COMPACT POWER RELAY
1 POLE—20 A
(For Automotive Applications)

FBR53 SERIES



■ FEATURES

- Compact for high density packaging
- High contact capability (40A continuous)
- High temperature grade (-40˚C to 125˚C)
- Contact arrangement Form U (form A)

■ ORDERING INFORMATION

[Example] FBR53 ND 012 -Y - ***
(a) (b) (c) (d) (e)

(a)	Series Name	FBR-53	: FBR-53 Series
(b)	Contact Arrangement	ND	: Form U
(c)	Nominal Voltage	09 10 12	: 9 VDC : 10 VDC : 12 VDC
(d)	Contact Material	Y	: Silver Tin Oxide Alloy
(e)	Custom designation	Nil -HW	: Standard : High capacity

Note: The part number on the relay cover does not include 'FBR'
Example: Ordering part number: FBR-53ND12-Y
Stamped part number: 53ND12-Y

■ COIL DATA CHART

Standard

Model	Nominal Voltage	Coil Resistance (±10% at 20˚C)	Must Operate Voltage
FBR53ND09-Y	9 VDC	135Ω	5.4 VDC (at 20˚C) 6.8 VDC (at 85˚C)
FBR53ND10-Y	10 VDC	180Ω	6.3 VDC (at 20˚C) 7.9 VDC (at 85˚C)
FBR53ND12-Y	12VDC	240Ω	7.3 VDC (at 20˚C) 9.2 VDC (at 85˚C)

High capacity

Model	Nominal Voltage	Coil Resistance (±10% at 20˚C)	Must Operate Voltage
FBR53ND09-Y-HW	9 VDC	94Ω	5.4 VDC (at 20˚C) 7.7 VDC (at 125˚C)
FBR53ND10-Y-HW	10 VDC	117Ω	6.3 VDC (at 20˚C) 9.0 VDC (at 125˚C)
FBR53ND12-Y-HW	12VDC	167Ω	7.3 VDC (at 20˚C) 10.4 VDC (at 125˚C)

■ SPECIFICATIONS

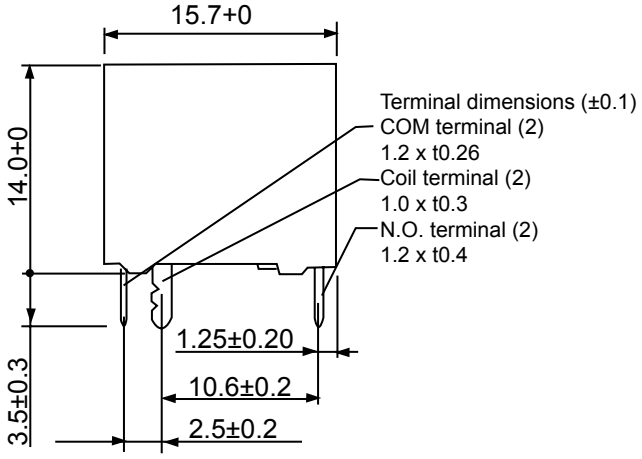
Item			Specification	
			Standard	-HW
Contact	Arrangement		Form U (Form A)	
	Material		Silver Tin Oxide	
	Contact rating		DC 14V, 20A (resistive load)	
	Maximum Carrying Current		20A continuous (10A each contact) at 25° C	40A continuous (20A each contact) at 25° C
	Maximum Inrush Current		60A inrush (30A each contact) at 25° C	80A inrush (40A each contact) at 25° C
	Contact Resistance		Average 1.5mΩ at 7A, 12 VDC	
Coil	Coil Power Consumption (at rated coil voltage)		Approximately 0.6 W	Approximately 0.86 W
	Operating Temperature Range		-40° C to +125° C (no frost)	
	Storage Temperature Range		-40° C to +125° C (no frost)	
	Operating Humidity		45 to 85%RH	
Insulation	Initial resistance		100MΩ maximum at 500VDC, (at 20° C, 65%RH)	
	Dielectric withstanding voltage between coil and contacts		500 VAC 50/60 Hz 1 minute, (at 20° C, 65%RH)	
Time	Operate (at nominal voltage)		10 ms maximum	
	Release (at nominal voltage)		5 ms maximum	
Life	Mechanical		$10x10^6$ operations minimum (with no load for contact)	
	Electrical		$1x10^5$ operations minimum (14VDC 20A resistive load)	
Other	Vibration resistance	Misoperation	10-55Hz,1.5mm dual amplitude, direction X, Y, Z	
		Endurance	10 to 100Hz, 1.5mm dual amplitude, direction X, Y, Z. Not be damaged (mechanical and technical) after test. Coil energizing: 1 hr in each direction, Coil non-energizing: 1 hr in each direction	
	Shock resistance	Misoperation	100 m/s^2 (11ms), direction X, Y, Z	
		Endurance	1000 m/s^2 (11ms), direction X, Y, Z, each 6 times Not be damaged (mechanical and technical) after test. Coil energizing: 3 times; Coil non-energizing: 3 times, total 36 times.	
	Terminal	Solderability	at 270±10° C for 3±0.5sec. (terminals must be soldered)	
		Strength	Pulling a terminal in its longitudinal direction for 10 sec. at 9.8N (1 Kgf)	
	Weight		Approximately 6 grams	

