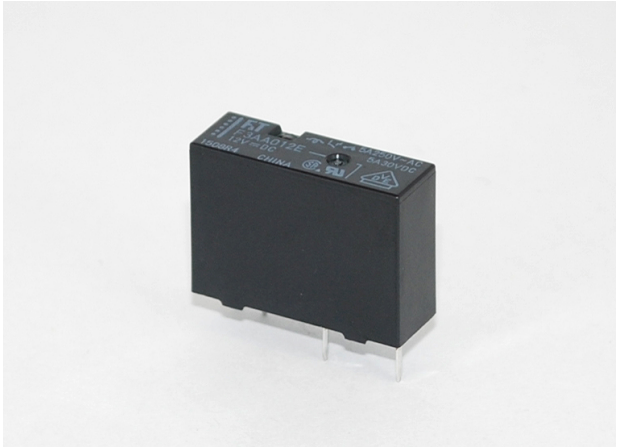
POWER RELAY

1 POLE - 3A/5A Slim Type Relay

FTR-F3 Series

■ FEATURES



- High density mounting
  Slim type with 7mm width and 142mm^2 mounting space
- High insulation
  Insulation distance: minimum 6mm between coil and contact (conforms to IEC 60065)
  Dielectric strength: 4KV
  Surge strength: 10KV
- Glow wire compliant type available which satisfies GWT required fo relay in IEC/EN60335-1
- 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) A (b) A (c) 012 (d) E (e) - HA (f) - GW (g)

(a)	Relay type	FTR-F3	: FTR-F3 Series
(b)	Contact configuration	A	: 1 form A (SPST-NO)
(c)	Coil type (power)	A	: 200mW
(d)	Coil rated voltage	012	: 5.....24 VDC Coil rating table at page 3
(e)	Contact material	E	: AgNi
(f)	Contact rating	Nil HA KS	: 3A type flux free : 5A type sealing confirmed : 3A type sealing confirmed
(g)	Special type	GW	: Comply with GWEPT (IEC60695-2-11)

Actual marking does not carry the type name : "FTR"
E.g.: Ordering code: FTR-F3AA012E-HA Actual marking: F3AA012E
5A 250V~ 5A 30VDC marked on relay

■ SPECIFICATION

Item			FTR-F3	
			FTR-F3AA( )E	FTR-F3AA( )E-HA
Contact Data	Configuration		1 form A (SPST-NO)	
	Construction		Single	
	Material		AgNi	
	Resistance (initial)		Max. 100mOhm at 1A, 6VDC	
	Contact rating (resistive)		3A, 125VAC, 30VDC	5A, 250VAC, 30VDC
	Max. carrying current		5A	
	Max. switching voltage		277VAC, 30VDC	
	Max. switching power		750VA, 90W	1,250VA, 150W
	Min. switching load *		10 mA, 5VDC	
Life	Mechanical		Min. 5 x 10^6 operations	
	Electrical (at rated load)		Min. 200 x 10^3 operations	Min. 100 x 10^3 operations
Coil Data	Rated power (20 °C)		200mW	
	Operate power		113mW	
	Operating temperature range		-40 °C to +70 °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 Hz single amplitude 0.75mm	
		Endurance	10 to 55 to 10 Hz single amplitude 0.75mm	
	Shock	Misoperation	Min. 100m/s^2 (11±1ms)	
		Endurance	Min. 1,000m/s^2 (6±1ms)	
	Weight		Approximately 4g	
	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

200mW type

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release Voltage (VDC) *	Rated Power (mW)
005	5	125	3.75	0.5	200
006	6	180	4.5	0.6	
009	9	405	6.75	0.9	
012	12	720	9	1.2	
018	18	1,620	13.5	1.8	
024	24	2,880	18	2.4	

