

# POWER RELAY

## 1 POLE—120A Inrush Current (CADMIUM FREE CONTACTS TYPE)

### FTR-F2P SERIES

RoHS compliant

#### ■ FEATURES

- SPST 5A
- Comply with TV-8 rating (120A inrush current)
- HIGH DENSITY MOUNTING  
Saves space by 26% compared to FTR-H1 type.
- HIGH ISOLATION  
Isolation distance between coil and contacts: 6mm  
Dielectric Strength: 4KV  
Surge Strength: 10KV
- HEAT RESISTANCE, FLAMMABILITY  
Class B (130° C) insulation, flammability 94V-0
- CADMIUM FREE CONTACT FOR ECO-PROGRAM
- SAFETY STANDARDS  
UL, CSA, VDE, SEMKO approved  
UL/CSA TV-5 rating approved
- RoHS compliant since date code: 0437L2  
Please see page 7 for more information



#### ■ ORDERING INFORMATION

[Example]      FTR-F2   P   L   012   T   -\*\*  
                   (a)        (b) (c)   (d)   (e)   (f)

(a)	Series Name	FTR-F2 series
(b)	Contact Arrangement	P: 1 Form A (SPST-NO) (TV-8 rating)
(c)	Coil Type	L: High sensitivity (250mW) M: High sensitivity (250mW) and high isolation
(d)	Coil Nominal Voltage/ Contact material	005: 5DC                      012: 12DC 006: 6DC                      018: 18DC 009: 9DC                      024: 24DC
(e)	TV-Rating	T: Silver tin oxide
(f)	Custom Designation (option)	To be assigned custom specification

# FTR-F2P Series

## ■ PART NUMBERS

High sensitivity (PL) and high sensitivity / high isolation (PM) (250 mW)

Ordering Part Number	Series	Contact	Coil Power	Coil Voltage	Contact Material
FTR-F2PL005T	FTR-F2	1 form A	L: 250mW (High sensitivity)	5	Silver tin oxide
FTR-F2PL006T				6	
FTR-F2PL009T				9	
FTR-F2PL012T				12	
FTR-F2PL018T				18	
FTR-F2PL024T				24	
FTR-F2PM005T			M: 250mW (High sensitivity/ high isolation)	5	
FTR-F2PM006T				6	
FTR-F2PM009T				9	
FTR-F2PM012T				12	
FTR-F2PM018T				18	
FTR-F2PM024T				24	

## ■ COIL DATA CHART

High sensitivity (PL) and high sensitivity / high isolation (PM) (250 mW)

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>
005	5	8.5 VDC	100 Ω	3.5 VDC	0.25 VDC
006	6	10.2 VDC	145 Ω	4.2 VDC	0.3 VDC
009	9	15.3 VDC	325 Ω	6.3 VDC	0.45 VDC
012	12	20.4 VDC	575 Ω	8.4 VDC	0.6 VDC
018	18	30.6 VDC	1,245 Ω	12.6 VDC	0.9 VDC
024	24	40.8 VDC	2,310 Ω	16.8 VDC	1.2 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-F2P Series

## ■ SPECIFICATIONS

Item		Open type	
		F2 PL ( ) T	F2 PM ( ) T
Contact	Arrangement	1 form A (SPST-NO)	
	Material	Silver tin oxide	
	Configuration	Single	
	Resistance (initial)	Maximum 100 mΩ at 6 VDC, 1 A	
	Rating (resistive)	250 VAC / 30 VDC / 5A	
	Maximum Carrying Current	5A	
	Maximum Switching Rating	1250VA / 150W	
	Maximum Switching Voltage	400VAC / 300 VDC	
	Maximum Switching Load*1	100 mA, 5 VDC	
Coil	Nominal Power (20°C)	250 mW	
	Operate Power (20°C)	160 mW	
	Operating Temperature	-40°C to +70°C (no frost)	
Time Value	Operate Time (at nominal voltage)	Maximum 15 ms	
	Release Time (at nominal voltage)	Maximum 5 ms	
Life	Mechanical	2 x 10 <sup>6</sup> operations minimum	
	Electrical	AC Contact rating	100 x 10 <sup>3</sup> operations min.
		DC Contact Rating	100 x 10 <sup>3</sup> operations minimum
		Lamp load (TV-5)	25 x 10 <sup>3</sup> operations minimum
Other	Vibration Resistance	Misoperation	10 to 55 Hz, at double amplitude of 1.5 mm
		Endurance	10 to 55Hz, at double amplitude of 1.5 mm
	Shock Resistance	Misoperation	Min. 200m/s <sup>2</sup> (11±1ms)
		Endurance	Min. 1,000m/s <sup>2</sup> (11±1ms)
	Weight	Approximately 12g	

