

# POWER RELAY

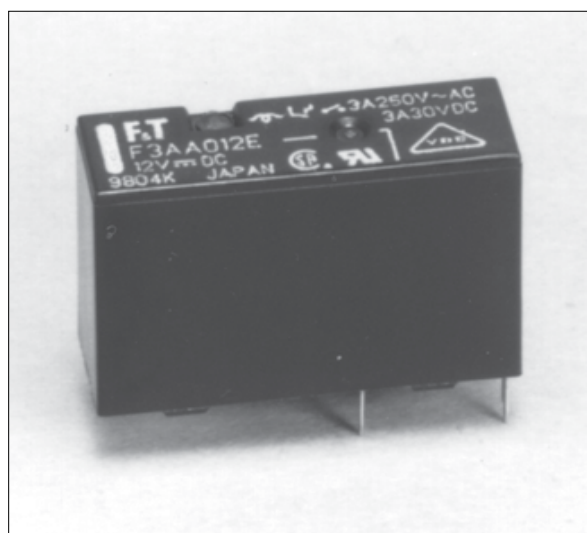
## 1 POLE 5A SLIM TYPE RELAY

### FTR-F3-HA Series

RoHS compliant

#### ■ FEATURES

- HIGH DENSITY MOUNTING  
Slim type with 7mm width and 142mm<sup>2</sup> mounting space
- HIGH ISOLATION  
Insulation Distance: Minimum 6mm between coil and contact (conforms to IEC 60065)  
Dielectric Strength: 4KV  
Surge Strength: 10KV
- HIGH COIL SENSITIVITY  
Nominal coil power consumption of 200mW
- CADMIUM FREE CONTACT FOR ECO-PROGRAM
- SAFETY STANDARDS  
UL, CSA, VDE, SEMKO, CQC
- Plastic sealed relay
- RoHS compliant since date code: 0435R1, 0432R2, 0429R3, 0434R4, 0437L2  
Please see page 6 for more information



#### ■ ORDERING INFORMATION

[Example]      FTR-F3    A    A    012    E    -HA  
                  (a)    (b) (c)    (d)    (e)    (f)

|     |                      |                                                                                     |
|-----|----------------------|-------------------------------------------------------------------------------------|
| (a) | Series Name          | FTR-F 3                                                                             |
| (b) | Contact Arrangement  | A : 1 Form A (SPST-NO)                                                              |
| (c) | Coil Type            | A : Standard (200mW)                                                                |
| (d) | Coil Nominal Voltage | 005 : 5DC      012 : 12DC<br>006 : 6DC      018 : 18DC<br>009 : 9DC      024 : 24DC |
| (e) | Contact Material     | E : Silver nickel                                                                   |
| (f) | Contact Rating       | HA : 5A sealing confirmed                                                           |

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

Ordering code      Actual marking  
FTR-F3AA012E      →      F3AA012E

# FTR-F3-HA SERIES

## ■ PART NUMBERS

| Ordering Part Number | Series | Contact  | Coil Power           | Coil Voltage | Contact Material | Contact Rating |
|----------------------|--------|----------|----------------------|--------------|------------------|----------------|
| FTR-F3AA005E-HA      | FTR-F3 | 1 form A | Standard<br>(200 mW) | 5            | Silver nickel    | 5A             |
| FTR-F3AA006E-HA      |        |          |                      | 6            |                  |                |
| FTR-F3AA009E-HA      |        |          |                      | 9            |                  |                |
| FTR-F3AA012E-HA      |        |          |                      | 12           |                  |                |
| FTR-F3AA018E-HA      |        |          |                      | 18           |                  |                |
| FTR-F3AA024E-HA      |        |          |                      | 24           |                  |                |

## ■ COIL DATA CHART

| Coil Voltage | Nominal Voltage (VDC) | Max. Coil Voltage* <sup>1</sup> | Coil Resistance (±10%) | Must Operate Voltage* <sup>2</sup> | Must Release Voltage* <sup>2</sup> | Coil Power |
|--------------|-----------------------|---------------------------------|------------------------|------------------------------------|------------------------------------|------------|
| 005          | 5                     | 12.0 VDC                        | 125 Ω                  | 3.75 VDC                           | 0.5 VDC                            | 200 mW     |
| 006          | 6                     | 14.4 VDC                        | 180 Ω                  | 4.5 VDC                            | 0.6 VDC                            |            |
| 009          | 9                     | 21.6 VDC                        | 405 Ω                  | 6.75 VDC                           | 0.9 VDC                            |            |
| 012          | 12                    | 28.8 VDC                        | 720 Ω                  | 9.0 VDC                            | 1.2 VDC                            |            |
| 018          | 18                    | 43.2 VDC                        | 1,620 Ω                | 13.5 VDC                           | 1.8 VDC                            |            |
| 024          | 24                    | 57.6 VDC                        | 2,880 Ω                | 18.0 VDC                           | 2.2 VDC                            |            |

