

# POWER RELAY

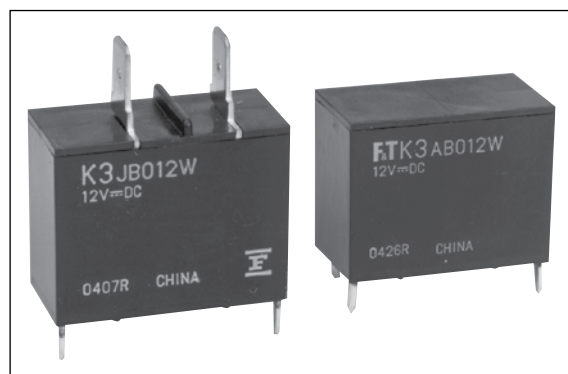
## 1 POLE - 20A Heavy Load

### FTR-K3 Series

RoHS compliant

#### ■ FEATURES

- SPST 20A and #250 tab terminal type is also available
- Low coil power (780mW)
- Cadmium free contacts
- SAFETY STANDARDS  
UL, CSA, VDE, CQC approved
- RoHS Compliant since production



#### ■ ORDERING INFORMATION

[Example]      FTR-K3    J    B    012    W    — ( )  
                   (a)    (b)    (c)    (d)    (e)    (f)

|     |                            |                                                                                |                            |                           |             |
|-----|----------------------------|--------------------------------------------------------------------------------|----------------------------|---------------------------|-------------|
| (a) | Series Name                | FTR-K3: FTR-K3 Series                                                          |                            |                           |             |
| (b) | Contact Arrangement        | A : 1 form A (SPST-NO) (PCB terminal)<br>J : 1 form A (SPST-NO) (Tab terminal) |                            |                           |             |
| (c) | Coil Type / Enclosure      | B : Standard (780 mW)                                                          |                            |                           |             |
| (d) | Nominal Voltage            | 005 : 5 VDC,<br>018 : 18 VDC                                                   | 006 : 6VDC,<br>024: 24VDC, | 009 : 9VDC<br>048 : 48VDC | 012 : 12VDC |
| (e) | Contact Material / TV type | W : Silver alloy                                                               |                            |                           |             |
| (f) | Special Designation        | :                                                                              |                            |                           |             |

Actual marking does not carry the type name : "FTR"

E.g.: Ordering code: FTR-K3AB012W

Actual marking: K3AB012W

# FTR-K3 SERIES

## ■ PART NUMBERS

400mW type

| Ordering Part Number | Series | Contact                     | Coil Power | Coil Voltage | Contact Material |
|----------------------|--------|-----------------------------|------------|--------------|------------------|
| FTR-K3AB005W         | FTR-K3 | A: 1 form A<br>PCB terminal | B: 780 mW  | 5            | W: Silver alloy  |
| FTR-K3AB006W         |        |                             |            | 6            |                  |
| FTR-K3AB009W         |        |                             |            | 9            |                  |
| FTR-K3AB012W         |        |                             |            | 12           |                  |
| FTR-K3AB018W         |        |                             |            | 18           |                  |
| FTR-K3AB024W         |        |                             |            | 24           |                  |
| FTR-K3AB048W         |        |                             |            | 48           |                  |
| FTR-K3JB005W         |        | J: 1 form A<br>Tab terminal |            | 5            |                  |
| FTR-K3JB006W         |        |                             |            | 6            |                  |
| FTR-K3JB009W         |        |                             |            | 9            |                  |
| FTR-K3JB012W         |        |                             |            | 12           |                  |
| FTR-K3JB018W         |        |                             |            | 18           |                  |
| FTR-K3JB024W         |        |                             |            | 24           |                  |
| FTR-K3JB048W         |        |                             |            | 48           |                  |

## ■ COIL DATA CHART

| Coil Voltage | Nominal Voltage (VDC) | Coil Resistance (±10%) | Must Operate Voltage*2 | Must Release Voltage*2 | Nominal Power (mW) |
|--------------|-----------------------|------------------------|------------------------|------------------------|--------------------|
| 005          | 5                     | 32 Ω                   | 3.5 VDC                | 0.5 VDC                | 780                |
| 006          | 6                     | 46 Ω                   | 4.2 VDC                | 0.6 VDC                |                    |
| 009          | 9                     | 105 Ω                  | 6.3 VDC                | 0.9 VDC                |                    |
| 012          | 12                    | 185 Ω                  | 8.4 VDC                | 1.2 VDC                |                    |
| 018          | 18                    | 415 Ω                  | 12.6 VDC               | 1.8 VDC                |                    |
| 024          | 24                    | 740 Ω                  | 16.8 VDC               | 2.4 VDC                |                    |
| 048          | 48                    | 2,955 Ω                | 33.6 VDC               | 4.8 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-K3 SERIES

