ULTRA MINIATURE RELAY

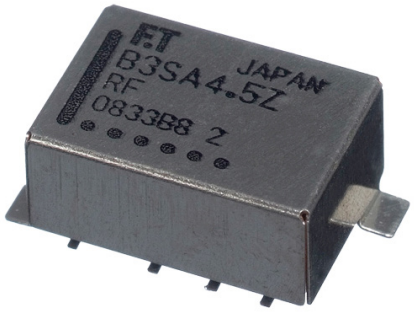
Flat High Frequency Relay

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: 97mm2
- Low power consumption:
  - Standard type: 140mW (230mW at 24V)
  - Latching type: 100mW (120mW at 24V)
- High reliable bifurcated contacts
- RoHS compliant.



■ 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

■ 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 10^6 operations
	Electrical		Min. 100 x 10^3 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. 1,000MOhm 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/s² (11 ± 1ms)
		Endurance	1,000m/s² (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)

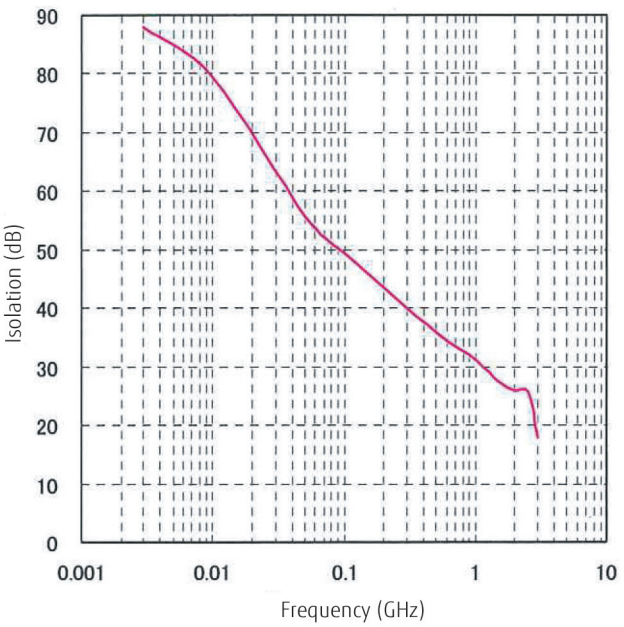
Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/-10% (Ohm)	Set Voltage (VDC) *	Reset Voltage (VDC) *	Rated Power (mW)
1.5	1.5	22.5	1.13	-1.13	100
003	3	90	2.25	-2.25	
4.5	4.5	203	3.38	-3.38	
006	6	360	4.5	-4.5	
009	9	810	6.75	-6.75	
012	12	1,440	9	-9	
024	24	4,800	18	-18	120

