

COMPACT HIGH POWER RELAY

1 POLE - 40A (For automotive applications)

FBR53-HW Series

■ FEATURES

- Small 40A relay
- High temperature grade (-40°C to 125°C)
- Contact arrangement Form U (form A)
- Surface mount compatible (reflow capability)
- Inrush current 80A
- Coil wire temperature class: H

■ Part Numbers

[Example] FBR53 N D12 - Y - HW - RW
 (a) (b) (c) (d) (e) (f)

(a)	Relay type	FBR53 : FBR53 series
(b)	Enclosure	N : Plastic sealed type
(c)	Coil rated voltage	D12 : 9...12VDC Coil rating table at page 3
(d)	Contact material	Y : Silver-tin oxide
(e)	Contact rating	HW : 40A
(f)	Soldering	Nil : Standard (Flow soldering) RW : Reflow capable (THR)

Actual markings does not carry the type name: "FBR"
 E.g.: Ordering code: FBR53ND12-Y-HW Actual marking: 53ND12-Y-HW



FBR53-HW Series

■ Specifications

Item			FBR53-HW		Remarks / conditions
			20A type (-MF, -GR)	30A type (-HA)	
Contact data	Configuration		1 form U		
	Material		Silver-tin oxide		
	Voltage drop		Max. 100 mV at 1A, at 12V open contact voltage. Average 1.2mΩ at 7A, 12VDC		
	Contact rating		40A, 14VDC		Resistive load
	Max. carrying current		40A		
	Max. inrush current		80A		
	Min. switching load		1A 6VDC		
Coil	Rated power consumption		900mW		At 20°C
	Operate power consumption		324mW		At 20°C
	Operating temperature range		-40°C ~ +85°C		No frost
Timing data	Operate		Max. 10ms		At nominal voltage
	Release		Max. 10ms		At nominal voltage (without diode)
Life	Mechanical		Min. 1 x 10 ⁶ operations		without contact load
	Electrical		Min. 100 x 10 ³ operations		14VDC, 40A resistive load
Insulation	Insulation resistance		Min. 100MΩ		Initial
	Dielectric withstanding voltage	Open contacts	500VAC (50/60Hz), 1 minute		
		Coil contact	500VAC (50/60Hz), 1 minute		
Other	Vibration resistance	Misoperation	10 to 55Hz double amplitude 1.5mm, direction X, Y, Z		
		Endurance	10 to 55Hz double amplitude 1.5mm, direction X, Y, Z Coil energizing: 1 hr each direction Coil not energized: 1 hr each direction		
	Shock resistance	Misoperation	100m/s ² (11±1ms), direction X, Y, Z		
		Endurance	1,000m/s ² (6±1ms), direction X, Y, Z, each 6 shocks Coil energizing: 3 shocks Coil not energized: 3 shocks, total 36 shocks		Contact ON/OFF total 36 times
	Terminals	Solderability	At 270±10°C for 3±0.5sec.		
		Strength	9.8N (1kgf) pull force, longitudinal during 10 sec.		
Dimensions / weight		12. x15.5x13.7 mm / approx. 6g			

*: 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.

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■ Coil Data

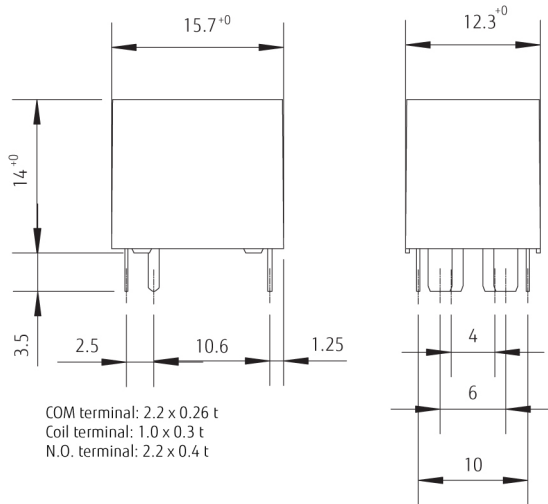
Coil code	Rated Coil Voltage (VDC)	Coil Resistance +/-10% (Ω)	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)
D09	9	94	5.4 7.7 (at 125°C)	0.7 1.0 (at 125°C)
D10	10	117	6.3 9 (at 125°C)	0.8 1.2 (at 125°C)
D12	12	167	7.3 10.4 (at 125°C)	1.0 1.5 (at 125°C)

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

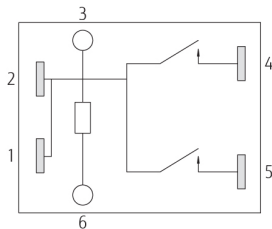
*: Specified operated values are valid for pulse wave voltage.

