

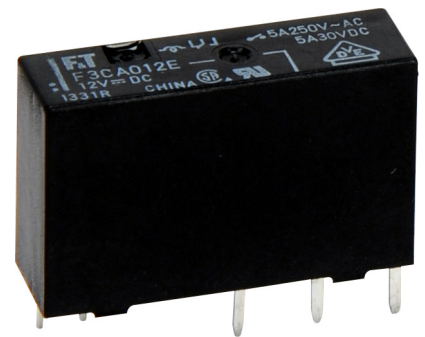
# POWER RELAY

## 1 POLE - 5A Change Over Relay

### FTR-F3 Series

#### ■ FEATURES

- High density mounting  
Height: 15mm  
Mounting space: 164mm<sup>2</sup>
- High insulation  
Insulation distance: 7mm 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
- Plastic sealed relay, RTIII
- RoHS compliant  
Please see page 6 for more information



#### ■ Part Numbers

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

(a)	Relay type	FTR-F3 : FTR-F3 series
(b)	Contact configuration	C : 1 form C
(c)	Coil type (power)	A : 360mW
(d)	Coil rated voltage	012 : 5..... 24VDC Coil rating table at page 3
(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			FTR-F3	Remarks / conditions
Contact data	Configuration		1 form C	
	Construction		Single	
	Material		AgNi	
	Resistance		Max. 100mOhm	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		10 mA, 5VDC	
Coil	Rated power (20°C)		360mW	
	Operating temperature range		-40°C ~ +70°C (at rated voltage)	No frost
Timing data	Operate		Max. 10ms	without bounce
	Release		Max. 10ms	without bounce
Life	Mechanical		Min. 2 x 10 <sup>6</sup> operations	
	Electrical (resistive)		Min. 100 x 10 <sup>3</sup> operations (3A, 250VAC/30VDC) Min. 50 x 10 <sup>3</sup> operations (5A, 250VAC/30VDC)	At rated load
Insulation	Insulation resistance		Min. 1000MΩ at 500VDC	
	Dielectric strength	Open contacts	750VAC (50/60Hz), 1 minute	
		Coil contact	4000VAC (50/60Hz), 1 minute	
	Surge strength	Coil to contacts	10,000V / 1.2 x 50μs standard wave	
	Clearance		7mm	
	Creepage		7mm	
	EN61810-1, VDE0435	Voltage		250V
Pollution		2		
Material group		III		
Other	Vibration resistance	Misoperation	10Hz ~ 55Hz ~ 10Hz single amplitude 0.75mm	
		Endurance	10Hz ~ 55Hz ~ 10Hz single amplitude 0.75mm	
	Shock resistance	Misoperation ≥1us	Min. 100m/s <sup>2</sup> (11 ± 1ms)	
		Endurance	Min. 1,000m/s <sup>2</sup> (6 ± 1ms)	
	Dimensions / weight		7.0 x 23.4 x 15.0 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% ( $\Omega$ )	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Rated 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	13.5	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.

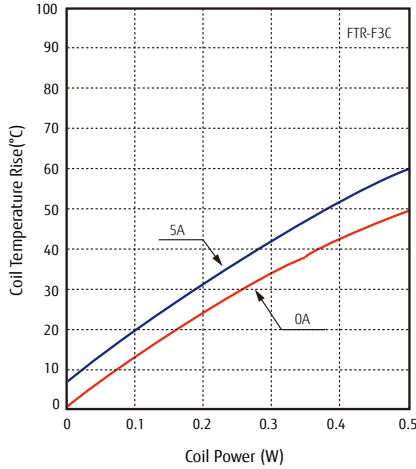
## ■ Safety Standards

Type	Compliance	Contact rating
UL	UL 508 File No. E63614	Flammability: UL 94-V-0 (plastics)
		5A, 30 VDC / 250VAC (resistive) 3A, 30 VDC / 250 VAC (resistive)
CSA	C22.2 No. 14 File No. LR 40304	
VDE	IEC/EN61810-1 EN60065 clause 14.6.1	5A, 250 VAC, $\cos\phi=1$ 5A, 30 VDC L/R=0ms 3A, 250 VAC, $\cos\phi=1$ 3A, 30 VDC L/R=0ms
CQC	GB15092.1 / GB/T21811.1 17002164382, 04001010925	5A 250VAC / 30VDC

