

POWER RELAY

2 POLE 5A/TV-3 RATED COMPACT TYPE

FTR-F4 Series

RoHS compliant

■ FEATURES

- Small high density type relay 288mm² save 24% compared to VB
- UL/CSA TV-3 rating
- Insulation distance: minimum 6 mm between coil and contacts (IEC65)
Dielectric strength: 4 KVAV
Surge strength: 10 KV
- Card separation system for high noise resistance between coil and contacts
- UL 94V-0 flamability materials, UL Class B (130°C)
- Safety standards
UL, CSA, VDE, SEMKO pending
- RoHS compliant since date code: 0437L2
Please see page 5 for more information



■ APPLICATIONS

- CRT monitor EMI protection
- Audio system speaker protection

■ ORDERING INFORMATION

[Example] $\frac{\text{FTR-F4}}{\text{(a)}} \quad \frac{\text{A}}{\text{(b)}} \quad \frac{\text{K}}{\text{(c)}} \quad \frac{\text{012}}{\text{(d)}} \quad \frac{\text{T}}{\text{(e)}} \quad \frac{\text{-**}}{\text{(f)}}$

| | | |
|-----|---------------------|--|
| (a) | Series Name | FTR-F4 : FTR-F4 Series |
| (b) | Contact Arrangement | A : 2 form A (DPST) |
| (c) | Coil Type | K : Standard type (530 mW) |
| (d) | Nominal Voltage | 005 : 5 VDC, 006 : 6VDC, 009 : 9VDC 012 : 12VDC, 024 : 24VDC, 048 : 48VDC |
| (e) | TV-Rating | T : TV-3 |
| (f) | Custom Designation | Special number for customized products |

Ordering Code: FTR-F4AK012T Actual Marking: F4AK012T

FTR-F4 SERIES

■ SAFETY STANDARD AND FILE NUMBERS

UL508

C22.2 No. 1, No. 14

Please note that UL/CSA ratings may differ from the standard ratings. Please request when the approval markings are required on the cover and/or relay recognized by SEV is required.

| Nominal Voltage | Contact Rating |
|-----------------|--|
| 5 to 48 VDC | TV-3, 120 VAC 1/6 HP 125 VAC 1/4HP 277 VAC 5A 30VDC/ 277 VAC res. Pilot duty D300 |

■ SPECIFICATIONS

| Item | | FTR-F4 | |
|----------------|--|--|--|
| Contact | Arrangement | 2 form A (DPST) | |
| | Material | Silver alloy | |
| | Style | Single | |
| | Resistance (initial) | Maximum 100 mΩ (at 1 A 6 VDC) | |
| | Rating (resistive) | 5A 277 VAC 30 VDC | |
| | Maximum Carrying Current | 5 A | |
| | Maximum Switching Power | 1,250VA / 150 W | |
| | Maximum Switching Voltage | 400 VAC / 300 VDC | |
| | Maximum Switching Current | 5 A | |
| | Minimum Switching Load*1 | 5 VDC, 100mA | |
| | Maximum Inrush Current | 120 VAC, 51A (TV-3) | |
| Coil | Nominal Power(at 20°C) | 0.53 W | |
| | Operate Power (at 20°C) | 0.3 W | |
| | Operating Temperature | -40°C to +70°C (no frost) | |
| Time Value | Operate (at nominal voltage) | Maximum 15 ms (not including bounce) | |
| | Release (at nominal voltage) | Maximum 5 ms (not including bounce) | |
| Insulation | Resistance (at 500 VDC) | Minimum 1,000 MΩ | |
| | Dielectric Strength | between open contacts | 1,000 VAC 1 minute |
| | | between adjacent contacts | 3,000VAC 1 minute |
| | | between coil and contacts | 4,000 VAC 1 minute |
| Surge Strength | 10,000 V (at 1.2 × 50 μs)(between coil and contacts) | | |
| Life | Mechanical | 2 × 10 ⁶ operations minimum | |
| | Electrical | Contact rating | 1 × 10 ⁵ operations minimum |
| | | Lamp load | 2.5 × 10 ⁴ operations minimum |
| Vibration | Misoperation | 10 to 55 Hz (double amplitude of 1.5 mm) | |
| | Endurance | 10 to 55 Hz (double amplitude of 1.5 mm) | |
| Shock | Misoperation | 200 m/s ² (11 ±1 ms) | |
| | Endurance | 1,000 m/s ² (6 ±1 ms) | |
| Weight | | Approximately 12 g | |

*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.

