

# POWER RELAY

## 2 POLE 5A/TV-3 RATED COMPACT TYPE

### FTR-F4 Series

RoHS compliant

#### ■ FEATURES

- Small high density type relay 288mm<sup>2</sup> save 24% compared to VB
- UL/CSA/VDE/SEMKO/CQC approved
- Insulation distance: minimum 6 mm between coil and contacts  
IEC60065  
Dielectric strength: 4 KVAV  
Surge strength: 10 KV
- Card separation system for high noise resistance between coil and contacts
- 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]  $\frac{\text{FTR-F4}}{\text{(a)}} \frac{\text{A}}{\text{(b)}} \frac{\text{K}}{\text{(c)}} \frac{\text{012}}{\text{(d)}} \frac{\text{T}}{\text{(e)}} \frac{\text{-**}}{\text{(f)}}$

(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)	Contact material / TV-Rating	T : Silver alloy TV-3
(f)	Custom Designation	Special number for customized products

Ordering Code: FTR-F4AK012T Actual Marking:F4AK012T

# 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.

## ■ SPECIFICATIONS

Item	FTR-F4		
Contact	Arrangement	2 form A (DPST)	
	Material	Silver alloy	
	Configuration	Single	
	Resistance (initial)	Maximum 100 mΩ at 1 A, 6 VDC	
	Rating (resistive)	5A, 250VAC / 30VDC	
	Maximum Carrying Current*1	5A	
	Maximum Switching Rating	1,250 VA / 150W	
	Maximum Switching Voltage	400 VAC / 300VDC	
	Maximum Switching Current	5A	
	Minimum Switching Load*2	100mA 5 VDC	
	Maximum Inrush Current	120VAC, 51A (TV-3) at lamp load	
Coil	Nominal Power (at 20°C)	530mW	
	Operate Power (at 20°C)	300mW	
	Operating Temperature	-40°C to +70°C (no frost)	
Time Value	Operate (at nominal voltage)	Maximum 15ms (no bounce)	
	Release (at nominal voltage)	Maximum 5ms (no bounce)	
Life	Mechanical	2 x 10 <sup>6</sup> ops minimum	
	Electrical	Contact rating	1 x 10 <sup>5</sup> ops min.
		Lamp load (TV-3)	2.5 x 10 <sup>4</sup> ops min.
Other	Vibration Resistance	Misoperation	10 to 55 Hz, at double amplitude of 1.5mm
		Endurance	10 to 55Hz, at double amplitude of 1.5mm
	Shock Resistance	Misoperation	200m/s <sup>2</sup> (11±1ms)
		Endurance	1,000m/s <sup>2</sup> (6±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-F4 SERIES

