FUJITSU

POWER RELAY

1 POLE - 5A Relay Type

FTR-F2 Series

■ FEATURES

- HIGH DENSITY MOUNTING
  Saves space by 26% compared to FTR-H1 type.
- High insulation
  Insulation distance between coil and contacts: 6mm
  Dielectric Strength: 4KV
  Surge Strength: 10KV
- Flux proof type, RTII
  (sealed type is available)
- 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
  Please see page 6 for more information

■ PARTNUMBER INFORMATION

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

(a)	Relay type	FTR-F2 : FTR-F2 Series
(b)	Contact configuration	A : 1 form A (SPST-NO)
(c)	Coil type / enclosure	K : Standard type (530mW) L : High sensitivity type (250mW) A : Sealed type (530mW)
(d)	Coil rated voltage	012 : 5....48VDC Coil rating table at page 3
(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

■ SPECIFICATION

Item			Standard	Sensitive	Sealed
			F2 AK ( ) T	F2 AL ( ) T	F2 AA ( ) T
Contact Data	Configuration		1 form A (SPST-NO)		
	Construction		Single		
	Material		Silver tin oxide ($AgSnO_2$)		
	Resistance (initial)		Max. 100 mOhm at 6 VDC, 1 A		
	Contact rating		5A, 250VAC / 30VDC		
	Max. carrying current		5A		
	Max. switching voltage		400VAC / 300 VDC		
	Max. switching power		1,250VA / 150A		
	Min. switching load *		100 mA, 5 VDC		
Life	Mechanical		2 x 10^6 operations minimum		
	Electrical	AC contact rating	Min. 100 x 10^3 operations		Min. 50 x 10^3 operations
		DC contact rating	Min.100 x 10^3 operations		Min. 50 x 10^3 operations
		Lamp load (TV-5)	Min. 25 x 10^3 operations		
Coil Data	Rated power (at 20 °C)		530mW	250mW	530mW
	Operate power (at 20 °C)		260mW	160mW	260mW
	Operating temperature range		-40 °C to +70 °C (no frost)		
Timing Data	Operate (at nominal voltage)		Max. 15 ms		
	Release (at nominal voltage)		Max. 5 ms		
Insulation	Resistance (initial)		Min. 1,000MOhm at 500VDC		
	Dielectric strength	Open contacts	1,000VAC (50/60Hz) 1min		
		Contacts to coil	4,000VAC (50/60Hz) 1min		
	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	B / 250V		
Other	Vibration Resistance	Misoperation	10 to 55Hz double amplitude 1.5mm		
		Endurance	10 to 55Hz double amplitude 1.5mm		
	Shock	Misoperation	Min. 200m/s² (11 ± 1ms)		
		Endurance	Min. 1,000m/s² (6 ± 1ms)		
	Weight		Approximately 12g		
	Sealing		Flux proof RTII (FTR-F2A(K;L) ( )T type) Sealed type RTIII (FTR-F2AA ( )T type)		

* 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 RATING

Standard Type (530mW)

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release-Voltage (VDC) *	Max. Coil Voltage (VDC)	Rated Power (mW)
005	5	47	3.5	0.25	8.5	530
006	6	68	4.2	0.3	10.2	
009	9	155	6.3	0.45	15.3	
012	12	270	8.4	0.6	20.4	
018	18	610	12.6	0.9	30.6	
024	24	1,110	16.8	1.2	40.8	
048	48	4,400	33.6	2.4	81.6	

Sensitive Type (250mW)

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release-Voltage (VDC) *	Max. Coil Voltage (VDC)	Rated Power (mW)
005	5	100	4	0.25	12.5	250
006	6	145	4.8	0.3	15	
009	9	325	7.2	0.45	22.5	
012	12	575	9.6	0.6	30	
024	24	2,310	19.2	1.2	60	

Note: All values in the table are valid for 20°C and zero contact current.
* Specified operate values are valid for pulse wave voltage.

