

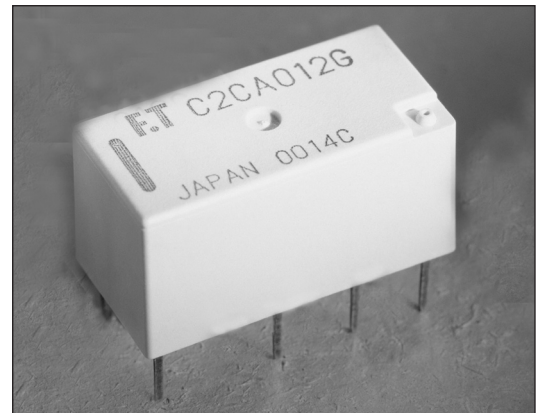
# ULTRA MINIATURE RELAY SIGNAL RELAY

## FTR-C2 Series

RoHS compliant

### ■ FEATURES

- Dimensions of large contact gap relay
  - Height: 11.8 mm maximum (THT)  
12 mm maximum (SMT)
  - Length: 20.2 mm maximum
  - Width: 10 mm maximum
- Conforms to IEC60950 / EN60950 / UL1950/ CSA C22.2 No.950 spacing & high breakdown voltage
- Recognized by UL/CSA and Bsi
  - UL: File E63615 Vol. 2 Sec.4
  - CSA: Master contract 169663 Certificate 1088921
  - Clearance: 2.0 mm (between open contacts, coil and contacts, contact sets)
  - Creepage: 2.0 mm (between open contacts, coil and contacts, contact sets)
- HIGH RELIABILITY
  - Bifurcated contacts
- Low power consumption 300 mV
- RoHS Compliant since production



### ■ ORDERING INFORMATION

[Example] FTR-C2 C A 012 G -B 05\*  
(a) (b) (c) (d) (e) (f) (g)

|     |                           |   |
|-----|---------------------------|---|
| (a) | Series Name               | FTR-C2  |
| (b) | Terminal Appearance       | C: Through hole type<br>G: Surface mount type |
| (c) | Operation Function        | A: Standard type<br>B: Latching type          |
| (d) | Coil Number               | Nominal Voltage                               |
| (e) | Contact Material          | G: Silver alloy                               |
| (f) | Relay enclosing direction | B: standard enclosing direction               |
| (g) | Number of relays per reel | 05: 500 (standard)                            |

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

Ordering code                      Actual marking  
FTR-C2CA03G                      →                      C2CA03G

\*only SMT version

# FTR-C2 Series

## ■ COIL DATA CHART

Standard type

| Model            | Nominal Voltage | Coil Resistance (±10%) | Must Operate Voltage | Must Release Voltage | Nominal Operating Power (±10%) |
|------------------|-----------------|------------------------|----------------------|----------------------|--------------------------------|
| FTR-C2 ( ) A003G | 3 VDC           | 30.0 Ω                 | 2.25 VDC             | 0.3 VDC              | 300 mW                         |
| FTR-C2 ( ) A005G | 5 VDC           | 83.3 Ω                 | 3.75 VDC             | 0.5 VDC              | 300 mW                         |
| FTR-C2 ( ) A012G | 12VDC           | 480.0 Ω                | 9.00 VDC             | 1.2 VDC              | 300 mW                         |
| FTR-C2 ( ) A024G | 24 VDC          | 1,920.0 Ω              | 18.00 VDC            | 2.4 VDC              | 300 mW                         |

Single coil latching type

| Model             | Nominal Voltage | Coil Resistance (±10%) | Set Voltage<br>Ω | Reset Voltage | Nominal Operating Power (±10%) |
|-------------------|-----------------|------------------------|------------------|---------------|--------------------------------|
| FTR-C2 ( ) B003G  | 3 VDC           | 60.0 Ω                 | 2.25 VDC         | 2.25 VDC      | 150 mW                         |
| FTR-C2 ( ) B005G  | 5 VDC           | 167.0 Ω                | 3.75 VDC         | 3.75 VDC      | 150 mW                         |
| FTR-C2 ( ) B0012G | 12VDC           | 960.0 Ω                | 9.00 VDC         | 9.00 VDC      | 150 mW                         |
| FTR-C2 ( ) B024G  | 24 VDC          | 3,840.0 Ω              | 18.00 VDC        | 18.00 VDC     | 150 mW                         |

