

POWER RELAY

1 POLE - 10A SLIM TYPE RELAY

FTR-F3 Series

RoHS Compliant

■ FEATURES

- High density mounting
- Slim type with 7mm width and 142mm² mounting space
- High insulation Insulation distance (between coil and contacts): 6mm min.
- Dielectric strength: 4,000VAC
- Surge strength: 10,000V
- Cadmium free contacts
- RoHS compliant



■ APPLICATIONS

Control of industrial equipment, equipment for home appliances

■ PART NUMBERS

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

(a)	Relay type	FTR-F3 series
(b)	Contact configuration	A : 1a (1 Form A, SPST-NO)
(c)	Coil type (power)	A : 200mW
(d)	Coil rated voltage	012 : 5....24VDC Please refer to coil rating table
(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

■ SPECIFICATIONS

Item		Specifications		Remarks/Conditions
		FTR-F3AA()E-HC	FTR-F3AA()E-HK	
Contact Data	Configuration	1a (1 Form A, SPST-NO)		
	Construction	Single		
	Material	AgNi		
	Resistance	Max. 100mΩ		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
Time	Operate	Max. 10ms (without bounce)		At rated load
	Release	Max. 10ms (without bounce)		At rated load
Life	Mechanical	Min. 5 x 10 ⁶ operations		
	Electrical (resistive)	Min. 50 x 10 ³ ops.	Min. 10 x 10 ³ ops.	At rated load Operating frequency 360 times/h
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		6mm	
	Creepage		6mm	
	EN61810-1	Voltage	250V	
		Pollution	3 2	
		Material group	III	
Others	Vibration resistance	Misoperation≥1μs	10Hz~55Hz~10Hz single amplitude 0.75mm	Coil ON/OFF, 3 axis, total 6 cycles
		Endurance	10Hz~55Hz~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		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.

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

❗ 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

■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance ±10% (Ω)	Must Operate Voltage ^{*1} (VDC)	Must Release Voltage ^{*1} (VDC)	Nominal 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	13.6	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.

*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	
		FTR-F3AA()E-HC	FTR-F3AA()E-HK
UL	Flammability: UL 94-V-0 (plastics)		
	Certification No.E63614 Part number: FTR-F3AA()E-(HC, HK) Standard: UL60947-1, UL60947-4-1	10A, 250VAC (resistive) 50x10 ³ ops. 85°C Class B insulation system	10A, 250VAC (resistive) 10x10 ³ ops. 85°C Class B insulation system
CSA	Certification No.LR40304 Part number: FTR-F3AA()E-(HC, HK) Standard: C22.2 No.14	10A, 250VAC (resistive) 50x10 ³ ops. 85°C	10A, 250VAC (resistive) 10x10 ³ ops. 85°C
VDE	Certification No.40015024 Part number: FTR-F3AA()E-(HC, HK) Standard: IEC/EN61810-1	10A, 250VAC (cosφ=1) 50x10 ³ ops. 85°C 8A, 250VAC (cosφ=1) 50x10 ³ ops. 105°C	10A, 250VAC (resistive) 10x10 ³ ops. 85°C 8A, 250VAC (cosφ=1) 50x10 ³ ops. 105°C
CQC	Certification No.10002049449 (Malaysia factory) Part number: FTR-F3AA()E-(HC, HK) Standard: GB/T21711.1, GB4943.1; IEC61810-1	10A, 250VAC 85°C	

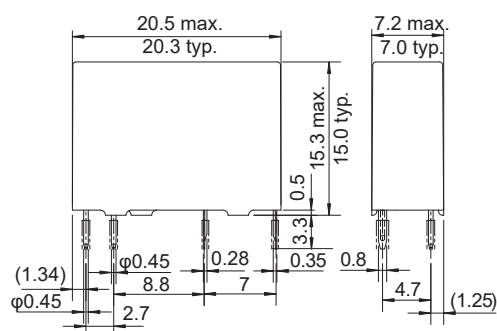
The part numbers on the safety standards' certifications and the ordering part numbers may differ. Coil coede is in ().

