

POWER RELAY

1 POLE - 5A Change Over Relay

FTR-F3 Series

RoHS Compliant



■ FEATURES

- High density mounting
Height: 15mm
Mounting space: 164mm²
- High insulation:
Insulation distance: 7mm 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

Control of industrial equipment, equipment for home appliances

■ PART NUMBERS

[Example] FTR-F3 C A 012 E
(a) (b) (c) (d) (e)

(a)	Relay type	FTR-F3 series
(b)	Contact configuration	C : 1c (1 Form C)
(c)	Coil type (power)	A : 360mW
(d)	Coil rated voltage	12 : 5....24VDC Please refer to coil rating table
(e)	Contact material	E : AgNi

Actual marking does not carry the type name: "FTR"

E.g.: Ordering code: FTR-F3CA012E Actual marking: F3CA012E

■ SPECIFICATIONS

Item			Specifications	Remarks/Conditions
Contact	Configuration		1c (1 Form C)	
Data	Construction		Single	
	Material		AgNi	
	Resistance		Max. 100mΩ	Initial at 1A, 6VDC
	Contact rating		5A, 250VAC, 30VDC	Resistive
	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)		360mW	
	Operating temperature range		-40°C to +70°C (at rated voltage)	No frost
Time	Operate		Max. 10ms	Without bounce
	Release		Max. 10ms	Without bounce
Life	Mechanical		Min. 2 x 10 ⁶ operations	
	Electrical (resistive)		Min. 100 x 10 ³ operations (3A, 250VAC/30VDC) Min. 50 x 10 ³ operations (5A, 250VAC/30VDC)	
Insulation	Insulation resistance		Min. 1,000MΩ	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		7mm	
	Creepage		7mm	
	EN61810-1	Voltage	250V	
		Pollution	2	
		Material group	III	
Others	Vibration resistance	Misoperation	10Hz to 55Hz to 10Hz single amplitude 0.75mm	Coil ON/OFF, 3 axis, total 6 cycles
		Endurance	10Hz to 55Hz to 10Hz single amplitude 0.75mm	Coil OFF, 3 axis, total 6 hours
	Shock resistance	Misoperation	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		7.0 x 23.4 x 15.0 mm / approx. 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

■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance ±10% (Ω)	Must Operate Voltage** (VDC)	Must Release Voltage** (VDC)	Nominal Power (mW)
005	5	69	3.75	0.5	360
006	6	100	4.5	0.6	
009	9	225	6.75	0.9	
012	12	400	9	1.2	
018	18	900	13.6	1.8	
024	24	1,600	18	2.4	

Note: All values in the table are valid at 20°C 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

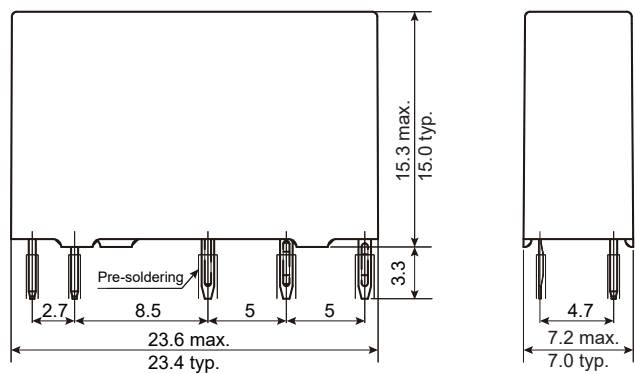
Type	Compliance	Contact Rating
UL	Flammability: UL 94-V-0 (plastics)	5A, 250VAC / 30VDC (resistive) 3A, 250VAC / 30VDC (resistive)
	UL 60947-1 / UL 60947-4-1 File No. E63614	
CSA	C22.2 No. 14 File No. LR 40304	
VDE	IEC/EN61810-1 File No. 40015024	5A, 250VAC, cosφ=1 5A, 30VDC, L/R=0ms 3A, 250VAC, cosφ=1 3A, 30VDC L/R=0ms
CQC	GB/T21711.1 File No. 04001010925	5A, 250VAC / 30VDC