\*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-F2P Series

## ■ INSULATION

Item	FTR-F2PL ( )T	FTR-F2PM ( )T
Resistance (initial) (500 VDC)	Minimum 1,000 MΩ 1 min.	
Dielectric Strength	open contacts	1,000 VAC (50/60 Hz) 1 min.
	coil and contacts	4,000 VAC (50/60 Hz) 1 min.
Surge Voltage (coil and contact) 1.2 x 50µs standard wave	10,000 V	12,000V
Clearance/Creepage	6 mm / 6 mm	
Insulation (DIN EN61810-1 VDE0435) Voltage Pollution Isolation material group	250 V 2 III a	
Isolation category / Reference voltage (VDE 0110b)	B / 250 V	

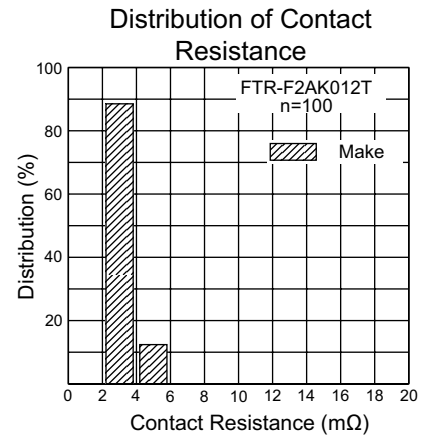
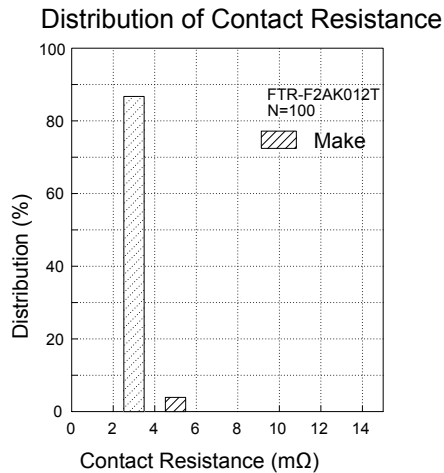
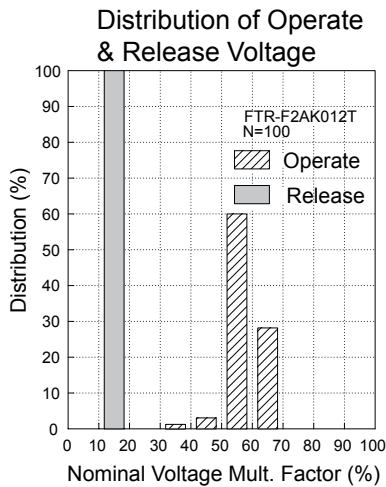
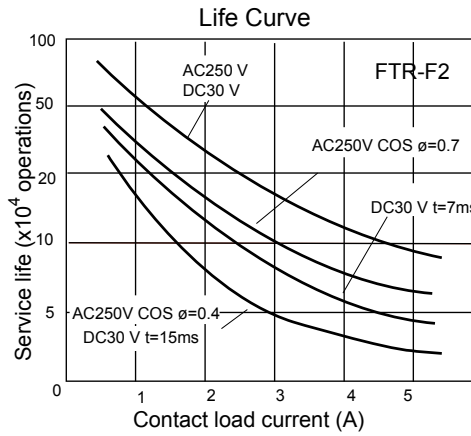
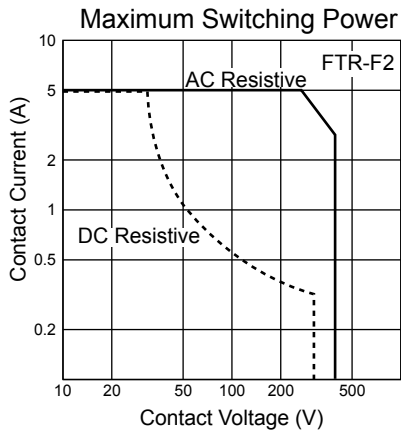
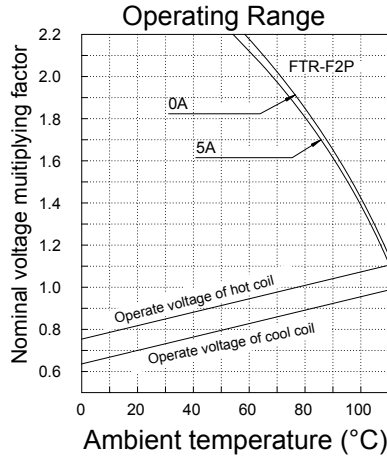
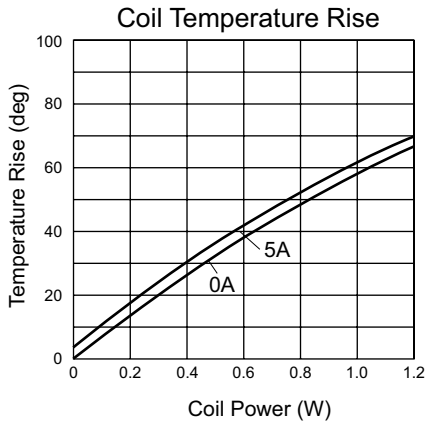
## ■ SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL 508 E63614	Flammability: UL 94-V0 (plastics) 5A, 30 VDC/250VAC (resistive) 1/6 HP, 125VAC
CSA	C22.2 No. 14 LR 40304	1/2 HP, 250VAC TV-8, 120 VAC Pilot duty: C300
SEMKO	EN 61058-1: 1992 AND A1 EN 61095:1993 and A1+A11	250 VAC, 5 (1) or 5/80 40T70