FTR-F4 SERIES

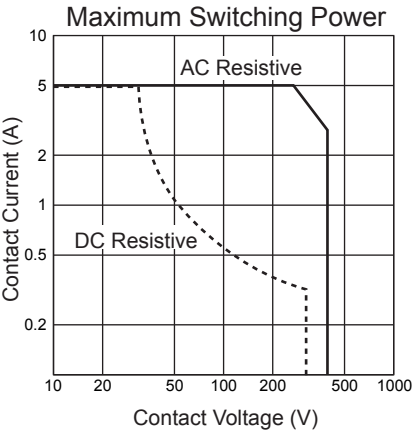
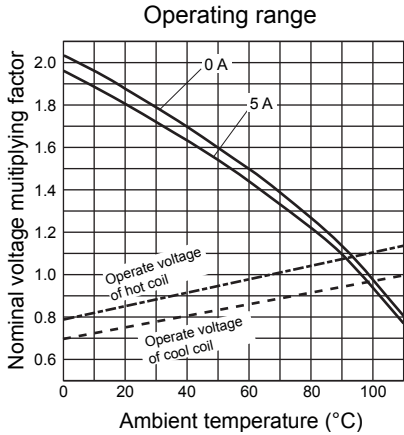
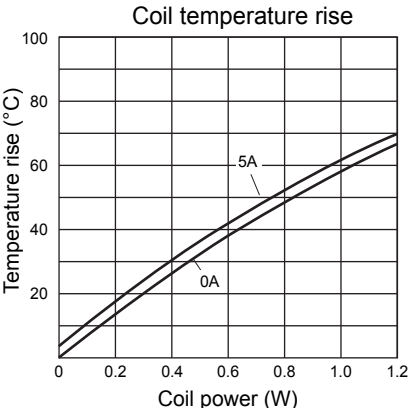
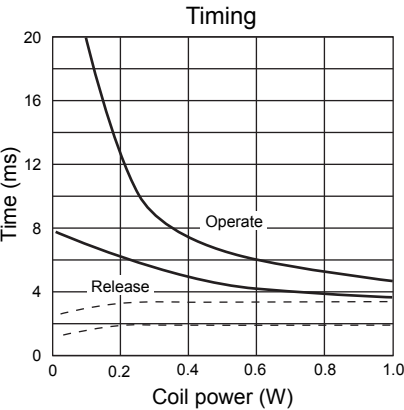
COIL DATA CHART

Standard type

| MODEL | Nominal voltage | Coil resistance (±10%) | Operate voltage | Release voltage | Nominal power |
|--------------|-----------------|------------------------|-----------------|-----------------|---------------|
| FTR-F4AK005T | 5 VDC | 47 Ω | 3.75 VDC | 0.25 VDC | 530 mW |
| FTR-F4AK006T | 6 VDC | 68 Ω | 4.5 VDC | 0.3 VDC | 530 mW |
| FTR-F4AK009T | 9 VDC | 155 Ω | 6.75 VDC | 0.45 VDC | 530 mW |
| FTR-F4AK012T | 12 VDC | 270 Ω | 9.0 VDC | 0.6 VDC | 530 mW |
| FTR-F4AK024T | 24 VDC | 1,100 Ω | 18.0 VDC | 1.2 VDC | 530 mW |
| FTR-F4AK048T | 48 VDC | 4,400 Ω | 36.0 VDC | 2.4 VDC | 530 mW |

