FUJITSU

POWER RELAY
1 POLE - 3A/5A Slim Type Relay
FTR-F3 Series

■ FEATURES

- High density mounting
  Slim type with 7mm width and 142mm^2 mounting space
  1C type; height 15mm and 164 mm^2 mounting space
  right angle type; height 7mm, 330 mm^2 mounting space
- High insulation
  Insulation distance:
  minimum 6mm (7mm for 1C and right angle type)
  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, SEMKO, CQC
- Plastic sealed relay, RTIII
- RoHS compliant
  Please see page 7 for more information

■ PARTNUMBER INFORMATION

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

(a)	Relay type	FTR-F3 :FTR-F3-Series
(b)	Contact configuration	A : 1 form A, straight terminals C : 1 form C, straight terminals P : 1 form A, right angle terminals
(c)	Coil type (power)	A : 200mW, 3A and 5A types, FTR-F3 (A;P) A (...) E (-HA); (-KS) : 280mW, TV3 and TV5 types, FTR-F3 (A;P) A (...) (V;T) : 360mW, 1 form C type, FTR-F3CA (...) E
(d)	Coil rated voltage	012 : 5.....24 VDC Coil rating table at page 3
(e)	Contact material	V : $AgSnO_2$ TV5 type, 1 form A type only (280mW coil) T : $AgSnO_2$ TV3 type, 1 form A type only (280mW coil) E : AgNi 3A and 5A types only (not for TV3 and TV5 types)
(f)	Contact rating	Nil : 3A type and V and T types only HA : 5A type (for type FTR-F3AA only) (not for TV types) KS : Sealing confirmed (3A type FTR-F3AA (...) E only)

Actual marking does not carry the type name : "FTR"
E.g.: Ordering code: FTR-F3AA012V Actual marking: F3AA012V
5A 250V~ 5A 30VDC and TV rating marked on relay

Ordering code: FTR-F3AA012E-HA Actual marking: F3AA012E
5A 250V~ 5A 30VDC marked on relay

■ SPECIFICATION

Item			FTR-F3			
			3A type	5A type		TV3 / TV5 type
Contact Data	Configuration		1 form A	1 form A	1 form C	1 form A
	Construction		Single			
	Material		Silver nickel (AgNi)			Ag alloy ($AgSnO_2$)
	Resistance (initial)		Max. 100mOhm at 1A, 6VDC			
	Contact rating (resistive)		3A, 125VAC, 30VDC	5A, 250VAC, 30VDC		5A, 250VAC, 30VDC TV3: (120VAC) 3A / 51A / 125VAC 3A / 50A / 250VAC TV5: (120VAC) 5A / 78A / 125VAC 5A / 80A / 250VAC
	Max. carrying current		5A			
	Max. switching voltage		277VAC, 30VDC	277VAC, 30VDC	277VAC, 150VDC	277VAC, 150VDC
	Max. switching power		750VA, 90W	1,250VA, 150W		
	Min. switching load *		10 mA, 5VDC			
Life	Mechanical		Min. 5 x 10^6 operations	Min. 5 x 10^6 operations	Min. 5 x 10^6 operations	Min. 5 x 10^6 operations
	Electrical (at rated load)		Min. 200 x 10^3 operations	Min. 100 x 10^3 operations		Min. 100 x 10^3 operations (3A, 250VAC/30VDC) Min. 50 x 10^3 operations (5A, 250VAC/30VDC)
Coil Data	Rated power (20 °C)		200mW	200mW	360mW	280mW
	Operate power		113mW	113mW	200mW	156mW
	Operating temperature range		-40 °C to +70 °C (no frost)	-40 °C to +70 °C (no frost)	-40 °C to +85 °C (no frost)	-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	6mm	7mm	7mm
	Creepage		6mm	6mm	7mm	7mm
	EN61810-1, VDE0435	Voltage	250V			
		Pollution degree	2			
		Material group	III			
		Category	C / 250V			
Other	Vibration resistance	Misoperation	10 to 55Hz double amplitude 1.5mm			
		Endurance	10 to 55Hz double amplitude 1.5mm			
	Shock	Misoperation	Min. 100m/s^2 (11±1ms)			
		Endurance	Min. 1,000m/s^2 (6±1ms)			
	Weight		Approximately 4g	Approx. 4g	Approx. 6g	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 contions and expected reliability levels.

■ COIL RATING

200mW type

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	125	3.75	0.5	12	200
006	6	180	4.5	0.6	14.4	
009	9	405	6.75	0.9	21.6	
012	12	720	9	1.2	28.8	
018	18	1,620	13.5	1.8	43.2	
024	24	2,880	18	2.4	57.6	

280mW type

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	90	3.75	0.5	10	280
006	6	130	4.5	0.6	12	
009	9	290	6.75	0.9	19	
012	12	515	9	1.2	26	
018	18	1,160	13.5	1.8	39	
024	24	2,060	18	2.4	52	

360mW type

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	69	3.75	0.5	9	360
006	6	100	4.5	0.6	11	
009	9	225	6.75	0.9	16	
012	12	400	9	1.2	21	
018	18	900	13.5	1.8	32	
024	24	1,600	18	2.4	42	

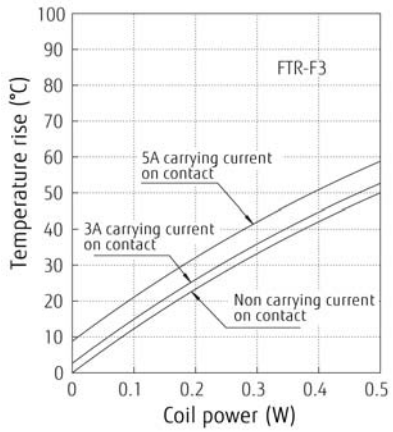
Note: All values in the tables are valid for 20°C and zero contact current.
* Specified operate values are valid for pulse wave voltage.