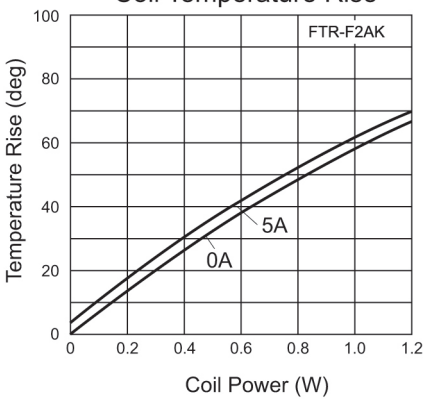
■ SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL 508 E63614	Flammability: UL 94-V0 (plastics) 5A, 30 VDC/250VAC (resistive) 1/6 HP, 125VAC 1/2 HP, 250VAC TV-5, 120 VAC Pilot duty: C300
CSA	C22.2 No. 14 LR 40304	
VDE	0435, 0860 40014652	5A, 250VAC (cosφ 1) 2A, 250VAC (cosφ 0.4) 5A, 30VDC (0ms)
SEMKO	EN 61058-1: 1992 AND A1 EN 61095:1993 and A1+A11	250 VAC, 5 (1) or 5/80 40T70

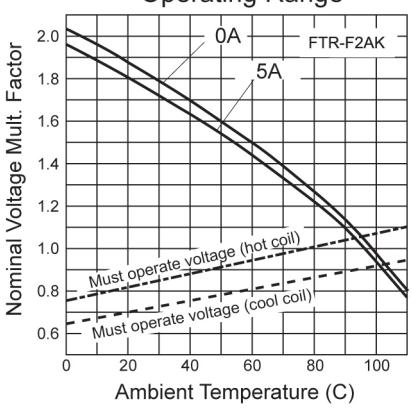
Complies with CQC, NEMKO, DEMKO, FIMKO,

■ CHARACTERISTIC DATA

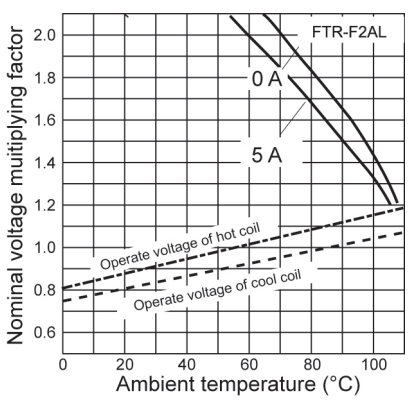
Coil Temperature Rise



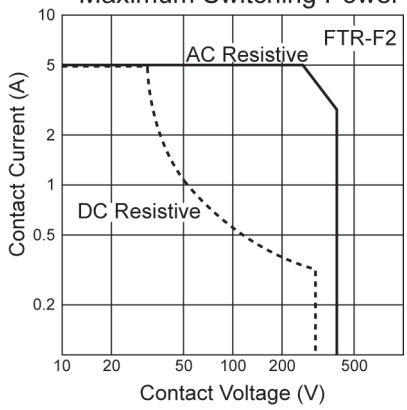
Operating Range



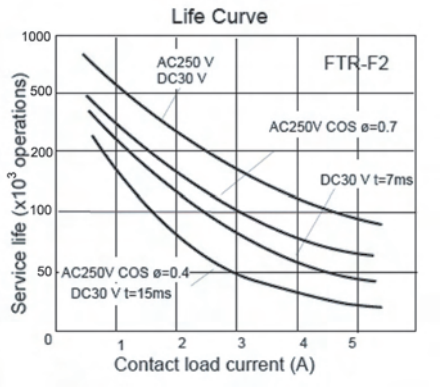
Operating range



Maximum Switching Power

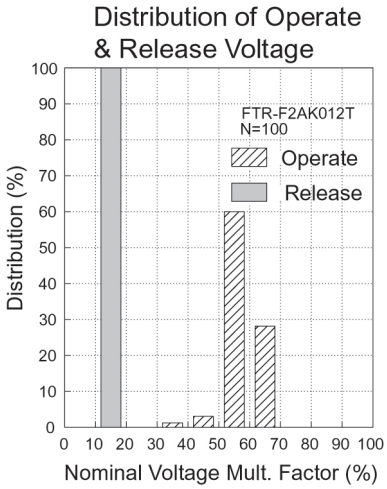


Life Curve

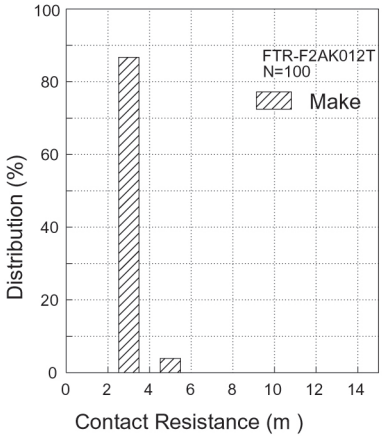


■ REFERENCE DATA

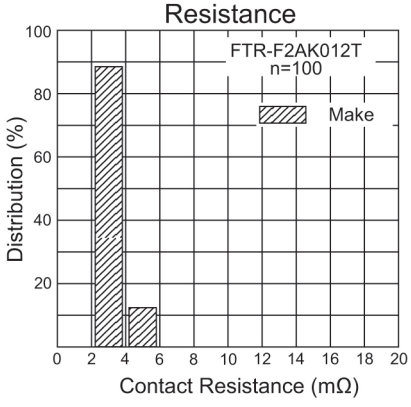
Distribution of Operate & Release Voltage



Distribution of Contact Resistance

