out Voltage



• Shift of Contact Resistance



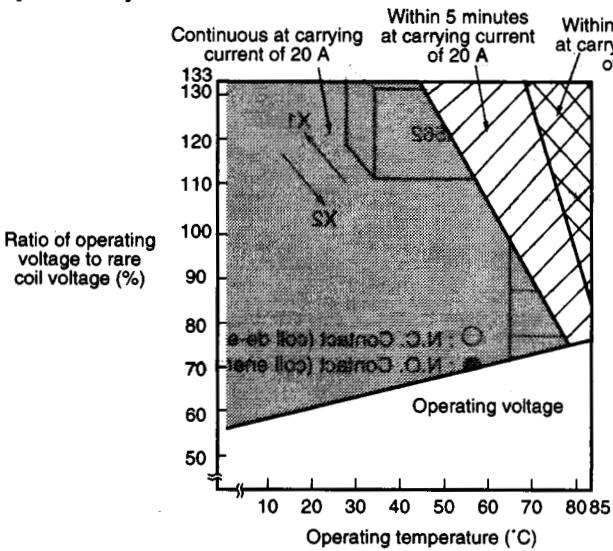
4. COIL TEMPERATURE RISE



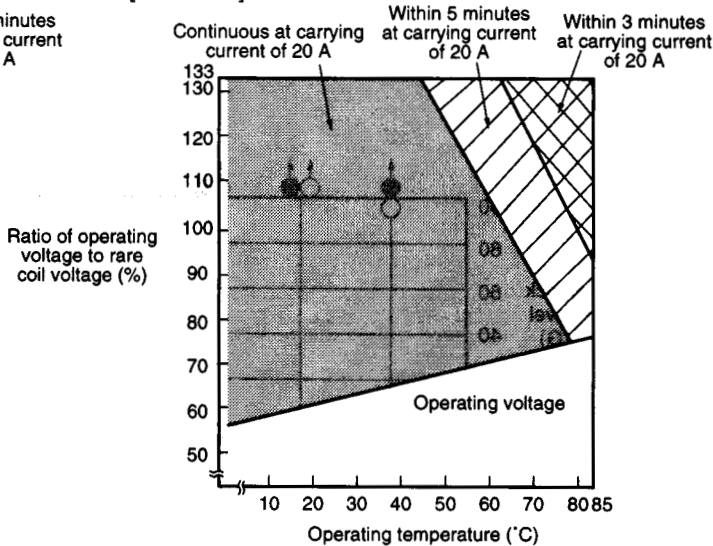
*: One coil energized at 20°C
 If both coils are energized, temperature rise will increase by
 (1) 5°C (0 A carrying current)
 (2) 20°C (10 A carrying current)

5. OPERATING COIL VOLTAGE RANGE (EXAMPLE)

[FBR560]