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

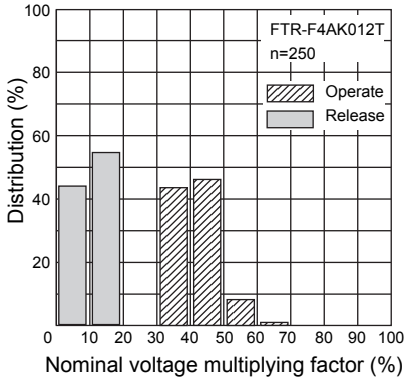
CHARACTERISTIC DATA



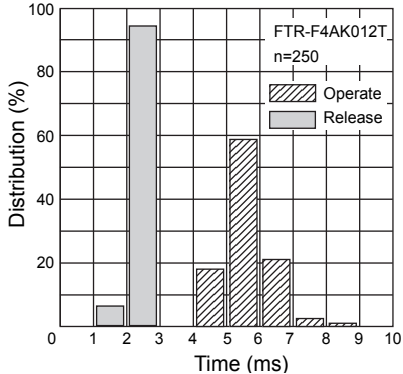
FTR-F4 SERIES

■ REFERENCE DATA

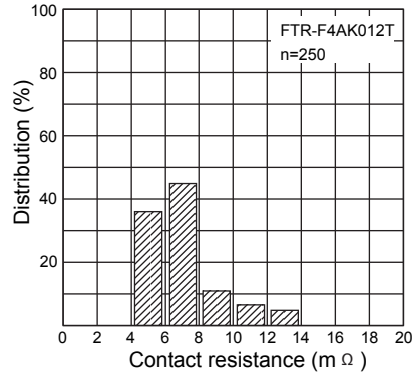
Distribution of operate and release voltage



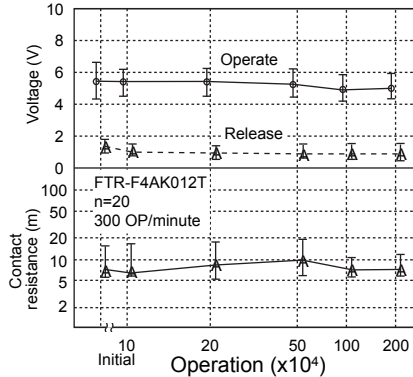
Distribution of operate and release time



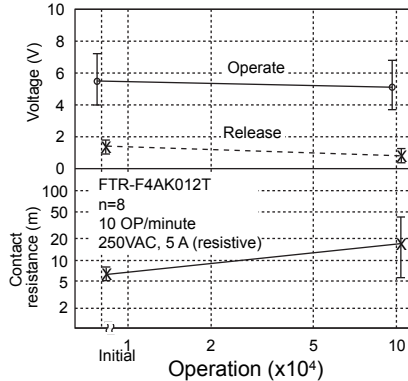
Distribution of contact resistance



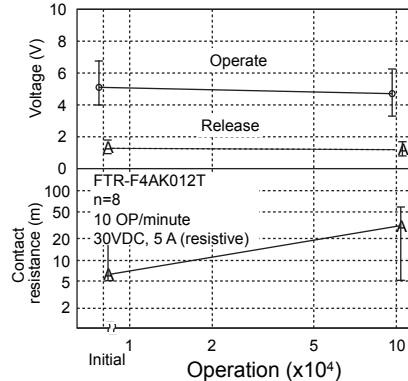
Mechanical life test



Electrical life test



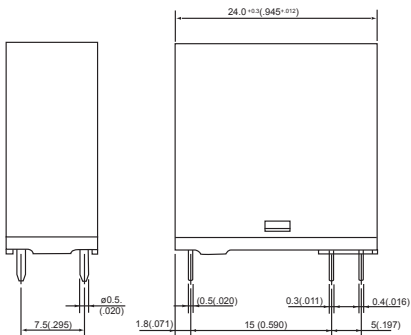
Electrical life test



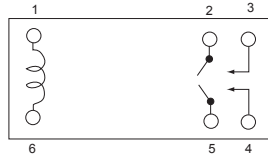
■ DIMENSIONS

● Dimensions

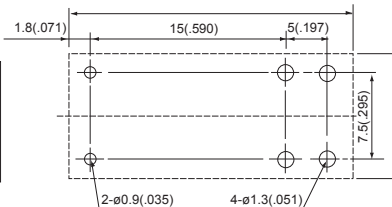
FTR-F4 type



● 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. 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 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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