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FUJITSU

POWER RELAY

2 POLE 5A / TV-3 Rated Compact Type Relay

FTR-F4 Series

■ FEATURES

- Small high density type relay 288mm^2 save 24% compared to VB
- UL, CSA, VDE, CQC approved
- Insulation distance: minimum 6 mm between coil and contacts
  IEC60065 Dielectric strength: 4 KV
  Surge strength: 10 KV
- Card separation system for high noise resistance between coil and contacts
- Flux proof type, RTII
- RoHS compliant
  Please see page 6 for more information

■ APPLICATIONS

- CRT monitor EMI protection
- Audio system speaker protection

■ Part Numbers

[Example] FTR-F4 (a) A (b) K (c) 012 (d) T (e)

(a)	Relay type	FTR-F4 : FTR-F4 series
(b)	Contact configuration	A : 2 form A (DPST)
(c)	Coil type (power)	K : Standard type (530mW)
(d)	Coil rated voltage	012 : 5..... 48VDC Coil rating table at page 3
(e)	Contact material / TV Type	T : Silver plating AgSnO^2 (TV-3)

Actual marking does not carry the type name: "FTR"
E.g.: Ordering code: FTR-F4AK012T Actual marking: F4AK012T

■ Specifications

Item			FTR-F4	Remarks / conditions
Contact data	Configuration		2 form A (DPST-NO)	
	Construction		Single	
	Material		Silver plating $AgSnO_2$ (TV-3)	
	Resistance		Max. 100mOhm	Initial at 1A, 6VDC
	Contact rating		5A, 250VAC, 30VDC	Resistive
	Max. carrying current		5A	
	Max. switching voltage		400 VAC / 300VDC	
	Max. switching power		1,250VA / 150W	
	Max. switching current		5A	
	Min. switching load *1		100mA, 5VDC	
	Max. inrush current		120VAC, 51A (TV-3)	
Coil	Rated power (20°C)		530mW	
	Operate power (20°C)		300mW	
	Operating temperature range		-40°C ~ +70°C	No frost
Timing data	Operate		Max. 15ms	without bounce
	Release		Max. 5ms	no diode
Life	Mechanical		Min. 2 x 10^6 operations	
	Electrical	Contact rating	Min. 100 x 10^3 ops.	At rated load
		Lamp load (TV-3)	Min. 25 x 10^3 ops.	
Insulation	Insulation resistance		Min. 1000MΩ	Initial at 500VDC
	Dielectric strength	Open contacts	1000VAC (50/60Hz), 1 minute	
		Coil contact	3000VAC (50/60Hz), 1 minute	
		Adjacent contacts	4000VAC (50/60Hz), 1 minute	
	Surge strength	Coil to contacts	10,000V / 1.2 x 50μs standard wave	
Other	Vibration resistance	Misoperation ≥1us	10Hz ~ 55Hz ~ 10Hz single amplitude 0.75mm	Direction X, Y, Z, contact ON/OFF total 6 cycles
		Endurance	10Hz ~ 55Hz ~ 10Hz single amplitude 0.75mm	Direction X, Y, Z, contact OFF total 6 hours
	Shock resistance	Misoperation ≥1us	Min. 200m/s² (11 ± 1ms)	Direction X, Y, Z, contact ON/OFF total 36 times
		Endurance	Min. 1,000m/s² (6 ± 1ms)	Direction X, Y, Z, contact OFF total 18 times
	Dimensions / weight		12.0 x 24.0 x 25.0 mm / approx. 12g	
	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 contions and expected reliability levels.

■ Coil Data

Coil code	Rated Coil Voltage (VDC)	Coil Resistance +/-10% (Ω)	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Rated Power (mW)
005	5	47	3.75	0.25	530
006	6	68	4.5	0.3	
009	9	155	6.75	0.45	
012	12	270	9.0	0.6	
024	24	1,100	18.0	1.2	
048	48	4,400	36.0	2.4	

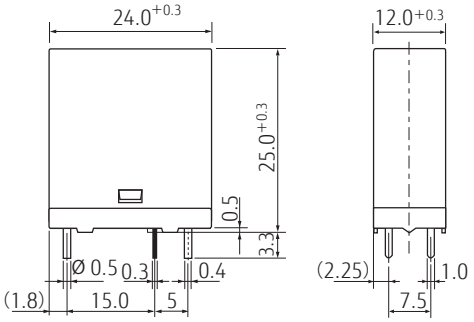
Note: All values in the table are valid at 20°C and zero contact current, unless otherwise specified.
*: Specified operated values are valid for pulse wave voltage.
Note: Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

