POWER RELAY

2 POLE 5A/TV-3 RATED COMPACT TYPE

FTR-F4 Series

RoHS compliant

■ FEATURES

- Small high density type relay 288mm^2 save 24% compared to VB
- UL/CSA TV-3 rating
- Insulation distance: minimum 6 mm between coil and contacts (IEC65)
  Dielectric strength: 4 KVAV
  Surge strength: 10 KV
- Card separation system for high noise resistance between coil and contacts
- UL 94V-0 flamability materials, UL Class B (130˚C)
- Safety standards
  UL, CSA, VDE, SEMKO pending
- 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] FTR-F4 (a) A (b) K (c) 012 (d) T (e) – ** (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)	TV-Rating	T : TV-3
(f)	Custom Designation	Special number for customized products

Ordering Code: FTR-F4AK012T
Actual Marking: F4AK012T

■ SAFETY STANDARD AND FILE NUMBERS

UL508
C22.2 No. 1, No. 14
Please note that UL/CSA ratings may differ from the standard ratings. Please request when the approval markings are required on the cover and/or relay recognized by SEV is required.

Nominal Voltage	Contact Rating
5 to 48 VDC	TV-3, 120 VAC 1/6 HP 125 VAC 1/4HP 277 VAC 5A 30VDC/ 277 VAC res. Pilot duty D300

■ SPECIFICATIONS

Item			FTR-F4
Contact	Arrangement		2 form A (DPST)
	Material		Silver alloy
	Style		Single
	Resistance (initial)		Maximum 100 mΩ (at 1 A 6 VDC)
	Rating (resistive)		5A 277 VAC 30 VDC
	Maximum Carrying Current		5 A
	Maximum Switching Power		1,250VA / 150 W
	Maximum Switching Voltage		400 VAC / 300 VDC
	Maximum Switching Current		5 A
	Minimum Switching Load*1		5 VDC, 100mA
	Maximum Inrush Current		120 VAC, 51A (TV-3)
Coil	Nominal Power(at 20°C)		0.53 W
	Operate Power (at 20°C)		0.3 W
	Operating Temperature		–40°C to +70°C (no frost)
Time Value	Operate (at nominal voltage)		Maximum 15 ms (not including bounce)
	Release (at nominal voltage)		Maximum 5 ms (not including bounce)
Insulation	Resistance (at 500 VDC)		Minimum 1,000 MΩ
	Dielectric Strength	between open contacts	1,000 VAC 1 minute
		between adjacent contacts	3,000VAC 1 minute
		between coil and contacts	4,000 VAC 1 minute
	Surge Strength		10,000 V (at 1.2 × 50 μs)(between coil and contacts)
Life	Mechanical		2×10^6 operations minimum
	Electrical	Contact rating	1×10^5 operations minimum
		Lamp load	2.5×10^4 operations minimum
Vibration	Misoperation		10 to 55 Hz (double amplitude of 1.5 mm)
	Endurance		10 to 55 Hz (double amplitude of 1.5 mm)
Shock	Misoperation		200 m/s^2 (11 ±1 ms)
	Endurance		1,000 m/s^2 (6 ±1 ms)
Weight			Approximately 12 g

*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.