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

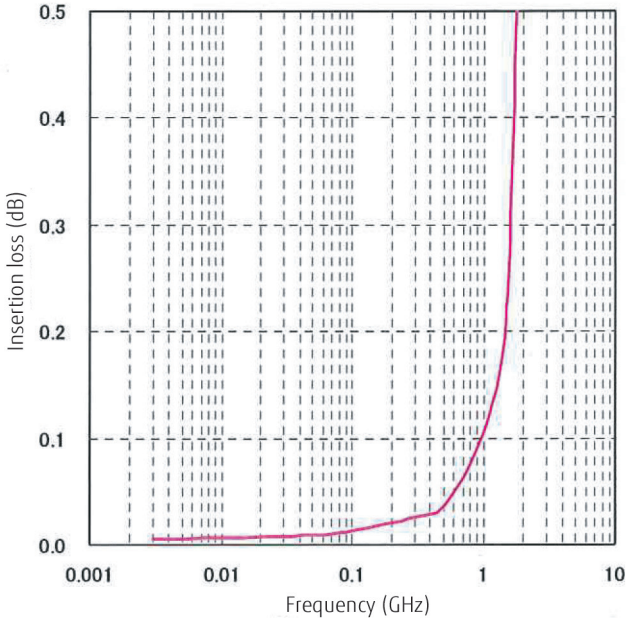
■ REFERENCE DATA

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

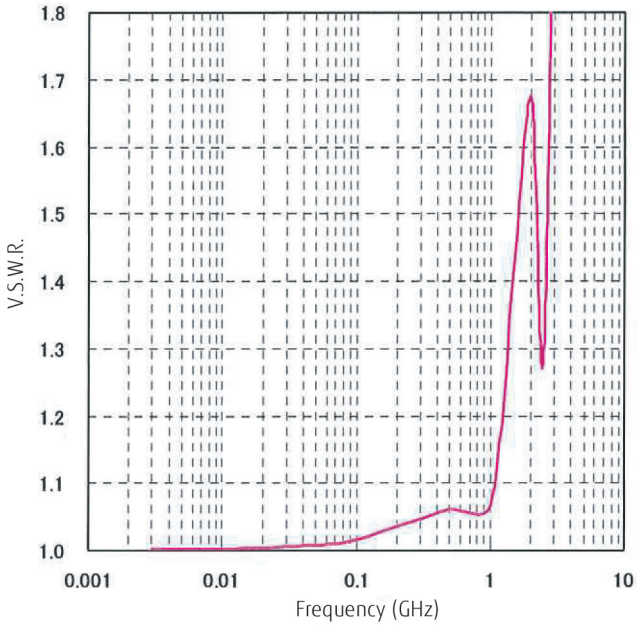
- **Isolation**



- **Insertion loss**



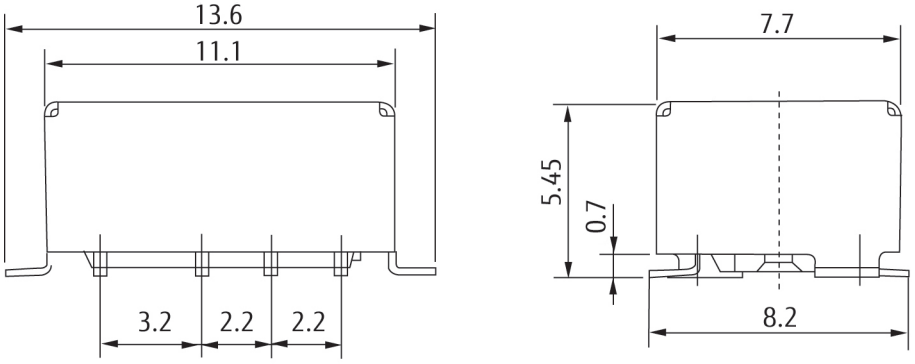
- **V.S.W.R.**



■ DIMENSIONS

FTR-B3G-RF - Surface mount

- **Dimensions**

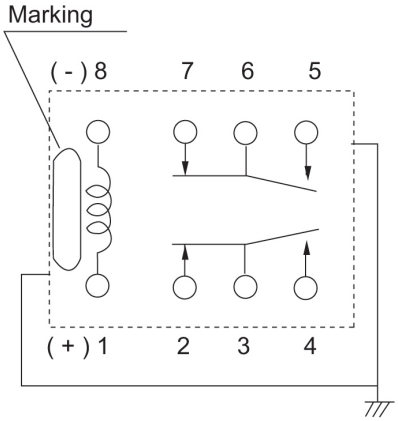


- **Schematics**

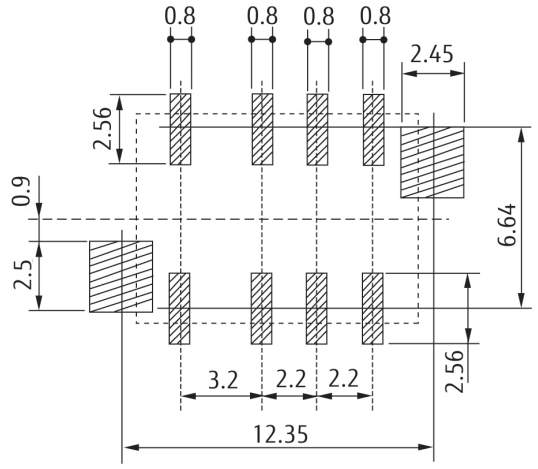
(TOP VIEW)

