# POWER RELAY

# 1 POLE - 3A Slim Type Relay

# FTR-F6 Series

## ■ FEATURES

- High density mounting
  Slim type with 7mm width and 142mm² mounting space
- High insulation
  Insulation distance: Minimum 6mm between coil and contact (conforms to IEC 60065)
  Dielectric strength: 4KV
  Surge strength: 10KV
- Cadmium free contact for eco-program
- Safety standards
  UL, CSA
- Plastic sealed relay, RTIII
- RoHS compliant
  Please see page 6 for more information

## ■ PARTNUMBER INFORMATION

[Example] FTR-F6 (a) A (b) A (c) 012 (d) Z (e)

| | | | |
|---|---|---|---|
| (a) | Relay type | FTR-F6 | : FTR-F6 Series |
| (b) | Contact configuration | A | : 1 form A (SPST-NO) |
| (c) | Coil type (power) | A | : 200mW |
| (d) | Coil rated voltage | 012 | : 5....24 VDC<br>Coil rating tagle at page 3 |
| (e) | Contact material | Z | : Au+AgNi |

Actual marking does not carry the type name: “FTR”
E.g.: Ordering code: FTR-F6AA012Z Actual marking: F6AA012Z

## ■ SPECIFICATION

| Item | | | FTR-F6<br>FTR-F6AA( )Z |
|---|---|---|---|
| Contact Data | Configuration | | 1 form A (SPST-NO) |
| | Construction | | Single |
| | Material | | Au+AgNi |
| | Resistance (initial) | | Max.30mOhm at 1A, 6VDC |
| | Contact rating (resistive) | | 3A, 125VAC, 30VDC |
| | Max. carrying current | | 5A |
| | Max. switching voltage | | 277VAC, 30VDC |
| | Max. switching power | | 750VA, 90W |
| | Min. switching load * | | 10mA, 5VDC |
| Life | Mechanical | | Min. 20 x $10^6$ operations |
| | Electrical (at rated load) | | Min. 200 x $10^3$ operations |
| Coil Data | Rated power (20°C) | | 200mW |
| | Operate power | | 82mW |
| | Operating temperature range | | -40°C to +90°C (no frost) |
| Timing Data | Operate (at nominal voltage) | | Max. 10ms (without bounce, no diode) |
| | Release (at nominal voltage) | | Max. 10ms (without bounce, no diode) |
| Insulation | Resistive (initial) | | Min. 1,000MOhm at 500VDC |
| | Dielectric strength | Open contacts | 750VAC (50/60Hz) 1 min. |
| | | Contacts to coil | 4,000VAC (50/60Hz) 1 min. |
| | Surge strength | Contacts to coil | 10,000V / 1.2 x 50μ standard wave |
| | Clearance | | 6mm |
| | Creepage | | 6mm |
| Other | Vibration resistance | Misoperation | 10 to 55 to 10 Hz single amplitude 0.75mm |
| | | Endurance | 10 to 55 to 10 Hz single amplitude 0.75mm |
| | Shock | Misoperation | Min. 100m/s² (11±1ms) |
| | | Endurance | Min. 1,000m/s² (6±1ms) |
| | Weight | | Approximately 4g |
| | Sealing | | Plastic sealed RTIII |

* 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.

## ■ COIL RATING

200mW type

| Coil Code | Rated coil voltage (VDC) | Coil Resistance +/- 10% (Ohm) | Must Operate Voltage (VDC)* | Must Release Voltage (VDC)* | Rated Power (mW) |
|---|---|---|---|---|---|
| 4.5 | 4.5 | 101 | 2.88 | 0.45 | 200 |
| 005 | 5 | 125 | 3.2 | 0.5 | |
| 006 | 6 | 180 | 3.84 | 0.6 | |
| 009 | 9 | 405 | 5.76 | 0.9 | |
| 012 | 12 | 720 | 7.68 | 1.2 | |
| 018 | 18 | 1,620 | 11.52 | 1.8 | |
| 024 | 24 | 2,880 | 15.36 | 2.4 | |

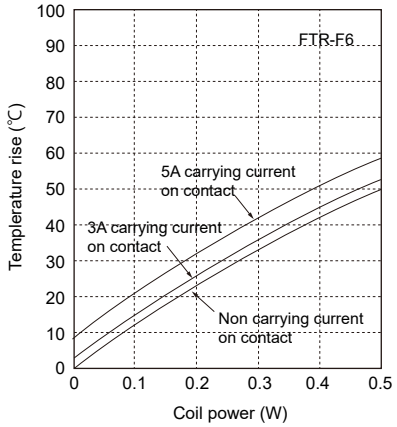
Note 1: All values given in the coil table(s) are valid at 20°C ambient temperature, at zero contact current, without pre-energizing and are specified at pulse wave voltage.
Note 2: When applying a higher than rated coil voltage, please refer to the “coil temperature rise” and “operating range”. Reference graphs for the effects on the relay operating behaviour.