■ Safety Standards

Type	Compliance	Contact rating
UL	UL 508 File No. E63614	5A, 277VAC/30VDC (resistive) 1/6 HP, 125VAC 1/4 HP, 277VAC Pilot duty: C300 TV-3 120VAC
CSA	C22.2 No. 14 File No. LR 40304	
VDE	IEC/EN61810-1, EN60065 clause 14.6.1	5A, 250VAC (cos φ 1), $50x10^3$ 2A, 250VAC (cos φ 0.4) $100x10^3$ 5A, 30VDC (0msec) 2/32A, 250VAC
CQC	GB15092.1 03001006524	5A, 250VAC

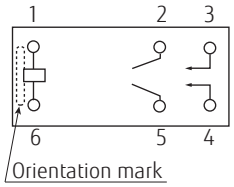
■ Dimensions

- Dimensions

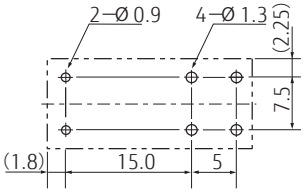


* Dimensions of the terminals do not include thickness of pre-solder.

- Schematics
(BOTTOM VIEW)



- PC Board Mounting Hole Layout
(BOTTOM VIEW)



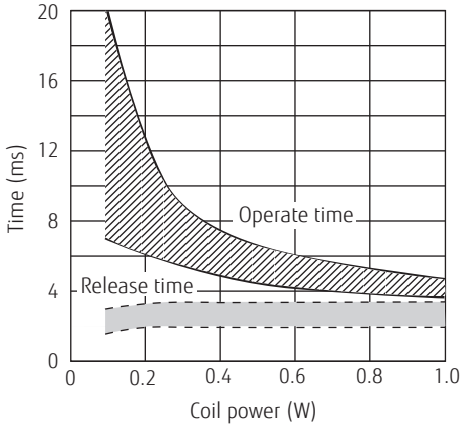
( ): Reference value
Unit: mm

* Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

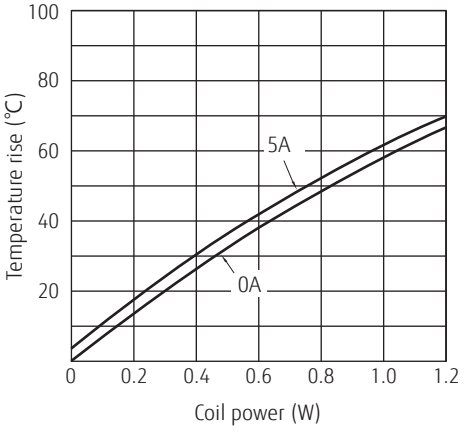
■ Characteristic Data (Reference)

