FUJITSU

POWER RELAY
1 POLE - 5A, TV-3 / TV-5 TYPE
FTR-F3 Series

■ FEATURES

- High inrush 50A/80A, TV rating capability
- Flat and slim power relays
  - Flat type (right angle type): height: 7mm
    Mounting space: 330mm²
  - Slim type (standard type)
    Width: 7mm
    Mounting space: 142mm²
- High inrush current contacts
- High insulation
  Insulation distance: minimum 6mm between coil and contact
  (conforms to IEC 60065)
  Dielectric strength: 4KV
  Surge strength: 10KV
- Cadmium free contact for eco-program
- Safety standards
  UL, CSA, VDE, CQC
- Plastic sealed relay, RTIII
- RoHS compliant
  Please see page 6 for more information

■ PARTNUMBER INFORMATION

[Example] FTR-F3 (a) P (b) A (c) 012 (d) V (e)

(a)	Relay type	FTR-F3	: FTR-F3-Series
(b)	Contact configuration	A P	: 1 form A, straight terminals : 1 form A, right angle terminals
(c)	Coil type (power)	A	: 280mW, TV3 and TV5 types, FTR-F3(A;P)A(...)(V;T)
(d)	Coil rated voltage	012	: 3.....24 VDC Coil rating table at page 3
(e)	Contact material	V T	: $AgSnO_2$ TV5 type, 1 form A type only (280mW coil) : $AgSnO_2$ TV3 type, 1 form A type only (280mW coil)

Actual marking does not carry the type name : "FTR"
E.g.: Ordering code: FTR-F3PA012V Actual marking: F3PA012V

■ SPECIFICATION

Item			FTR-F3	
			FTR-F3(A;P)A(...)V	FTR-F3(A;P)A(...)T
Contact Data	Configuration		1 form A (SPST)	
	Construction		Single	
	Material		T and V: $AgSnO_2$ May or may be not gold plated	
	Resistance (initial)		Max. 100mOhm at 1A, 6VDC	
	Contact rating (resistive)		5A, 250VAC, 30VDC	
	Max. inrush current		78A, 250VAC (TV-5)	51A, 250VAC (TV-3)
	Max. carrying current		5A	
	Max. switching voltage		277VAC, 150VDC	
	Max. switching power		1,250VA, 150W	
	Min. switching load *		10 mA, 5VDC	
Life	Mechanical		Min. 5 x 10^6 operations	
	Electrical (resistive)		Min. 100 x 10^3 operations (3A, 250VAC/30VDC) Min. 50 x 10^3 operations (5A, 250VAC/30VDC)	
	Electrical (lamp)		Min. 25 x 10^3 operations (UL, TV-5)	Min. 25 x 10^3 operations (UL, TV-3)
Coil Data	Rated power (20 °C)		280mW	
	Operate power		156mW	
	Operating temperature range		-40 °C to +85 °C (no frost)	
Timing Data	Operate (at nominal voltage)		Max. 10ms (without bounce, no diode)	
	Release (at nominal voltage)		Max. 10ms (without bounce, no diode)	
Insulation	Resistance (initial)		Min. 1,000MOhm at 500VDC	
	Dielectric strength	Open contacts	750VAC (50/60Hz) 1min	
		Contacts to coil	4,000VAC (50/60Hz) 1min	
	Surge strength	Contacts to coil	10,000V / 1.2 x 50µs standard wave	
	Clearance		6mm	
	Creepage		6mm	
	EN61810-1, VDE0435	Voltage	250V	
		Pollution degree	2	
		Material group	III	
Other	Vibration resistance	Misoperation	10 to 55 to 10 single amplitude 0.75mm	
		Endurance	10 to 55 to 10 single amplitude 0.75mm	
	Shock	Misoperation	Min. 100m/s^2 (11±1ms)	
		Endurance	Min. 1,000m/s^2 (6±1ms)	
	Weight		Approximately 6g	
	Sealing		Plastic sealed RTIII	

* 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 conditions and expected reliability levels.

■ COIL RATING

280mW type

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release Voltage (VDC) *	Rated Power (mW)
003	3	31.2	2.25	0.3	280
005	5	90	3.75	0.5	
006	6	130	4.5	0.6	
009	9	290	6.75	0.9	
012	12	515	9	1.2	
018	18	1,160	13.5	1.8	
024	24	2,060	18	2.4	

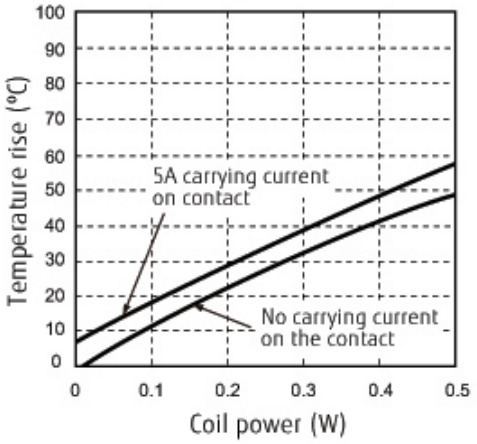
Note 1: All values given in the coil table(s) are valid at 20°C ambient temperature, at zero contactcurrent, without pre-energizing and are specified at pulse wave voltage.
Note 2: When applying a higher than rated coil voltage, please refer to the "coil temperature rise" and "operating range". Reference graphs for the effects on the relay operating behaviour.

