

COMPACT POWER RELAY

2 POLE - 30A (For Automotive Applications)

FBR51 Latching Series

■ FEATURES

- Magnetically latched PCB relay
 - Increased ambient temperature range up to 125C
 - Two coils with set and reset function
 - Reflow soldering capable
 - Two types of contact materials
 - RoHS compliant
- Please see page 4 for more information



■ PARTNUMBER INFORMATION

[Example] FBR51 N L 2 10 - W1 - RW
 (a) (b) (c) (d) (e) (f) (g)

(a)	Relay type	FBR51 : FBR51 Series
(b)	Enclosure	N : Plastic sealed type
(c)	Operating function	L : Latching type
(d)	Coil type	2 : Double coil
(e)	Coil rated voltage	10 : 10VDC
(f)	Contact material	W1 : AgSnO ₂ E : AgNi
(g)	Mounting process	RW : Surface mount capable (P.I.P.)

* E (AgNi) versions used for special low current applications that require lower contact resistance (dark current applications)

E.g.: Ordering code:FBR51NL210-W1-RW

Actual marking: 51NL210-W1-RW

FBR51 SERIES

■ SPECIFICATION

Item		W1 contact	E contact
Contact Data	Configuration	1 Form C	
	Material	AgSnO ₂	AgNi
	Resistance	Max. 50mOhm at 2A, 12VDC	
	Contact rating	25A at 14VDC (locked motor load)	
	Max. carrying current	30A / 1 hour (25 °C, 100% rated coil voltage)	
	Max. switching voltage (reference)	16VDC	
	Max. switching current (reference)	35A	
Life	Mechanical	Min. 1 x 10 ⁶ operations	
	Electrical	Min. 200 x 10 ³ operations 14VDC 25A inrush power window motor (1 operation: 1 forward and 1 reverse)	Min. 50 x 10 ³ operations, 14VDC 25A inrush power window motor (1 operation: 1 forward and 1 reverse)
Coil Data	Rated power (20 °C)	1.11 W	
	Operate power (20 °C)	0.44 W	
	Operating ambient temperature range	-40 °C to +125 °C (no frost)	
Timing Data	Set/Reset (at nominal voltage)	Max. 5 ms (without bounce)	
	Coil excitation	Min. 20 ms, max. 1 min.	
Insulation	Resistance	Min. 100 MOhm at 500VDC	
	Dielectric strength	Open contacts	500 VAC (50/60 Hz) 1 min.
		Coil and contacts	500 VAC (50/60 Hz) 1 min.
Other	Vibration resistance	Misoperation	10-55Hz, 1.5mm double amplitude
	Shock resistance	Misoperation	100m/s ² minimum (10G)
		Endurance	1,000m/s ² minimum (100G)
	Weight	Approximately 6 g	
	Sealing	Plastic sealed RT III	

■ COIL RATING

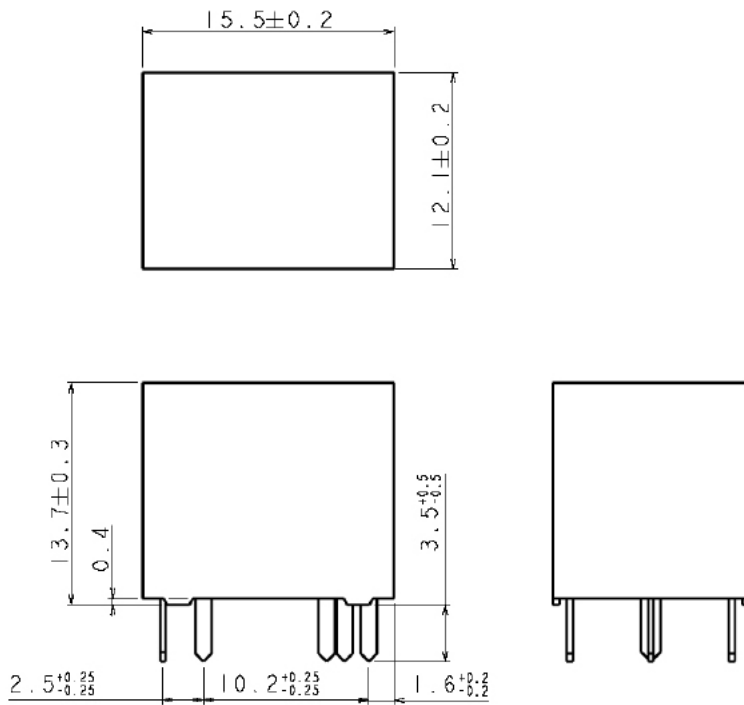
Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Set Voltage (VDC) *	Reset Voltage (VDC)
10	10	90 (x 2)	6.3	6.3
			8.9 (at 125 °C)	8.9 (at 125 °C)