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

# FTR-C2 Series

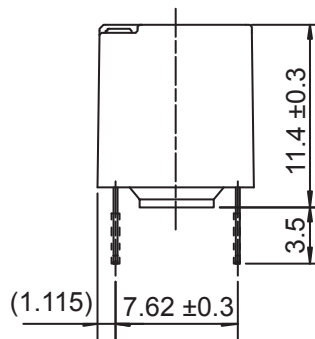
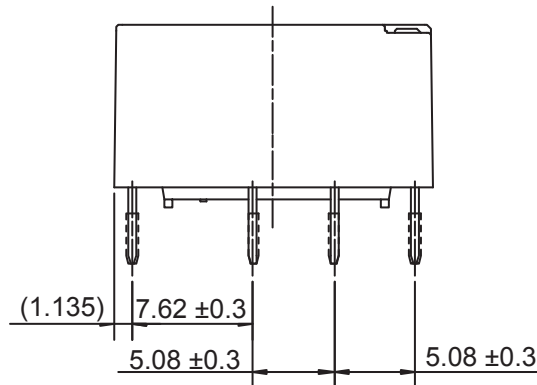
## ■ SPECIFICATIONS

| Item  |                              | FTR-C2CA ( )G<br>FTR-C2GA-( )G   |                         |
|---|------------------------------|--|-------------------------|
| Contact   | Arrangement                  | 2 Form C   |                         |
|   | Material                     | Silver alloy   |                         |
|   | Resistance (initial)         | Max. 150m ohm (at 1A 6VDC)   |                         |
|   | Max. Switching Power         | 37.5AV / 30W   |                         |
|   | Max. Switching Voltage       | 250VAC, 220 VDC  |                         |
|   | Max. Switching Current       | 1 A  |                         |
| Coil  | Operating Temperature        | -40° C to + 85° C (no frost)   |                         |
|   | Max. Allowable Voltage       | 150% nominal voltage (at 20° C)  |                         |
| Time Value  | Operate Time                 | Max. 15ms (at nominal voltage, without bounce)   |                         |
|   | Release Time (without diode) | Max. 15ms (at nominal voltage, without bounce)   |                         |
| Insulation  | Resistance (at 500 VDC)      |  | Min. 1,000M ohm         |
|   | Dielectric Strength          | Between open contacts  | 1,500VAC, 1 minute      |
|   |                              | Between adjacent contacts  | 1,500VAC, 1 minute      |
|   |                              | Between coil and contacts  | 2,000VAC, 1 minute      |
|   | Surge Strength               | Between open contacts  | 2,500V (at10/700micros) |
|   |                              | Between adjacent contacts  | 2,500V (at10/700micros) |
| Between coil and contacts                         |                              | 2,500V (at10/700micros)  |                         |
| Life  | Mechanical                   | 10x10 <sup>6</sup> operations min. (at 10Hz)   |                         |
|   | Electrical (resistive load)  | 100x10 <sup>3</sup> operations min. at 1A, 30VDC, 0.5Hz<br>100x10 <sup>3</sup> operations min. at 0.1A, 48VDC, 0.5Hz<br>100x10 <sup>3</sup> operations min. at 0.3A, 125VDC, 0.5Hz |                         |
| Vibration Resistance                              | Misoperation                 | 10 to 55 Hz at double amplitude of 3.3 mm  |                         |
|   | Endurance                    | 10 to 55 Hz at double amplitude of 5 mm  |                         |
| Shock Resistance                                  | Misoperation                 | Min. 300 m/s <sup>2</sup>  |                         |
|   | Endurance                    | Min. 1,000 m/s <sup>2</sup>  |                         |
| UL / CSA  | Contact Rating               | 0.3A 125 VAC<br>1A 30VDC<br>0.3 110VDC   |                         |
| IEC060950<br>UL1950<br>C22.2<br>No.950<br>EN60950 | Insulation Class             | Supplementary Insulation   |                         |
|   | Working Voltage              | 250 V  |                         |
|   | Pollution Degree             | 2 (outside)  | 1 (inside)              |
|   | Clearance                    | 2.0 mm (outside)   | 2.0 mm (inside)         |
|   | Creepage Distance            | 2.5 mm (outside)   | 2.0 mm (inside)         |