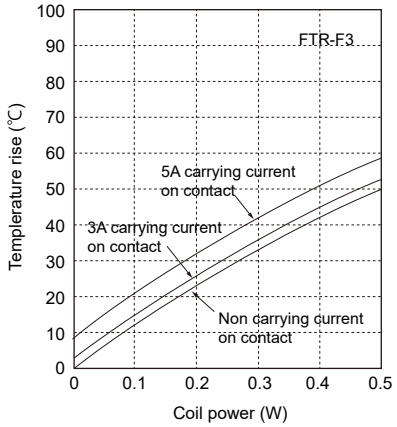
Note 1: All values given in the coil table(s) are valid at 20°C ambient temperature, at zero contactcurrent, without pre-energizing and are specified at pulse wave voltage.
Note 2: When applying a higher than rated coil voltage, please refer to the "coil temperature rise" and "operating range". Reference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

■ SAFETY STANDARDS

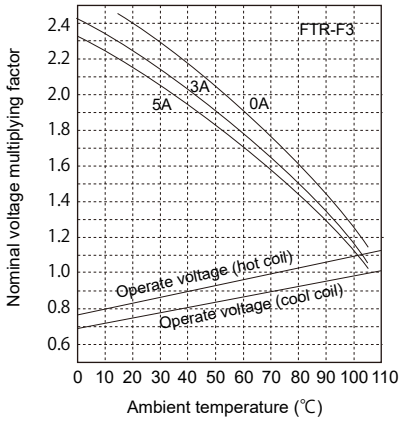
Type	Compliance	Contact rating	
		FTR-F3	FTR-F3-HA
UL	UL 508 E63614	Flammability: UL 94-V0 (plastics) 5A, 30VDC/277VAC (resistive) 6A, 277VAC (resistive) 3A, 30 VDC/ 277 VAC (resistive) 1/10 HP, 125VAC 1/8 HP, 277VAC Pilot duty: D300	3A, 30VDC/277VAC (resistive) 6A, 277VAC (resistive) 5A, 30VDC/ 277VAC (resistive) 1/10 HP, 250VAC (UL only), 1/10HP 125VAC 1/8 HP, 277VAC Pilot duty: D300
CSA	C22.2 No. 14 LR 40304		
VDE	IEC61810-1	3A, 250VAC, cosφ =1 3A, 30VDC, L/R=0ms	5A, 250VAC, cosφ =1 5A, 30VDC, L/R=0ms
CQC	GB/T21711.1, GB15092.1 10002049449, 04001010925, 17002164382	3A,250VAC/30VDC (except-KS type)	5A 250VAC/30VDC

■ CHARACTERISTIC DATA (Reference)

