FUJITSU THE POSSIBILITIES ARE INFINITE

POWER RELAY

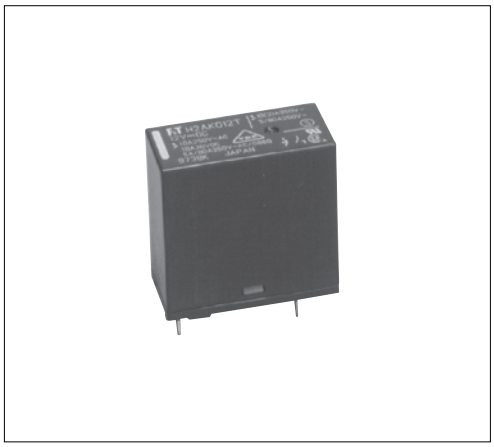
1 POLE—120A Inrush Current
(CADMIUM FREE CONTACTS TYPE)

FTR-F2P SERIES

RoHS compliant

■ FEATURES

- SPST 5A
- Comply with TV-8 rating (120A inrush current)
- HIGH DENSITY MOUNTING
  Saves space by 26% compared to FTR-H1 type.
- HIGH ISOLATION
  Isolation distance between coil and contacts: 6mm
  Dielectric Strength: 4KV
  Surge Strength: 10KV
- 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 since date code: 0437L2
  Please see page 7 for more information



■ ORDERING INFORMATION

[Example] FTR-F2 (a) P (b) L (c) 012 (d) T (e) – ** (f)

(a)	Series Name	FTR-F2 series
(b)	Contact Arrangement	P: 1 Form A (SPST-NO) (TV-8 rating)
(c)	Coil Type	L: High sensitivity (250mW) M: High sensitivity (250mW) and high isolation
(d)	Coil Nominal Voltage/ Contact material	005: 5DC 012: 12DC 006: 6DC 018: 18DC 009: 9DC 024: 24DC
(e)	TV-Rating	T: Silver tin oxide
(f)	Custom Designation (option)	To be assigned custom specification

■ PART NUMBERS

High sensitivity (PL) and high sensitivity / high isolation (PM) (250 mW)

Ordering Part Number	Series	Contact	Coil Power	Coil Voltage	Contact MateriPM
FTR-F2PL005T	FTR-F2	1 form A	L: 250mW (High sensitivity)	5	Silver tin oxide
FTR-F2PL006T				6	
FTR-F2PL009T				9	
FTR-F2PL012T				12	
FTR-F2PL018T				18	
FTR-F2PL024T				24	
FTR-F2PM005T			M: 250mW (High sensitivity/ high isolation)	5	
FTR-F2PM006T				6	
FTR-F2PM009T				9	
FTR-F2PM012T				12	
FTR-F2PM018T				18	
FTR-F2PM024T				24	

■ COIL DATA CHART

High sensitivity (PL) and high sensitivity / high isolation (PM) (250 mW)

Coil Voltage	Nominal Voltage (VDC)	Max. Coil Voltage*1	Coil Resistance (±10%)	Must Operate Voltage*2	Must Release Voltage*2
005	5	8.5 VDC	100 Ω	3.5 VDC	0.25 VDC
006	6	10.2 VDC	145 Ω	4.2 VDC	0.3 VDC
009	9	15.3 VDC	325 Ω	6.3 VDC	0.45 VDC
012	12	20.4 VDC	575 Ω	8.4 VDC	0.6 VDC
018	18	30.6 VDC	1,245 Ω	12.6 VDC	0.9 VDC
024	24	40.8 VDC	2,310 Ω	16.8 VDC	1.2 VDC

Note: All values in the table are measured at 20°C.
*1: No contact current at 20°C
*2: Specified values are subject to pulse wave voltage

■ SPECIFICATIONS

Item			Open type	
			F2 PL ( ) T	F2 PM ( ) T
Contact	Arrangement		1 form A (SPST-NO)	
	Material		Silver tin oxide	
	Configuration		Single	
	Resistance (initial)		Maximum 100 mΩ at 6 VDC, 1 A	
	Rating (resistive)		250 VAC / 30 VDC / 5A	
	Maximum Carrying Current		5A	
	Maximum Switching Rating		1250VA / 150W	
	Maximum Switching Voltage		400VAC / 300 VDC	
	Maximum Switching Load*1		100 mA, 5 VDC	
Coil	Nominal Power (20°C)		250 mW	
	Operate Power (20°C)		160 mW	
	Operating Temperature		-40ºC to +70ºC (no frost)	
Time Value	Operate Time (at nominal voltage)		Maximum 15 ms	
	Release Time (at nominal voltage)		Maximum 5 ms	
Life	Mechanical		2×10^6 operations minimum	
	Electrical	AC Contact rating	100×10^3 operations min.	
		DC Contact Rating	100×10^3 operations minimum	
		Lamp load (TV-5)	25×10^3 operations minimum	
Other	Vibration Resistance	Misoperation	10 to 55 Hz, at double amplitude of 1.5 mm	
		Endurance	10 to 55Hz, at double amplitude of 1.5 mm	
	Shock Resistance	Misoperation	Min. 200m/s^2 (11±1ms)	
		Endurance	Min. 1,000m/s^2 (11±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.

