

# POWER RELAY 1 POLE - 5A

# FTR-F2 Series

## RoHS Compliant

## ■ FEATURES

- High density mounting  
Saves space by 26% compared to FTR-H1 type.
- High insulation  
Insulation distance between coil and contacts: 6mm
  - Dielectric Strength: 4,000V
  - Surge Strength: 10,000V
- Flux proof type, RTII
- Flammability 94V-0
- Cadmium free contact for eco-program
- Safety standards:
  - UL, CSA, VDE, CQC approved
  - UL/CSA TV-5 rating approved
- RoHS Compliant



## ■ APPLICATIONS

Power switching, FA equipment control etc.

## ■ PART NUMBERS

[Example] FTR-F2 A K 012 I  
(a) (b) (c) (d) (e)

(a)	Relay type	FTR-F2 series
(b)	Contact configuration	A : 1a (1 Form A/ SPST-NO)
(c)	Coil type	K : Standard type (530mW) L : High sensitivity type (250mW)
(d)	Coil rated voltage	012 : 5....48VDC Please refer to coil rating table
(e)	Contact material	T : Silver tin oxide / TV-5

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

E.g.: Ordering code: FTR-F2AK012T Actual marking: F2AK012T

## ■ SPECIFICATIONS

Item		Specifications		Remarks/Conditions
		Standard: FTR-F2AK( )T	Sensitive: FTR-F2AL( )T	
Contact Data	Configuration	1a (1 Form A, SPST-NO)		
	Construction	Single		
	Material	Silver tin oxide		
	Resistance (initial)	Max. 100 mΩ		At 1A, 6VDC
	Contact rating	5A, 250VAC / 30VDC		Resistive
	Max. carrying current	5A		
	Max. inrush current	78A, 250VAC		
	Max. switching voltage	400VAC / 300VDC		
	Max. switching power	1,250VA / 150W		
Coil	Min. switching load <sup>*1</sup>	100 mA, 5 VDC		
	Rated power (20°C)	530mW	250mW	
	Operate power (at 20°C)	260mW	160mW	
Time	Operating temperature range	-40°C to +70°C		No frost
	Operate	Max. 15ms (without bounce)		At nominal voltage
	Release	Max. 5ms (without bounce)		At nominal voltage
Life	Mechanical	Min. 2 x 10 <sup>6</sup> operations		
	Electrical	AC contact rating	Min. 100 x 10 <sup>3</sup> operations	
		DC contact rating	Min. 100 x 10 <sup>3</sup> operations	
	Lamp load (TV-5)	Min. 25 x 10 <sup>3</sup> operations		
Insulation	Insulation resistance	Min. 1,000MΩ		At 500VDC
	Dielectric strength	Open contacts	1,000VAC (50/60Hz) 1 minute	
		Coil to contacts	4,000VAC (50/60Hz) 1 minute	
	Surge strength	Coil to contacts	10,000V / 1.2 x 50μs standard wave	
	Clearance	6mm		
	Creepage	6mm		
	EN61810-1, VDE0435	Voltage	250V	
		Pollution degree	2	
		Material group	III a	
		Category	8/250	
Others	Vibration resistance	Misoperation	10 to 55Hz double amplitude 1.5mm	
		Endurance	10 to 55Hz double amplitude 1.5mm	
	Shock resistance	Misoperation	Min. 200m/s <sup>2</sup> (11±1ms)	
		Endurance	Min. 1,000m/s <sup>2</sup> (6±1ms)	
	Dimensions / Weight		11.0 x 24.0 x 25.0mm / Approximately 13g	
	Sealing		Flux proof RTII	

\*1: 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 DATA

### Standard type (530mW)

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance ±10% (Ω)	Must Operate Voltage <sup>1</sup> (VDC)	Must Release Voltage <sup>1</sup> (VDC)	Rated Power (mW)
005	5	47	3.5	0.25	530
006	6	68	4.2	0.3	
009	9	155	6.3	0.45	
012	12	270	8.4	0.6	
018	18	610	12.6	0.9	
024	24	1,100	16.8	1.2	
048	48	4,400	33.6	2.4	

### Sensitive type (250mW)

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance ±10% (Ω)	Must Operate Voltage <sup>1</sup> (VDC)	Must Release Voltage <sup>1</sup> (VDC)	Rated Power (mW)
005	5	100	4	0.25	250
006	6	145	4.8	0.3	
009	9	325	7.2	0.45	
012	12	575	9.6	0.6	
015	15	900	12.0	0.75	
024	24	2,310	19.2	1.2	

Note: All values in the table are valid at 20°C and zero contact current, unless otherwise specified.