■ SAFETY STANDARDS

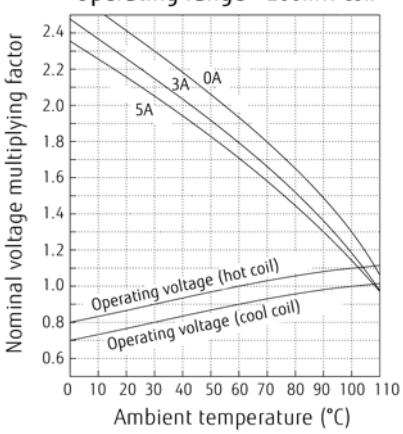
Type	Compliance	Contact rating
UL	UL 508 E63614	Flammability: UL 94-V0 (plastics)
CSA	C22.2 No. 14 LR 40304	3A, 30 VDC/ 277 VAC (resistive) 1/10 HP, 250VAC /125VAC 1/8 HP, 277VAC Pilot duty: D300
VDE	0435 40015024	5A, 250 VAC, cosφ 1 = 100 x 10^3, 85°C, FTR-F3 AA -E 3A, 250 VAC, cosφ 1 = 200 x 10^3, 85°C, FTR-F3 AA -E 5A, 30 VDC, 0 msec = 100 x 10^3, 85°C, FTR-F3 AA -E 3A, 30 VDC, 0 msec = 200 x 10^3, 85°C, FTR-F3 AA -E 5A, 250 VAC, cosφ 1 = 50 x 10^3, 70°C, FTR-F3 CA (CO) 5A, 30 VDC, 0msec = 100 x 10^3, 70°C, FTR-F3 CA (CO) 3A, 30 VDC, 0msec = 200 x 10^3, 70°C, FTR-F3 CA (CO) 5A, 250 VAC, cosφ 1 = 50 x 10^3, 85°C, FTR-F3 (A;P) A - (V;T) 3A, 250 VAC, cosφ 1 = 100 x 10^3, 85°C, FTR-F3 (A;P) A - (V;T) 3/51A, 250 VAC = 10 x 10^3, 85°C, FTR-F3 (A;P) A - T 5/80A, 250 VAC = 10 x 10^3, 85°C, FTR-F3 (A;P) A - V
SEMKO	EN 61058-1: 1992 +A1:1993 EN 61095:1993+A11	5A, 250 VAC 40T70