■ Dimensions

- Dimensions

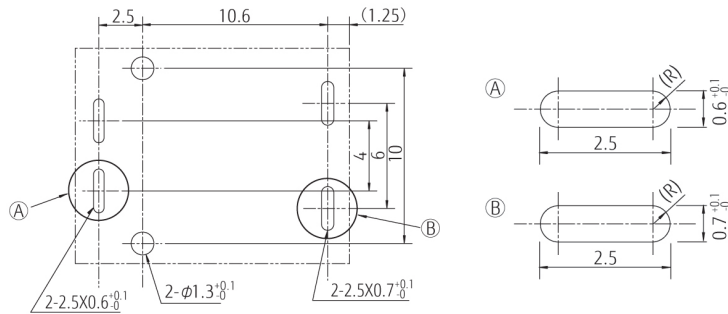


- Schematics (BOTTOM VIEW)

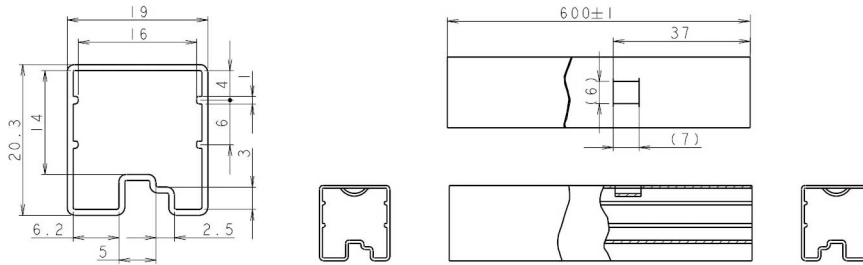


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- PC Board Mouting Hole Layout (BOTTOM VIEW)

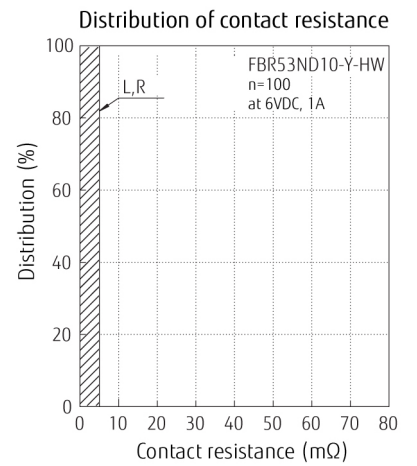
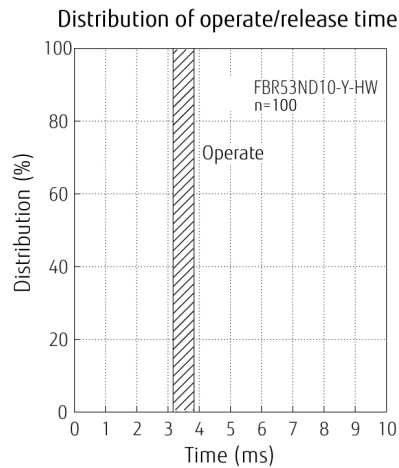
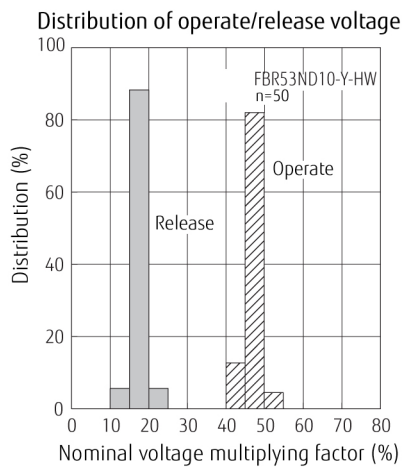


- Tube carrier (POKAYOKE)