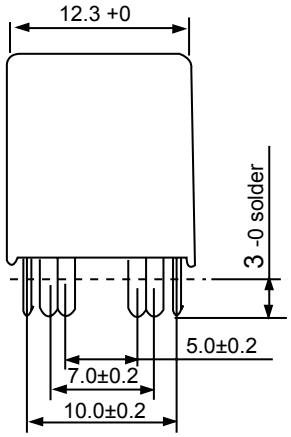
*This is the standard value of the minimum load level. This value may differ depending on the switching frequency, environmental conditions and target reliability standard. We recommend to check this value by an actual load prior to use.

■ DIMENSIONS

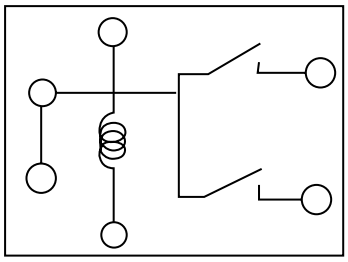
Standard

• Dimensions

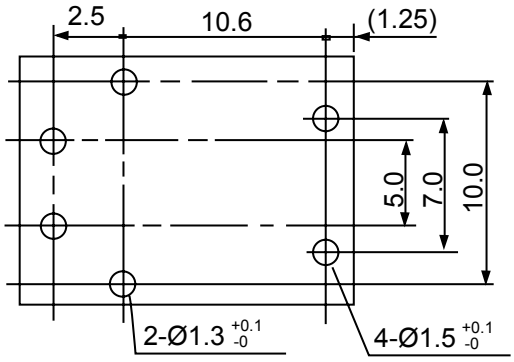




• Schematic
(bottom view)



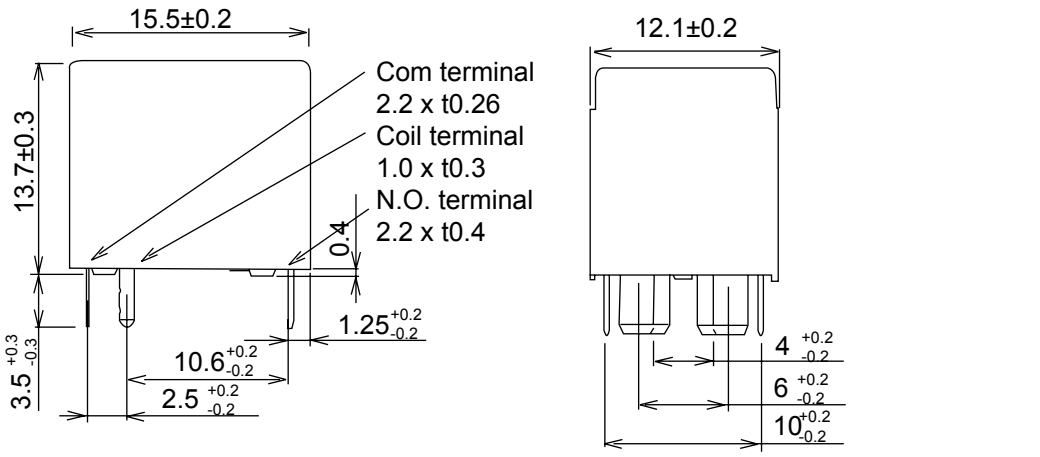
• Mounting hole layout
(bottom view)



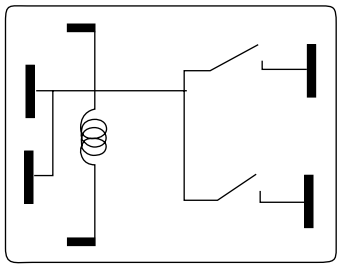
Unit: mm

High Capacity

• Dimensions

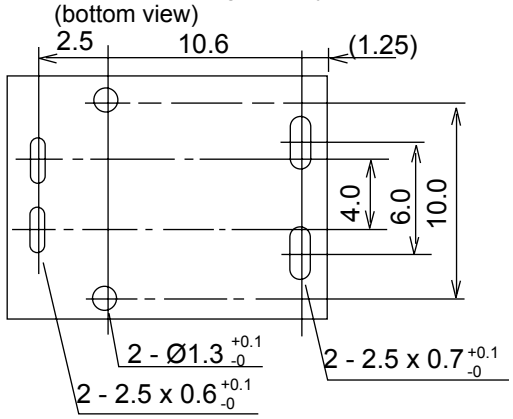


• Schematic
(bottom view)



Tolerance: ±0.1mm

• PCB Mounting hole layout
(bottom view)



Unit: mm

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