■ INSULATION

Item		FTR-F2PL ( )T	FTR-F2PM ( )T
Resistance (initial) (500 VDC)		Minimum 1,000 MΩ 1 min.	
Dielectric Strength	open contacts	1,000 VAC (50/60 Hz) 1 min.	
	coil and contacts	4,000 VAC (50/60 Hz) 1 min.	
Surge Voltage (coil and contact) 1.2 x 50μs standard wave		10,000 V	12,000V
Clearance/Creepage		6 mm / 6 mm	
Insulation (DIN EN61810-1 VDE0435) Voltage Pollution Isolation material group		 250 V 2 III a	
Isolation category / Reference voltage (VDE 0110b)		B / 250 V	

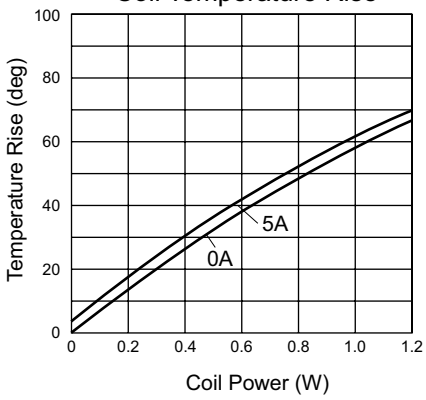
■ SAFETY STANDARDS

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-8, 120 VAC Pilot duty: C300
CSA	C22.2 No. 14 LR 40304	
SEMKO	EN 61058-1: 1992 AND A1 EN 61095:1993 and A1+A11	250 VAC, 5 (1) or 5/80 40T70