## ■ SPECIFICATIONS

|            |                            |              |                                              |
|------------|----------------------------|--------------|----------------------------------------------|
| Item       |                            |              | FTR-K3                                       |
| Contact    | Arrangement                |              | 1 form A                                     |
|            | Material                   |              | Silver alloy                                 |
|            | Configuration              |              | Single                                       |
|            | Resistance (initial)       |              | Maximum 100 mΩ at 1 A, 6 VDC                 |
|            | Rating                     |              | 20 A, 250 VAC (resistive)                    |
|            | Maximum Carrying Current*1 |              | 25A                                          |
|            | Maximum Switching Current  |              | 25A                                          |
|            | Maximum Switching Rating   |              | 6,250VA                                      |
|            | Maximum Switching Voltage  |              | 250 VAC                                      |
|            | Maximum Switching Load*2   |              | 100 mA 5VDC                                  |
| Coil       | Nominal Power (at 20°C)    |              | 780mW                                        |
|            | Operate Power (at 20°C)    |              | 380 mW                                       |
|            | Operating Temperature      |              | -40°C to +60°C (no frost)                    |
| Time Value | Operate (without diode)    |              | Maximum 20ms (at nominal voltage, no bounce) |
|            | Release (without diode)    |              | Maximum 10ms (at nominal voltage, no bounce) |
| Life       | Mechanical                 |              | 20 x 10 <sup>6</sup> operations minimum      |
|            | Electrical                 | Resistive    | 100 x 10 <sup>3</sup> operations min.        |
|            |                            | Motor        | 200 x 10 <sup>3</sup> operations min.        |
|            |                            | Inverter     | 30 x 10 <sup>3</sup> operations min.         |
| Other      | Vibration Resistance       | Misoperation | 10 to 55 Hz, at double amplitude of 0.7 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 25g                            |

\*1 Need to consider the head from PCB when max. current is more than 10A.

\*2 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.

# FTR-K3 SERIES

## ■ INSULATION

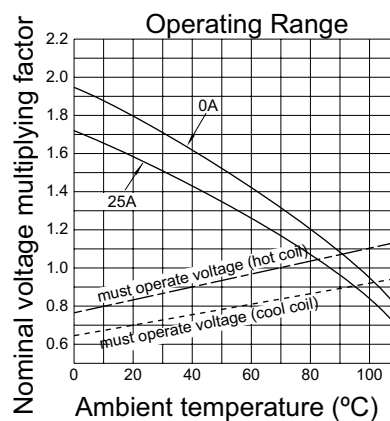
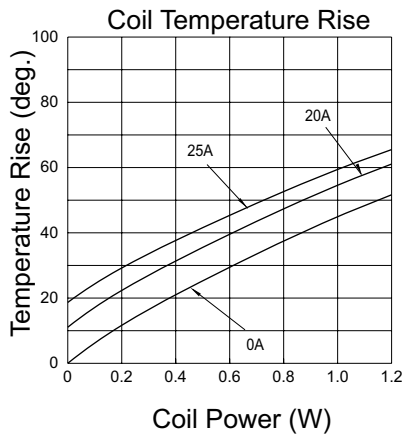
| Item                             |                   | FTR-K1                      | Note                     |
|----------------------------------|-------------------|-----------------------------|--------------------------|
| Resistance (initial)             |                   | Minimum 1,000 MΩ 1 min.     | at 500 VDC               |
| Dielectric Strength              | open contacts     | 1,000 VAC (50/60 Hz) 1 min. |                          |
|                                  | coil and contacts | 5,000 VAC (50/60 Hz) 1 min. |                          |
| Surge Voltage (coil and contact) |                   | 8,500 V                     | 1.2 x 50μs standard wave |