■ SAFETY STANDARDS

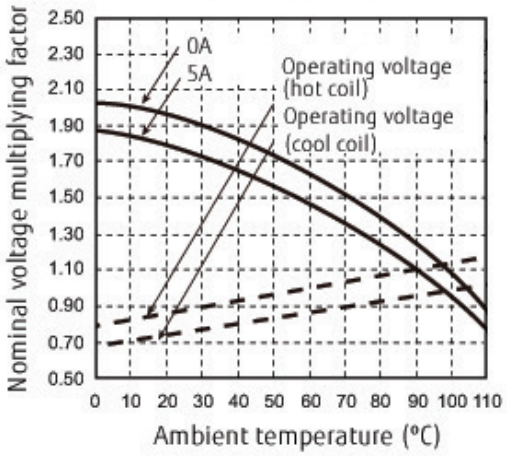
Type	**Compliance**	**Contact rating**
UL	UL 508 E63614	Flammability: UL 94-V0 (plastics) <u>FTR-PA(...)V, FTR-F3AA(...)V</u> 3A, 250VAC / 30VDC resistive, 10K operations 5A, 250VAC / 30VDC resistive TV-5, 120VAC, 25K operations <u>FTR-F3PA(...)T, FTR-F3AA(...)T</u> 3A, 250VAC/30VDC resistive, 10K operations 5A, 250VAC/30VDC resistive TV-3, 120VAC, 25K operations
CSA	C22.2 No. 14 LR 40304	
VDE	IEC/EN61810-1 EN60065 clause 14.6.1	<u>FTR-F3PA(...)V, FTR-F3AA(...)V</u> 3A, 250 VAC, cosφ =1, 100 x 10^3, 85°C 5A, 250 VAC, cosφ =1, 50 x 10^3, 85°C 8A, 250VAC, cosφ =1, 6 x 10^3, 85°C 3A, 30VDC (0ms), 70 x 10^3, 85°C 5A, 30VDC (0ms), 50 x 10^3, 85°C 8A, 30VDC, τ=0msec, 6 x 10^3, 85°C <u>FTR-F3PA(...)T, FTR-F3AA(...)T</u> 3A, 250 VAC, cosφ =1, 100 x 10^3, 85°C 5A, 250 VAC, cosφ =1, 50 x 10^3, 85°C 3A, 30VDC (0ms), 70 x 10^3, 85°C 5A, 30VDC (0ms), 50 x 10^3, 85°C
CQC	GB/T21711.1, GB15092.1 10002049449, 03001005455	5A 250VAC/ 30VDC

■ CHARACTERISTIC DATA (Reference)

