

ULTRA MINIATURE Flat High-Frequency Relay Surface mount, 1GHz-Band, 2 Form C

FTR-B3-RF Series

RoHS compliant

■ FEATURES

- Excellent high-frequency characteristics up to 1GHz (impedance 50 Ohm) by specialized shield structure
 - Surface mount type
 - Space saving, ultra miniature flat package:
Height: 6.7mm, Mounting area: 97mm²
 - Low power consumption:
 - Standard type: 140mW (230mW at 24V)
 - Latching type: 100mW (120mW at 24V)
 - High reliable bifurcated contacts
 - RoHS compliant
- Please see page 6 for more information



■ ORDERING INFORMATION

[Example] FTR-B3 G A 012 Z -RF
 (a) (b)(c) (d) (e) (f)

(a)	Series Name	FTR-B3 series
(b)	Terminal Type	G: surface mount S: surface mount, space saving version
(c)	Operation Function	A: standard type B: latching type
(d)	Rated voltage of coil	1.5 : 1.5 VDC 009 : 9VDC 003 : 3VDC 012: 12 VDC 4.5 : 4.5VDC 024 : 24VDC 006: 6VDC
(e)	Contact material	Z: gold overlay silver alloy
(f)	Application category	RF: high frequency type

Remarks: Actual marking on relay would not carry code FTR and be as below:

Ordering code: FTR-B3GA012Z-RF

Actual marking: B3GA012Z-RF

FTR-B3-RF Series

■ COIL DATA CHART

Standard type

Coil Voltage	Nominal Voltage (VDC)	Coil Resistance ($\pm 10\%$)	Must Operate Voltage	Must Release Voltage	Nominal Power (mW)
1.5	1.5	16.1 Ω	1.13 VDC	0.15 VDC	140
003	3	64.3 Ω	2.25 VDC	0.3 VDC	
4.5	4.5	145 Ω	3.38 VDC	0.45 VDC	
006	6	257 Ω	4.5 VDC	0.6 VDC	
009	9	579 Ω	6.75 VDC	0.9 VDC	
012	12	1,028 Ω	9.0 VDC	1.2 VDC	
024	24	2,504 Ω	18.0 VDC	2.4 VDC	230

Latching type (1 coil)

Coil Voltage	Nominal Voltage (VDC)	Coil Resistance ($\pm 10\%$)	Set Voltage	Reset Voltage	Nominal Power (mW)
1.5	1.5	22.5 Ω	1.13 VDC	-1.13 VDC	100
003	3	90 Ω	2.25 VDC	-2.25 VDC	
4.5	4.5	203 Ω	3.38 VDC	-3.38 VDC	
006	6	360 Ω	4.5 VDC	-4.5 VDC	
009	9	810 Ω	6.75 VDC	-6.75 VDC	
012	12	1,440 Ω	9.0 VDC	-9.0 VDC	
024	24	4,800 Ω	18.0 VDC	-18.0 VDC	120

* Pulse driven

Note: All values in the table valid at 20°C.

FTR-B3-RF Series

■ SPECIFICATIONS

		Standard Type
		FTR-B3G() ()Z-RF
Contact	Arrangement	2 Form C (SPDT)
	Contact material	Gold overlay silver alloy
	Contact type	Bifurcated contact
	Contact resistance (initial value)	75mΩ maximum
	Contact rating (resistive)	125 VAC 0.3 A, 30 VDC 1A, 1GHz 1W
	Maximum carrying current	2A
	Maximum switching power	62.5 VA / 30W
	Maximum switching voltage	30 VDC
	Minimum switching current	1 A
High frequency characteristics	Isolation	30dB min. (at 1GHz)
	Insertion loss	0.2dB max. (at 1GHz)
	V.S.W.R.	1.2 max. (at 1GHz)
	Maximum carrying power	1W (at 1GHz)
	Maximum switching power	3W (at 1GHz)
Coil	Nominal power (at 20°C)	0.2 W
	Operate power (at 20°C)	0.1W
	Operating temperature (no frost)	-40°C to +85°C
Time value	Operate (at nominal voltage)	3ms maximum
	Release (at 0V without diode)	3ms maximum
	Set/Reset pulse	10ms minimum at nominal voltage
Life	Mechanical	50 x 10 ⁶ operations minimum
	Electrical	100 x 10 ³ operations minimum
Vibration resistance	Misoperation	10 to 55 Hz at double amplitude of 3.3 mm
	Endurance	10 to 55 Hz at double amplitude of 5.0 mm
Shock resistance	Misoperation	750 m/s ² (11±1ms)
	Endurance	1,000 m/s ² (6±1ms)
Weight	Approximately 1.3 g	