## ■ SAFETY STANDARDS

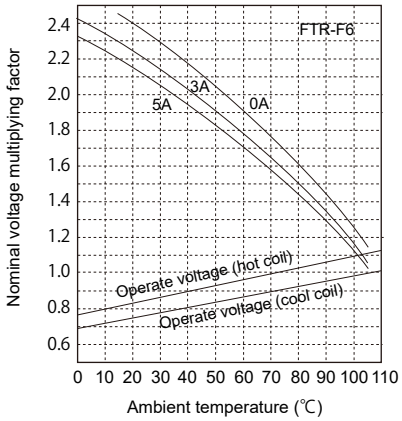
| Type | Compliance | Contact rating |
|---|---|---|
| UL | UL 508 | Flammability: UL 94-V0 (plastics) |
| | E63614 | 5A, 30VDC/277VAC (resistive)<br>3A, 30VDC/277VAC (resistive)<br>1/10 HP, 125VAC<br>1/8 HP, 277VAC<br>Pilot duty: D300 |
| CSA | C22.2 No.14 | |
| | LR 40304 | |

## ■ CHARACTERISTIC DATA (Reference)

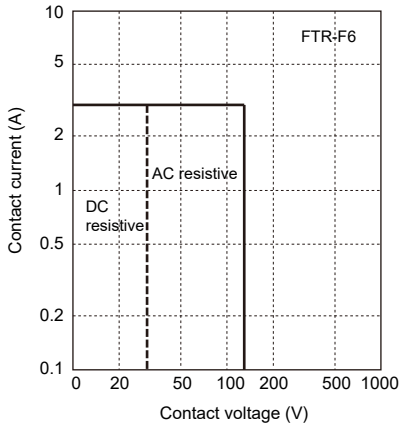
Coil temperature rise



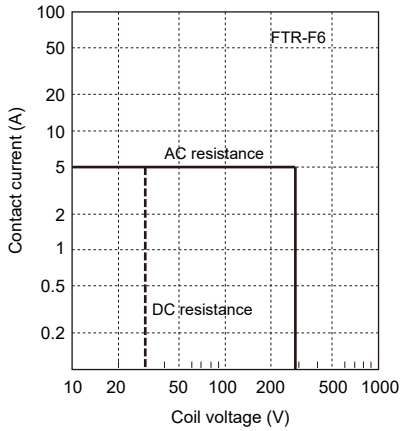

Operating range



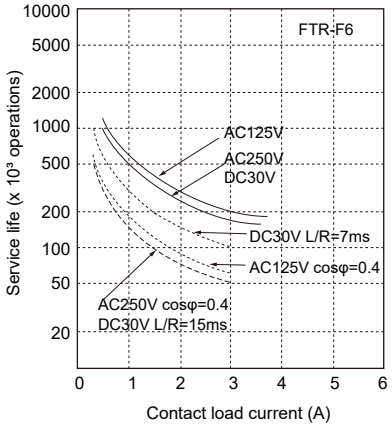

Maximum switching power




Maximum switching power

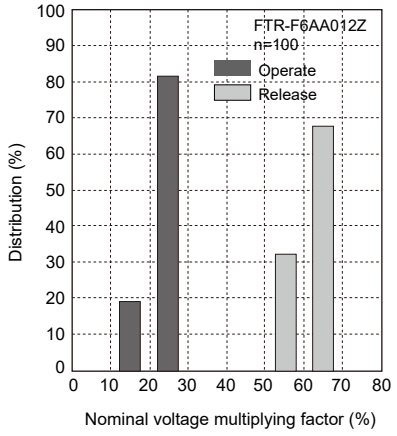



Life curve - 3A type

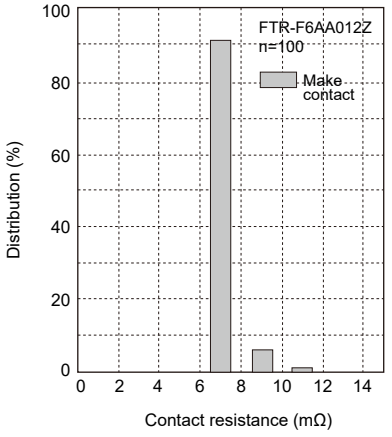



## ■ REFERENCE DATA

Distribution of operate/release voltage



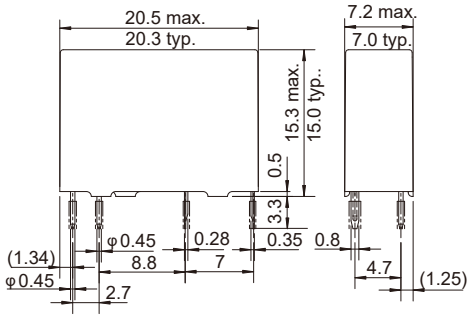

Distribution of contact resistance



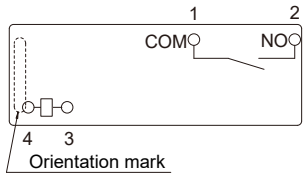
## ■ DIMENSIONS

Standard type

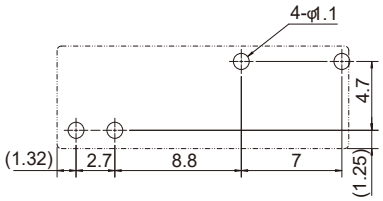
- **Dimensions**




- **Schematics**
(BOTTOM VIEW)




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




Unit: mm

# CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited.
- Do not use relays in the atmosphere with sulfide gas, chloride gas or nitric oxide. Contact resistance may increase.
- Do not use silicon or silicon-containing product or materials near relays. It may cause contact failure.

# GENERAL INFORMATION

## 1. ROHS Compliance

- All relays produced by FCL Components are compliant with RoHS directive 2011/65/EU, including commission delegated directive 2015/863.

## 2. Recommended lead free solder condition

- 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.
- Recommended solder for assembly: Sn-3.0Ag-0.5Cu.

**Flow Solder Condition:**

| | |
|---|---|
| Pre-Heating: | Maximum 120˚C within 90 sec. |
| Soldering: | Eip within 5 sec. at 255°C±5°C solder bath |

Relay must be cooled by air immediately after soldering

**Solder by Soldering Iron:**

| | |
|---|---|
| Soldering Iron: | 30-60W |
| Temperature: | Maximum 340-360˚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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