■ PART NUMBER LIST

Part Number	Contact Configuration	Contact Rating	Rated Coil Power	Contact Material
FTR-F3CA()E	1c (1 Form C)	5A 250VAC / 30VDC	Approx. 360mW	AgNi

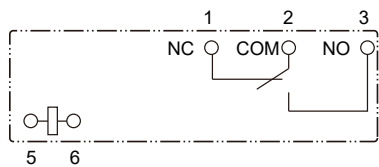
■ DIMENSIONS

• Dimensions

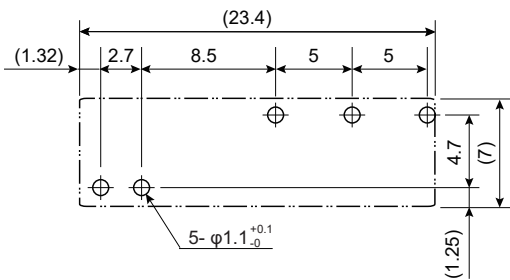


* Dimensions of the terminals do not include thickness of pre-soldering.

• Schematics
(BOTTOM VIEW)



• PC Board Mounting Hole Layout
(BOTTOM VIEW)



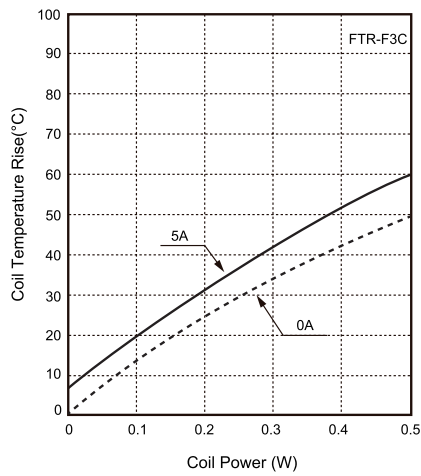
* Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

