

POWER RELAY

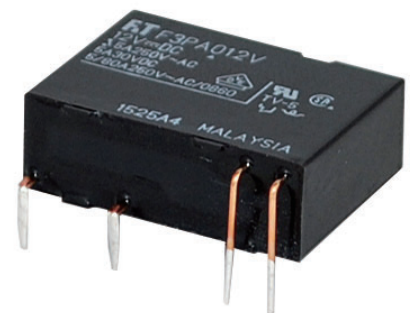
1 POLE - 5A, TV-3 / TV-5 TYPE

FTR-F3 Series

RoHS Compliant

■ 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
 - Dielectric strength: 4,000V
 - Surge strength: 10,000V
- Cadmium free contact for eco-program
- Safety standards: UL, CSA, VDE, CQC
- Plastic sealed relay, RTIII
- RoHS compliant



■ APPLICATIONS

LCD TVs and other ome appliances that require smaller power supplies

■ PART NUMBERS

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

(a)	Relay type	FTR-F3 series
(b)	Contact configuration	A : 1a (1 Form A), slim type P : 1a (1 Form A), flat type
(c)	Coil type (power)	A : 280mW
(d)	Coil rated voltage	012 : 3....24VDC Please refer to coil rating table
(e)	Contact material	V : AgSnO ₂ , TV-5 type T : 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		Specifications		Remarks/Conditions
		FTR-F3(A,P)A(...)V	FTR-F3(A,P)A(...)T	
Contact Data	Configuration	1a (1 Form A, SPST)		
	Construction	Single		
	Material	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}	10mA, 5VDC		
Coil	Rated power (20°C)	280mW		
	Operating temperature range	-40°C to +85°C (at rated voltage)		No frost
Time	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 rated load
	Electrical (lamp)	Min. 25 x 10 ³ ops. (UL TV-5)	Min. 25 x 10 ³ ops. (UL TV-3)	
Insulation	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		6mm	
	Creepage		6mm	
	EN61810-1	Voltage	250V	
		Pollution	2	
		Material group	III	
Others	Vibration resistance	Misoperation ≥1μs	10 to 55 to 10Hz single amplitude 0.75mm	Coil ON/OFF, 3 axis, total 6 cycles
		Endurance	10 to 55 to 10Hz single amplitude 0.75mm	Coil OFF, 3 axis, total 6 hours
	Shock resistance	Misoperation ≥1μs	Min. 100m/s ² (11±1ms)	Coil ON/OFF, 3 axis, total 36 operations
		Endurance	Min. 1,000m/s ² (6 ±1ms)	Coil OFF, 3 axis, total 18 operations
	Dimensions / Weight		Slim type: 7.0 x 20.3 x 15.0 mm / approx. 6g 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 ^{*1} (VDC)	Must Release Voltage ^{*1} (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°C and zero contact current, unless otherwise specified.

