

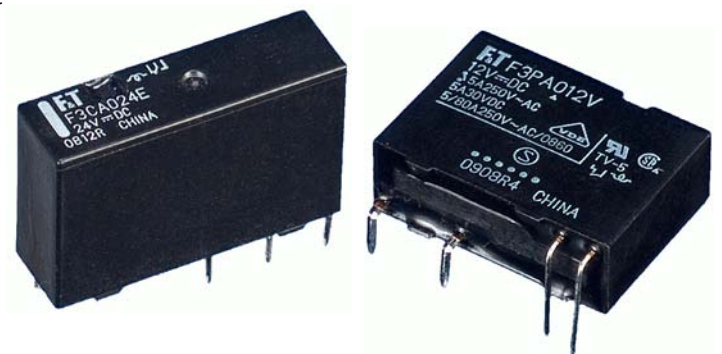
POWER RELAY

1 POLE - 3A/5A Slim Type Relay

FTR-F3 Series

■ FEATURES

- High density mounting
Slim type with 7mm width and 142mm² mounting space
1C type; height 15mm and 164 mm² mounting space
right angle type; height 7mm, 330 mm² mounting space
- High insulation
Insulation distance:
minimum 6mm (7mm for 1C and right angle type)
between coil and contact (conforms to IEC 60065)
Dielectric strength: 4KV
Surge strength: 10KV
- Cadmium free contact for eco-program
- Safety standards
UL, CSA, VDE, SEMKO, CQC
- Plastic sealed relay, RTIII
- RoHS compliant
Please see page 7 for more information



■ PARTNUMBER INFORMATION

[Example] $\frac{\text{FTR-F3}}{\text{(a)}} \quad \frac{\text{A}}{\text{(b)}} \quad \frac{\text{A}}{\text{(c)}} \quad \frac{\text{012}}{\text{(d)}} \quad \frac{\text{V}}{\text{(e)}} \quad \text{- HA} \quad \frac{\text{}}{\text{(f)}}$

| | | |
|-----|-----------------------|---|
| (a) | Relay type | FTR-F3 :FTR-F3-Series |
| (b) | Contact configuration | A : 1 form A, straight terminals C : 1 form C, straight terminals P : 1 form A, right angle terminals |
| (c) | Coil type (power) | A : 200mW, 3A and 5A types, FTR-F3 (A;P) A (...) E (-HA); (-KS) : 280mW, TV3 and TV5 types, FTR-F3 (A;P) A (...) (V;T) : 360mW, 1 form C type, FTR-F3CA (...) E |
| (d) | Coil rated voltage | 012 : 5.....24 VDC Coil rating table at page 3 |
| (e) | Contact material | V : AgSnO ₂ TV5 type, 1 form A type only (280mW coil) T : AgSnO ₂ TV3 type, 1 form A type only (280mW coil) E : AgNi 3A and 5A types only (not for TV3 and TV5 types) |
| (f) | Contact rating | Nil : 3A type and V and T types only HA : 5A type (for type FTR-F3AA only) (not for TV types) KS : Sealing confirmed (3A type FTR-F3AA (...) E only) |

