

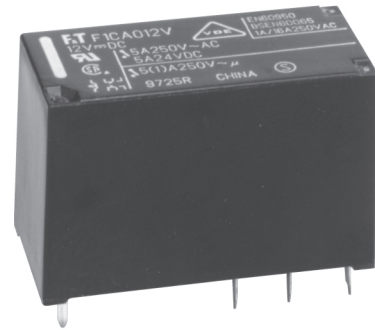
# POWER RELAY

## 2 POLES - 8A Low Profile Type

### FTR-F1 R Series

#### ■ FEATURES

- DPST/DPDT 8A
  - Low profile power relay (height 16.5 mm) employing unique construction
  - High insulation by employing reinforced insulation construction  
Insulation distance: 8 mm (between coil and contact)  
Dielectric strength: 5 kV (between coil and contact)  
Surge strength: 10 kV (between coil and contact)
  - Pin configuration compatible to VB
  - UL, CSA, VDE, SEMKO, CQC recognized
  - Flux proof sealing, RTII
  - RoHS Compliant
- Please see page 6 for more information



Note: Image of standard FTR-F1 relay

#### ■ PARTNUMBER INFORMATION

[Example]       $\frac{\text{FTR-F1}}{\text{(a)}}$      $\frac{\text{A}}{\text{(b)}}$      $\frac{\text{L}}{\text{(c)}}$      $\frac{\text{005}}{\text{(d)}}$      $\frac{\text{R}}{\text{(e)}}$     -     $\frac{\text{RG}}{\text{(f)}}$

|     |                       |  |
|-----|-----------------------|--|
| (a) | Relay type            | FTR-F1 : FTR-F1 Series                         |
| (b) | Contact configuration | A : 2 form A (SPST-NO)<br>C : 2 form C (DPDT)  |
| (c) | Coil type             | L : High sensitive type (400mW)                |
| (d) | Coil rated voltage    | 005 : 3...48VDC<br>Coil rating table at page 3 |
| (e) | Contact rating        | R : 8A   |
| (f) | Special type          | RG : Transparent cover type                    |

Actual marking does not carry the type name : "FTR"  
E.g.: Ordering code: FTR-F1AL005R      Actual marking: F1AL005R

# FTR-F1 SERIES

## ■ SPECIFICATION

| Item                               |                                      |   | Standard type<br>F1 (A, C) L ( ) R                                 | Transparent cover<br>F1 (A, C) L ( ) R - RG |
|------------------------------------|--------------------------------------|---|--|---|
| Contact Data                       | Configuration                        |   | 2 form A (DPST-NO), 2 form C (DPDT)                                |   |
|                                    | Construction                         |   | Single   |   |
|                                    | Material                             |   | Movable: gold plate silver tin oxide; Stationary: Silver tin oxide |   |
|                                    | Resistance (initial)                 |   | Max. 100mOhm at 1A, 6VDC   |   |
|                                    | Contact rating                       |   | 8A, 250VAC / 24VDC   |   |
|                                    | Max. carrying current * <sup>1</sup> |   | 8A   |   |
|                                    | Max. switching voltage               |   | 400VAC/ 300VDC   |   |
|                                    | Max. switching power                 |   | 2,000VA, 192W  |   |
| Min. switching load * <sup>2</sup> |                                      | 10mA, 5VDC                              |  |   |
| Life                               | Mechanical                           |   | Min. 20x 10 <sup>6</sup> operations                                |   |
|                                    | Electrical                           | AC load                                 | Min. 50 x 10 <sup>3</sup> operations                               |   |
|                                    |                                      | DC load                                 | Min. 50 x 10 <sup>3</sup> operations                               |   |
| Coil Data                          | Rated Power (at 20 ° C)              |   | 400mW  |   |
|                                    | Operate Power (at 20 ° C)            |   | 225mW  |   |
|                                    | Operating temperature range          |   | -40 to +75 °C (no frost)   | -40 to +70 °C (no frost)                    |
| Timing Data                        | Operate (at nominal voltage)         |   | Max. 15ms (no diode, without bounce)                               |   |
|                                    | Release (at nominal voltage)         |   | Max. 5ms (no diode, without bounce)                                |   |
| Insulation                         | Resistance (Initial)                 |   | Min. 1,000MOhm at 500VDC   |   |
|                                    | Dielectric strength                  | Open contacts                           | 1,000VAC (50/60Hz) 1min.   |   |
|                                    |                                      | Coil and contacts                       | 5,000VAC (50/60Hz) 1min.   |   |
|                                    |                                      | Adjacent contacts                       | 3,000VAC (50/60Hz) 1 min.  |   |
|                                    | Surge strength                       | Coil and contacts                       | 10.000V/ 1.2 x 50µs standard wave                                  |   |
|                                    | Clearance                            |   | 8 mm   |   |
|                                    | Creepage                             |   | 8 mm   |   |
|                                    | EN61810-1, VDE0435                   | Voltage                                 | 250V   |   |
|                                    |                                      | Pollution degree                        | 3  |   |
|                                    | Material group                       | IIIa                                    |  |   |
|                                    | Category                             | C / 250V (reference voltage) (VDE0110b) |  |   |
| Other                              | Vibration Resistance                 | Misoperation                            | 10 to 55Hz double amplitude 1.65mm                                 |   |
|                                    |                                      | Endurance                               | 10 to 55Hz double amplitude 3.3mm                                  |   |
|                                    | Shock                                | Misoperation                            | Min. 100 m/s <sup>2</sup> (11 ± 1ms)                               |   |
|                                    |                                      | Endurance                               | Min. 1,000 m/s <sup>2</sup> (6 ± 1ms)                              |   |
|                                    | Weight                               |   | Approximately 13 g   |   |
| Sealing                            |                                      | Flux proof, RTII                        |  |   |