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

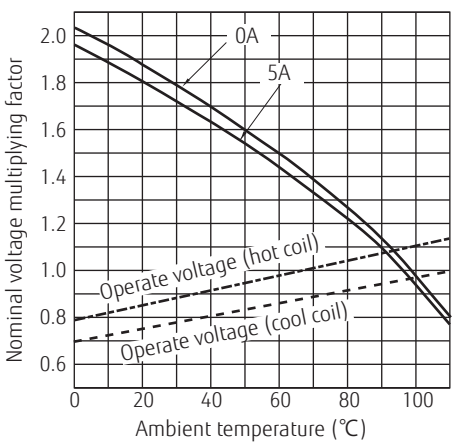
Timing



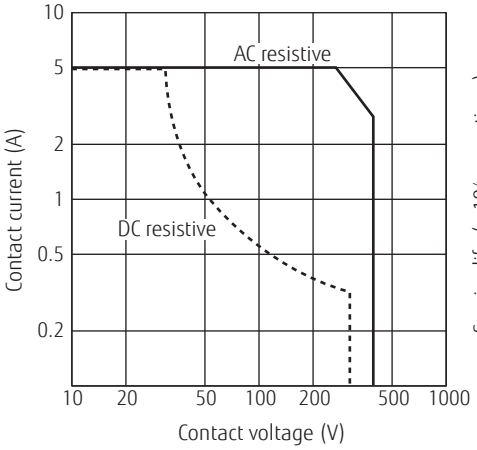
Coil temperature rise



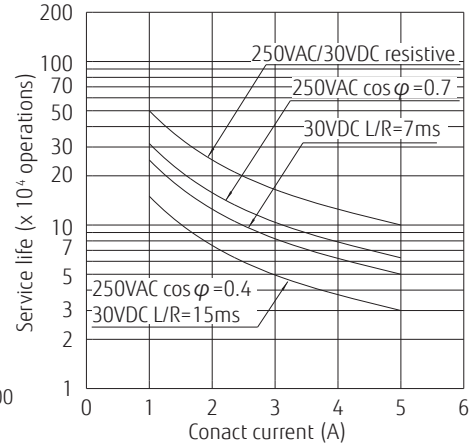
Operating range



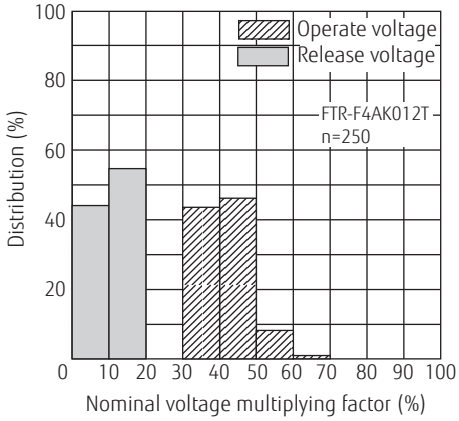
Maximum switching power



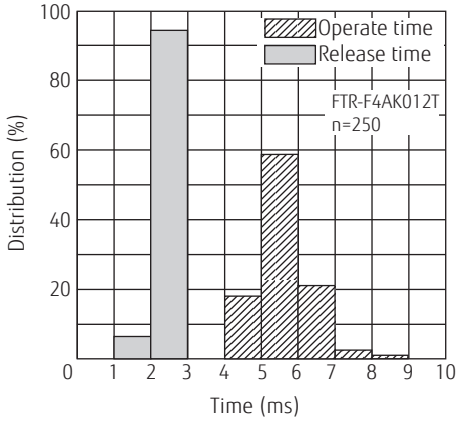
Life curve



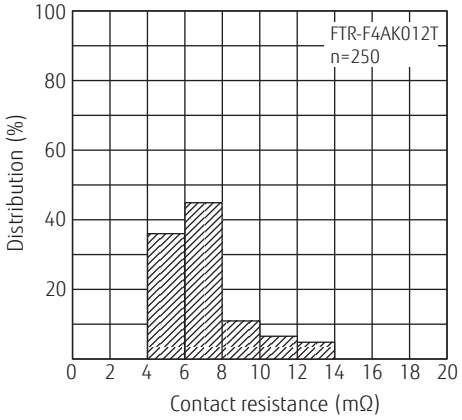
Distribution of operate/release voltage



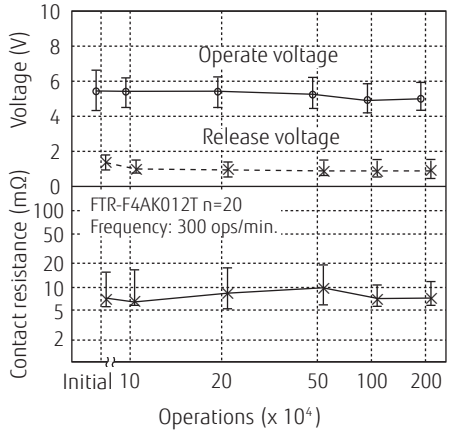
Distribution of operate/release time



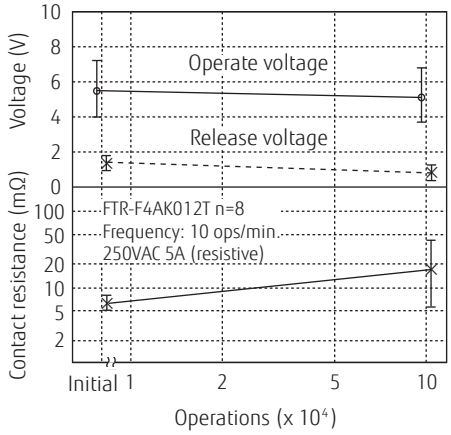
Distribution of contact resistance



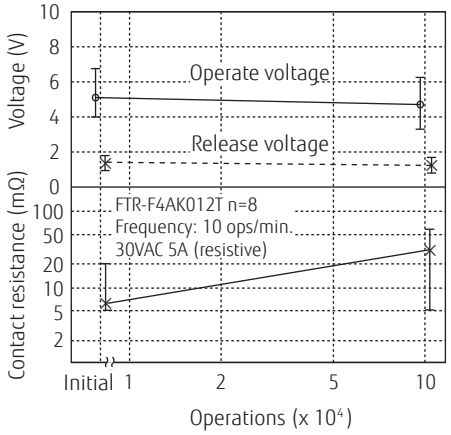
Mechanical life test



Electrical life test



Electrical life test



GENERAL INFORMATION

1. ROHS Compliance

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Use of Cadmium in electrical contacts is exempted as per Annex III of the RoHS directive 2011/65/EU. Please consider expiry date of exemption. Relays with Cadmium containing contacts are not to be used for new designs.
- All relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: http://www.fujitsu.com/downloads/MICRO/fcai/relays/lead-free-letter.pdf
- Characteristic data is not guaranteed values, but measured values of samples from production line.

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 350-360˚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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