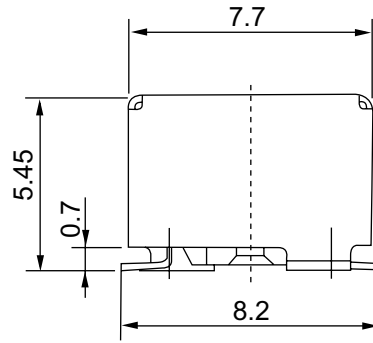
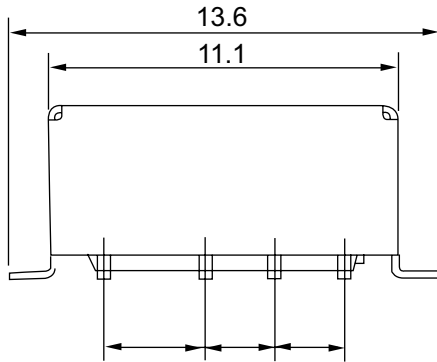
*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

■ INSULATION

Item	FTR-B3-RF	Note
Resistance	Minimum 1,000 MΩ	at 500 VDC
Dielectric Strength	between open contacts	750 VAC 1 min.
	between adjacent contacts	750 VAC 1 min.
	between coil and contacts	750 VAC 1 min.
	between metal shield and coil/contacts	500 VAC 1 min.

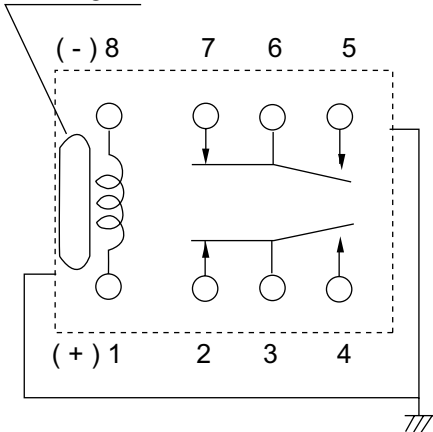
■ DIMENSIONS

● Dimensions

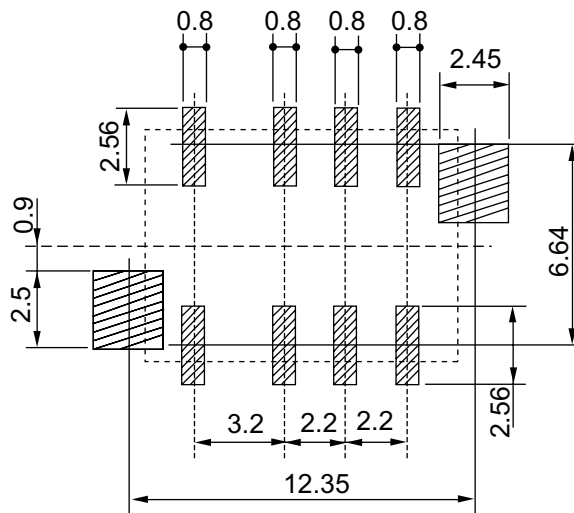


● Schematics (TOP VIEW)

Marking



● Suggested mounting pad (TOP VIEW)

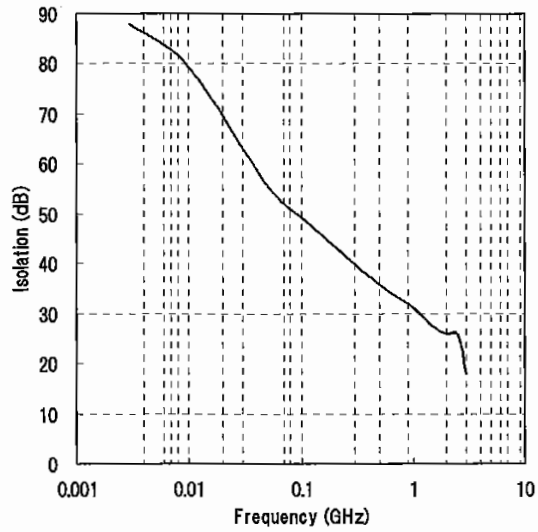


Unit: mm

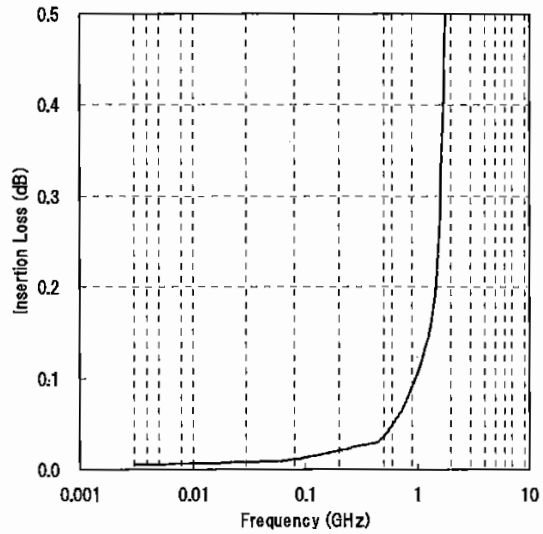
■ REFERENCE DATA - High Frequency Characteristics