Complies with CQC, NEMKO, DEMKO, FIMKO

# FTR-F2P Series

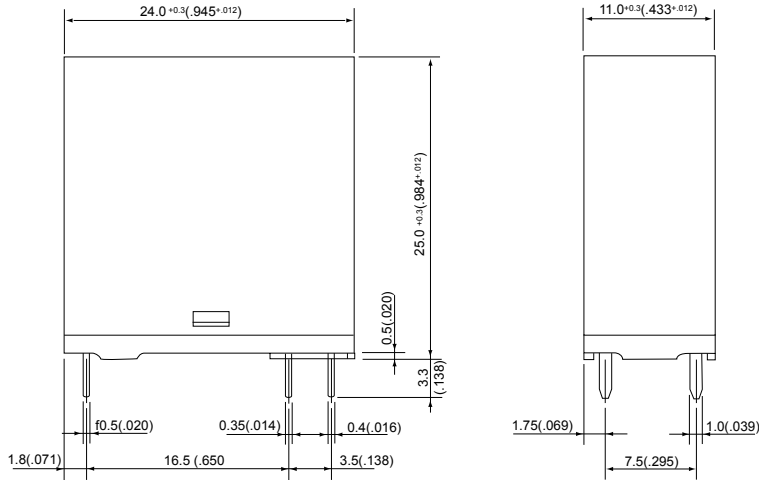
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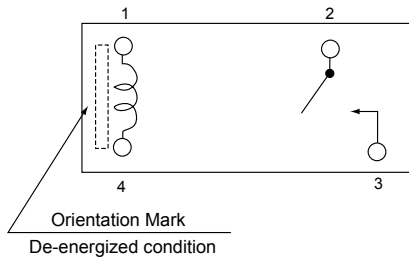
# FTR-F2P Series

## ■ DIMENSIONS

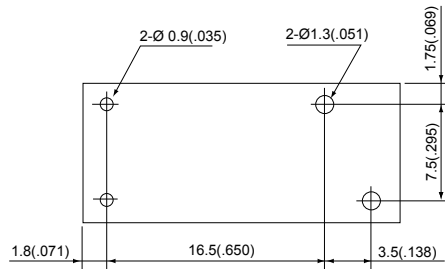
### ● Dimensions



### ● Schematics (BOTTOM VIEW)



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



Unit: mm (in.)

## 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 lead 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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