

# POWER RELAY

## 1 POLE - 10A Slim Type Relay

### FTR-F3 Series

#### ■ FEATURES

- High density mounting  
Slim type with 7mm width and 142mm<sup>2</sup> mounting space
- High insulation  
Insulation distance (between coil and contacts):  
6mm min. Dielectric strength: 4KV Surge strength: 10KV
- Cadmium free contacts
- RoHS compliant  
Please see page 6 for more information



#### ■ Part Numbers

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

(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..... 24VDC Coil rating table at page 3
(e)	Contact material	E : AgNi
(f)	Enclosure	HC : Flux proof type HK : Plastic sealed type

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

E.g.: Ordering code: FTR-F3AA012E-HC

Actual marking: F3AA012E-HC

# FTR-F3 Series

## ■ Specifications

Item			FTR-F3AA( )E-HC	FTR-F3AA( )E-HK	Remarks / conditions	
Contact data	Configuration		1 form A (SPST-NO)			
	Construction		Single			
	Material		AgNi			
	Resistance		Max. 100mOhm		Initial at 1A, 6VDC	
	Contact rating		10A, 250VAC		Resistive	
	Max. carrying current		10A			
	Max. switching voltage		250VAC			
	Max. switching power		2,500VA			
	Min. switching load *1		100mA, 5VDC			
Coil	Rated power (20°C)		200mW			
	Operate power (20°C)		113mW			
	Operating temperature range		-40°C ~ +55°C (at rated voltage) -40°C ~ +85°C (refer to "Operating range" data)		No frost	
Timing data	Operate		Max. 10ms		without bounce, no diode	
	Release		Max. 10ms		without bounce, no diode	
Life	Mechanical		Min. 5 x 10 <sup>6</sup> operations			
	Electrical		Min. 50 x 10 <sup>3</sup> ops.	Min. 10 x 10 <sup>3</sup> ops.	At rated load Operating frequency 360 times/h	
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		6mm			
	Creepage		6mm			
	EN61810-1, VDE0435	Voltage		250V		
		Pollution		2		
Material group		III				
Other	Vibration resistance	Misoperation ≥1us	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 ≥1us	Min. 100m/s <sup>2</sup> (11 ± 1ms)		Direction X, Y, Z, contact ON/OFF total 36 times	
		Endurance	Min. 1,000m/s <sup>2</sup> (6 ± 1ms)		Direction X, Y, Z, contact OFF total 18 times	
	Dimensions / weight		7.0 x 20.3 x 15.0 mm / approx. 4g			
	Sealing		Flux proof	Plastic sealed		

\*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

\*2: Values of electrical characteristics are under 15 to 35 degC, 25 to 75%RH (JIS standard condition) unless otherwise specified.

\*3: Care shall be taken on the heat generated on PC board when maximum carrying current exceeds 10A. Please perform the confirmation test with actual conditions

# FTR-F3 Series

## ■ Coil Data

Coil code	Rated Coil Voltage (VDC)	Coil Resistance +/-10%(Ω)	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: 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	
		FTR-F3AA( )E-HC	FTR-F3AA( )E-HK
UL	UL 508 File No.E63614	Flammability: UL 94-V0 (plastics) 10A, 250VAC, Resistive, 10x10 <sup>3</sup> , 85°C Class B insulation system	
CSA	C22.2 No.14 File No.LR40304	10A, 250VAC (Resistive) 50x10 <sup>3</sup> , 85°C	10A, 250VAC (Resistive) 50x10 <sup>3</sup> , 85°C
VDE	IEC/EN61810-1	10A, 250VAC (cosφ=1), 50x10 <sup>3</sup> , 85°C 8A, 250VAC (cosφ=1), 50x10 <sup>3</sup> , 105°C	10A, 250VAC (cosφ=1), 10x10 <sup>3</sup> , 85°C 8A, 250VAC (cosφ=1), 50x10 <sup>3</sup> , 105°C
CQC	GB15092.1 / GB/T21711.1 File No. 10002049449	10A 250VAC	

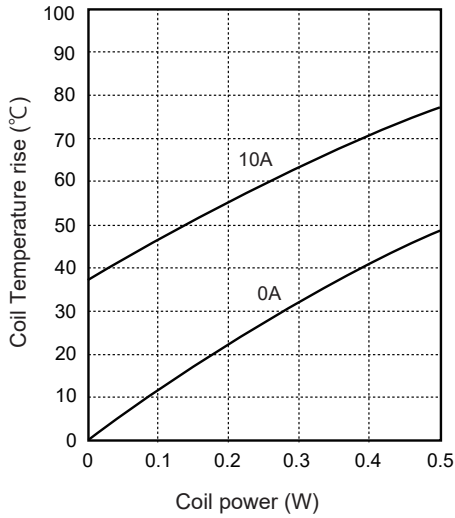


# FTR-F3 Series

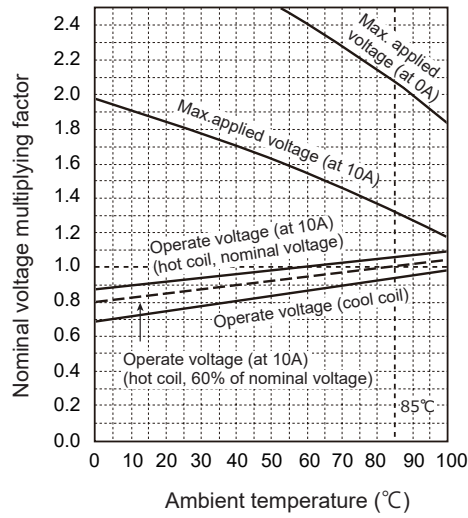
## ■ Characteristic Data (Reference)