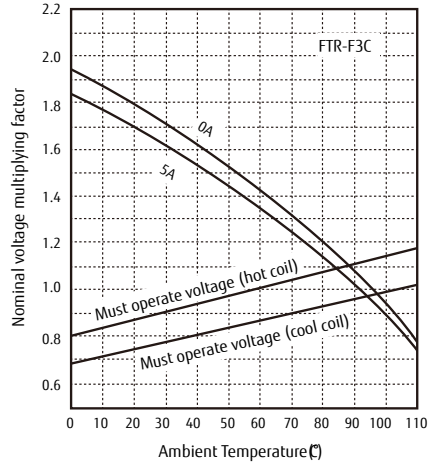
## ■ Characteristic Data (Reference)

\* Characteristic data is not guaranteed value but measured values of samples from production line.

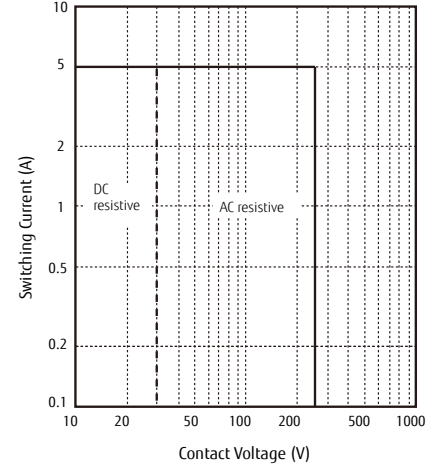
Coil Temperature Rise



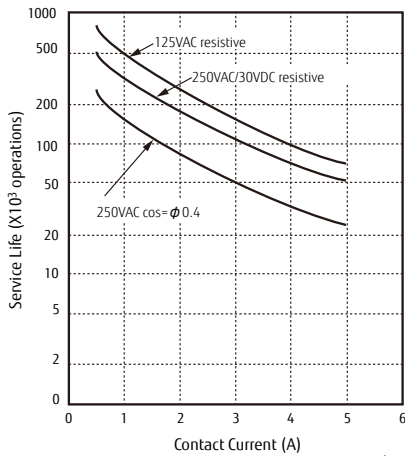
Operating Range



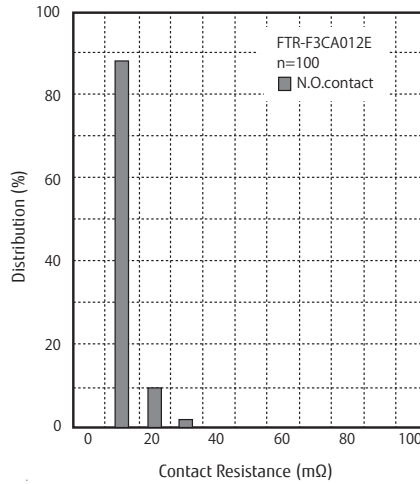
Maximum Switching Power



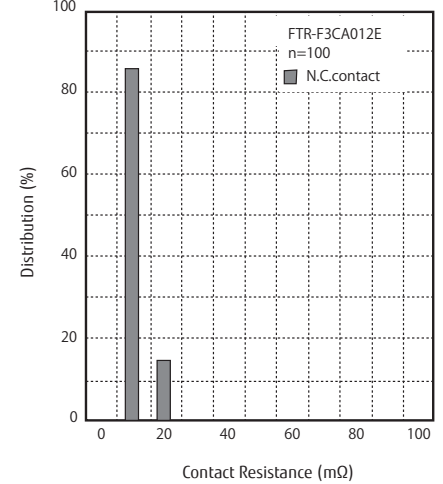
Life Curve



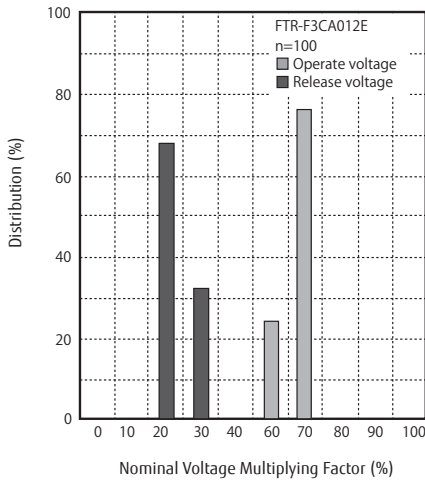
Distribution of Contact Resistance (N.O.)



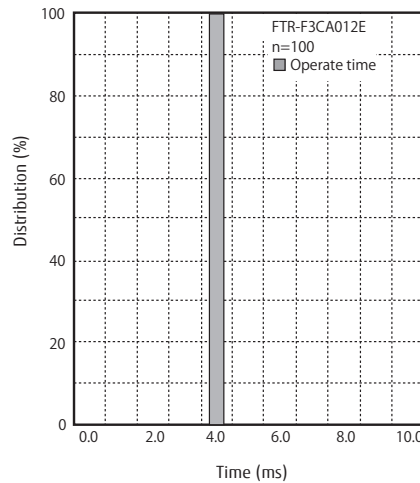
Distribution of Contact Resistance (N.C.)



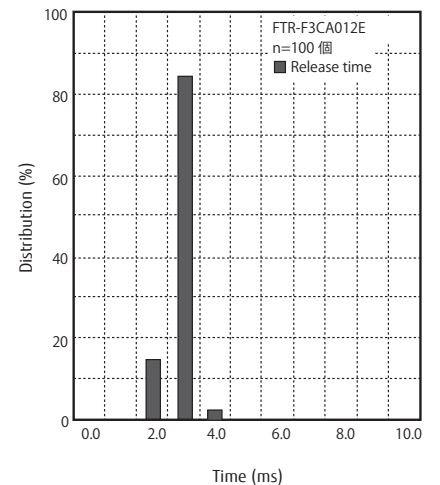
Distribution of Operation & Release Voltage



Distribution of Operation Time



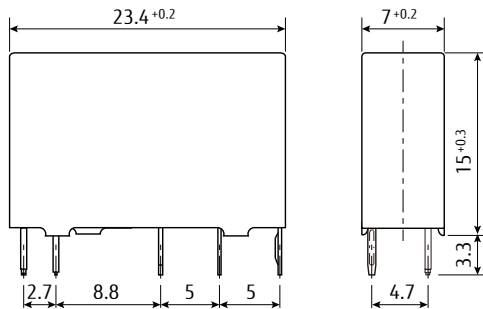
Distribution of Release Time



## ■ Dimensions

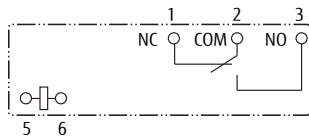
- Dimensions

Changeover contact type

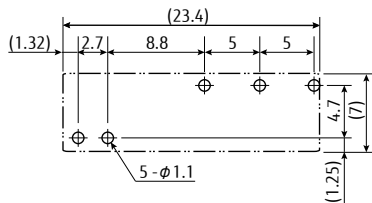


\* Dimensions of the terminals do not include thickness of pre-solder.

- Schematics  
(BOTTOM VIEW)



- PC Board Mounting Hole Layout  
(BOTTOM VIEW)



( ): Reference value  
Unit: mm

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

## GENERAL INFORMATION

### 1. ROHS Compliance

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Use of Cadmium in electrical contacts is exempted as per Annex III of the RoHS directive 2011/65/EU. Please consider expiry date of exemption. Relays with Cadmium containing contacts are not to be used for new designs.
- All relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: <http://www.fujitsu.com/downloads/MICRO/fcai/relays/lead-free-letter.pdf>
- Characteristic data is not guaranteed values, but measured values of samples from production line.

### 2. Recommended lead free solder condition

- 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 350-360°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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