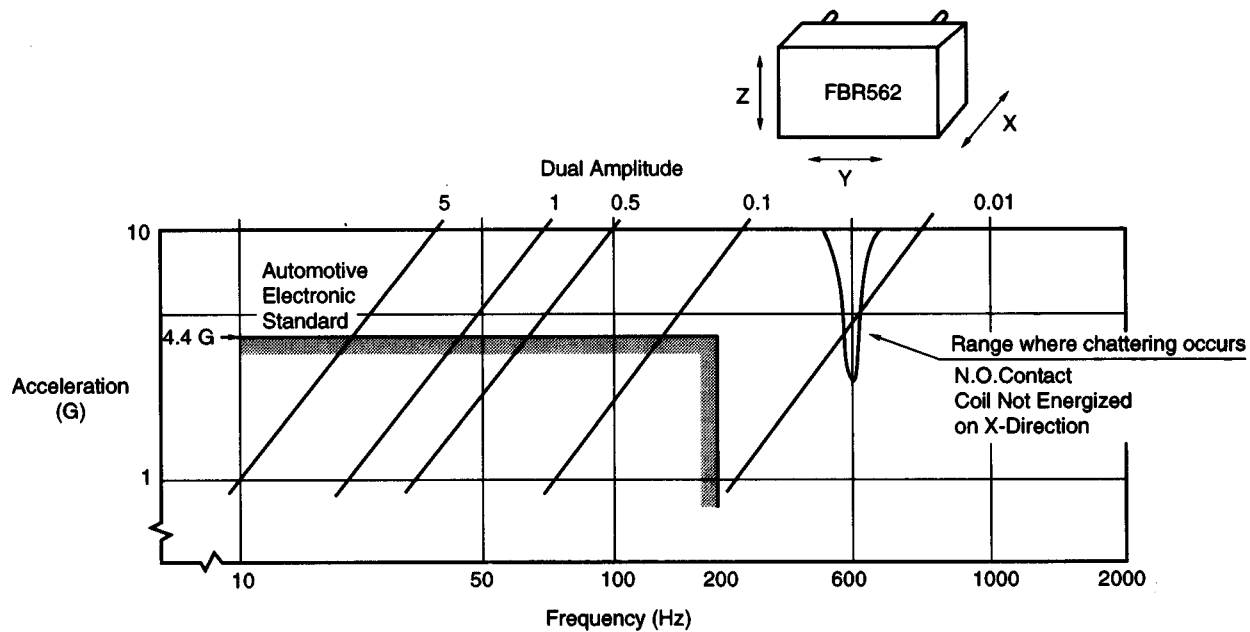


[FBR570]

