

# ULTRA MINIATURE RELAY

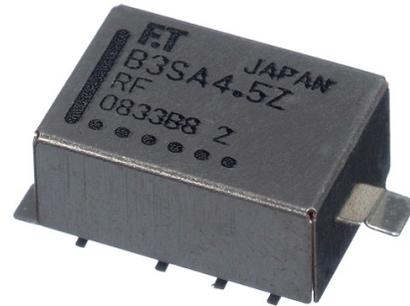
## Flat High Frequency Relay

### 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<br>S : Surface mount, space saving version |
| (c) | Operation function   | A : Standard type<br>B : Latching type                       |
| (d) | Coil rated voltage   | 012 : 1.5.....24 VDC<br>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. 1,000MΩ 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.

# FTR-B3-RF SERIES

## ■ 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.

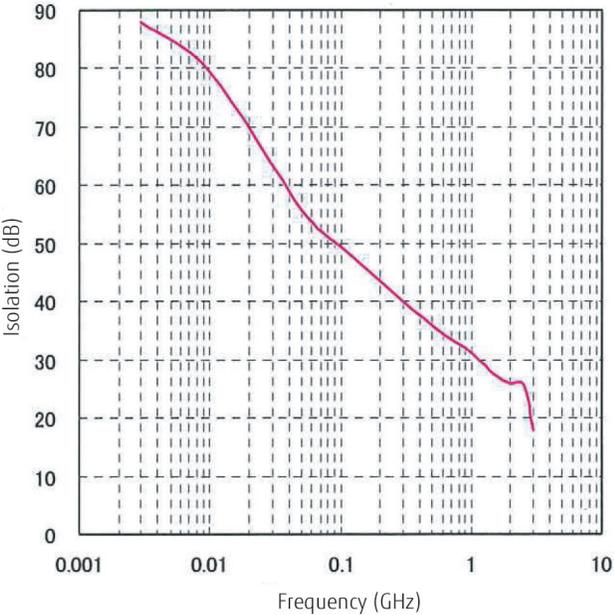
\* Specified operate values are valid for pulse wave voltage.

