

AUTOMOTIVE RELAY

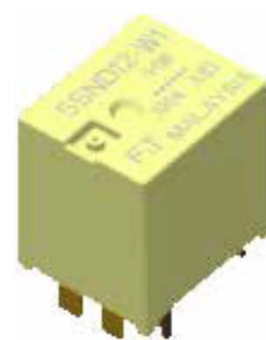
1 POLE – 60A

FBR55-HW Series

RoHS Compliant

■ FEATURES

- Smallest high power 60A relay
- 60A (N.O. side), 1 form C
- High temperature grade (-40° C to +125° C)
- This relay is able to replace the Mini ISO relay
- Reflow capable (through hole reflow) type available
- Plastic sealed



■ APPLICATIONS

Radiator fan (double fan), fuel pump, EPS, head lamp, seat heater, DC-DC converter, motor braking circuit etc.

■ PART NUMBERS

[Example] FBR55 N D12 - W1 - HW - RW
 (a) (b) (c) (d) (e) (f)

(a)	Relay type	FBR55	: FBR55 series
(b)	Enclosure	N	: Plastic sealed type
(c)	Coil rated voltage	D12	: 12VDC
(d)	Contact material	W1	: Silver tin oxide indium
(e)	Contact rating	HW	: 60A (N.O. side)
(f)	Soldering	Nil RW	: Standard (Flow soldering) : Reflow capable (THR)

Note: Actual marking does not carry the type name: "FBR".

E.g.: Ordering code: FBR55ND12W1-HW, actual marking: 55ND12W1-HW

■ SPECIFICATIONS

Item		Specifications	Remarks / Conditions
Contact Data	Configuration	1c (1 form C)	
	Material	Silver tin oxide indium	
	Construction	Single	
	Voltage drop	Max. 100mV	At 1A 12VDC
	Contact rating	N.O.: 60A, 14VDC N.C.: 30A, 14VDC	Resistive load
	Max. carrying current	N.O.: 60A, 14VDC N.C.: 40A, 14VDC	At 20°C
	Max. inrush current	100A	Reference
	Min. switching load	1A 12VDC	Reference*1
Coil	Rated power consumption	480mW	At rated coil voltage, at 20°C
	Operate coil power	178mW	At operate voltage, at 20°C
	Operating temperature range	-40°C to +125°C*2	
Time	Operate	Max. 10ms	At rated coil voltage, without bounce
	Release	Max. 5ms	At rated coil voltage, without bounce
Life	Mechanical	Min. 1 x 10 ⁶ operations	
	Electrical	Min. 100 x 10 ³ operations	14VDC, resistive load 60A
Insulation	Insulation resistance		Min. 100MΩ
	Dielectric withstanding voltage	Open contacts	500VAC (50/60Hz), 1 minute
		Coil-contact	500VAC (50/60Hz), 1 minute
Others	Vibration resistance	Misoperation	10 to 200Hz, acceleration 44m/s ² (4.5G) constant acceleration
		Endurance	10 to 200Hz, acceleration 44m/s ² (4.5G) constant acceleration
	Shock resistance	Misoperation	100m/s ² (11 ± 1ms)
		Endurance	1,000m/s ² (6 ± 1ms)
	Dimensions		13.6 x 16.5 x 16.2 mm

*: 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.

2: Relays shall be kept frost-free.

! Care shall be taken on the heat generated on PC board when maximum carrying current exceed 10A.

COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance $\pm 10\%$ (Ω)	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Nominal Power (mW)
D12	12	300	7.3 (at 20°C) 10.4 (at 125°C)	1.0 (at 20°C) 1.5 (at 125°C)	Approx. 480

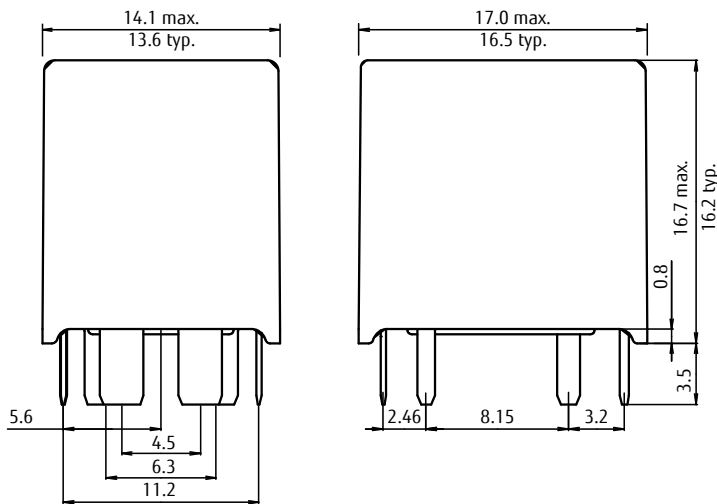
Note: All values in the table are valid at 20°C and zero contact current unless otherwise specified.

Note: Please use at rated coil voltage.