\*1: Specified operated values are valid for pulse wave voltage.

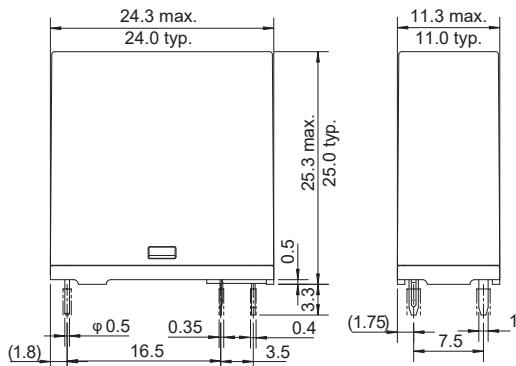
! Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

## ■ SAFETY STANDARDS

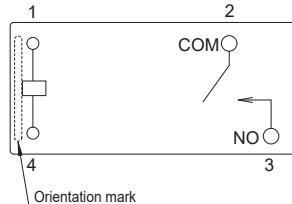
Type	Compliance	Contact Rating
UL	Flammability: UL 94-V-0 (plastics)	
	UL508 File No. E63614	5A, 30VDC/250VAC (resistive) 1/6 HP, 125VAC 1/2 HP, 250VAC TV-5, 120 VAC Pilot duty: C300
CSA	C22.2 No. 14 File No. LR40304	5A, 250VAC (cosφ=1) 2A, 250VAC (cosφ=0.4) 5A, 30VDC (0ms)
VDE	IEC/EN61810-1 EN60065 clause 14.6.1	5A, 250VAC
CQC	GB/T21711.1, GB15092.1 File No. 03001008809	5A, 250VAC

## ■ DIMENSIONS

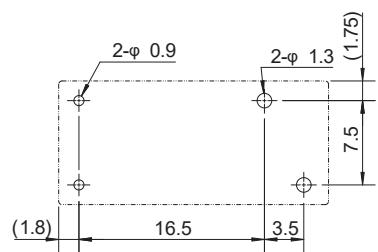
- Dimensions



- Schematics  
(Bottom view)



- PC board mounting hole layout  
(Bottom view)



Notes: Dimensions of the terminals do not include thickness of pre-solder.  
Tolerance of PC board mounting hole layout:  $\pm 0.1$  unless otherwise specified.