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

E.g.: Ordering code: FTR-F3AA012V

Actual marking: F3AA012V

5A 250V~ 5A 30VDC and TV rating marked on relay

Ordering code: FTR-F3AA012E-HA

Actual marking: F3AA012E

5A 250V~ 5A 30VDC marked on relay

FTR-F3 SERIES

■ SPECIFICATION

| Item | FTR-F3 | | | | | | |
|-----------------------|------------------------------|---------------------------------------|---------------------------------------|-------------------------------------|---|---|--|
| | | | 3A type | 5A type | TV3 / TV5 type | | |
| Contact Data | Configuration | 1 form A | | 1 form A | 1 form C | 1 form A | |
| | Construction | Single | | | | | |
| | Material | Silver nickel (AgNi) | | | Ag alloy (AgSnO ₂) | | |
| | Resistance (initial) | Max. 100mOhm at 1A, 6VDC | | | | | |
| | Contact rating (resistive) | 3A, 125VAC, 30VDC | | 5A, 250VAC, 30VDC | | 5A, 250VAC, 30VDC | |
| | | | | | | TV3: (120VAC) 3A / 51A / 125VAC 3A / 50A / 250VAC | |
| | | | | | | TV5: (120VAC) 5A / 78A / 125VAC 5A / 80A / 250VAC | |
| | Max. carrying current | 5A | | | | | |
| | Max. switching voltage | 277VAC, 30VDC | | 277VAC, 30VDC | 277VAC, 150VDC | 277VAC, 150VDC | |
| Max. switching power | 750VA, 90W | | 1,250VA, 150W | | | | |
| Min. switching load * | 10 mA, 5VDC | | | | | | |
| Life | Mechanical | Min. 5 x 10 ⁶ operations | Min. 5 x 10 ⁶ operations | Min. 5 x 10 ⁶ operations | Min. 5 x 10 ⁶ operations | | |
| | Electrical (at rated load) | Min. 200 x 10 ³ operations | Min. 100 x 10 ³ operations | | Min. 100 x 10 ³ operations (3A, 250VAC/30VDC) Min. 50 x 10 ³ operations (5A, 250VAC/30VDC) | | |
| Coil Data | Rated power (20 °C) | 200mW | 200mW | 360mW | 280mW | | |
| | Operate power | 113mW | 113mW | 200mW | 156mW | | |
| | Operating temperature range | -40 °C to +70 °C (no frost) | -40 °C to +70 °C (no frost) | -40 °C to +85 °C (no frost) | -40 °C to +85 °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 | Resistance (initial) | Min. 1,000MOhm at 500VDC | | | | | |
| | Dielectric strength | Open contacts | 750VAC (50/60Hz) 1min | | | | |
| | | Contacts to coil | 4,000VAC (50/60Hz) 1min | | | | |
| | Surge strength | Contacts to coil | 10,000V / 1.2 x 50µs standard wave | | | | |
| | Clearance | 6mm | 6mm | 7mm | 7mm | | |
| | Creepage | 6mm | 6mm | 7mm | 7mm | | |
| | EN61810-1, VDE0435 | Voltage | 250V | | | | |
| | | Pollution degree | 2 | | | | |
| Material group | | III | | | | | |
| Category | | C / 250V | | | | | |
| Other | Vibration resistance | Misoperation | 10 to 55Hz double amplitude 1.5mm | | | | |
| | | Endurance | 10 to 55Hz double amplitude 1.5mm | | | | |
| | Shock | Misoperation | Min. 100m/s ² (11±1ms) | | | | |
| | | Endurance | Min. 1,000m/s ² (6±1ms) | | | | |
| | Weight | Approximately 4g | Approx. 4g | Approx. 6g | Approximately 6g | | |
| | 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.

FTR-F3 SERIES

■ COIL RATING

200mW 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) |
|-----------|--------------------------|-------------------------------|------------------------------|------------------------------|-------------------------|------------------|
| 005 | 5 | 125 | 3.75 | 0.5 | 12 | 200 |
| 006 | 6 | 180 | 4.5 | 0.6 | 14.4 | |
| 009 | 9 | 405 | 6.75 | 0.9 | 21.6 | |
| 012 | 12 | 720 | 9 | 1.2 | 28.8 | |
| 018 | 18 | 1,620 | 13.5 | 1.8 | 43.2 | |
| 024 | 24 | 2,880 | 18 | 2.4 | 57.6 | |