■ PART NUMBER LIST

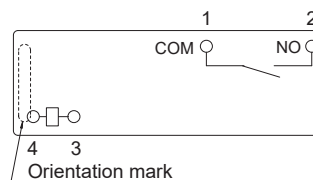
Part Number	Contact Configuration	Rated Coil Power	Contact Material	Contact rating	Enclosure
FTR-F3CA()E-HC	1a (1 Form A)	200mW	AgNi	10A, 250VAC	Flux proof
FTR-F3AA()E-HK					Plastic sealed

DIMENSIONS

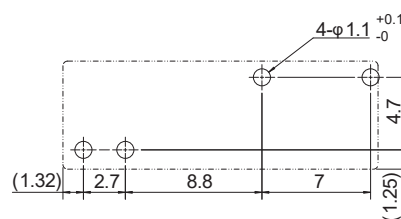
Dimensions



Schematics
(BOTTOM VIEW)



PC board mounting hole layout
(BOTTOM VIEW)



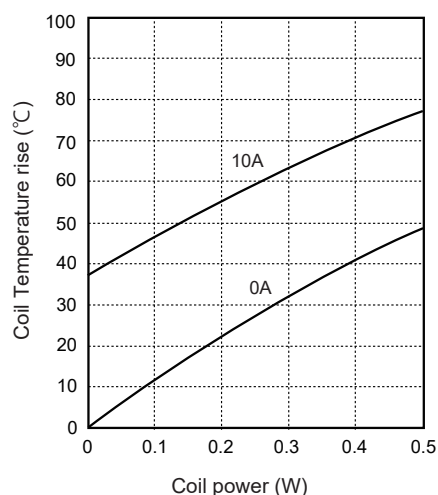
- Dimensions of the terminals do not include thickness of pre-soldering.
- Tolerance of PC board mounting hole layout : ± 0.1 unless otherwise specified.

