Preliminary

New relay, production not started,
engineering samples available

FUJITSU

COMPACT HIGH POWER RELAY
1 POLE - 60A (For Automotive Applications)
FBR59-HW Series

■ FEATURES

- 1 pole, 60A, 1 form U (form A)
- High temperature grade (-40 °C to +125 °C)
- RoHS compliant, lead free
  Please see page 4 for more information

■ PARTNUMBER INFORMATION

[Example] FBR59 (a) N (b) D12 (c) - Y (d) - HW (e)

(a)	Relay type	FBR59	: FBR59 Series
(b)	Enclosure	N Nil	: Plastic sealed type : Flux free type
(c)	Coil rated voltage	D12	: 9.....12 VDC Coil rating table at page 3
(d)	Contact material	Y	: Silver-tin oxide
(e)	Carrying current rating	HW	: 60A

E.g.: Ordering code: FBR59ND12-Y-HW Actual marking: 59ND12-Y-HW

■ SPECIFICATION

Item			FBR59-HW
Contact Data	Configuration		1 form U
	Construction		Single
	Material		Silver tin oxide
	Contact rating		45A, 14VDC
	Max. carrying current		60A
	Max. inrush current		220A
	Min. switching load *		1A, 6VDC (reference)
	Contact voltage drop		Max. 100mV (at 1A, 12VDC)
Life	Mechanical		Min. 1 x 10^6 operations
	Electrical (resistive)		Min. 100 x 10^3 operations
Coil Data	Operating temperature range		-40 to +125 °C (no frost)
Timing Data	Operate (at nominal voltage)		Max. 10ms (without bounce)
	Release (at nominal voltage)		Max. 5ms (without diode)
Insulation	Resistance (Initial)		Min. 100MOhm at 500VDC
	Dielectric strength	Open contacts	500VAC (50/60Hz) 1min.
		Coil and contacts	500VAC (50/60Hz) 1min.
Other	Vibration Resistance	Misoperation	10 to 55Hz double amplitude 1.5mm
		Endurance	10 to 55Hz double amplitude 1.5mm
	Shock	Misoperation	Min. 100m/s² (11 ± 1ms)
		Endurance	Min. 1,000m/s² (6 ± 1ms)
	Weight		Approximately 13 g

* 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.

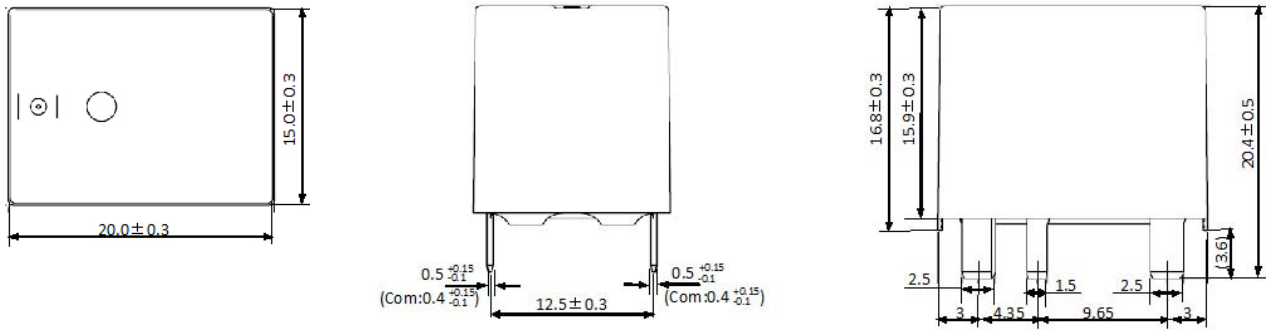
■ COIL RATING

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release Voltage (VDC) *	Rated Power (W)
D09	9	170	5.4	0.7	0.45
D10	10	220	6.3	0.8	
D12	12	320	7.3	1.0	

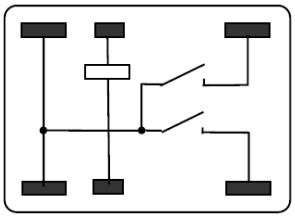
Note: All values in the table are valid for 20°C and zero contact current, unless otherwise stated.
* Specified operate values are valid for pulse wave voltage.

■ DIMENSIONS

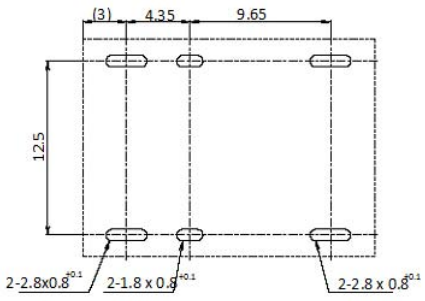
- **Dimensions**



- **Schematics**
  (BOTTOM VIEW)



- **PC board mounting hole layout**
  (BOTTOM VIEW)



RoHS Compliance and Lead Free Information

1. General Information

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives.
  As per Annex III of directive 2011/65/EU.
- 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
- 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 Condition

- Recommended solder 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.

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.

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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