## INSULATION

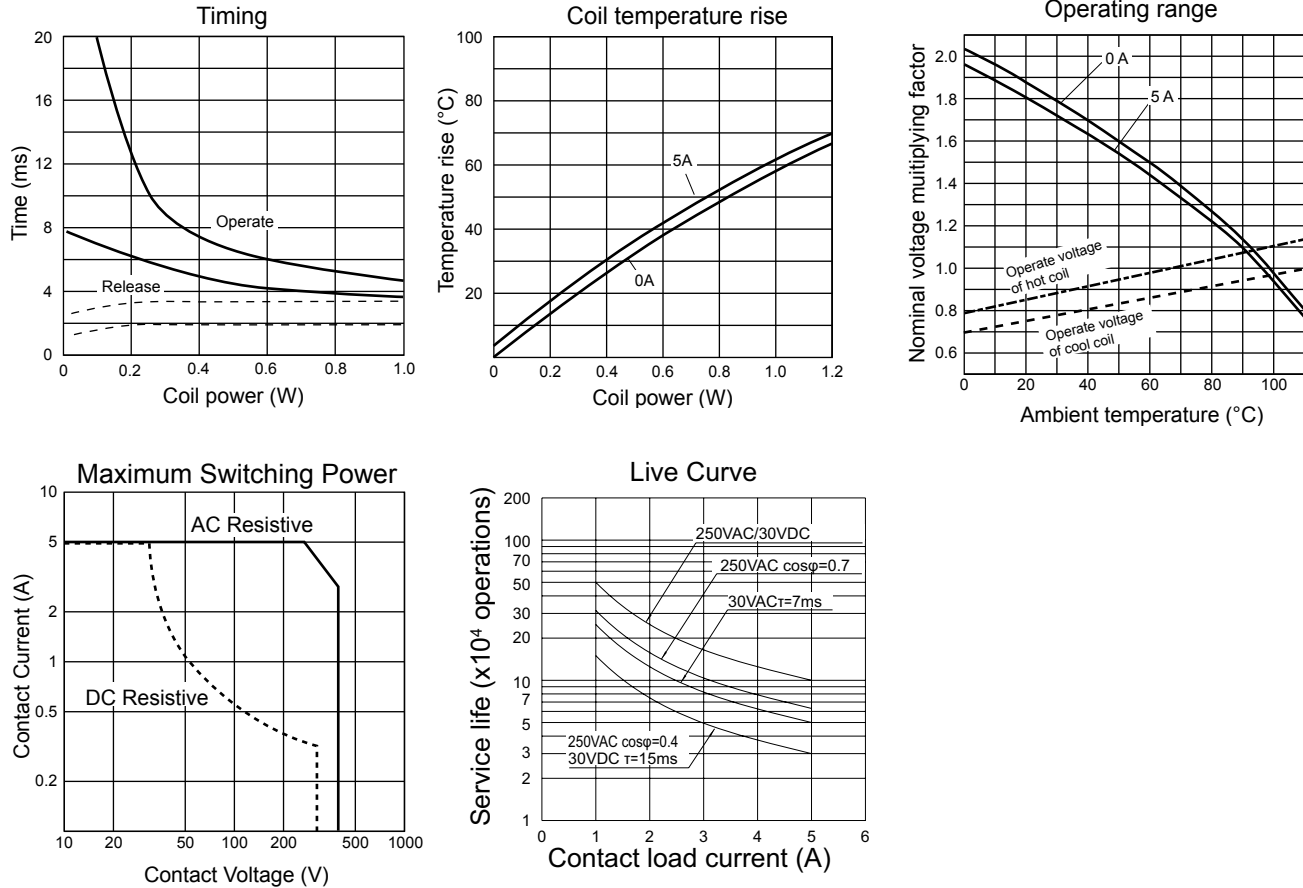
Item	FTR-F4	Note
Resistance (initial)	Minimum 1,000 MΩ	at 500 VDC
Dielectric Strength	open contacts	1,000 VAC (50/60 Hz) 1 min.
	coil and contacts	3,000 VAC (50/60 Hz) 1 min.
	adjacent contacts	4,000 VAC (50/60 Hz) 1 min.
Surge Voltage (coil and contact)	10,000 V	1.2 x 50μs standard wave

## SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL 508	Flammability: UL 94-V0 (plastics) 5A, 277VAC/30VDC (resistive) 1/6 HP, 125VAC 1/4 HP, 277VAC Pilot duty: C300 TV-3 120VAC
	E63614	
CSA	C22.2 No. 14 LR 40304	
VDE	0435, 0860	

