

# ULTRA MINIATURE RELAY

## Flat High Frequency Relay

### Surface mount, 1 GHz-band, 2 Form C

## FTR-B3-RF Series

#### ■ 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: 97mm<sup>2</sup>
  - 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



#### ■ PARTNUMBER INFORMATION

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

(a)	Relay type	FTR-B3 : 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)	Coil rated voltage	012 : 1.5.....24 VDC Coil rating table at page 3
(e)	Contact material	Z : Gold overlay silver nickel
(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

## ■ SPECIFICATION

Item	FTR-B3-RF		
Contact Data	Configuration	2 form C (SPDT)	
	Construction	Bifurcated contact	
	Material	Gold overlay silver alloy	
	Resistance (initial)	Max. 75 mΩ	
	Contact rating (resistive)	125VAC / 0.3A , 30VDC / 1A, 1GHz / 1W	
	Max. carrying current	2A	
	Max. switching voltage	30VDC	
	Max. switching power	62.5VA / 30W	
	Min. switching load *	1A	
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)	
Life	Mechanical	Min. 50 x 10 <sup>6</sup> operations	
	Electrical	Min. 100 x 10 <sup>3</sup> operations	
Coil Data	Rated Power (at 20 °C)	0.2W	
	Operate Power (at 20 °C)	0.1W	
	Operating temp range	-40 °C to +85 °C	
Timing Data	Operate (at nominal voltage)	Max. 3 ms	
	Release (at 0V without diode)	Max. 3 ms	
	Set/Reset pulse	10ms minimum at nominal voltage	
Insulation	Resistance (initial)	Min. 1,000MΩhm at 500VDC	
	Dielectric strength	Open contacts	750VAC, 1min
		Adjacent contacts	750VAC, 1min
		Coil and contacts	750VAC, 1min.
		Metal shield and coil/contacts	500VAC, 1min
Other	Vibration resistance	Misoperation	10 to 55Hz double amplitude 3.3mm
		Endurance	10 to 55Hz double amplitude 5.0mm
	Shock resistance	Misoperation	750m/s <sup>2</sup> (11 ± 1ms)
		Endurance	1,000m/s <sup>2</sup> (6 ± 1ms)
	Weight	Approximately 1.3 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

Standard type

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release Voltage (VDC) *	Rated Power (mW)
1.5	1.5	16.1	1.13	0.15	140
003	3	64.3	2.25	0.3	
4.5	4.5	145	3.38	0.45	
006	6	257	4.5	0.6	
009	9	579	6.75	0.9	
012	12	1,028	9	1.2	
024	24	2,504	18	2.4	230

Latching type (1 coil)

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Set Voltage (VDC) *	Reset Voltage (VDC) *	Rated Power (mW)
1.5	1.5	22.5	1.13	-1.13	100
003	3	90	2.25	-2.25	
4.5	4.5	203	3.38	-3.38	
006	6	360	4.5	-4.5	
009	9	810	6.75	-6.75	
012	12	1,440	9	-9	
024	24	4,800	18	-18	120

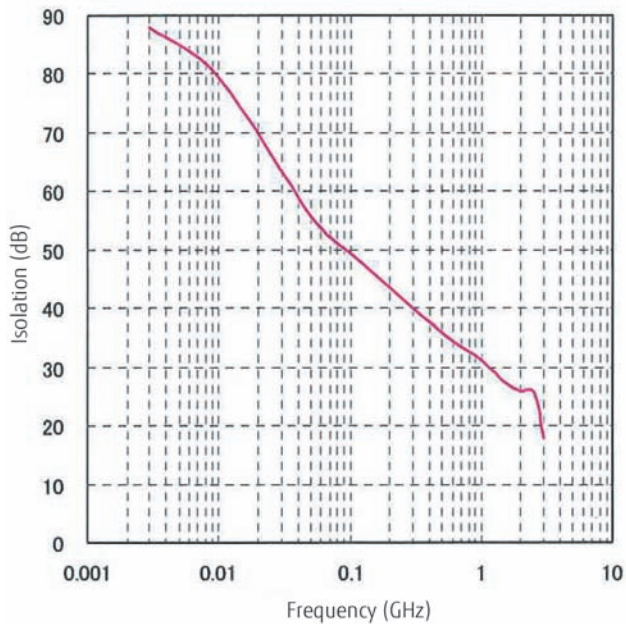
Note: All values in the table are valid for 20°C and zero contact current.