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

\*1: No contact current at 20°C

\*2: Specified values are subject to pulse wave voltage

# FTR-F3-HA SERIES

## ■ SPECIFICATIONS

|            |                              |              |                                            |
|------------|------------------------------|--------------|--------------------------------------------|
| Item       |                              |              | FTR-F3 AA ( ) E-HA                         |
| Contact    | Arrangement                  |              | 1 form A (SPST-NO)                         |
|            | Material                     |              | Silver nickel                              |
|            | Configuration                |              | Single                                     |
|            | Resistance (initial)         |              | Maximum 100 mΩ at 6 VDC, 1 A               |
|            | Rating                       |              | 5 A, 250 VAC / 30 VDC                      |
|            | Maximum Carry Current        |              | 5A                                         |
|            | Maximum Switching Power      |              | 1,250 VA / 150 W                           |
|            | Maximum Switching Voltage    |              | 277 VAC / 30VDC                            |
|            | Maximum Switching Load*1     |              | 10 mA 5 VDC                                |
| Coil       | Rating Power                 |              | 200 mW                                     |
|            | Must Operate Power           |              | 113 mW                                     |
|            | Operating Temperature        |              | -40°C to +70°C (no frost)                  |
| Time Value | Operate Time (without diode) |              | Maximum 10 ms                              |
|            | Release Time (without diode) |              | Maximum 10 ms                              |
| Life       | Mechanical                   |              | 5 x 10 <sup>6</sup> operations minimum     |
|            | Electrical                   |              | 100 x 10 <sup>3</sup> operations minimum   |
| Other      | Vibration Resistance         | Misoperation | 10 to 55 Hz, at double amplitude of 1.5 mm |
|            |                              | Endurance    | 10-55Hz, at double amplitude of 1.5 mm     |
|            | Shock Resistance             | Misoperation | Min. 100m/s <sup>2</sup> (11±1ms)          |
|            |                              | Endurance    | Min. 1,000m/s <sup>2</sup> (6±1ms)         |
|            | Weight                       |              | Approximately 4g                           |