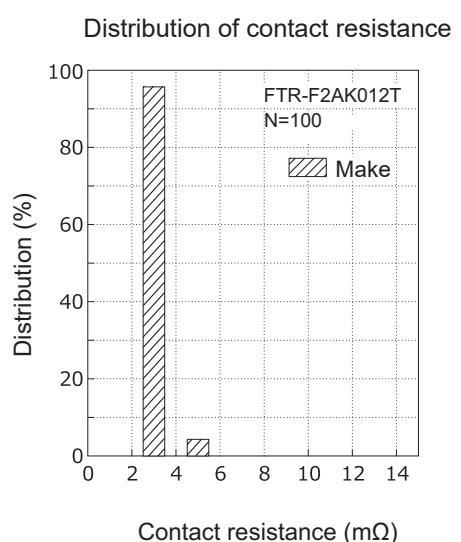
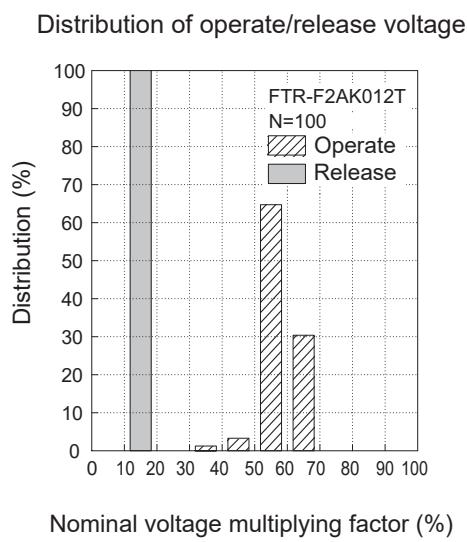
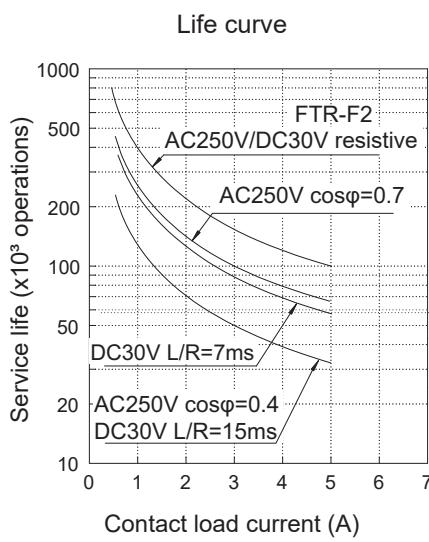
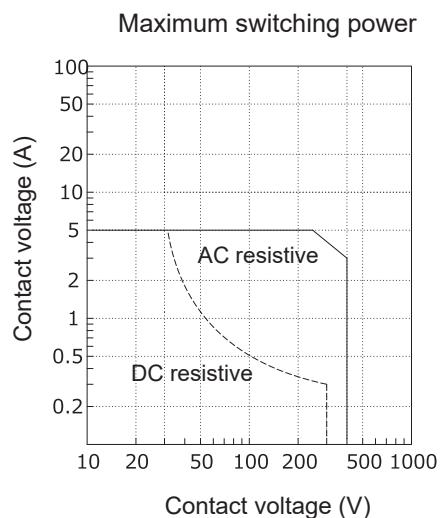
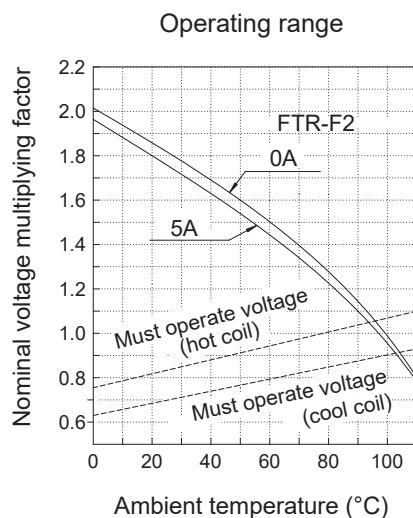
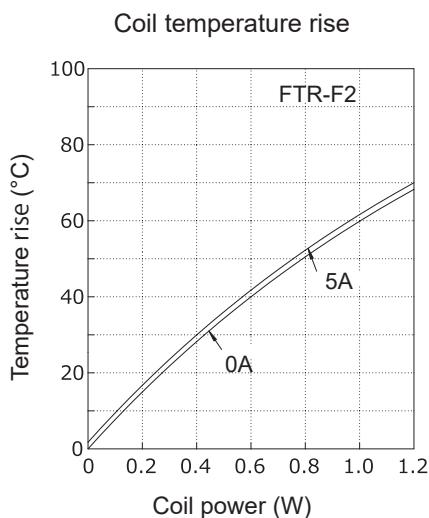
( ): Reference  
Unit: mm

## ■ PART NUMBER LIST

Part Number	Contact Configuration	Coil type	Contact Material
FTR-H2AK( )T	1a (1 Form A)	Standard (530mW)	Silver tin oxide / TV-5
FTR-H2AL( )T		High sensitive (250mW)	

## ■ CHARACTERISTIC DATA

(Characteristic data is not guaranteed value but measured values of samples from production line.)



## 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: Dip 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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