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

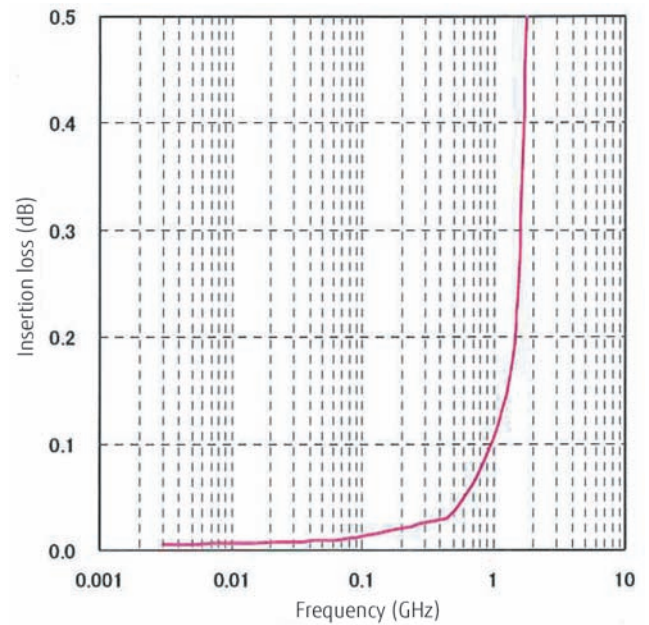
## REFERENCE DATA

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

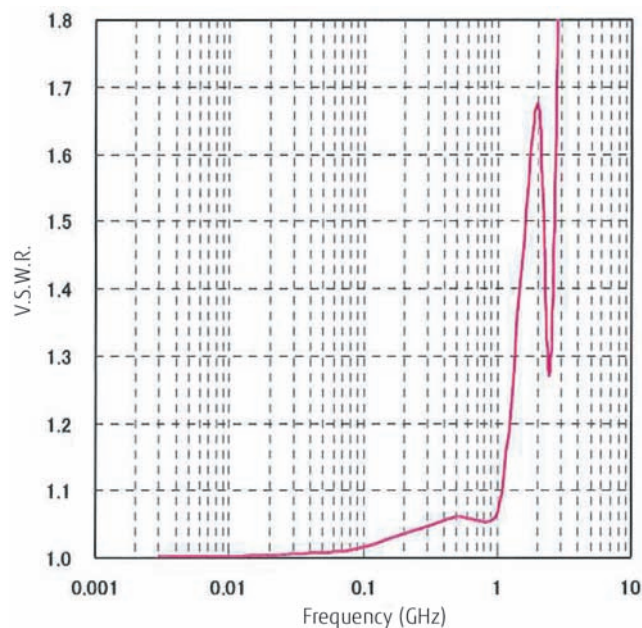
### Isolation



### Insertion loss



### V.S.W.R.

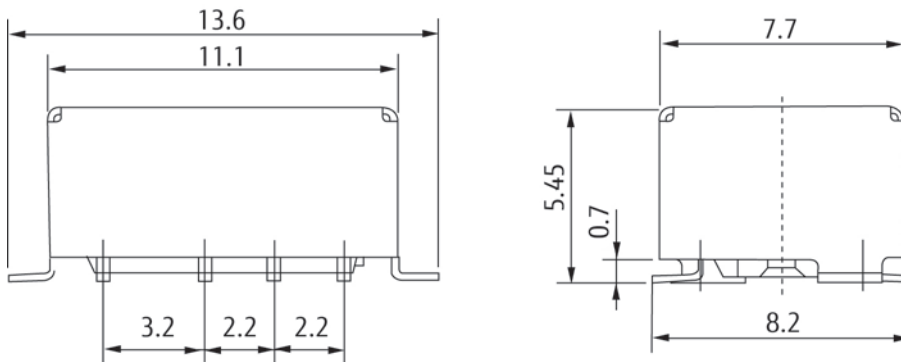


# FTR-B3-RF SERIES

## ■ DIMENSIONS

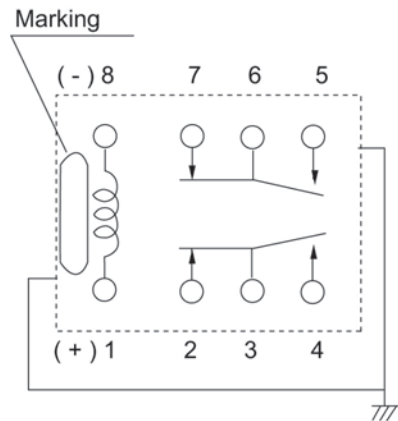
FTR-B3G-RF - Surface mount

### ● Dimensions

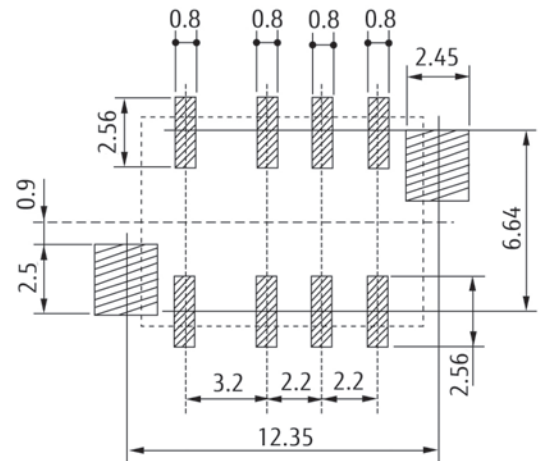


### ● Schematics (TOP VIEW)

Indicates reset state for latching relays (FTR-B3GB version)  
Indicates non-operate state for standard relays (FTR-B3GA version)