\*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

## ■ INSULATION

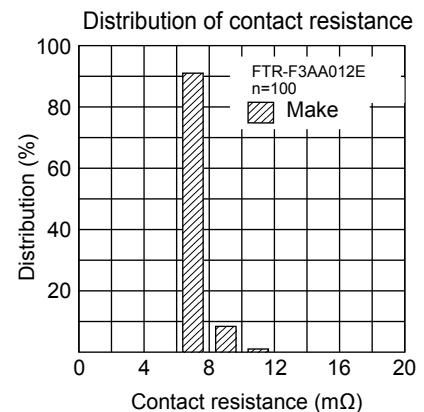
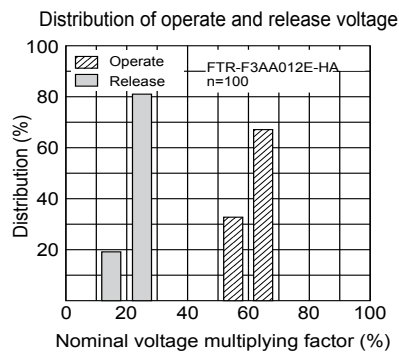
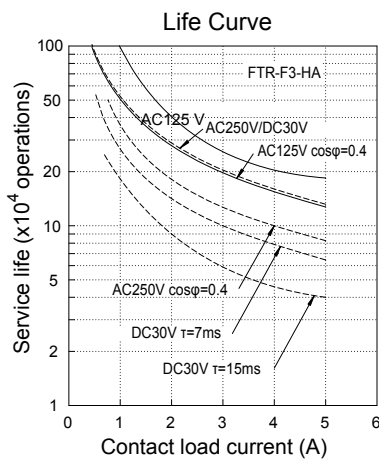
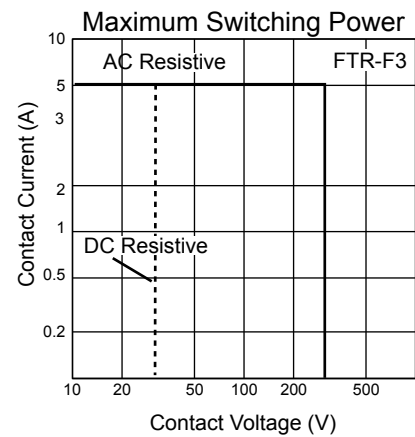
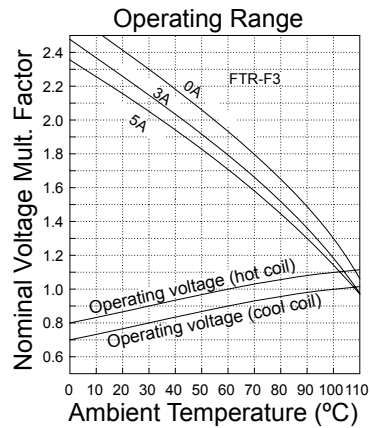
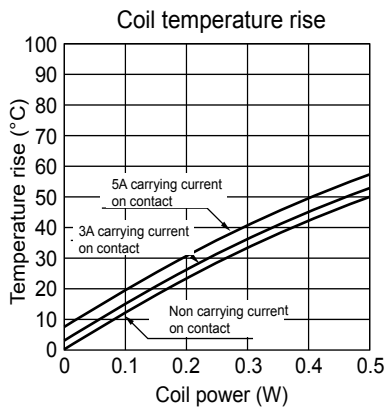
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|---------------------------------------------------|-------------------|-------------------------------------|
| Item                                              |                   | FTR-F3                              |
| Resistance (500 VDC)                              |                   | Minimum 1,000 MΩ                    |
| Dielectric Strength                               | open contacts     | 750 VAC (50/60 Hz) 1 min.           |
|                                                   | coil and contacts | 4,000 VAC (50/60 Hz) 1 min.         |
| Surge Voltage (coil and contact)                  |                   | 10,000 V (1.2 x 50μs standard wave) |
| Clearance/Creepage                                |                   | 6 mm / 6 mm                         |
| Insulation (DIN EN61810-1 VDE0435)                |                   |                                     |
| Voltage                                           |                   | 250 V                               |
| Pollution                                         |                   | 2                                   |
| Isolation material group                          |                   | Ila                                 |
| Isolation category / Reference voltage (VDE01106) |                   | C / 250 V                           |

# FTR-F3-HA SERIES

## SAFETY STANDARDS

| Type  | Compliance                                     | Contact rating                                                                                    |
|-------|------------------------------------------------|---------------------------------------------------------------------------------------------------|
| UL    | UL 508<br>E63614                               | Flammability: UL 94-V0 (plastics)<br>5A, 30 VDC / 277 VAC (resistive)<br>1/10 HP, 250VAC / 125VAC |
| CSA   | C22.2 No. 14<br>LR 40304                       | 1/8 HP, 277VAC<br>Pilot duty: D300, 120 VAC / 240 VAC                                             |
| VDE   | 0435                                           | 5A, 250 VAC / 30 VDC 85°C<br>4A, 250 VAC break 1A cosØ=0.8, 85C                                   |
| SEMKO | EN 61058-1: 1992 +A1:1993<br>EN 61095:1993+A11 | 5A, 250 VAC<br>40T70                                                                              |

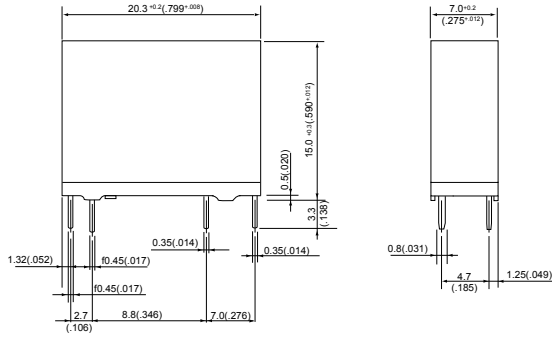
## CHARACTERISTIC DATA



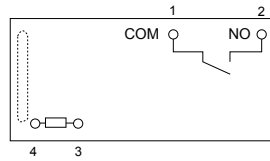
# FTR-F3-HA SERIES

## ■ DIMENSIONS

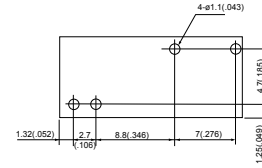
### ● Dimensions



### ● Schematics (BOTTOM VIEW)



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



## 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. All 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 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 leaded 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.

#### 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.

### 4. Tin Whisker

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

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