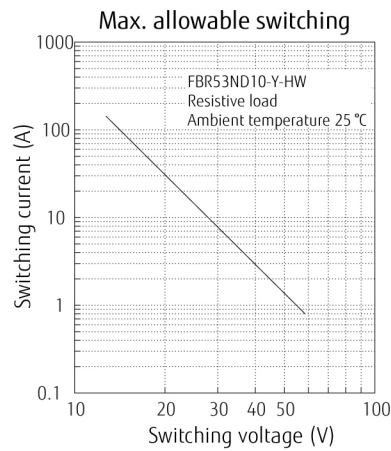
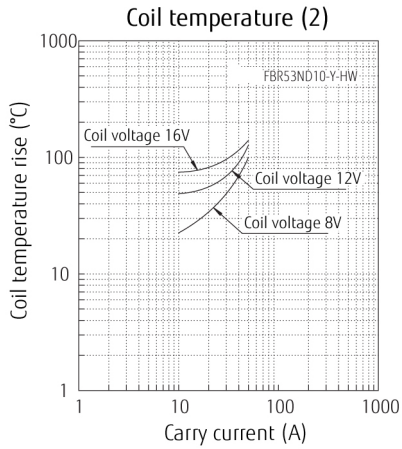
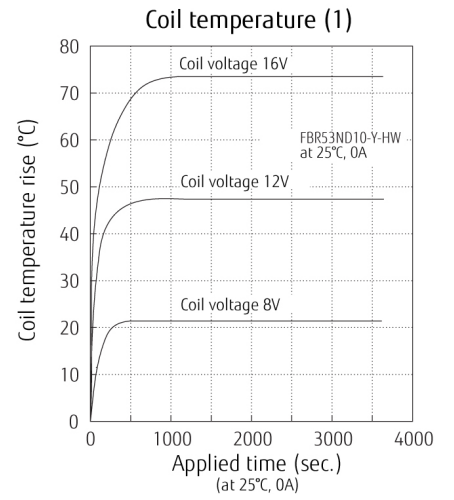
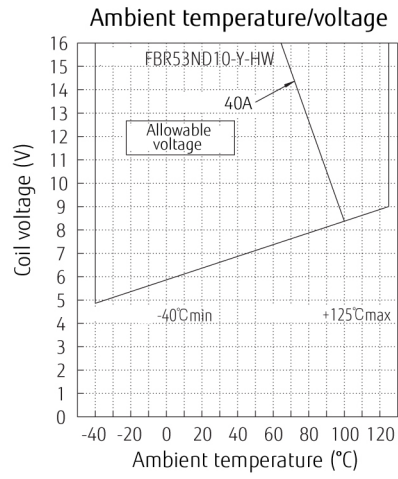
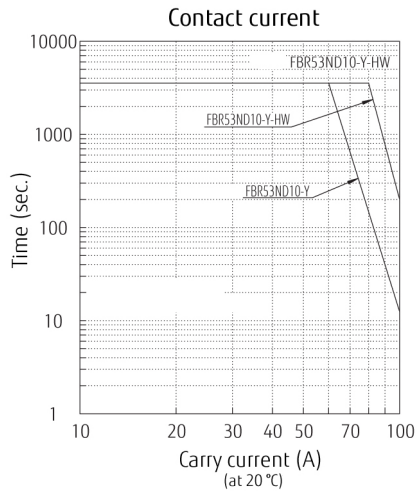


(): Reference value
Unit: mm

Characteristic Data (Reference)



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GENERAL INFORMATION

1. ROHS Compliance

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Use of Cadmium in electrical contacts is exempted as per Annex III of the RoHS directive 2001/65/EU. Please consider expiry date of exemption. Relays with Cadmium containing contacts are not to be used for new designs.
- All relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: <http://www.fujitsu.com/downloads/MICRO/fcai/relays/lead-free-letter.pdf>

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.

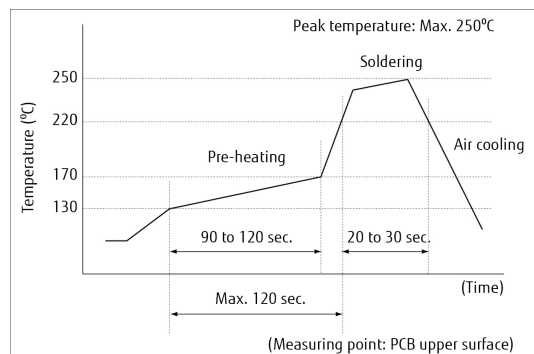
Flow Solder Condition:

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 350-360°C
Duration: maximum 3 sec.

Re-Flow Solder Condition:



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. -RW THR relay will be shipped in moisture barrier bag.

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.

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