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

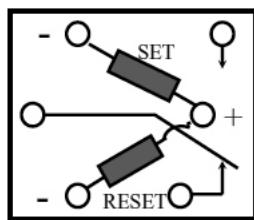
* Specified operate values are valid for pulse wave voltage.

FBR51 SERIES

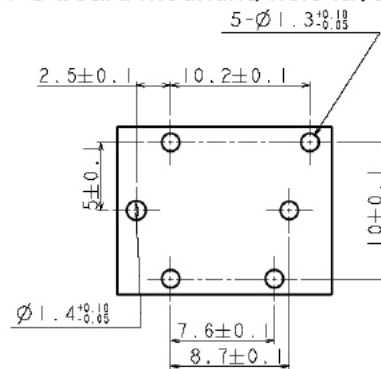
■ DIMENSIONS



Schematics (Bottom View)



PC board mounting hole layout



RoHS Compliance and Lead Free Information

1. General Information

- All automotive relays produced by Fujitsu Components are compliant with RoHS directive 2002/95/EC including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives on October 21st, 2005. (Amendment to Directive 2002/95/EC)
- All our automotive relays are lead-free.
- 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.

2. Recommended Lead Free Solder Profiles

- Recommended solder Sn-3.0Ag-0.5Cu.

Flow Solder condition:

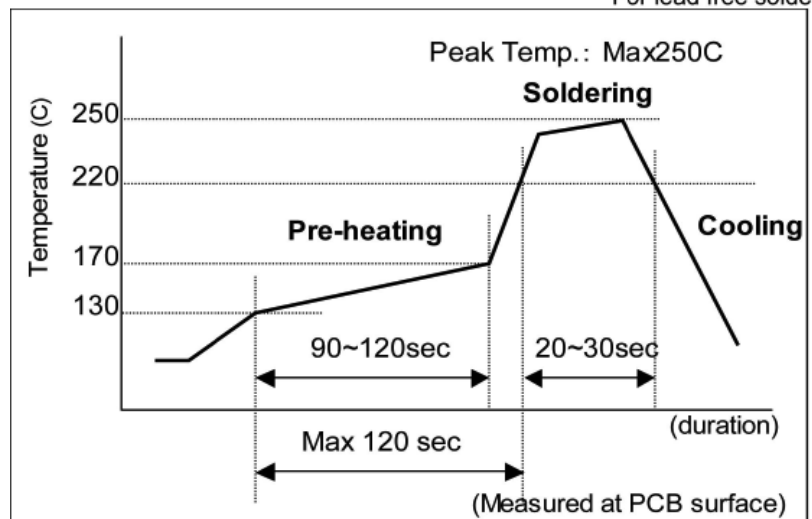
Pre-heating: maximum 120°C
Soldering: dip within 5 sec. at 260°C solder bath

Solder by Soldering Iron:

Soldering Iron
Temperature: maximum 360°C
Duration: maximum 3 sec.

Recommended Reflow-Soldering profile

For lead free solder



	Pre-heating	Soldering	Peak Temp.
Temperature	130~170C	220~Peak~220C	250C
Duration	90~120sec	20~30sec	-

We highly recommend that you confirm your actual solder conditions

3. Moisture Sensitivity

- Moisture Sensitivity Level: 2A. Relays are delivered in moisture barrier bags with MSL label.

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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