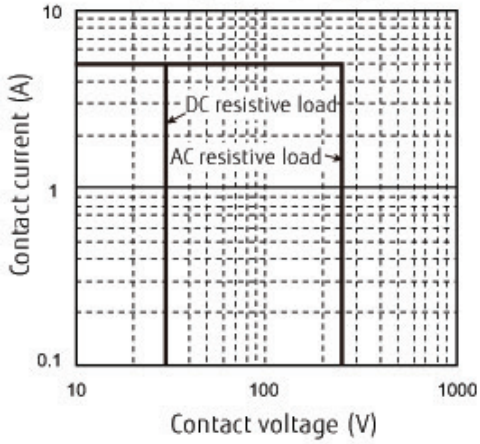
Coil temperature rise



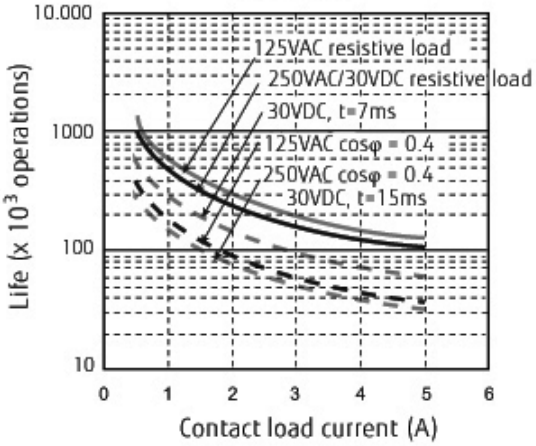
Operating range



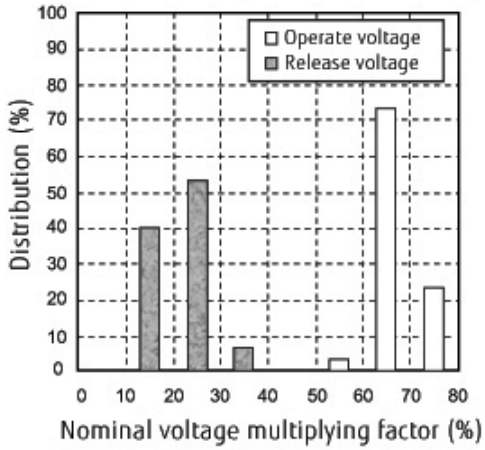
Maximum switching power



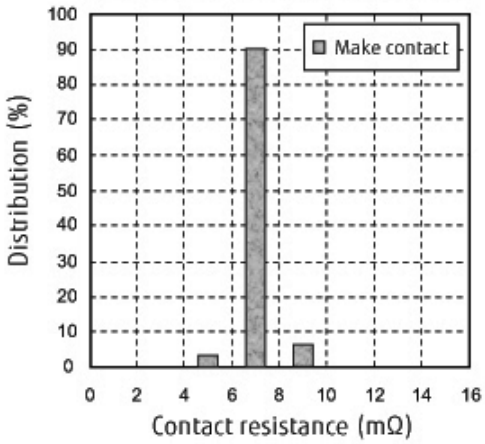
Life curve



Distribution of operate/release voltage



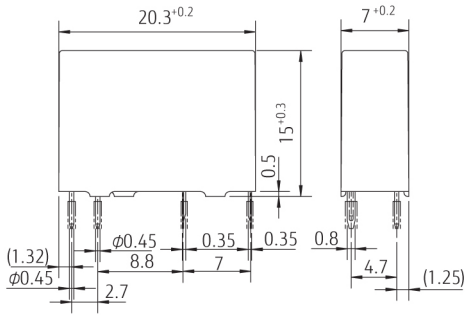
Distribution of contact resistance



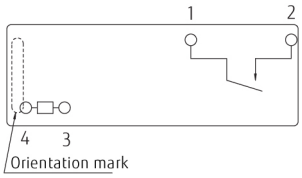
■ DIMENSIONS

Standard type - FTR-F3AA(...) (V,T)

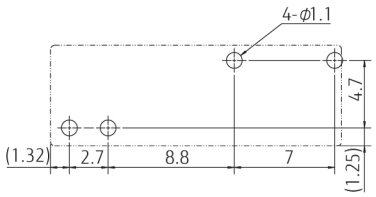
- **Dimensions**



- **Schematics** (BOTTOM VIEW)



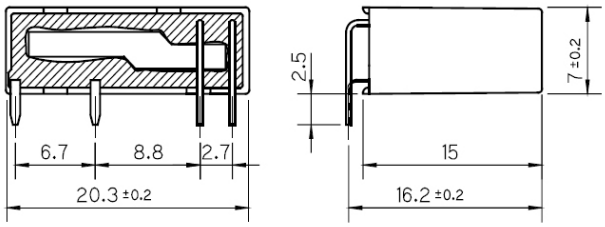
- **PC board mounting hole layout** (BOTTOM VIEW)



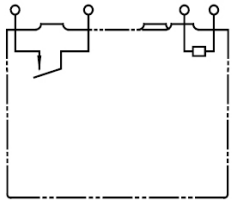
Tolerance:

Right angle type - FTR-F3PA(...) (V,T)

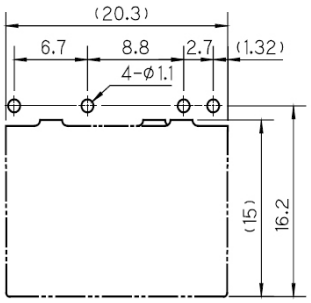
- **Dimensions**



- **Schematics** (BOTTOM VIEW)



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



Unit: mm

RoHS Compliance and Lead Free Information

1. General Information

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives.
  As per Annex III of directive 2011/65/EU.
- 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
- 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 Condition

- Recommended solder Sn-3.0Ag-0.5Cu.

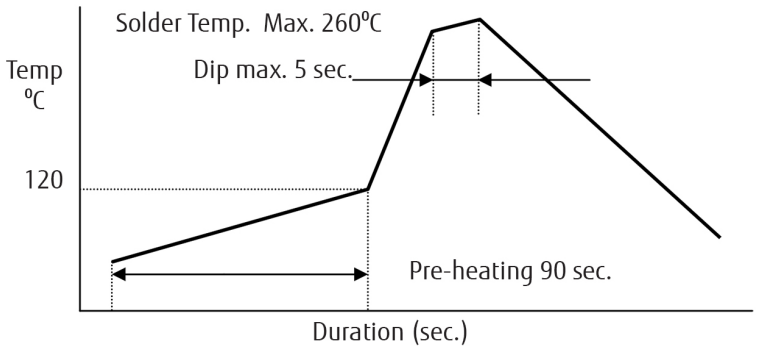
Flow Solder Condition:

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 Temperature:	30-60W 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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