280mW 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) |
|-----------|--------------------------|-------------------------------|------------------------------|------------------------------|-------------------------|------------------|
| 005 | 5 | 90 | 3.75 | 0.5 | 10 | 280 |
| 006 | 6 | 130 | 4.5 | 0.6 | 12 | |
| 009 | 9 | 290 | 6.75 | 0.9 | 19 | |
| 012 | 12 | 515 | 9 | 1.2 | 26 | |
| 018 | 18 | 1,160 | 13.5 | 1.8 | 39 | |
| 024 | 24 | 2,060 | 18 | 2.4 | 52 | |

360mW 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) |
|-----------|--------------------------|-------------------------------|------------------------------|------------------------------|-------------------------|------------------|
| 005 | 5 | 69 | 3.75 | 0.5 | 9 | 360 |
| 006 | 6 | 100 | 4.5 | 0.6 | 11 | |
| 009 | 9 | 225 | 6.75 | 0.9 | 16 | |
| 012 | 12 | 400 | 9 | 1.2 | 21 | |
| 018 | 18 | 900 | 13.5 | 1.8 | 32 | |
| 024 | 24 | 1,600 | 18 | 2.4 | 42 | |

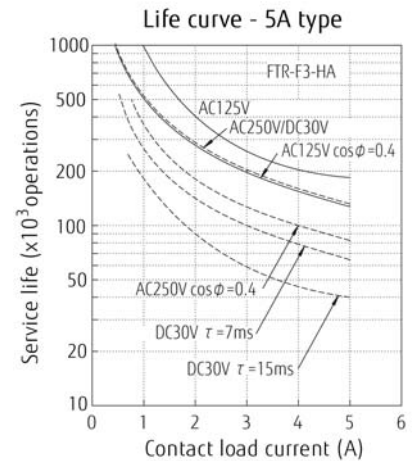
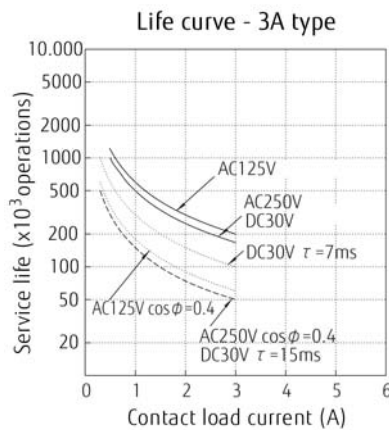
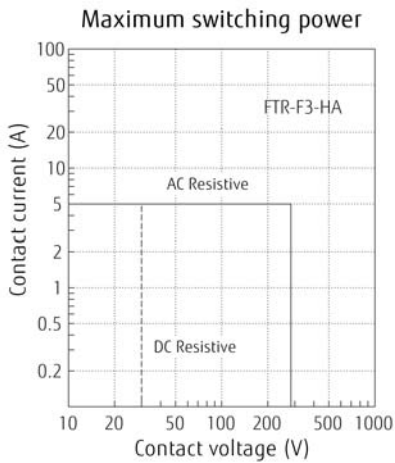
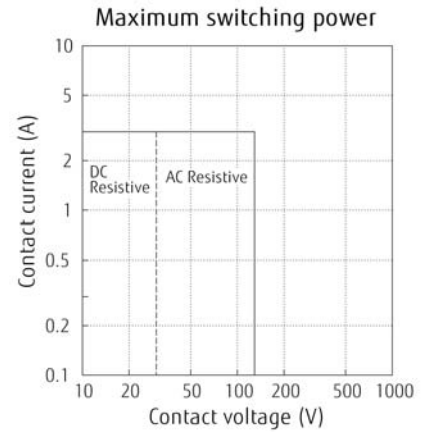
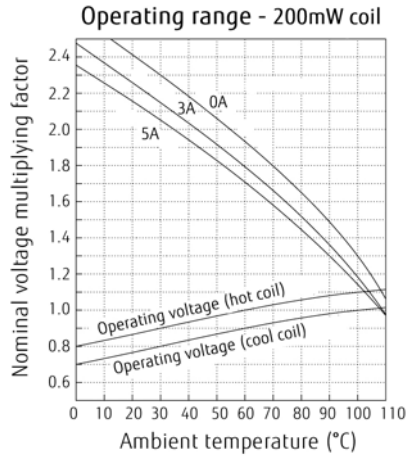
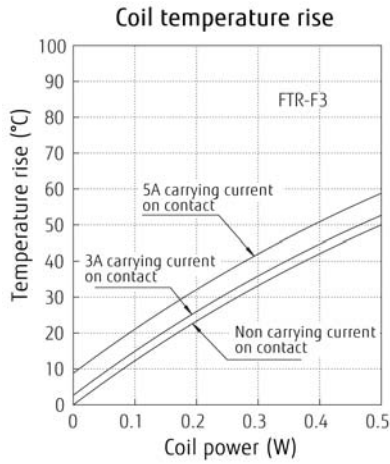
Note: All values in the tables are valid for 20°C and zero contact current.