# FTR-C2 Series

## ■ DIMENSIONS AND SCHEMATICS

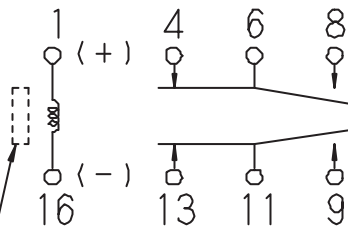
Through hole type



Unit: mm

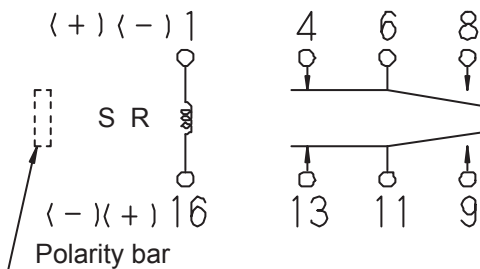
## ■ TERMINAL DESIGNATIONS

(Bottom view de-energized position)



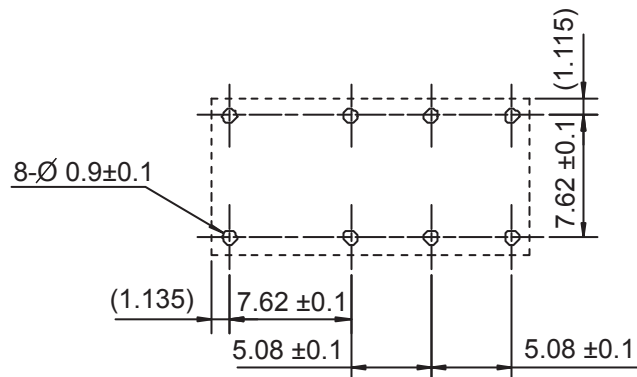
## Single Coil Latching Type

(Bottom view reset position)



S: shows polarity of set position  
R: shows polarity of reset position

## ■ RECOMMENDED MOUNTING PAD

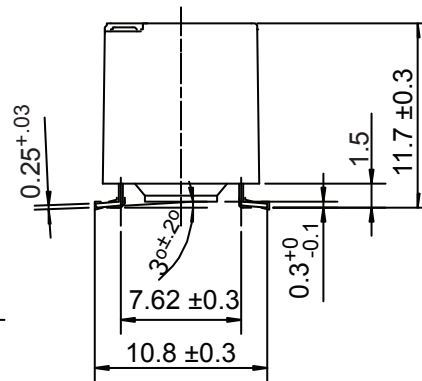
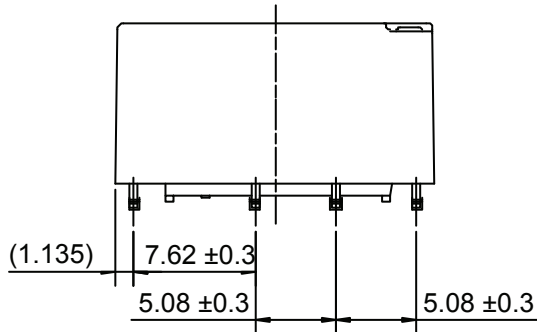


Unit: mm

# FTR-C2 Series

## ■ DIMENSIONS AND SCHEMATICS

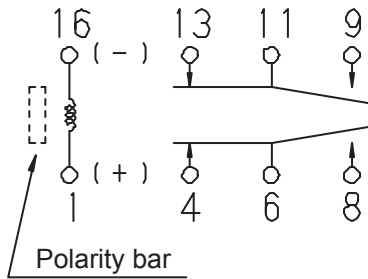
Surface mount type



Unit: mm

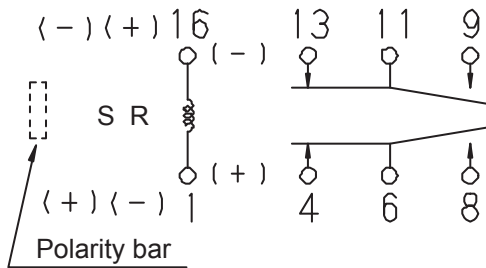
## ■ TERMINAL DESIGNATIONS

(Top view de-energized position)