Unit: mm
() : Reference

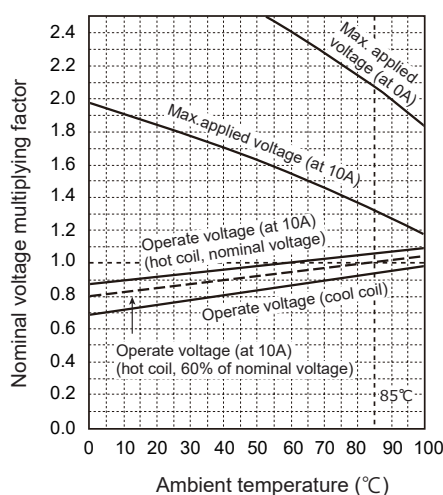
CHARACTERISTIC DATA

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

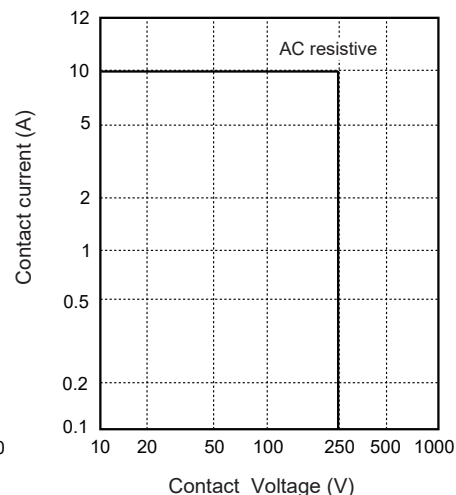
Coil Temperature rise



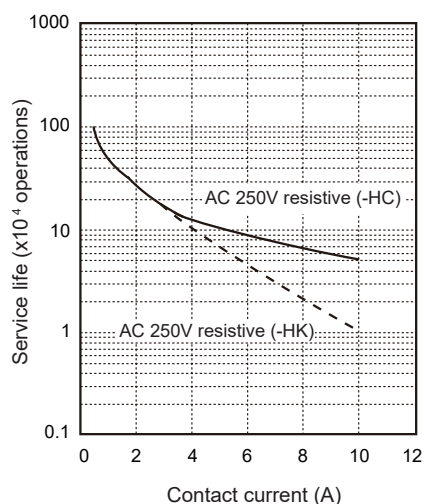
Operating range



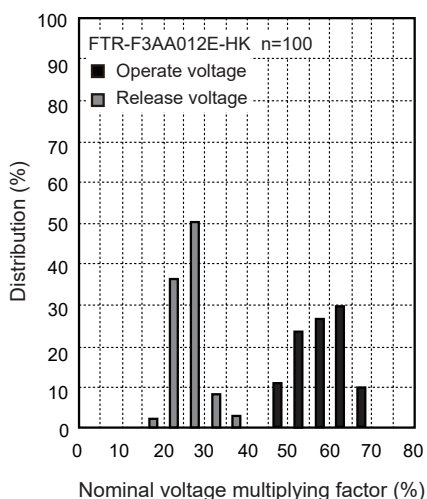
Maximum switching power



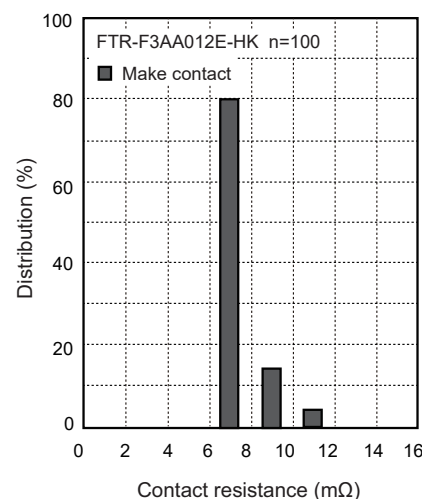
Life curve



Distribution of
operate/release voltage



Distribution of
contact resistance



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.

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: contact@fcl-components.usnents.com

Europe

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

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

Hong Kong

FCL COMPONENTS HONG KONG CO.,
LIMITED
Unit 2313, Seapower Tower, Concordia
Plaza, No.1 Science Museum Road,
TST, Kowloon, Hong Kong
Tel: +852-2881-8495
Email: fcal@fcl-components.com

Web: www.fcl-components.com/en/

© 2025 FCL Components Limited. All rights reserved. All trademarks or registered trademarks are the property of their respective owners.

FCL Components Products are intended for general use, including without limitation, in personal, household and office environments, in buildings and for ordinary use in the industry. FCL Components Products are not intended to be used in applications where extremely high safety is required ("High Safety Required Applications"), such as, but not limited to, applications in nuclear facilities, in aircraft automatic flight control, in air traffic control, in mass transit system control, in missile launch system, in weapon systems, in medical equipment for life support or any application involving a direct serious risk of physical injury or death.

Please do not use FCL Components Products without securing the sufficient safety and reliability required for the High Safety Required Applications.

In addition, FCL Components shall not be liable against the customer and/or any third party for any claims or damages arising in connection with the use of FCL Components Products in the High Safety Required Applications.

FCL Components warrants that its Products, if properly used and services, will conform to their specification and will be free from defects in material and workmanship for twelve months from delivery.

The implied warranties of merchantability and fitness for a particular purpose and all other warranties, representations and conditions, express or implied by statute, trade usage or otherwise, except as set forth in this warranty, are excluded and shall not apply to the Products delivered.

The contents, data and information in this datasheet are provided by FCL Components Limited as a service only to its user and only for general information purposes. The use of the contents, data and information provided in this datasheet is at the users' own risk.

FCL Components has assembled this datasheet with care and will endeavor to keep the contents, data and information correct, accurate, comprehensive, complete and up to date.

FCL Components Limited and affiliated companies do however not accept any responsibility or liability on their behalf, nor on behalf of its employees, for any loss or damage, direct, indirect or consequential, with respect to this datasheet, its contents, data, and information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof. Nor do FCL Components Limited and affiliated companies accept on their behalf, nor on behalf of its employees, any responsibility or liability with respect to these datasheets, its contents, data, information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof. Rev. January 9, 2025