\*<sup>1</sup> At carry currents > 10A PCB layout need to be considered.

\*<sup>2</sup> 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-F1 SERIES

## ■ COIL RATING

400mW type

| Coil Code | Rated Coil Voltage (VDC) | Coil Resistance +/- 10% (Ohm) | Must Operate Voltage (VDC) * | Must Release Voltage (VDC) * | Max. Coil Voltage (VDC) | Rated Power (mW) |
|-----------|--------------------------|-------------------------------|------------------------------|------------------------------|-------------------------|------------------|
| 003       | 3                        | 22.5                          | 2.25                         | 0.3                          | 6                       | 400              |
| 005       | 5                        | 62                            | 3.75                         | 0.5                          | 10                      |                  |
| 006       | 6                        | 90                            | 4.5                          | 0.6                          | 12                      |                  |
| 009       | 9                        | 202                           | 6.75                         | 0.9                          | 18                      |                  |
| 012       | 12                       | 360                           | 9                            | 1.2                          | 24                      |                  |
| 024       | 24                       | 1,440                         | 18                           | 2.4                          | 48                      |                  |
| 048       | 48                       | 5,760                         | 36                           | 4.8                          | 96                      |                  |

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

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

## ■ SAFETY STANDARDS

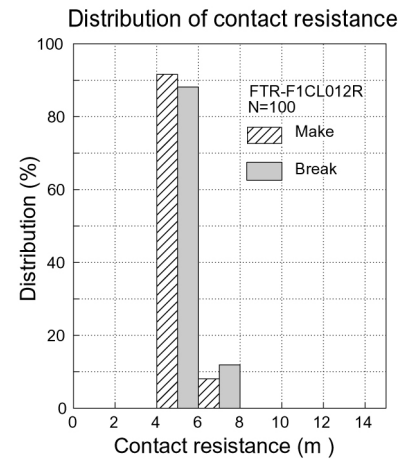
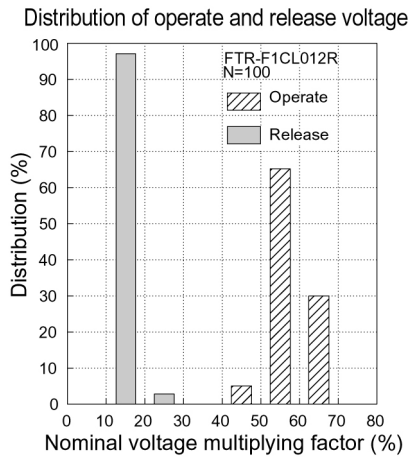
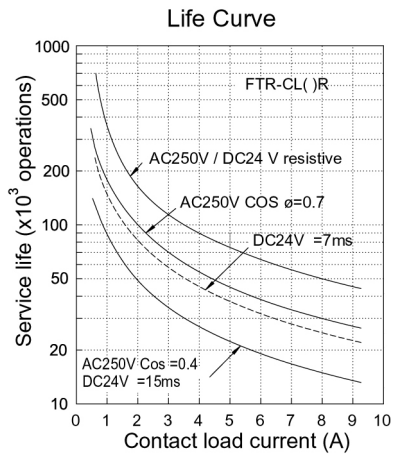
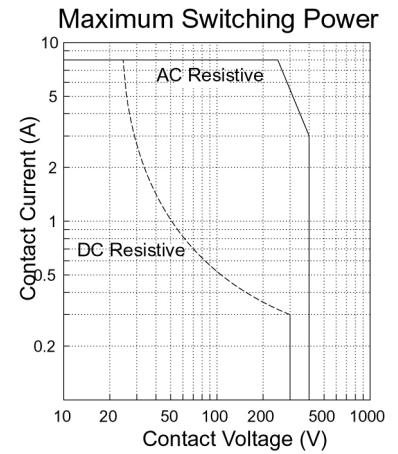
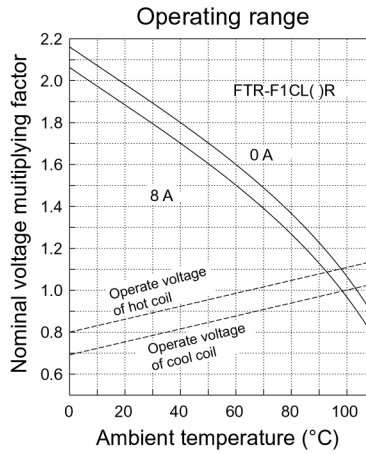
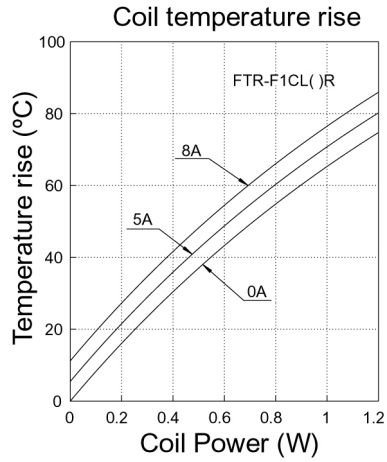
| Type | Compliance                         | Contact rating   |
|------|------------------------------------|--|
| UL   | UL 508                             | Flammability: UL 94-V0 (plastics)                          |
|      | E63614                             | 8A, 24VDC (resistive)<br>8A, 250 VAC (resistive)           |
| CSA  | C22.2 No. 14<br>LR 40304           | 1/6 HP, 125VAC<br>1/4 HP, 250VAC<br>Pilot duty: C300, R300 |
| VDE  | 0435, 0631, 0700, 0860<br>40013858 | 8A, 250 VAC (cosφ=1)<br>8 A 24VDC (0ms)                    |

Complies with BSI, IMC, CQC

# FTR-F1 SERIES

## CHARACTERISTIC DATA

8A Rating type

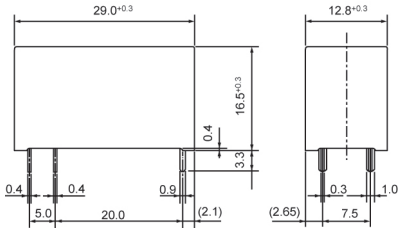


# FTR-F1 SERIES

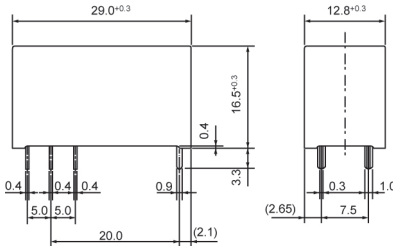
## ■ DIMENSIONS

### ● Dimensions

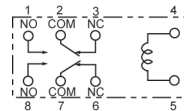
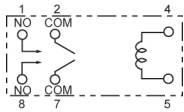
FTR-F1A type



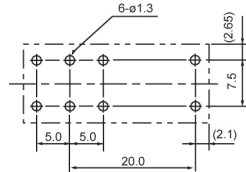
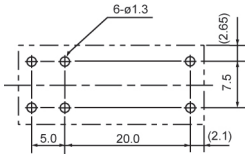
FTR-F1C type



### ● Schematics (BOTTOM VIEW)



### ● PC board mounting hole layout (BOTTOM VIEW)



Unit: mm

## 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-3.0Ag-0.5Cu, unless otherwise specified. 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.

**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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