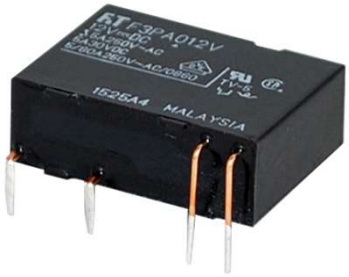
POWER RELAY

1 POLE – 5A, TV-3 / TV-5 Type Relay

FTR-F3 Series

■ FEATURES



- High inrush 51A/78A, 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 contacts
  (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

■ 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, slim type : 1 form A, flat type
(c)	Coil type (power)	A	: 280mW
(d)	Coil rated voltage	012	: 3….24VDC See coil rating table
(e)	Contact material	V T	: $AgSnO_2$, TV-5 type : $AgSnO_2$, TV-3 type

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

■ SPECIFICATIONS

Item			FTR-F3(A;P)A(...)V	FTR-F3(A;P)A(...)T	Remarks/conditions
Contact data	Configuration		1 form A (SPST)		
	Construction		Single		
	Material		T and V: $AgSnO_2$		
	Resistance		Max. 100mΩ		Initial at 1A, 6VDC
	Contact rating		5A, 250VAC, 30VDC		Resistive
	Max. inrush current		78A, 250VAC (TV-5)	51A, 250VAC (TV-3)	
	Max. carrying current		5A		
	Max. switching voltage		277VAC, 30VDC		
	Max. switching power		1,250VA, 150W		
	Min. switching load*1		10 mA, 5VDC		
Coil data	Rated power (20℃)		280mW		
	Operating temperature range		-40ºC ~ +85ºC (at rated voltage)		No frost
Timing data	Operate		Max. 10ms		without bounce, no diode
	Release		Max. 10ms		without bounce, no diode
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)		At raged load
	Electrical (lamp)		Min. 25 x 10^3 ops. (UL TV-5)	Min. 25 x 10^3 ops. (UL TV-3)	
Insula-tion	Insulation resistance		Min. 1000MΩ at 500VDC		
	Dielectric strength	Open contacts	750VAC (50/60Hz), 1 minute		
		Coil to contacts	4,000VAC (50/60Hz), 1 minute		
	Surge strength	Coil to contacts	10,000V / 1.2 x 50μs standard wave		
	Clearance / Creepage		6mm / 6mm		
	Insulation (IEC/EN61810-1)	Voltage	250V		
		Pollution	2		
		Material group	III		
Others	Vibration resistance	Misoperation ≧1μs	10Hz ~ 55Hz ~ 10Hz single amplitude 0.75mm		Direction X, Y, Z, contact ON/OFF total 6 cycles
		Endurance	10Hz ~ 55Hz ~ 10Hz single amplitude 0.75mm		Direction X, Y, Z, contact OFF total 6 hours
	Shock resistance	Misoperation ≧1μs	Min. 100m/s^2 (11 ± 1ms)		Direction X, Y, Z, contact ON/OFF total 36 times
		Endurance	Min. 1,000m/s^2 (6 ± 1ms)		Direction X, Y, Z, contact OFF total 18 times
	Dimensions / weight		Slim type: 7.0 x 20.3 x 15.0 mm Flat type: 15.0 x 20.3 x 7.0 mm / approx. 6g		
	Sealing		Plastic sealed RTIII		

*1: 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.

■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance ±10% (Ω)	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Rated Power (mW)
003	3	32.1	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: All values in the table are valid at 20℃ and zero contact current, unless otherwise specified.
*: Specified operated values are valid for pulse wave voltage.
Note: Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

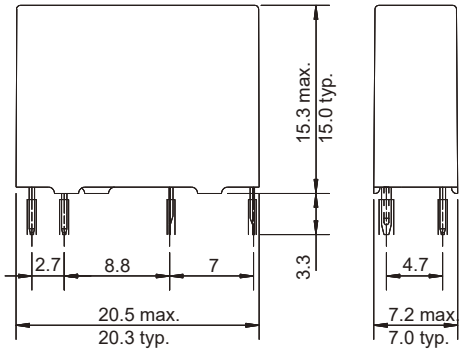
■ SAFETY STANDARDS

Type	Compliance	Contact Rating
UL	UL508 File No. E63614	Flammability: UL94-V0 (Plastics)
CSA	C22.2 No. 14 File No. LR40304	FTR-F3PA(...)V, FTR-F3AA(...)V 3A, 250VAC / 30VDC resistive 5A, 250VAC / 30VDC resistive TV-5, 120VAC FTR-F3PA(...)T, FTR-F3AA(...)T 3A, 250VAC/30VDC resistive 5A, 250VAC/30VDC resistive TV-3, 120VAC
VDE	IEC/EN61810-1 EN60065 clause 14.6.1	FTR-F3PA(...)V, FTR-F3AA(...)V 3A, 250 VAC, cosφ =1 5A, 250 VAC, cosφ =1 3A, 30VDC (L/R=0ms) 5A, 30VDC (L/R=0ms) FTR-F3PA(...)T, FTR-F3AA(...)T 3A, 250 VAC, cosφ =1 5A, 250 VAC, cosφ =1 3A, 30VDC (L/R=0ms) 5A, 30VDC (L/R=0ms)
CQC	GB15092.1 / GB/T21711.1 File No. 10002049449, 17002164382	5A 250VAC / 30VDC