■ CHARACTERISTIC DATA

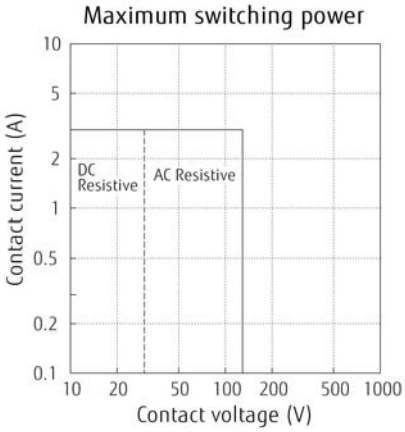
Coil temperature rise



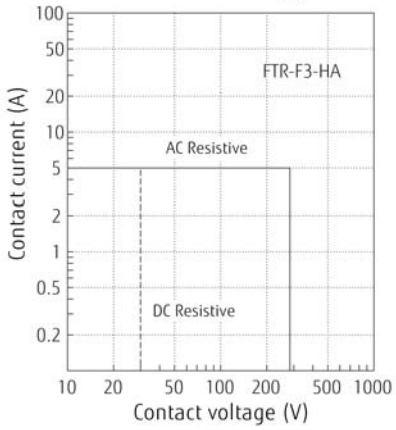
Operating range - 200mW coil



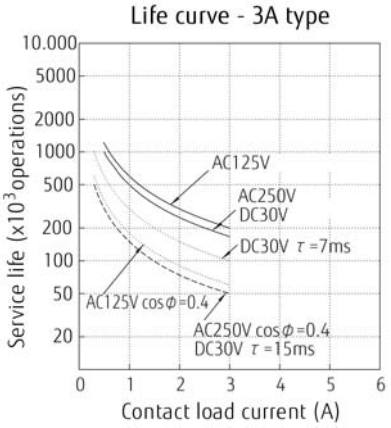
Maximum switching power



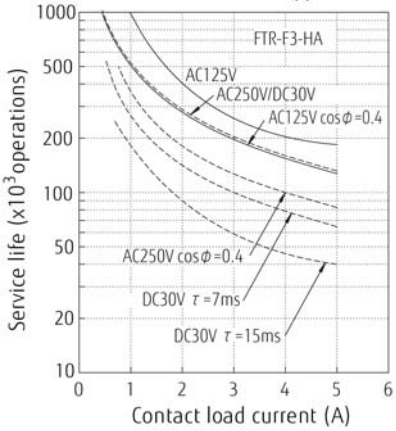
Maximum switching power



Life curve - 3A type

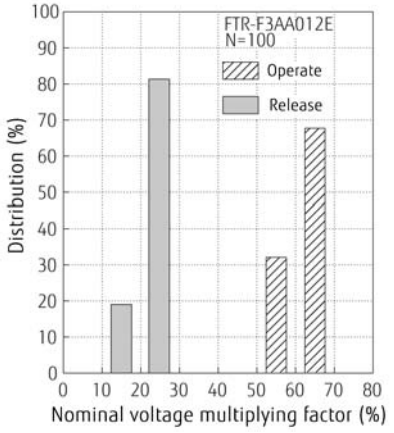


Life curve - 5A type

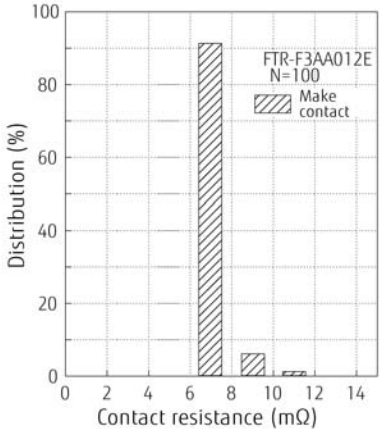


■ REFERENCE DATA

Distribution of operate/release voltage



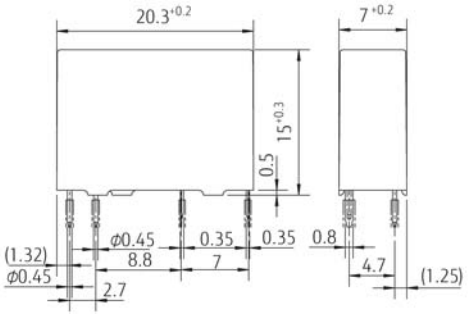
Distribution of contact resistance



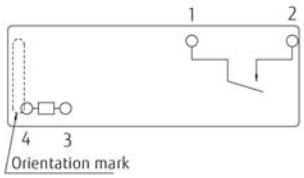
■ DIMENSIONS Unit: mm

Standard type

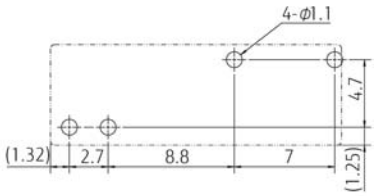
- **Dimensions**



- **Schematics** (BOTTOM VIEW)

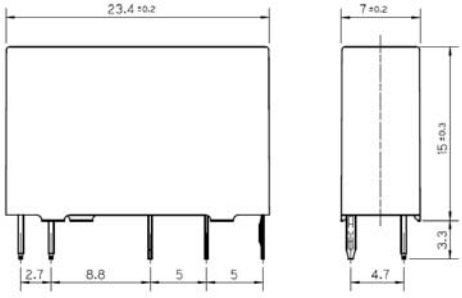


- **PC board mounting hole layout** (BOTTOM VIEW)



Change-over-contact type

- **Dimensions**



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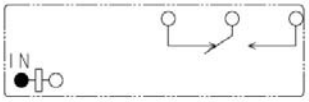

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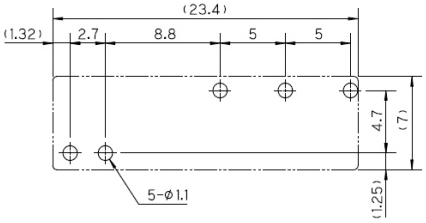
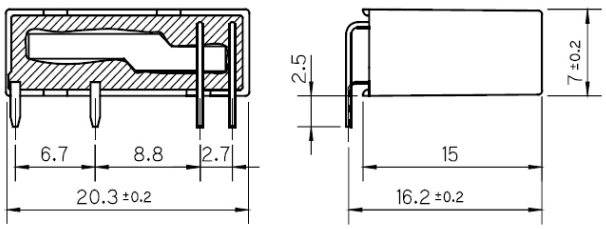
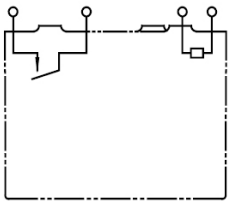


Right angle type

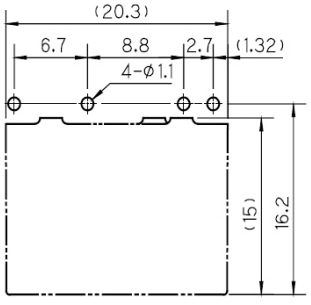
- **Dimensions**



- **Schematics** (BOTTOM VIEW)



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



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.