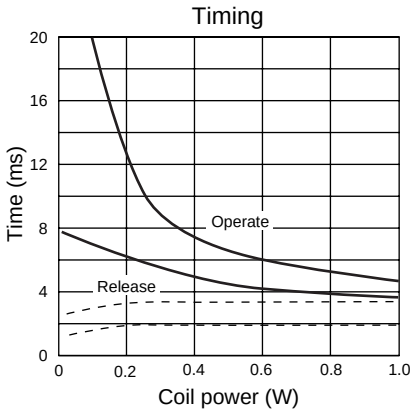
■ COIL DATA CHART

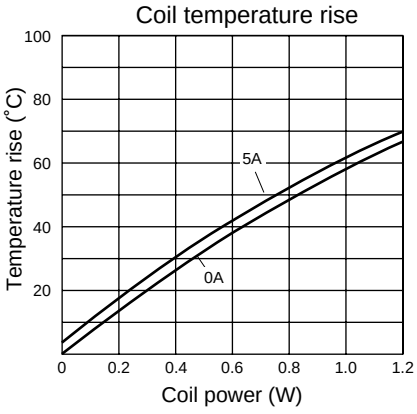
Standard type

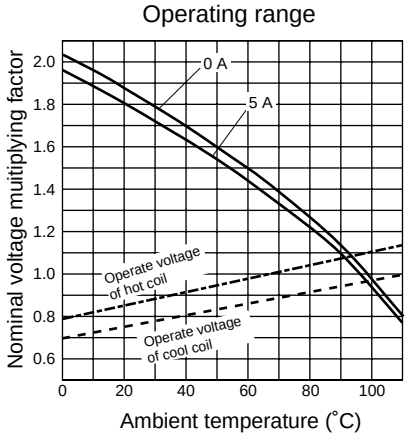
MODEL	Nominal voltage	Coil resistance (±10%)	Operate voltage	Release voltage	Nominal power
FTR-F4AK005T	5 VDC	47 Ω	3.75 VDC	0.25 VDC	530 mW
FTR-F4AK006T	6 VDC	68 Ω	4.5 VDC	0.3 VDC	530 mW
FTR-F4AK009T	9 VDC	155 Ω	6.75 VDC	0.45 VDC	530 mW
FTR-F4AK012T	12 VDC	270 Ω	9.0 VDC	0.6 VDC	530 mW
FTR-F4AK024T	24 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

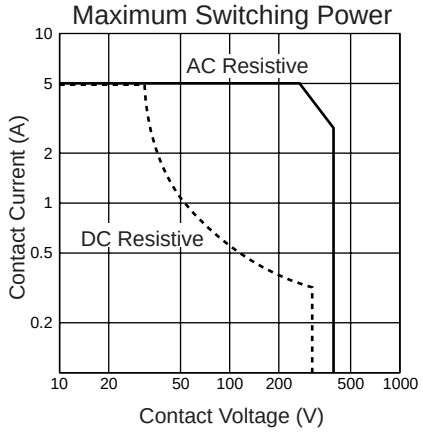
Note: All values in the table are measured at 20°C.

■ CHARACTERISTIC DATA



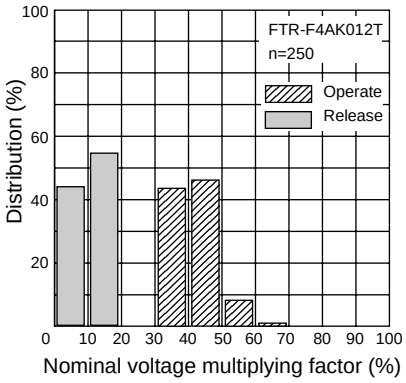




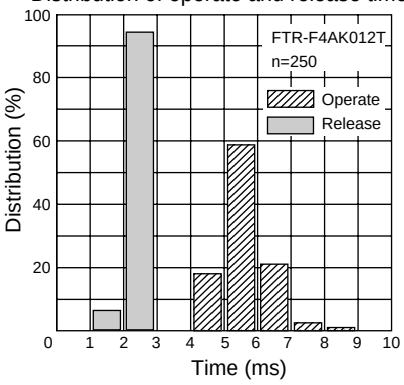


■ REFERENCE DATA

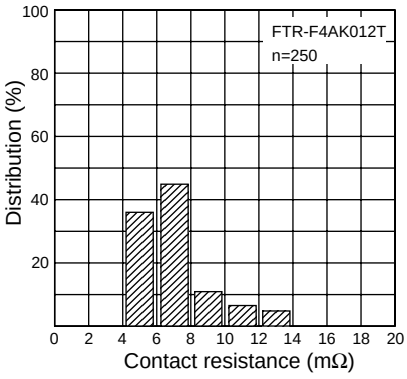
Distribution of operate and release voltage



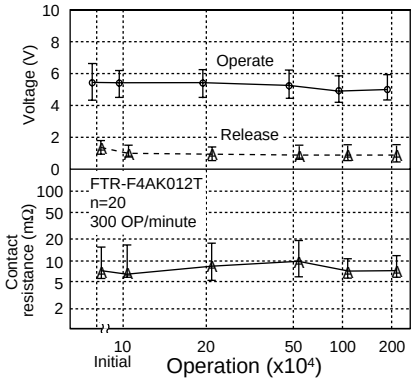
Distribution of operate and release time