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

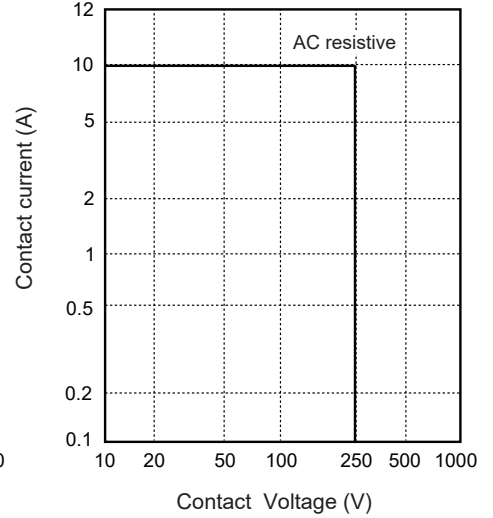
Coil Temperature rise



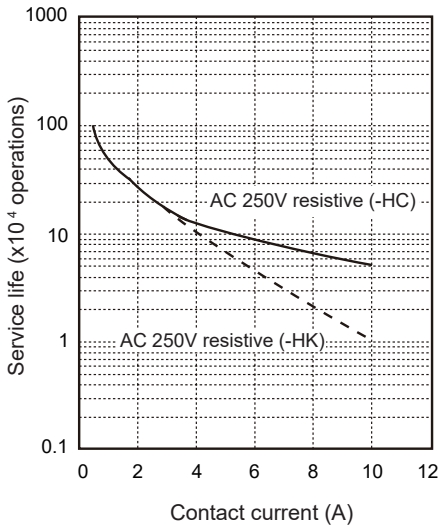
Operating range



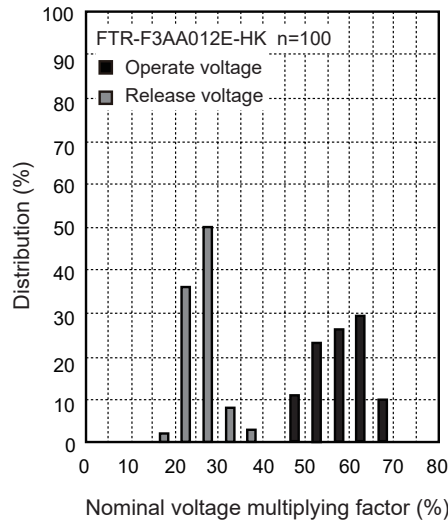
Maximum switching power



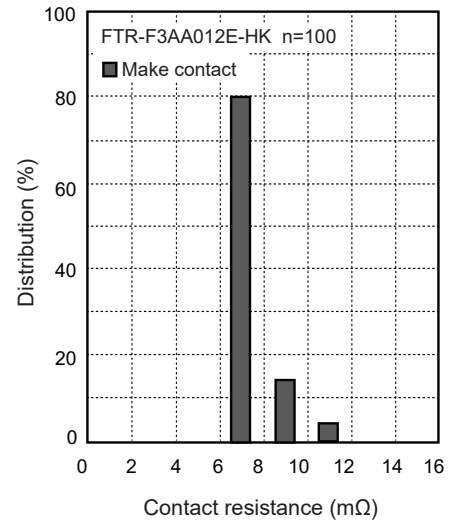
Life curve



Distribution of operate/release voltage



Distribution of contact resistance



# FTR-F3 Series

## 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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## Contact

### Japan

FCL COMPONENTS LIMITED  
Shinagawa Seaside Park Tower  
12-4, Higashi-shinagawa 4-chome,  
Tokyo 140 0002, Japan  
Tel: +81-3-3450-1682  
Email: fcl-contact@cs.fcl-components.com

### North and South America

FCL COMPONENTS AMERICA, INC.  
2055 Gateway Place Suite 480,  
San Jose, CA 95110 USA  
Tel: +1-408-745-4900  
Email: fcai.components@fcl-components.com

### Europe

FCL COMPONENTS EUROPE B.V.  
Diamantlaan 25  
2132 WV Hoofddorp, Netherlands  
Tel: +31-23-556-0910  
Email: info.fceu@cs.fcl-components.com

### Asia Pacific

FCL COMPONENTS ASIA PTE LTD.  
No. 20 Harbour Drive, #07-01B  
Singapore 117612  
Tel: +65-6375-8560  
Email: fcal@fcl-components.com

### China

FCL COMPONENTS (SHANGHAI) CO., LTD.  
Unit 1105, Central Park - Jing An,  
No.329 Heng Feng Road, Shanghai 200070,  
China  
Tel: +86-21-3253 0998  
Email: fcsh@fcl-components.com

**Web:** [www.fcl-components.com/en/](http://www.fcl-components.com/en/)

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