Indicates reset state for latching relays (FTR-B3GB version)

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



- **Suggested mounting pad** (TOP VIEW)

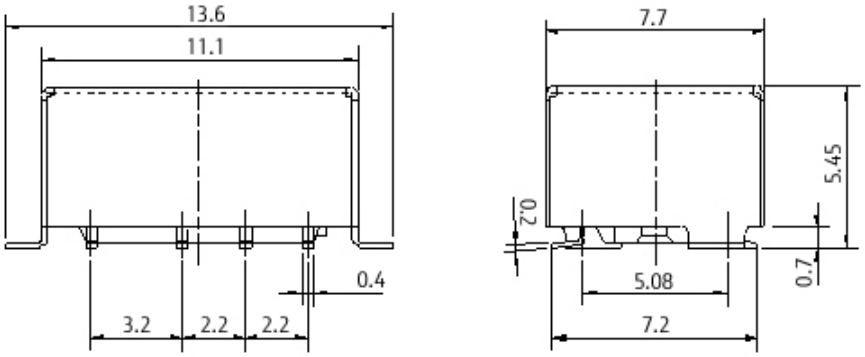


Unit: mm

■ DIMENSIONS

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

- **Dimensions**

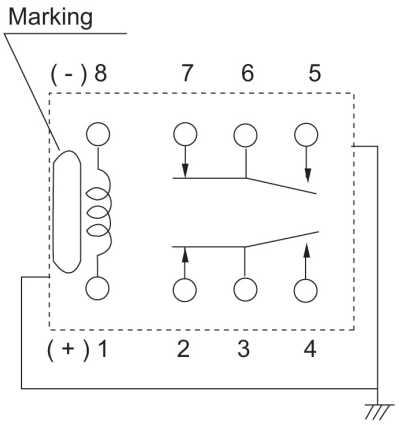


- **Schematics**

(TOP VIEW)

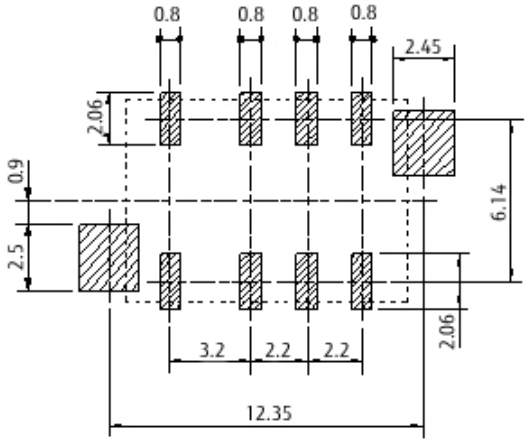
Indicates reset state for latching relays (FTR-B3SB version)

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	-	+

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 FCL 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:

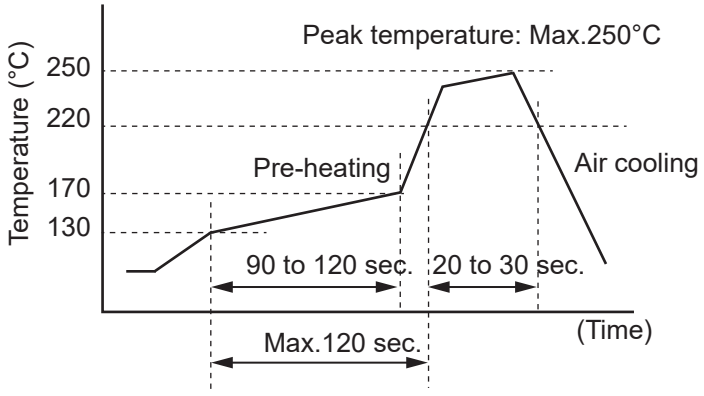
Pre-Heating: Maximum 120˚C within 90 sec.
Soldering: Dip within 5 sec. at 255°C±5°C solder bath
Relay must be cooled by air immediately after soldering

Solder by Soldering Iron:

Soldering Iron: 30-60W
Temperature: maximum 350-360˚C
Duration: maximum 3 sec.

Reflow Solder Condition:

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

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