# FTR-B3-RF SERIES

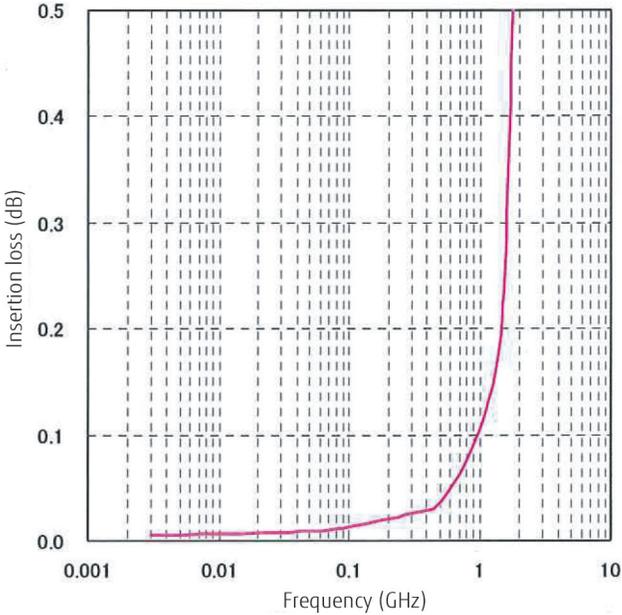
## ■ REFERENCE DATA

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

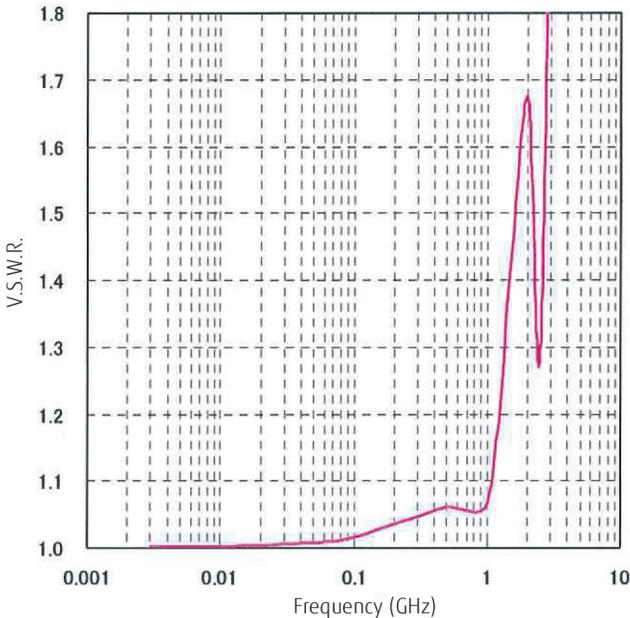
### ● Isolation



### ● Insertion loss



### ● V.S.W.R.

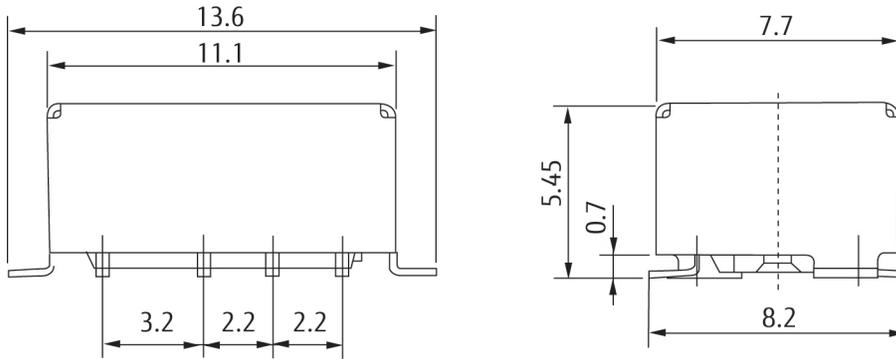


# FTR-B3-RF SERIES

## ■ DIMENSIONS

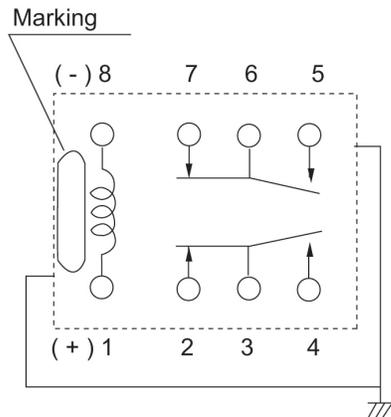
FTR-B3G-RF - Surface mount

### ● Dimensions

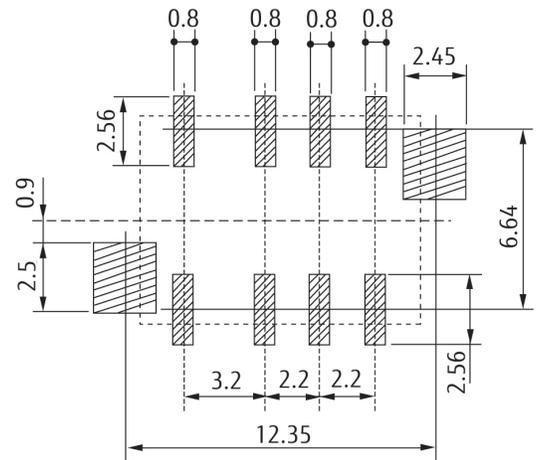


### ● Schematics (TOP VIEW)

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



### ● Suggested mounting pad (TOP VIEW)



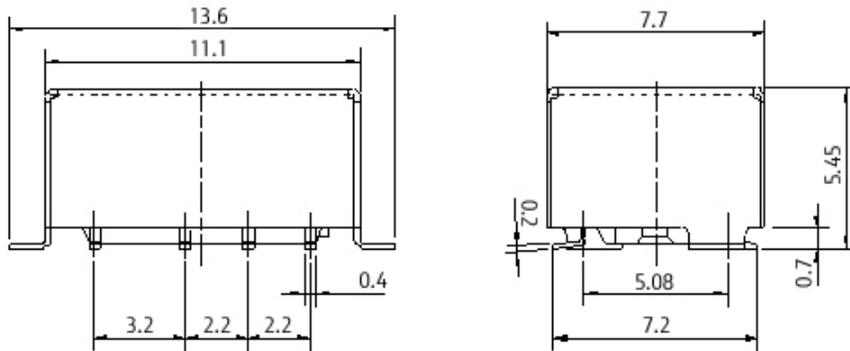
Unit: mm

# FTR-B3-RF SERIES

## ■ DIMENSIONS

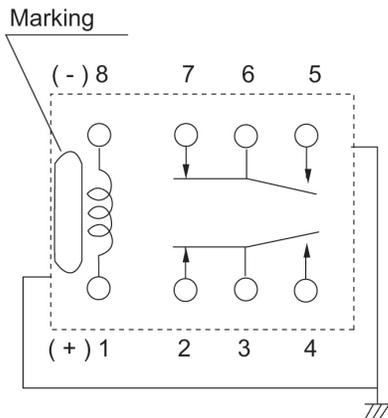
FTR-B3S-RF - Surface mount, space saving version

### ● Dimensions

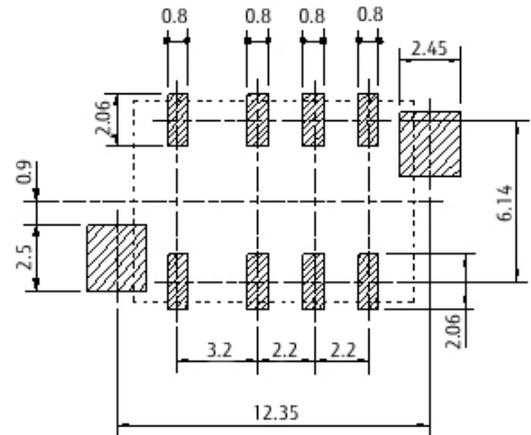


### ● Schematics (TOP VIEW)

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         | - | + |

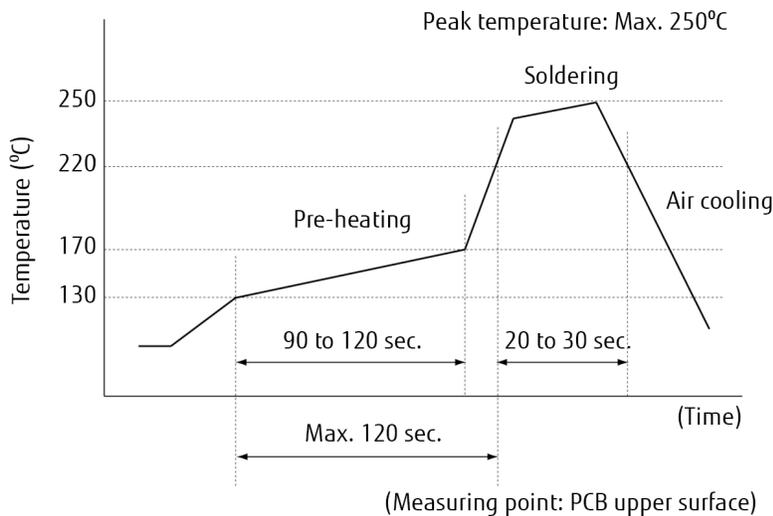
## RoHS Compliance and Lead Free Information

### 1. General Information

- All 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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|  |  |  |
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