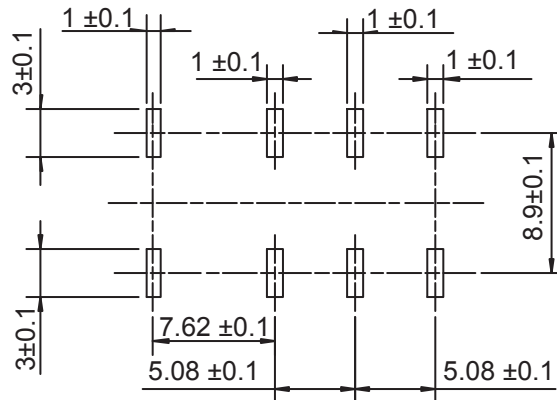
### Single Coil Latching Type

(Top view reset position)



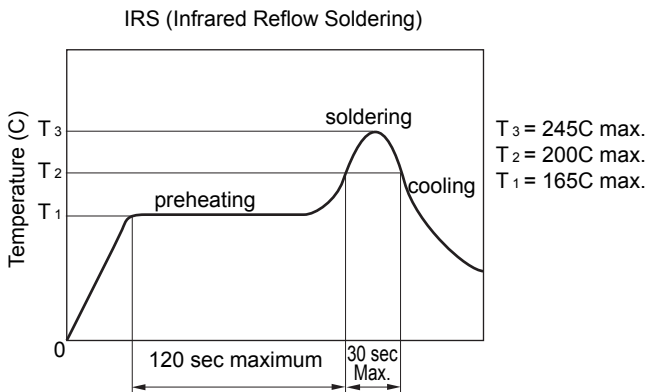
S: shows polarity of set position  
R: shows polarity of reset position

## ■ RECOMMENDED MOUNTING



Unit: mm

## ■ RECOMMENDED SOLDERING CONDITIONS (TEMPERATURE PROFILE)



- Note:
1. Temperature profiles show the temperature of PC board surface.
  2. Please perform soldering test with your actual PC board before mass production, since the temperatures of PC board surfaces vary according to the size of PC board, status of parts mounting and heating method.

## RoHS Compliance and Lead Free Relay Information

### 1. General Information

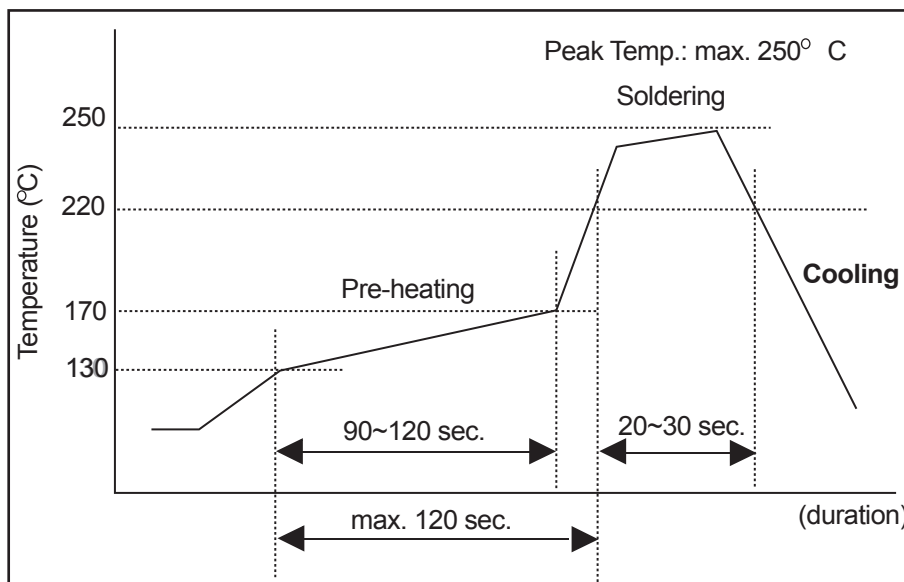
- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. Most of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (<http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>)
- Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu.
- All signal and most 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 Sm-3.0 Cu-Ni (only FTR-B3 and FTR-B4 from February 2005).

#### Reflow Solder condition for SMT



|                               |  |
|-------------------------------|--|
| <b>Flow Solder condition:</b> |  |
| Pre-heating:                  | maximum 120°C                          |
| Soldering:                    | dip within 5 sec. at 260°C solder bath |

|                                  |                |
|----------------------------------|----------------|
| <b>Solder by Soldering Iron:</b> |                |
| 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.

### 4. Tin Whisker

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

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