Complies with CQC, SEMKO

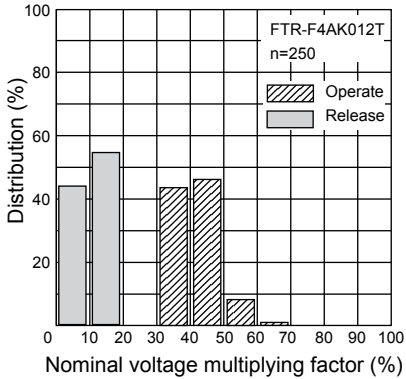
## CHARACTERISTIC DATA



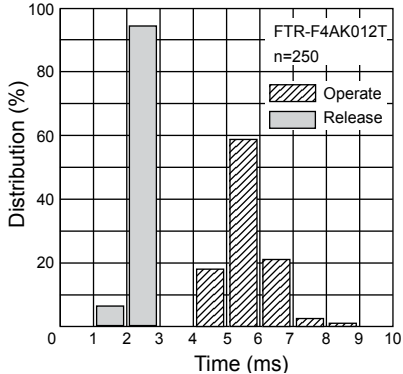
# FTR-F4 SERIES

## ■ REFERENCE DATA

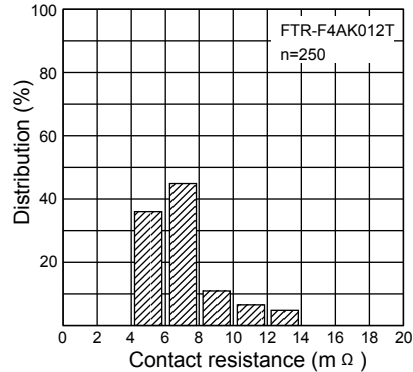
Distribution of operate and release voltage



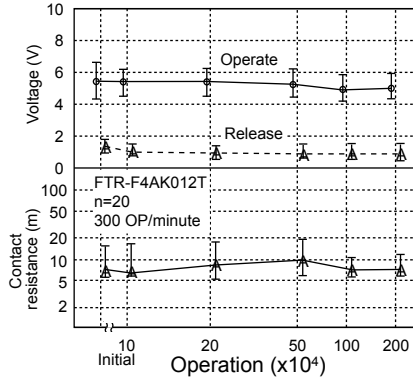
Distribution of operate and release time



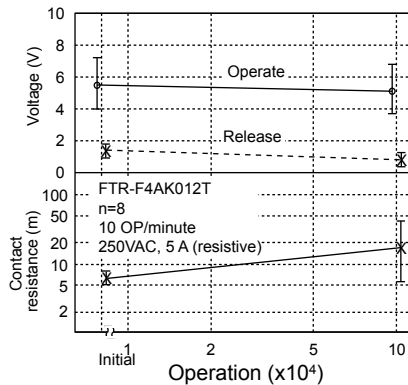
Distribution of contact resistance



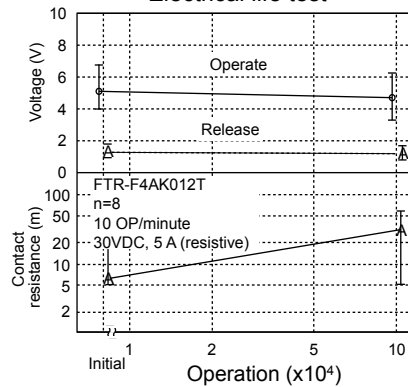
Mechanical life test



Electrical life test



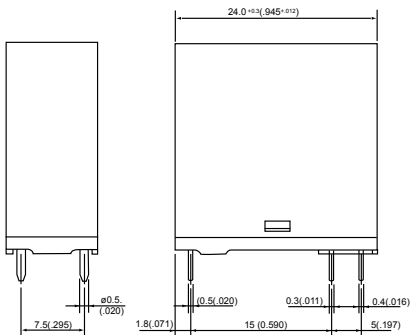
Electrical life test



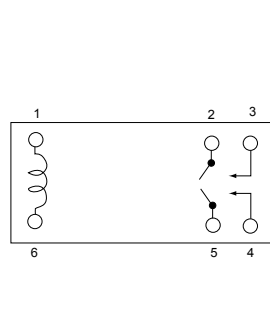
## ■ DIMENSIONS

### ● Dimensions

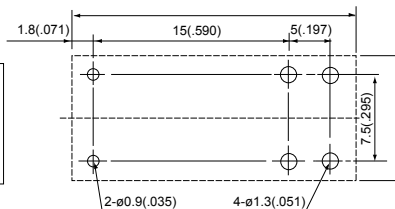
FTR-F4 type



### ● 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. 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 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

<b>Flow Solder condition:</b>	
Pre-heating:	maximum 120°C
Soldering:	dip within 5 sec. at 260°C solder bath

<b>Solder by Soldering Iron:</b>	
Soldering Iron	
Temperature:	maximum 360°C
Duration:	maximum 3 sec.

<b>We highly recommend that you confirm your actual solder conditions</b>
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### 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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