## ■ SAFETY STANDARDS

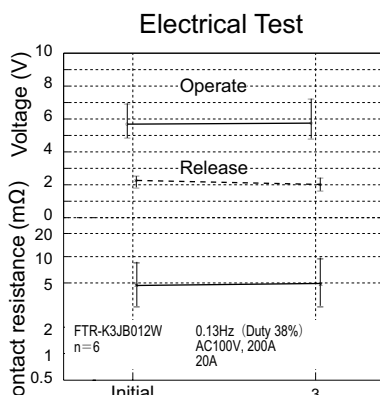
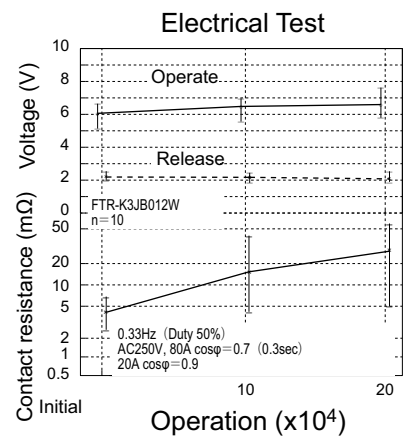
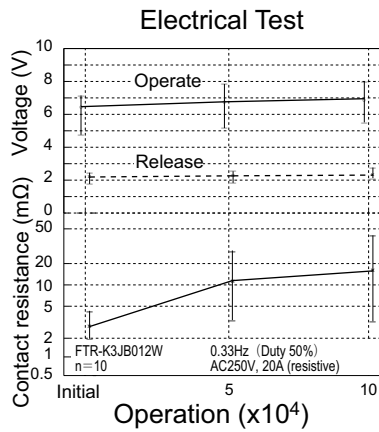
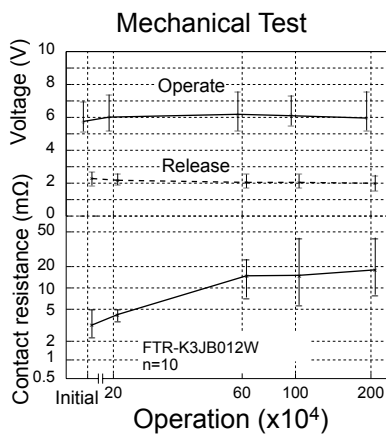
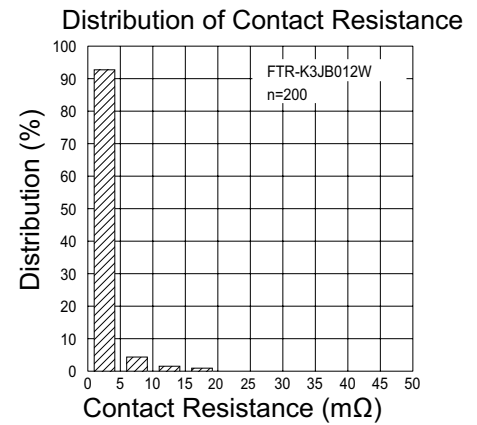
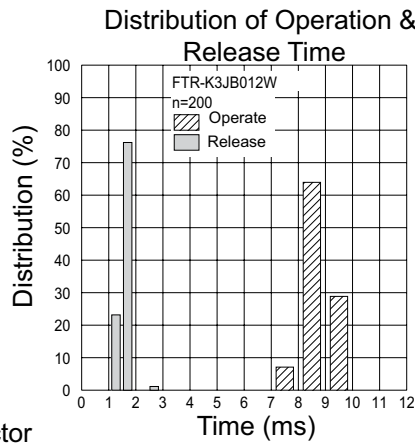
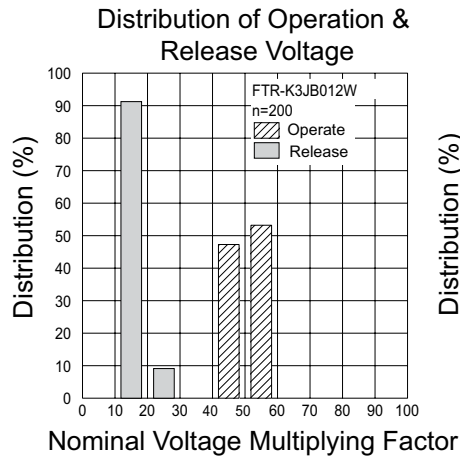
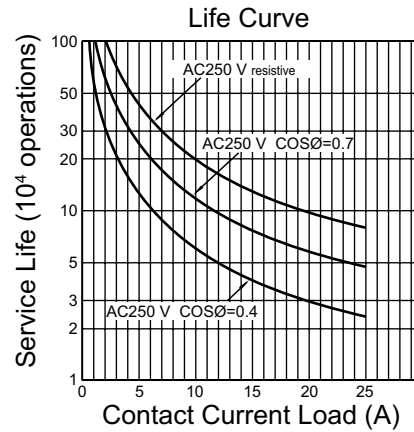
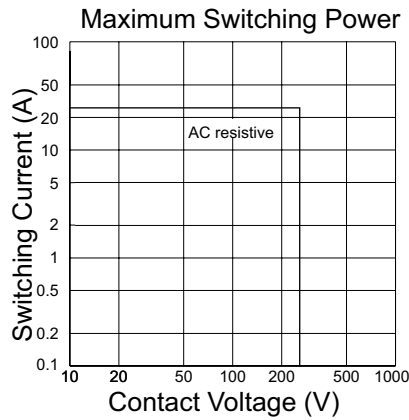
| Type | Compliance               | Contact rating                                                                |
|------|--------------------------|-------------------------------------------------------------------------------|
|      |                          | FTR-K3                                                                        |
| UL   | UL 508<br>E63614         | Flammability: UL 94-V0 (plastics)<br>20A, 277 VAC (resistive)<br>1 HP, 125VAC |
| CSA  | C22.2 No. 14<br>LR 40304 | 2 HP, 277VAC, 100,000 ops.                                                    |
| VDE  | 0435                     |                                                                               |
| CQC  | 04001009179              |                                                                               |