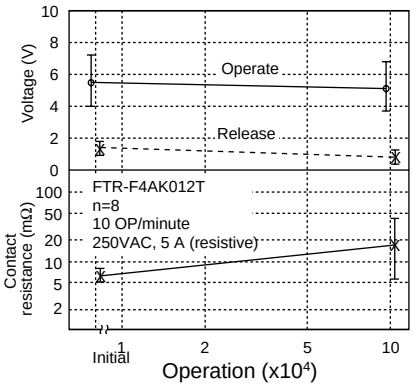
Distribution of contact resistance



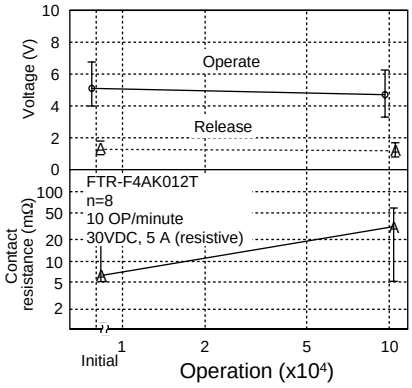
Mechanical life test



Electrical life test



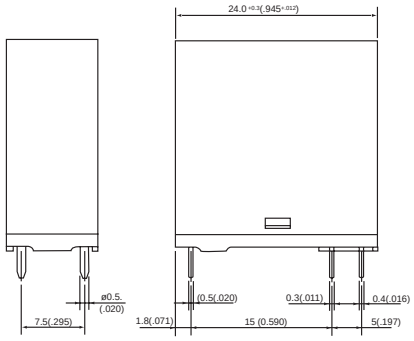
Electrical life test



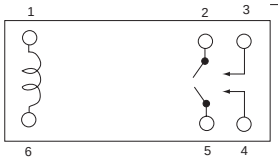
■ DIMENSIONS

● **Dimensions**

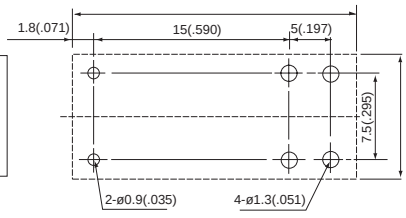
FTR-F4 type



● **Schematics**
(BOTTOM VIEW)



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



Unit: mm

RoHS Compliance and Lead Free Relay Information

1. General Information

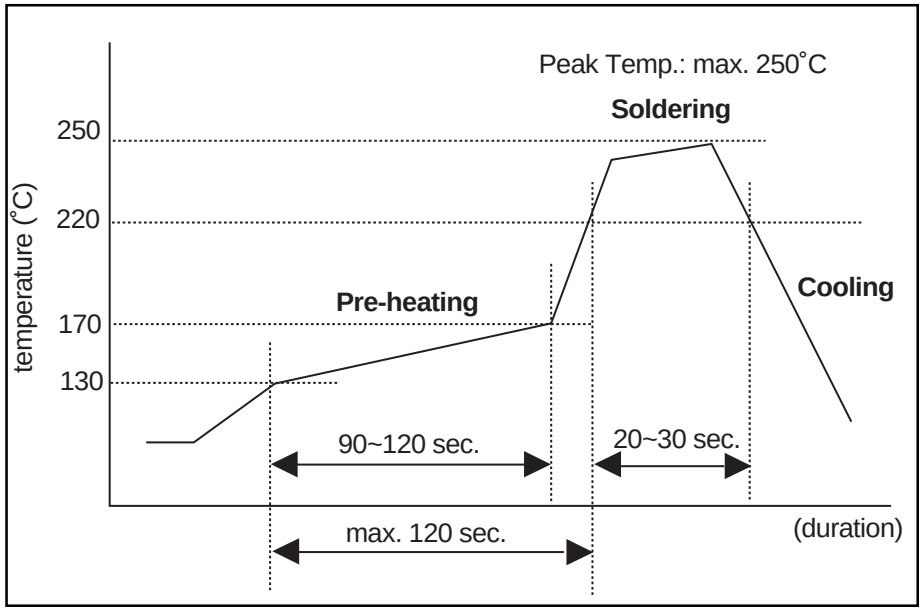
- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. Most of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (http://www.fcai.fujitsu.com/pdf/LeadFreeLetter.pdf)
- Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu. From February 2005 forward Sn-3.0Cu-Ni will be used for FTRB3 and FTR-B4 series relays.
- Most signal and some power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 6 hazardous materials that are restricted by RoHS directive (lead, mercury, cadmium, 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.

2. Recommended Lead Free Solder Profile

- Recommended solder paste Sn-3.0Ag-0.5Cu and Sn-3.0 Cu-Ni (only FTR-B3 and FTR-B4 from February 2005)

Reflow Solder condtion



Flow Solder condtion:

Pre-heating:	maximum 120˚C
Soldering:	dip within 5 sec. at 260˚C soler 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 realys.

4. Tin Whisker

- SnAgCu solder is known as low riskof tin whisker. No considerable length whisker was found by our in-house test.

5. Solid State Relays

- Each lead terminal will be changed from solder plating to Sn plating and Nickel plating. A layer of Nickel plating is between the terminal and the Sn plating to avoid whisker.

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