* Specified operate values are valid for pulse wave voltage.

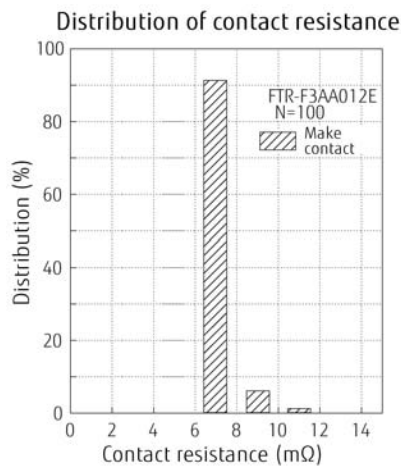
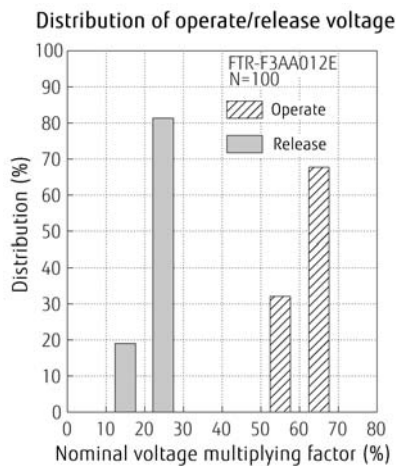
■ SAFETY STANDARDS

| Type | Compliance | Contact rating |
|-------|--|--|
| UL | UL 508 | Flammability: UL 94-V0 (plastics) |
| | E63614 | 3A, 30 VDC/ 277 VAC (resistive) 1/10 HP, 250VAC /125VAC |
| CSA | C22.2 No. 14 LR 40304 | 1/8 HP, 277VAC Pilot duty: D300 |
| VDE | 0435 40015024 | 5A, 250 VAC, $\cos\phi 1 = 100 \times 10^3$, 85°C, FTR-F3 AA -E 3A, 250 VAC, $\cos\phi 1 = 200 \times 10^3$, 85°C, FTR-F3 AA -E 5A, 30 VDC, 0 msec = 100×10^3 , 85°C, FTR-F3 AA -E 3A, 30 VDC, 0 msec = 200×10^3 , 85°C, FTR-F3 AA -E 5A, 250 VAC, $\cos\phi 1 = 50 \times 10^3$, 70°C, FTR-F3 CA (CO) 5A, 30 VDC, 0msec = 100×10^3 , 70°C, FTR-F3 CA (CO) 3A, 30 VDC, 0msec = 200×10^3 , 70°C, FTR-F3 CA (CO) 5A, 250 VAC, $\cos\phi 1 = 50 \times 10^3$, 85°C, FTR-F3 (A;P) A - (V;T) 3A, 250 VAC, $\cos\phi 1 = 100 \times 10^3$, 85°C, FTR-F3 (A;P) A - (V;T) 3/51A, 250 VAC = 10×10^3 , 85°C, FTR-F3 (A;P) A - T 5/80A, 250 VAC = 10×10^3 , 85°C, FTR-F3 (A;P) A - V |
| SEMKO | EN 61058-1: 1992 +A1:1993 EN 61095:1993+A11 | 5A, 250 VAC 40T70 |