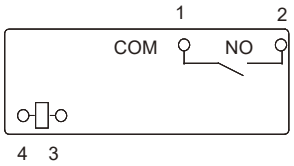
■ DIMENSIONS

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

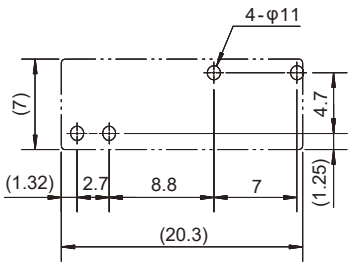
Dimensions



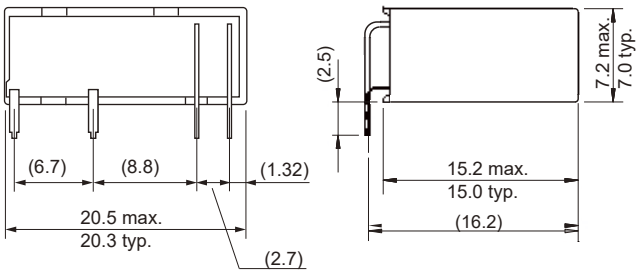
Schematics
(BOTTOM VIEW)



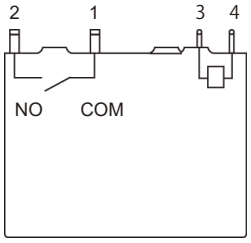
PC board mounting hole layout
(BOTTOM VIEW)



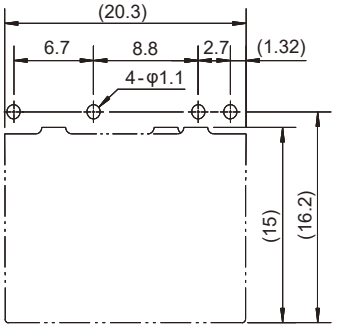
Right angle type - FTR-F3PA(...)(V,T)



Schematics
(BOTTOM VIEW)



PC board mounting hole layout
(BOTTOM VIEW)



Dimensions of the terminals do not include thickness of pre-solder.

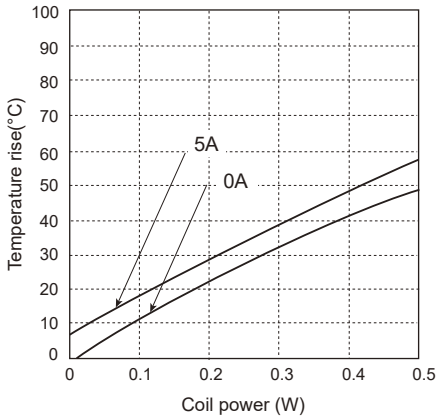
Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

Unit: mm
( ): Reference

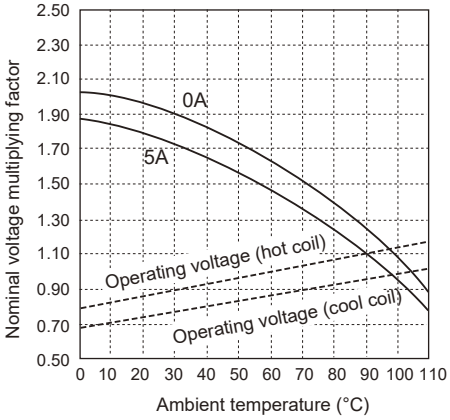
■ CHARACTERISTIC DATA

(Characteristic data is not guaranteed value but measured values of samples from production line)

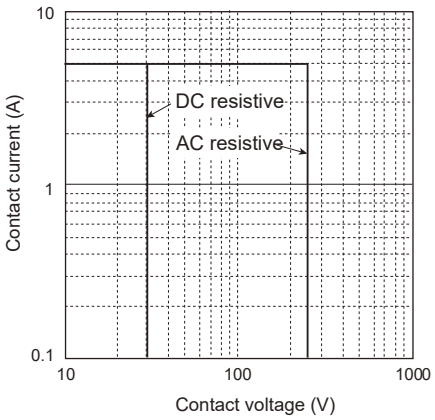
Coil temperature rise



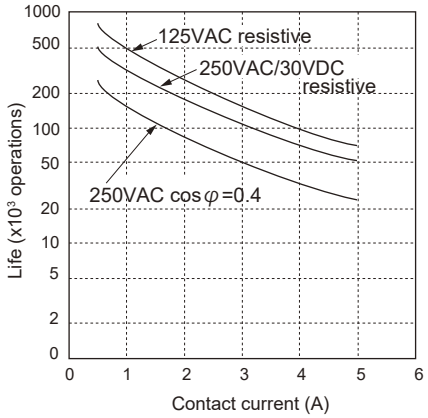
Operating range



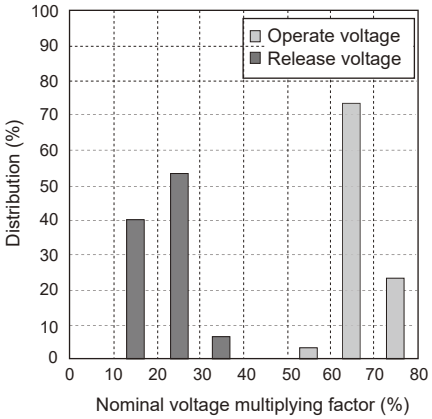
Maximum switching power



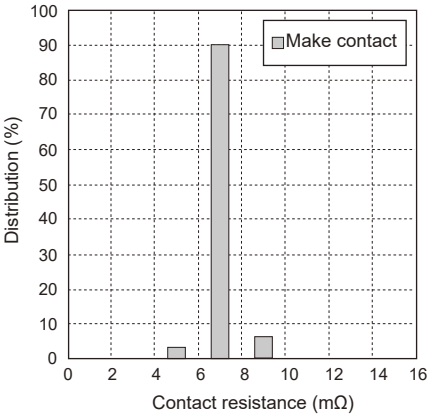
Life curve



Distribution of operate/release voltage (pulse)



Distribution of contact resistance (at 1A 6VDC)



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:	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:	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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