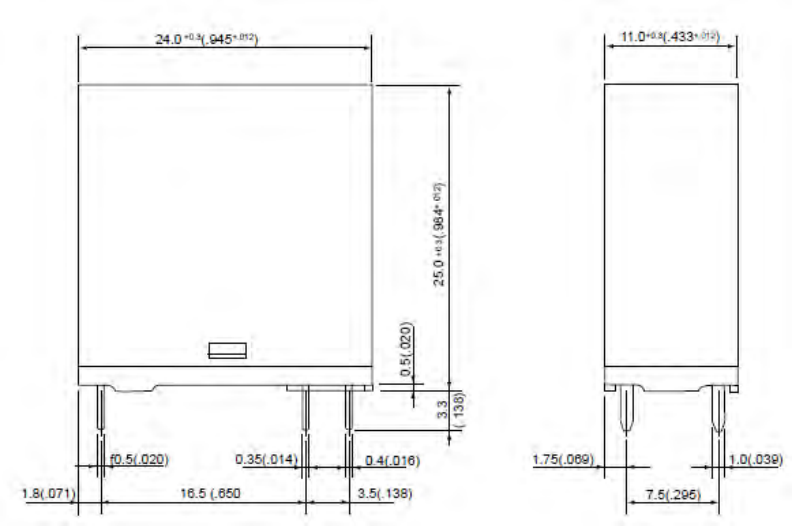


Distribution of Contact Resistance

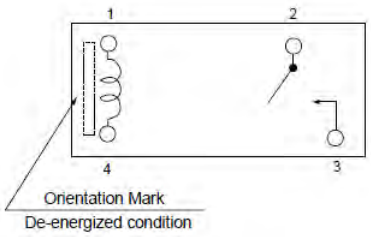


■ DIMENSIONS

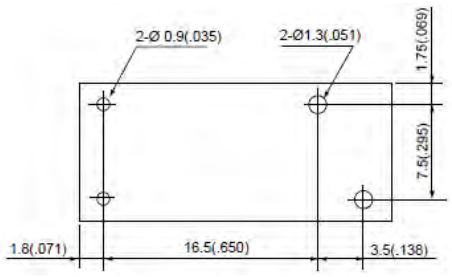
- **Dimensions**



- Schematics
(BOTTOM VIEW)



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



Unit: mm (in.)

RoHS Compliance and Lead Free Information

1. General Information

- All signal and power relays produced by Fujitsu Components are compliant with RoHS directive 2002/95EC including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives on October 21st, 2005. (Amendment to Directive 2002/95/EC)
- All of our signal and power relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf
- 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.

2. Recommended Lead Free Solder Profile

- Recommended solder Sn-3.0Ag-0.5Cu.

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, 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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