CHARACTERISTIC DATA



REFERENCE DATA

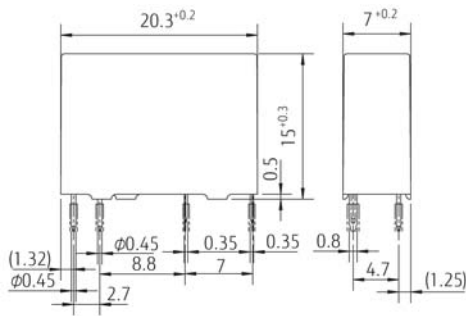


FTR-F3 SERIES

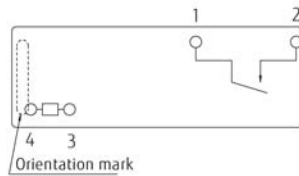
■ DIMENSIONS Unit: mm

Standard type

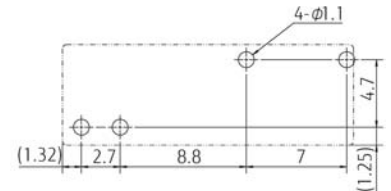
● Dimensions



● Schematics (BOTTOM VIEW)

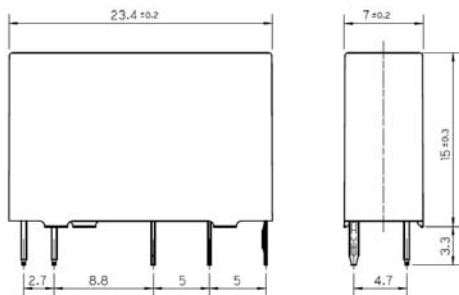


● PC board mounting hole layout (BOTTOM VIEW)

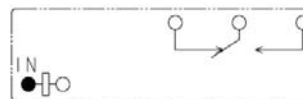


Change-over-contact type

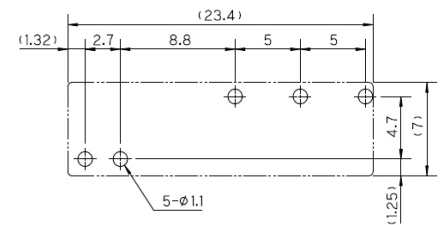
● Dimensions



● Schematics (BOTTOM VIEW)

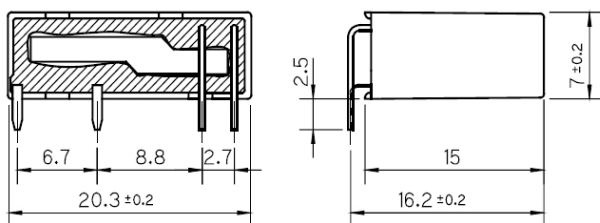


● PC board mounting hole layout (BOTTOM VIEW)

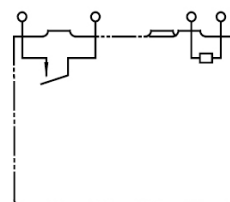


Right angle type

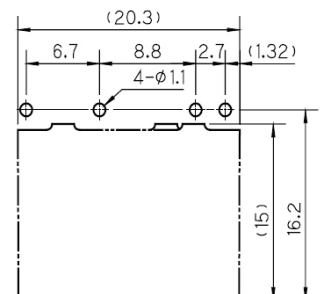
● Dimensions



● Schematics (BOTTOM VIEW)



● PC board mounting hole layout (BOTTOM VIEW)



RoHS Compliance and Lead Free Information

1. General Information

- All signal and power relays produced by Fujitsu Components are compliant with RoHS directive 2002/95EC 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.