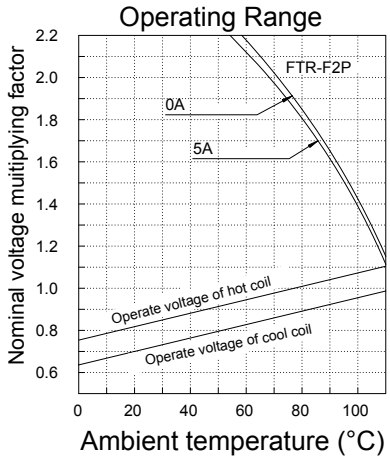
Complies with CQC, NEMKO, DEMKO, FIMKO

■ REFERENCE DATA

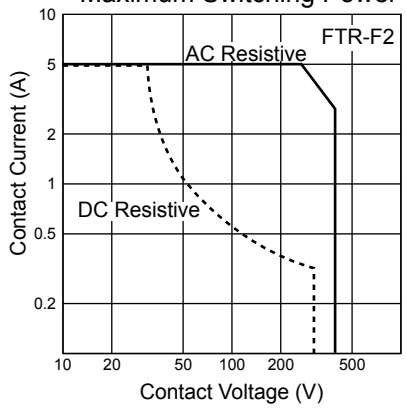
Coil Temperature Rise



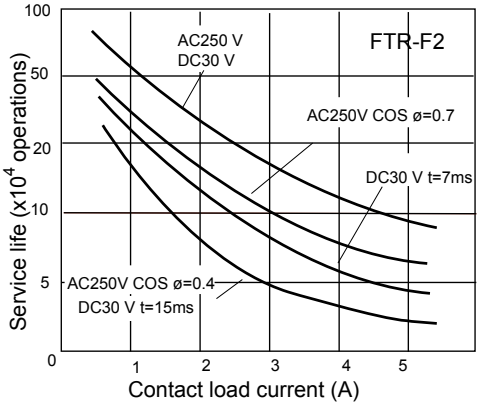
Operating Range



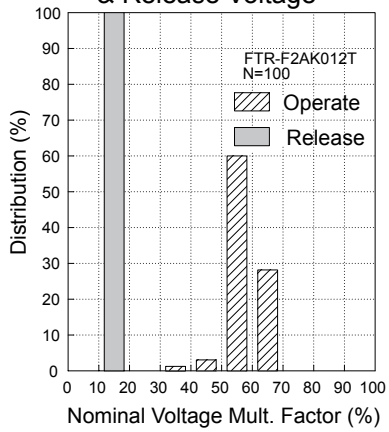
Maximum Switching Power



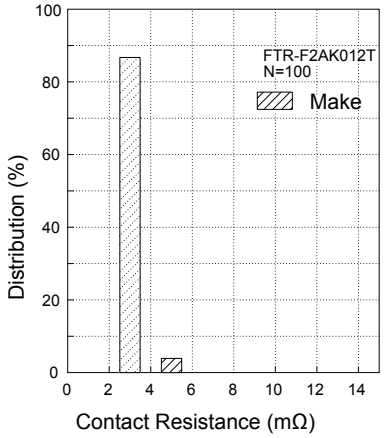
Life Curve



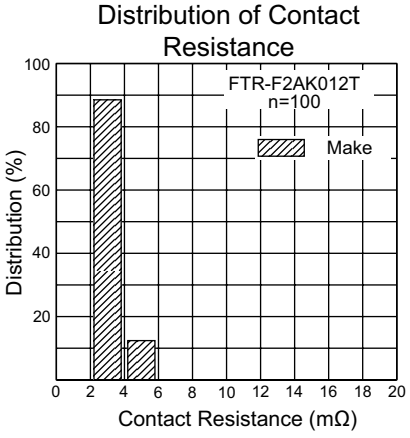
Distribution of Operate & Release Voltage



Distribution of Contact Resistance

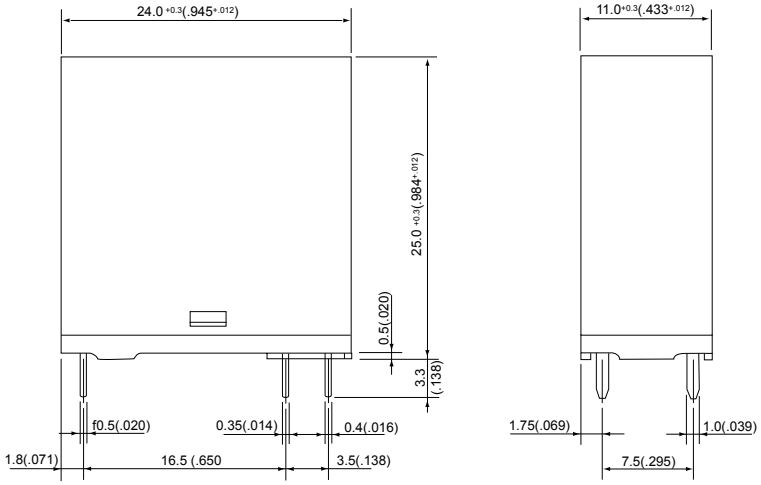


Distribution of Contact Resistance

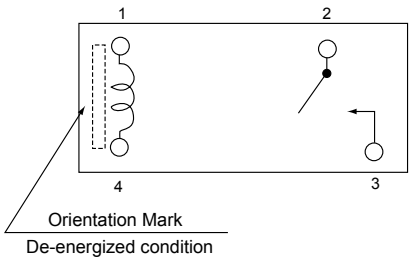


■ DIMENSIONS

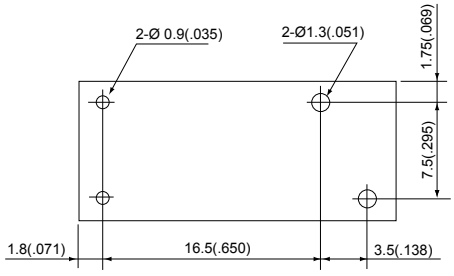
● Dimensions



● Schematics
(BOTTOM VIEW)



● PC board mounting hole layout
(BOTTOM VIEW)



Unit: mm (in.)

RoHS Compliance and Lead Free 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

Flow Solder condition:

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

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

Fujitsu Components International Headquarter Offices

Japan
Fujitsu Component Limited
Gotanda-Chuo Building
3-5, Higashigotanda 2-chome, Shinagawa-ku
Tokyo 141, Japan
Tel: (81-3) 5449-7010
Fax: (81-3) 5449-2626
Email: promothq@ft.ed.fujitsu.com
Web: www.fcl.fujitsu.com

Europe
Fujitsu Components Europe B.V.
Diamantlaan 25
2132 WV Hoofddorp
Netherlands
Tel: (31-23) 5560910
Fax: (31-23) 5560950
Email: info@fceu.fujitsu.com
Web: emea.fujitsu.com/components/

North and South America
Fujitsu Components America, Inc.
250 E. Caribbean Drive
Sunnyvale, CA 94089 U.S.A.
Tel: (1-408) 745-4900
Fax: (1-408) 745-4970
Email: components@us.fujitsu.com
Web: http://www.fujitsu.com/us/services/edevices/components/

Asia Pacific
Fujitsu Components Asia Ltd.
102E Pasir Panjang Road
#01-01 Citilink Warehouse Complex
Singapore 118529
Tel: (65) 6375-8560
Fax: (65) 6273-3021
Email: fcal@fcal.fujitsu.com
Web: http://www.fujitsu.com/sg/services/micro/components/

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