(): Reference value
Unit: mm

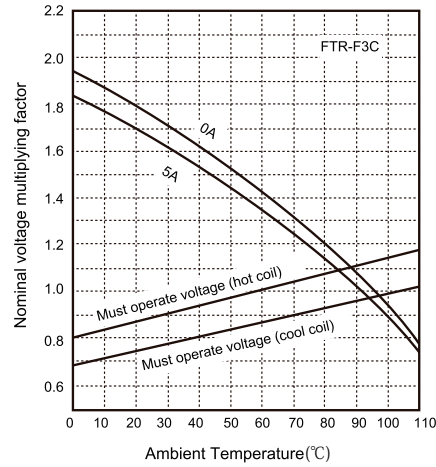
■ CHARACTERISTIC DATA

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

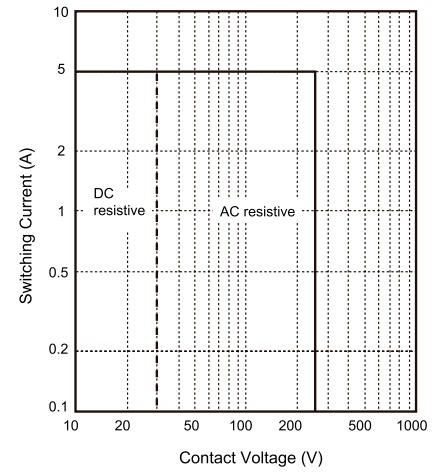
Coil Temperature Rise



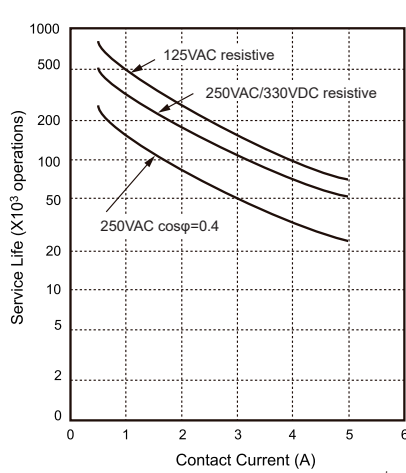
Operating Range



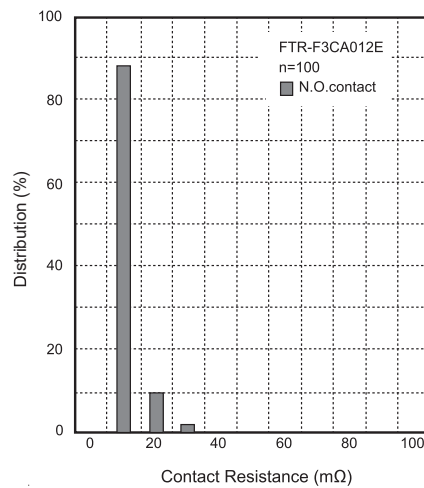
Maximum Switching Power



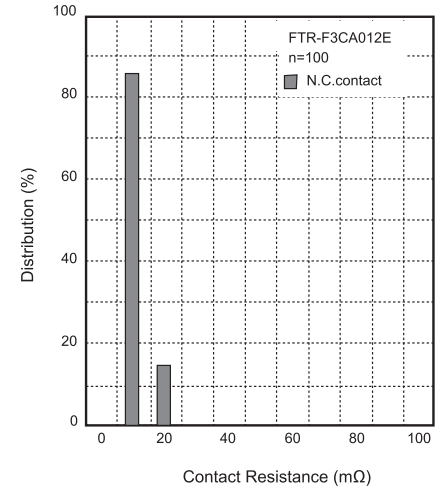
Life Curve



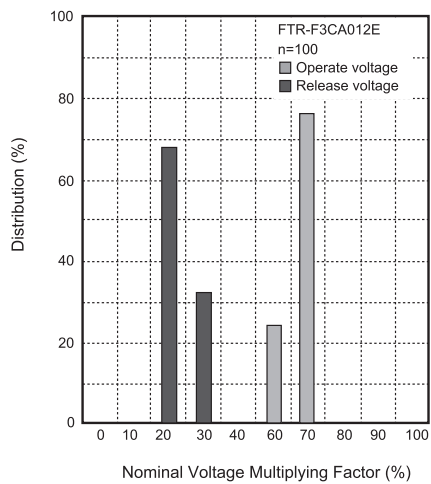
Distribution of Contact Resistance (N.O.)



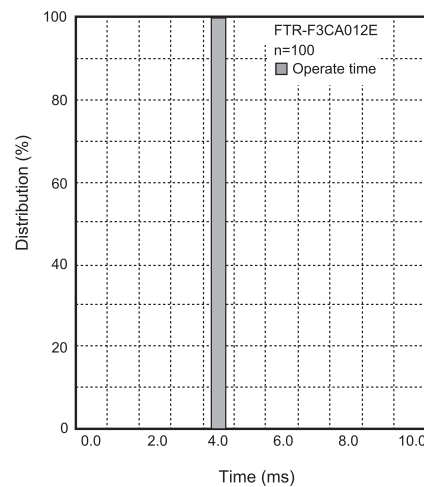
Distribution of Contact Resistance (N.C.)



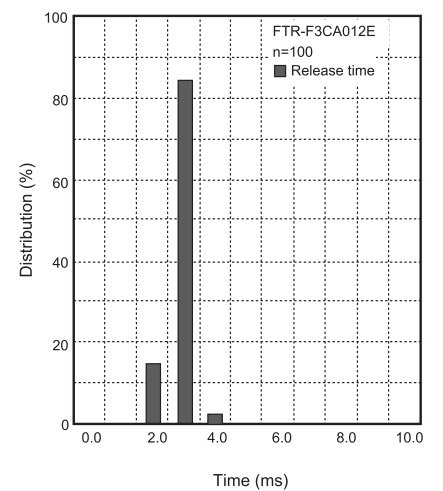
Distribution of Operation & Release Voltage



Distribution of Operation Time



Distribution of Release Time



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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