Sample relay: Coil nominal voltage 12V type
Measuring condition: Impedance 50 Ohm

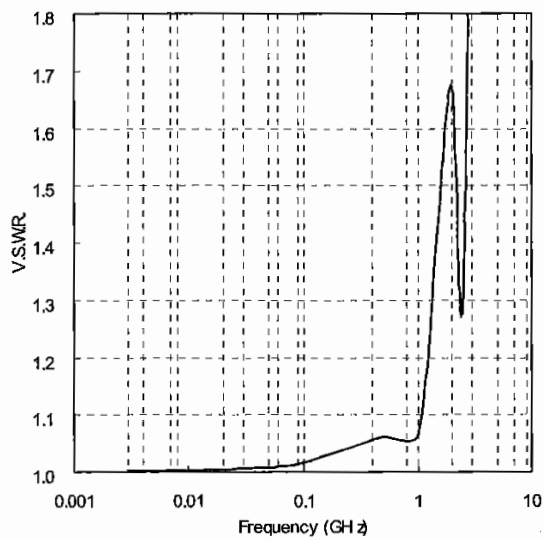
● Isolation



● Insertion loss



● V.S.W.R.



RoHS Compliance and Lead Free Relay Information

1. General Information

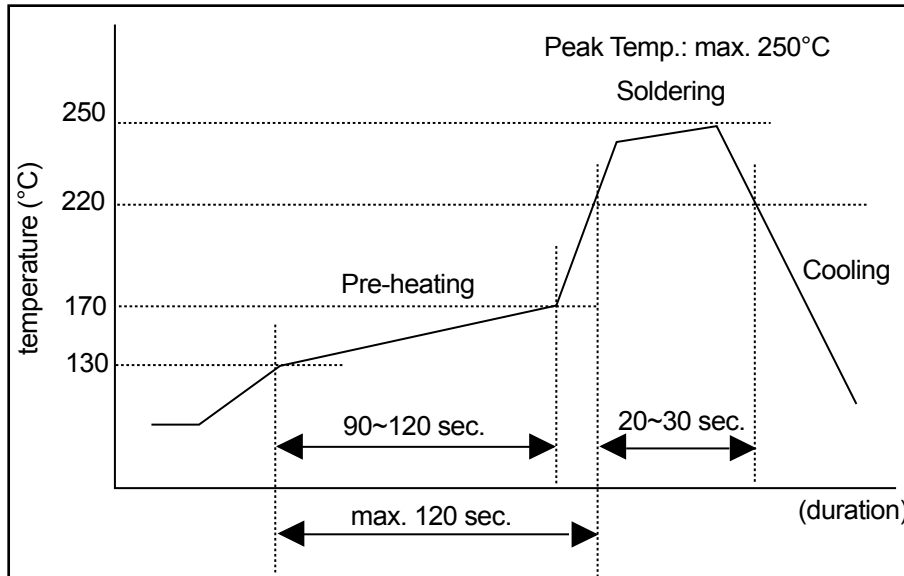
- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. All of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (<http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>)
- Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu. From February 2005 forward Sn-3.0Cu-Ni will be used for the FTR-B3 and FTR-B4 series relays.
- All signal and power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 5 hazardous materials that are restricted by RoHS directive (lead, mercury, chromium IV, PBB, PBDE).
- It has been verified that using lead-free relays in lead assembly process will not cause any problems (compatible).
- "LF" is marked on each outer and inner carton. (No marking on individual relays).
- To avoid leaded relays (for lead-free sample, etc.) please consult with area sales office.
 - We will ship leaded relays as long as the leaded relay inventory exists.

Note: Cadmium was exempted from RoHS on October 21, 2005. (Amendment to Directive 2002/95/EC)

2. Recommended Lead Free Solder Profile

- Recommended solder paste Sn-3.0Ag-0.5Cu and Sn-3.0Cu-Ni (only FTR-B3 and FTR-B4 from February 2005).

Reflow Solder condition



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.

We highly recommend that you confirm your actual solder conditions

3. Moisture Sensitivity

- Moisture Sensitivity Level 3 for FTR-B3 relays.

4. Tin Whisker

- SnAgCu and SnCuNi solder is known as low risk of tin whisker. No considerable whisker length was found by our in-house test.

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