### ● Suggested mounting pad (TOP VIEW)



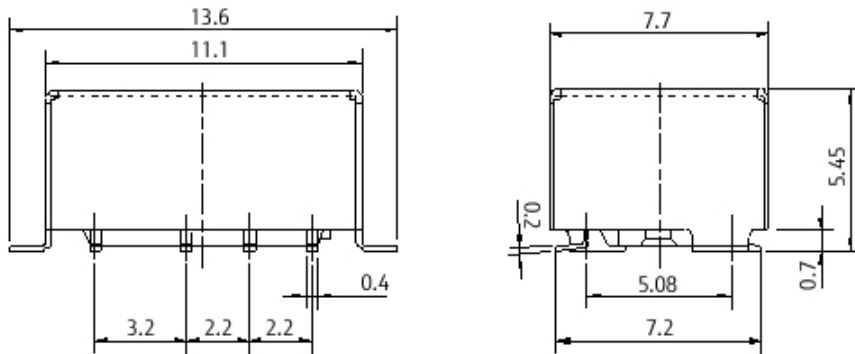
Unit: mm

# FTR-B3-RF SERIES

## ■ DIMENSIONS

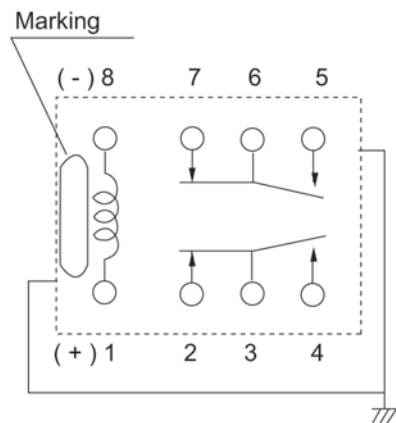
FTR-B3S-RF - Surface mount, space saving version

### ● Dimensions

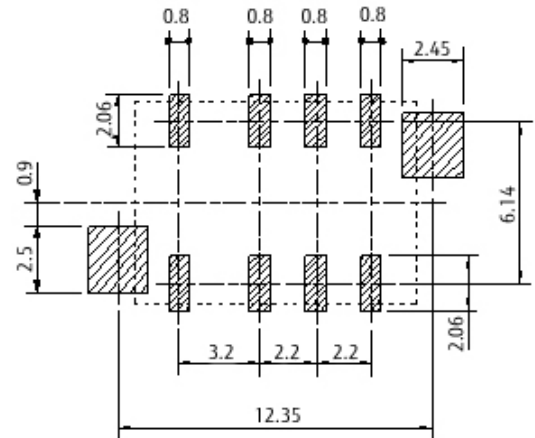


### ● Schematics (TOP VIEW)

Indicates reset state for latching relays (FTR-B3SB version)  
Indicates non-operate state for standard relays (FTR-B3SA version)



### ● Suggested mounting pad (TOP VIEW)



Unit: mm

## ■ COIL POLARITY LATCHING TYPE

Coil terminal	1	8
Set	+	-
Reset	-	+

## RoHS Compliance and Lead Free Information

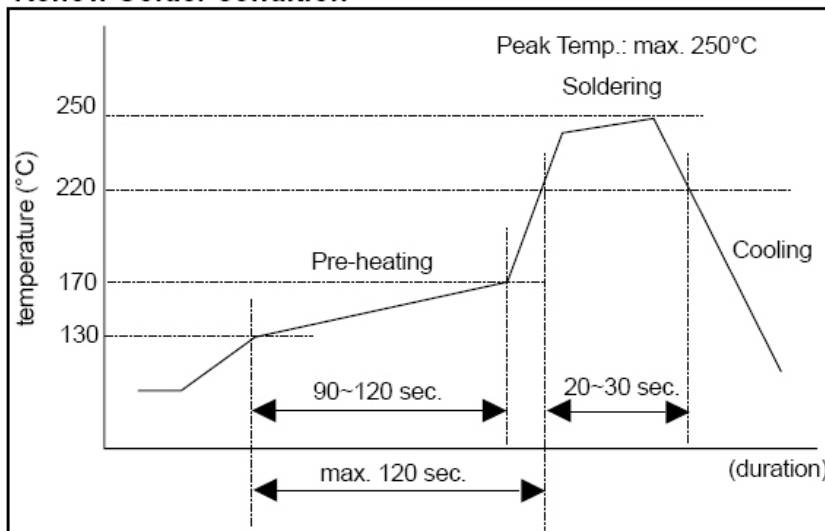
### 1. General Information

- All signal and power 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 of our signal and power relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: <http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>
- Lead free solder plating on relay terminals is Sn-3.0Cu-Ni for FTR-B3 and FTR-B4 series relays. This material has been verified to be compatible with PbSn assembly process.

### 2. Recommended Lead Free Solder Profile

- Recommended solder Sn-3.0Ag-0.5Cu or Sn-3.0 Cu-Ni (only FTR-B3 and FTR-B4)

#### 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 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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