Complies with NEMKO, DEMKO, FIMKO

## ■ CHARACTERISTIC DATA



# FTR-K3 SERIES

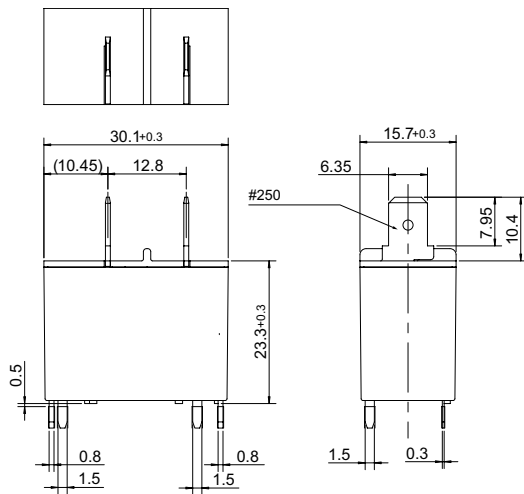


# FTR-K3 SERIES

## ■ DIMENSIONS

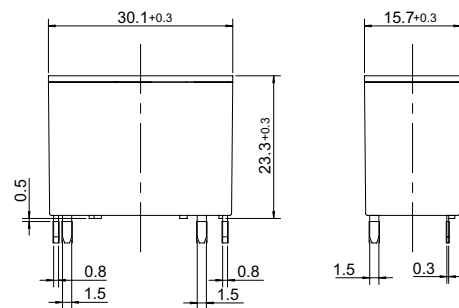
- **Dimensions**

FTR-K3 JB

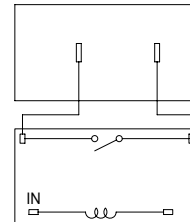


- **Dimensions**

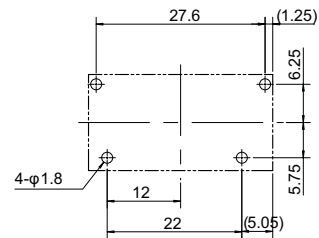
FTR-K3 AB



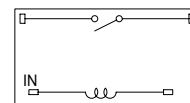
- Schematics  
(BOTTOM VIEW)



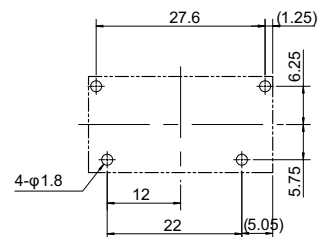
- **PC board mounting hole layout (BOTTOM VIEW)**



- Schematics (BOTTOM VIEW)



- **PC board mounting hole layout (BOTTOM VIEW)**



Unit: mm

## 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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