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

DIMENSIONS

Dimensions

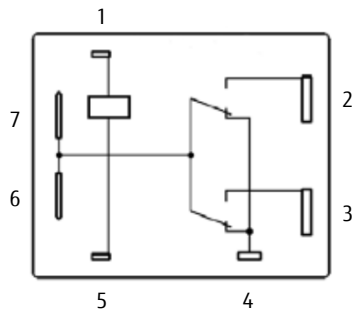


COM terminal: 2.5 x 0.32t
Coil terminal: 1.0 x 0.3t
N.O. terminal: 2.5 x 0.5t
N.C. terminal: 1.3 x 0.4t

- Dimensions of the terminals do not include thickness of pre-solder.
- Dimensions do not include tolerances.

Unit: mm

Schematics (BOTTOM VIEW)



PC Board Mounting Hole Layout

TBD

- Pattern shall be designed to short-circuit #2 and #3 on the PC board.

CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited for flow soldering type.
- Do not use relays in the atmosphere with sulfide gas, chloride gas or nitric oxide. Contact resistance may increase.
- Do not use silicon or silicon-containing product or materials near relays. It may cause contact failure.

GENERAL INFORMATION

1. ROHS Compliance

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU, including commission delegated directive 2015/863.

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:

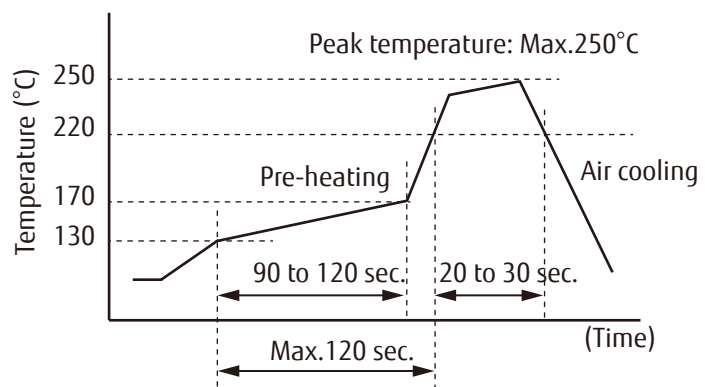
Pre-Heating: maximum 120°C
within 90 sec.
Soldering: dip within 5 sec. at 255°C±5°C
solder bath
Relay must be cooled by air immediately after soldering

Solder by Soldering Iron:

Soldering Iron: 30-60W
Temperature: maximum 340-360°C
Duration: maximum 3 sec.

Reflow Solder Condition:

(Applicable only for reflow capable type)
Recommended reflow soldering profile
IRS (infrared reflow soldering)



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.

Fujitsu Components International Headquarter Offices

<p>Japan FUJITSU COMPONENT LIMITED Shinagawa Seaside Park Tower 19F, 12-4, Higashi-shinagawa 4-chome, Shinagawa-ku, Tokyo, 140-0002, Japan Tel: (81-3) 3450-1682 Fax: (81-3) 3474-2385 Email: fcl-contact@cs.jp.fujitsu.com Web: www.fujitsu.com/jp/fcl/</p>	<p>Asia Pacific FUJITSU COMPONENTS ASIA, LTD. 102E Pasir Panjang Road #01-01 Citilink Warehouse Complex Singapore 118529 Tel: (65) 6375-8560 Fax: (65) 6273-3021 Email: fcal@sg.fujitsu.com Web: www.fujitsu.com/sg/products/devices/components</p>	<p>Korea FUJITSU COMPONENTS KOREA LIMITED Alpha Tower #403, 645 Sampyeong-dong, Bundang-gu, Seongnam-si, Gyeonggi-do, 13524 Korea Tel: (82) 31-708-7108 Fax: (82) 31-709-7108 Email: fcal@sg.fujitsu.com www.fujitsu.com/sg/products/devices/components/</p>
<p>North and South America FUJITSU COMPONENTS AMERICA, INC 1230 E. Arques Ave. M/S 160 Sunnyvale, CA. 94085, USA Tel: (1-408) 745-4900 Fax: (1-408) 745-4970 Email: components@us.fujitsu.com Web: us.fujitsu.com/components</p>	<p>China FUJITSU ELECTRONIC COMPONENTS (SHANGHAI) CO., LTD. Unit 4306, InterContinental Center 100 Yu Tong Road, Shanghai 200070, China Tel: (86-21) 3253 0998 Fax: (86-21) 3253 0997 Email: fcsh@cn.fujitsu.com Web: www.fujitsu.com/cn/products/devices/components/</p>	
<p>Europe FUJITSU COMPONENTS EUROPE B.V. Diamantlaan 25 2132 WV Hoofddorp Netherlands Tel: (31-23) 5560910 Fax: (31-23) 5560950 Email: info@fceu.fujitsu.com Web: www.fujitsu.com/uk/components</p>	<p>Hong Kong FUJITSU COMPONENTS HONG KONG CO., LTD Unit 506, Inter-Continental Plaza No.94 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong Tel: (852) 2881-8495 Fax: (852) 2894-9512 Email: fcal@sg.fujitsu.com Web: www.fujitsu.com/sg/products/devices/components/</p>	

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