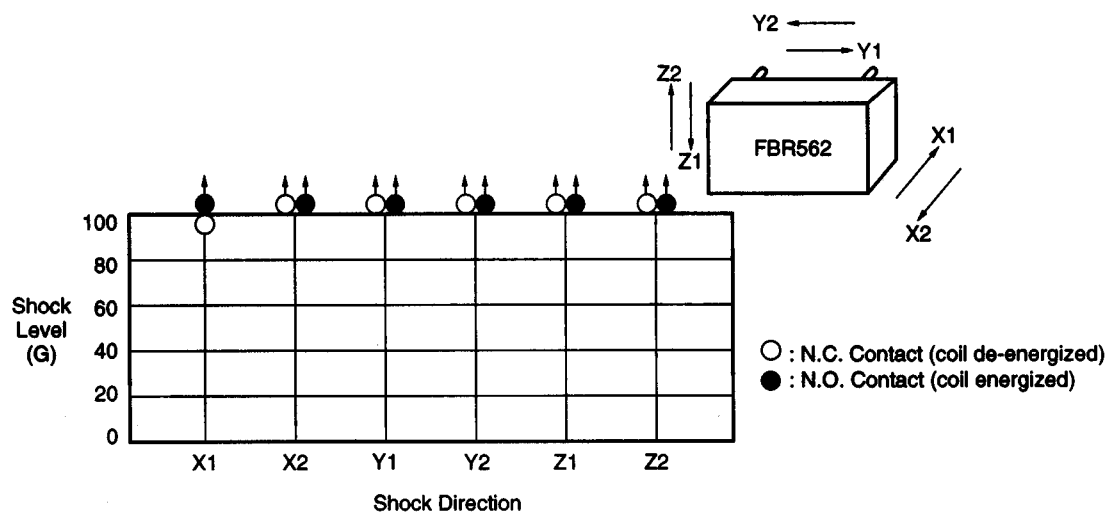


FBR560, 570 SERIES

6. VIBRATION RESISTANCE CHARACTERISTICS

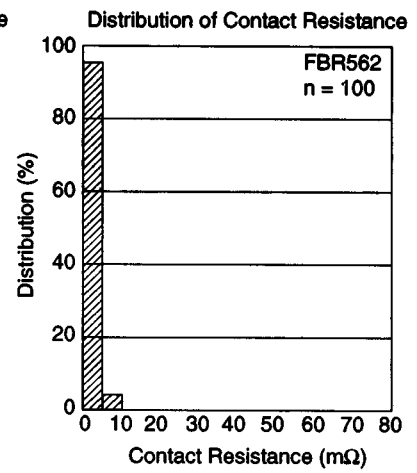
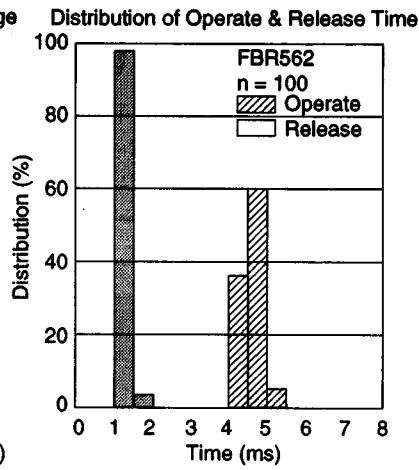
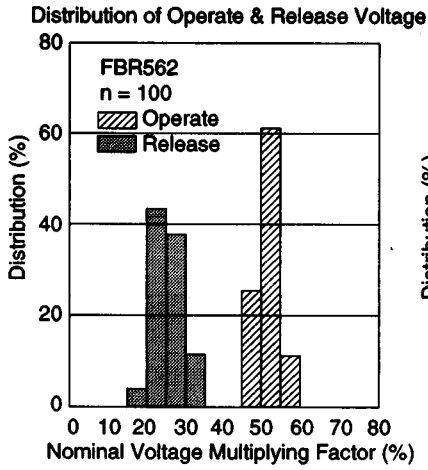


7. SHOCK RESISTANCE CHARACTERISTICS



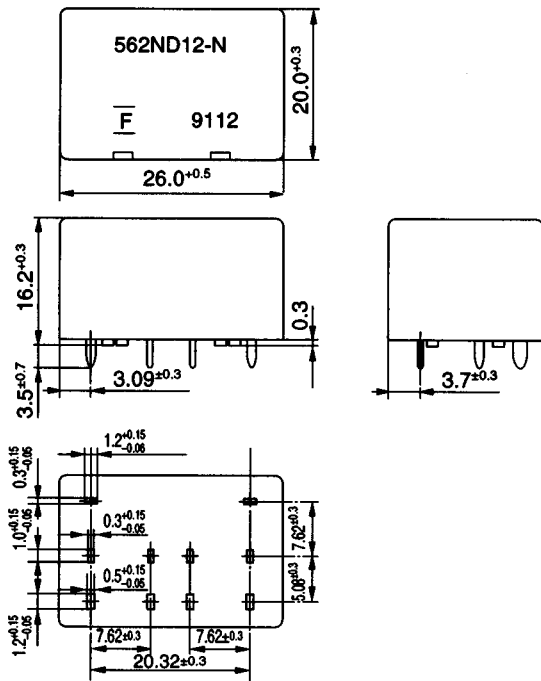
FBR560, 570 SERIES

REFERENCE DATA

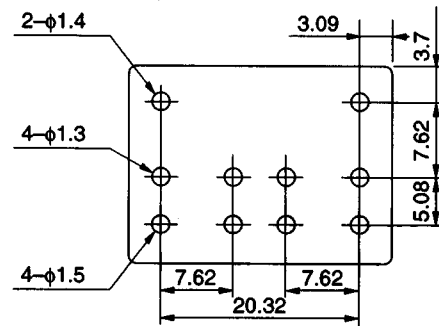


DIMENSIONS

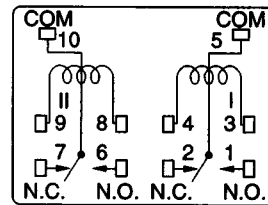
Dimensions



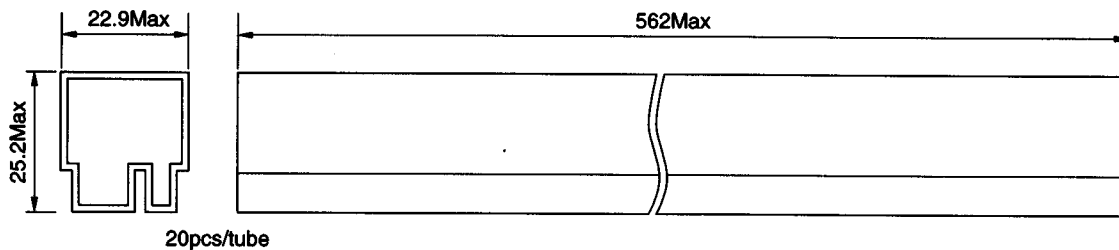
PC board mounting hole layout (BOTTOM VIEW)



Schematics (BOTTOM VIEW)



Tube carrier



Unit: mm