*1: 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

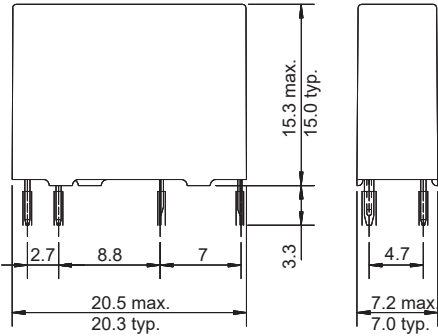
Certified Body/ Type	Certification No./Certified Part Number/ Applicable Standard	Contact Rating	
		TV-5	TV-3
UL	Flammability: UL 94-V-0 (plastics)		
	Certification No. E63614 Part number: FTR-F3(A,P)A()V (TV-5) FTR-F3(A,P)A()T (TV-3) Standard: UL60947-1, UL60947-4-1	3A, 250VAC/30VDC (resistive) 85°C (CSA 40°C) 5A, 250VAC/30VDC (resistive) 85°C (CSA 40°C)	3A, 250VAC/30VDC (resistive) 85°C (CSA 40°C) 5A, 250VAC/30VDC (resistive) 85°C (CSA 40°C)
CSA	Certification No. LR40304 Part number: FTR-F3(A,P)A()V (TV-5) FTR-F3(A,P)A()T (TV-3) Standard: C22.2 No.14	TV-5, 120VAC 85°C (CSA 40°C)	TV-3, 120VAC 85°C (CSA 40°C)
VDE	Certification No. 40015024 Part number: FTR-F3(A,P)A()V (TV-5) FTR-F3(A,P)A()T (TV-3) Standard: IEC/EN61810-1	3A, 250VAC (cosφ=1) 85°C 5A, 250VAC (cosφ=1) 85°C 3A, 30VDC (L/R=0ms) 85°C 5A, 30VDC (L/R=0ms) 85°C	
	EN60065 clause 14.6.1	5A (Peak inrush 80A) 250VAC 85°C	3A (Peak inrush 51A) 250VAC 85°C
CQC	Certification No. 10002049449 (Malaysia factory) Part number: FTR-F3(A,P)A()V (TV-5) FTR-F3(A,P)A()T (TV-3) Standard: GB/T21711.1, GB4943.1; IEC61810-1	5A, 250VAC/30VDC 85°C	

The part numbers on the safety standards' certifications and the ordering part numbers may differ. Coil code is in ().

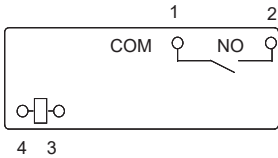
■ DIMENSIONS

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

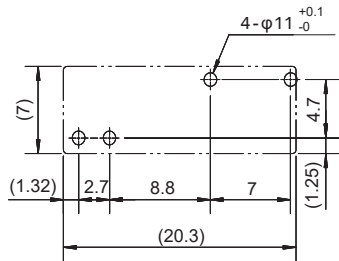
Dimensions



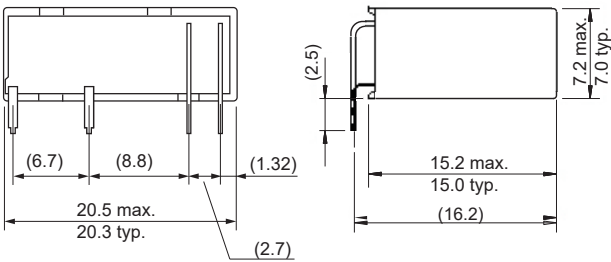
Schematics
(BOTTOM VIEW)



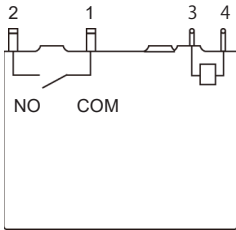
PC board mounting hole layout
(BOTTOM VIEW)



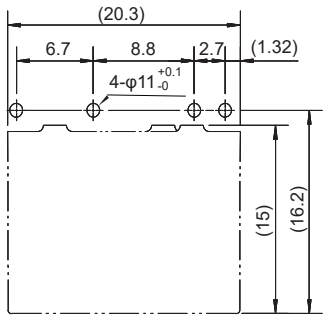
Right angle type - FTR-F3PA(...)(V,T)



Schematics
(BOTTOM VIEW)



PC board mounting hole layout
(BOTTOM VIEW)