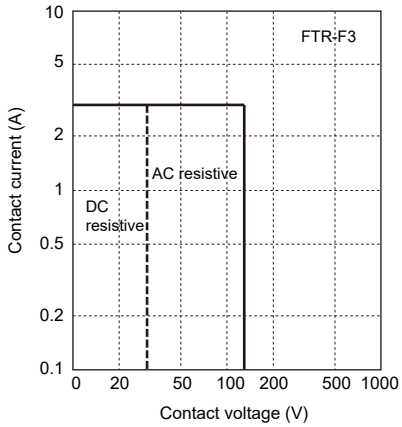
Coil temperature rise



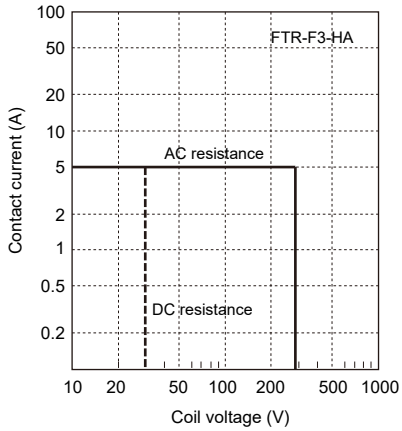
Operating range



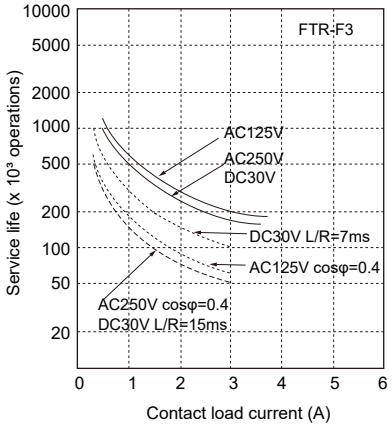
Maximum switching power



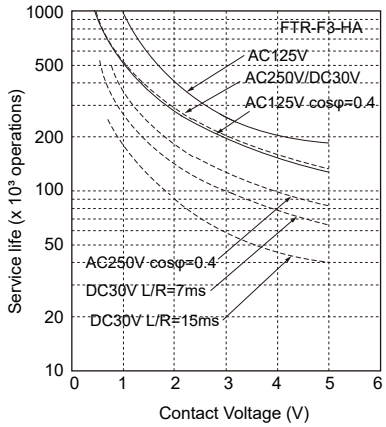
Maximum switching power



Life curve - 3A type

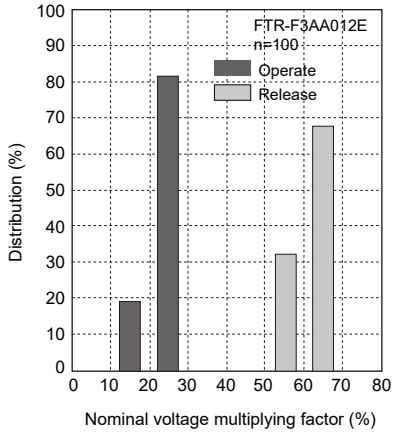


Life curve - 5A type

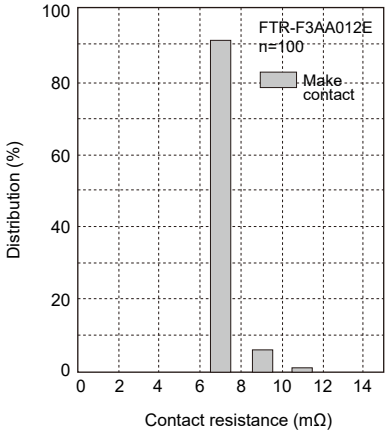


■ REFERENCE DATA

Distribution of operate/release voltage



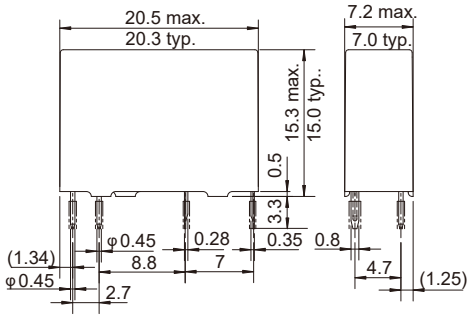
Distribution of contact resistance



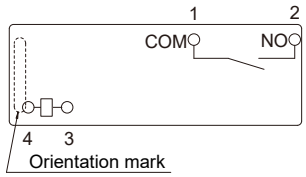
■ DIMENSIONS

Standard type

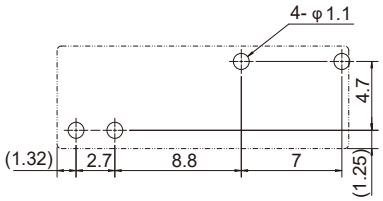
- **Dimensions**



- **Schematics**
(BOTTOM VIEW)



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



Unit: mm

* Dimensions of the terminals do not include thickness of pre-solder.
* Tolerance of PC board mounting hole layout: ±0.1 unless otherwise specified.

CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited.
- Do not use relays in the atmosphere with sulfide gas, chloride gas or nitric oxide. Contact resistance may increase.
- Do not use silicon or silicon-containing product or materials near relays. It may cause contact failure.

GENERAL INFORMATION

1. ROHS Compliance

- All relays produced by FCL Components are compliant with RoHS directive 2011/65/EU, including commission delegated directive 2015/863.

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:	Eip 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 340-360˚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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