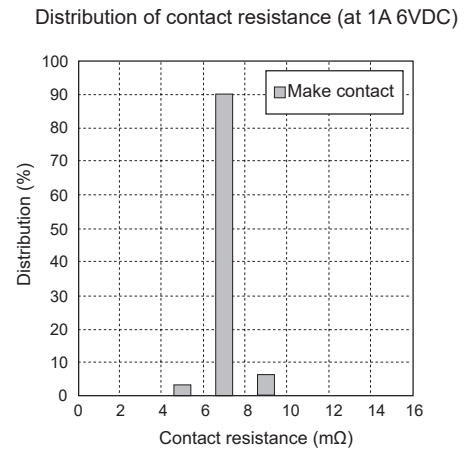
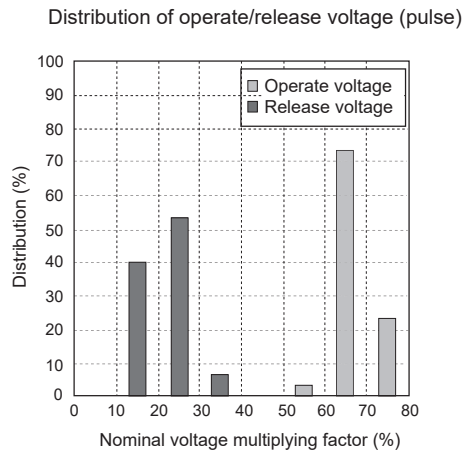
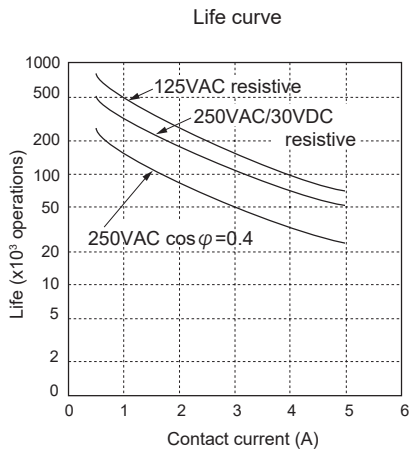
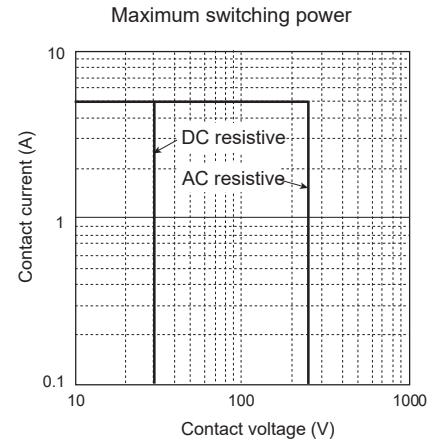
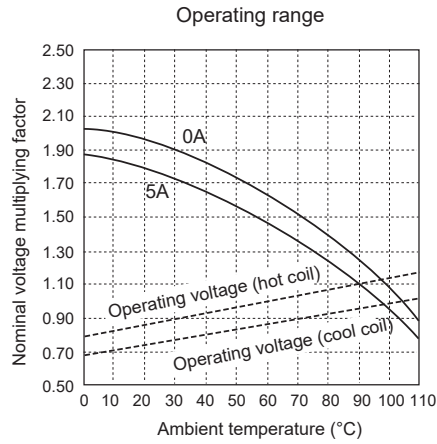
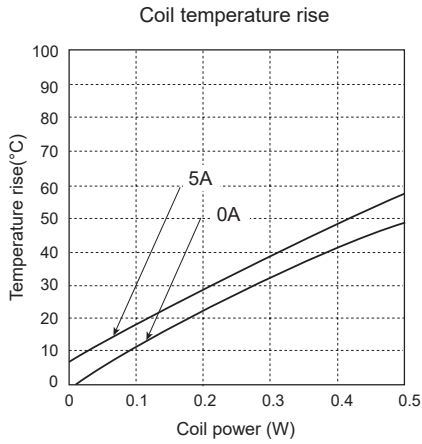


Dimensions of the terminals do not include thickness of pre-soldering.
Tolerance of PC board mounting hole layout : ± 0.1 unless otherwise specified.

Unit: mm
(): Reference

CHARACTERISTIC DATA

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



PART NUMBER LIST

Part Number	Figure	Contact Configuration	Contact Rating	Rated Power	Contact Material	TV Rating
FTR-F3AA()V	Slim	1a (1 Form A)	5A, 250VAC/30VDC	Approx. 280mW	AgSnO ₂	UL TV-5
FTR-F3AA()T						UL TV-3
FTR-F3PA()V	Flat	1a (1 Form A)	5A, 250VAC/30VDC	Approx. 280mW	AgSnO ₂	UL TV-5
FTR-F3PA()T						UL TV-3

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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