

POWER RELAY

1 POLE - 20A HEAVY LOAD

FTR-K3 Series

RoHS Compliant

■ FEATURES

- SPST 20A and #250 tab terminal type is also available
- Low coil power (780mW)
- Glow wire compliant type available which satisfies GWT required for relay in IEC/EN 60335-1
- Cadmium free contacts
- SAFETY STANDARDS
UL, CSA, VDE, CQC approved
- Flux proof
- RoHS compliant

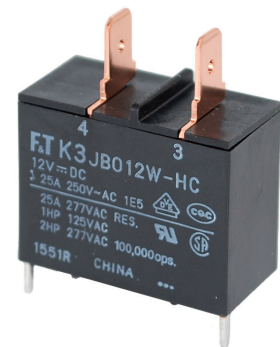
Standard type



High isolation type



High current type



■ APPLICATIONS

Air conditioners, water heaters, refrigerators, OA equipment etc.

■ PART NUMBERS

[Example] FTR-K3 A B 012 W - HC - GW
 (a) (b) (c) (d) (e) (f) (g)

(a)	Relay type	FTR-K3 series
(b)	Contact configuration	A : 1a (1 Form A, SPST-NO) (PCB terminal) J : 1a (1 Form A, SPST-NO) (Tab terminal)
(c)	Coil type	B : Standard type (780mW)
(d)	Coil rated voltage	12 : 5....48VDC Please refer to coil rating table
(e)	Contact material	W : Silver alloy
(f)	Special type	Nil : Standard type (20A) LS : High isolation type (20A) HC : High current type (25A)
(g)	Option	GW : Comply with GWEPT (IEC/EN 60695-2-11) Not applicable for (b) J, (f) LS,

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

E.g.: Ordering code: FTR-K3AB012W Actual marking: K3AB012W

■ SPECIFICATIONS

Item		Specifications			Remarks/Conditions
		FTR-K3	FTR-K3-LS	FTR-K3-HC	
Contact Data	Configuration	1a (1 Form A)			
	Construction	Single			
	Material	Silver alloy			
	Resistance	Max. 100mΩ			Initial at 1A, 6VDC
	Contact rating	20A, 250VAC	20A, 250VAC	25A, 250VAC	Resistive
	Max. carrying current	25A			
	Max. inrush current	200A (peak) / steady 20A 100VAC (inverter load)			
	Max. switching current ^{*1}	25A			
	Max. switching voltage	250VAC			
	Max. switching power	6,250VA			
	Min. switching load ^{*2}	100mA, 5VDC			
Coil	Rated power	780mW			At 20°C
	Operate power	380mW			At 20°C
	Operating temperature range	-40°C to +60°C			No frost
Time	Operate	Max. 20ms (without bounce)			At nominal voltage
	Release	Max. 10ms (no diode, without bounce)			At nominal voltage
Life	Mechanical	Min. 2 x 10 ⁶ operations			
	Electrical	Resistive load	Min. 100 x 10 ³ operations		
		Motor load	Min. 200 x 10 ³ operations (250VAC, inrush 80A cosφ=0.7, cut off 20A cosφ=0.9)	Min. 200 x 10 ³ operations (250VAC, inrush 80A cosφ=0.7, cut off 20A cosφ=0.9)	Min. 200 x 10 ³ operations (250VAC, inrush 80A cosφ=0.7, cut off 25A cosφ=0.9)
		Inverter load	Min. 30 x 10 ³ operations 100VAC, inrush 200A / cut off 20A		
Insulation	Insulation resistance (Initial)		Min. 1,000MΩ		At 500VDC
	Dielectric strength	Open contacts	1,000VAC (50/60Hz) , 1 minute		
		Coil to contacts	5,000VAC (50/60Hz) , 1 minute		
	Surge strength	Coil to contacts	8,500V / 1.2 x 50μs standard wave		
	Clearance / creepage		6.4mm / 9.5mm	8.0mm / 9.5mm	6.4mm / 9.5mm
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. 200m/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		15.7×30.1×23.3mm / Approximately 25g		
	Sealing		Flux proof, RTII		

* 1 Need to consider the heat from PCB when max. current is more than 10A

* 2 Minimum switching loads mentioned above are reference values. Please perform the test with actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels..

■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance $\pm 10\%$ (Ω)	Must Operate Voltage ^{*1} (VDC)	Must Release Voltage ^{*1} (VDC)	Nominal Power (mW)
005	5	32	3.5	0.5	780
006	6	46	4.2	0.6	
009	9	105	6.3	0.9	
012	12	185	8.4	1.2	
018	18	415	12.6	1.8	
024	24	740	16.8	2.4	
048	48	2,955	33.6	4.8	

Note: All values in the table are valid for 20°C and zero contact current.

* Specified operate values are valid for pulse wave voltage.

Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

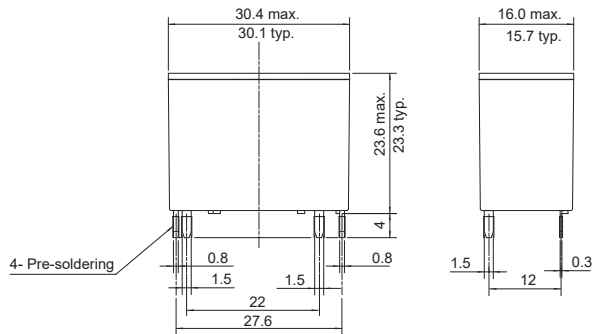
■ SAFETY STANDARDS

Type	Compliance	Contact Rating		
		FTR-K3	FTR-K3-LS	FTR-K3-HC
UL	UL 508 File No. E63614	20A, 277VAC (resistive at 60°C) 1hp, 125VAC (at 60°C) 2hp, 277VAC (100,000 ops. at 60°C)		25A, 277VAC (resistive at 60°C) 1hp, 125VAC (at 60°C) 2hp, 277VAC (100,000 ops.at 60°C)
CSA	C22.2 No. 14 File No. LR40304	20A, 277VAC (resistive) 1hp, 125VAC 2hp, 277VAC (100,000 ops.)	-	25A, 277VAC (resistive) 1hp, 125VAC 2hp, 277VAC (100,000 ops.)
VDE	IEC61810-1 EN60950-1 clause 2.9.2; 2.10.3; 2.10.5; 5.2 (only -LS)	20A, 250VAC (cos $\varphi=1$) 60°C		25A, 250VAC (cos $\varphi=1$) 60°C
CQC	GB15092-1 GB8898 GB/T21711.1 File No. 17002165723	20A, 250VAC	-	25A, 250VAC
TUV	IEC61810-1	-	20A, 250VAC (cos $\varphi=1$) 60°C	-

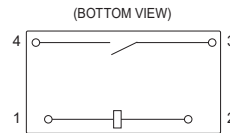
■ DIMENSIONS

FTR-K3AB type

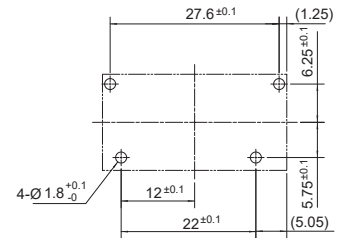
• Dimensions



• Schematics

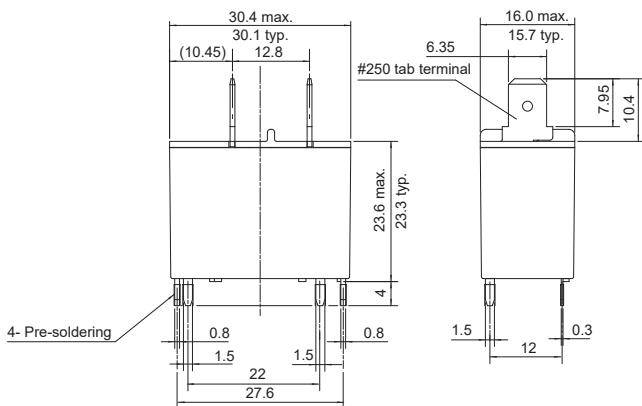


• PC board mounting hole layout (BOTTOM VIEW)

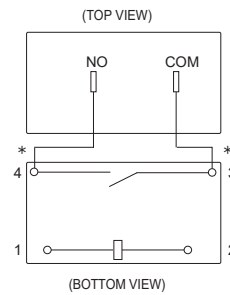


FTR-K3JB type

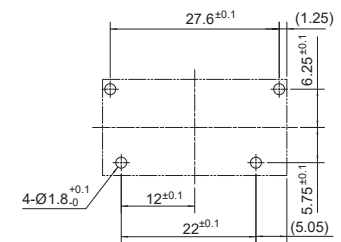
• Dimensions



• Schematics



• PC board mounting hole layout (BOTTOM VIEW)



*: Contact terminal and tab terminal are connected inside the relay

Notes:

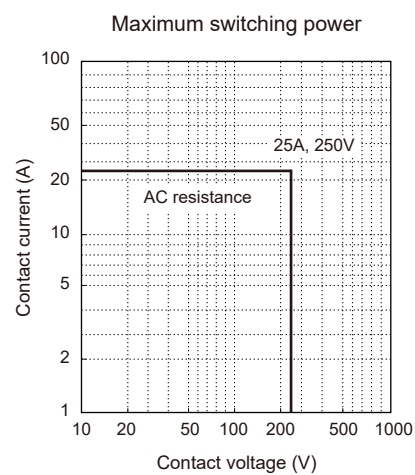
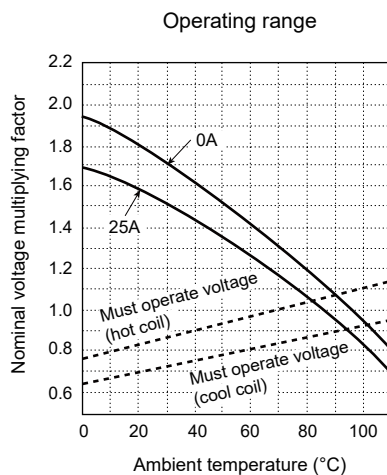
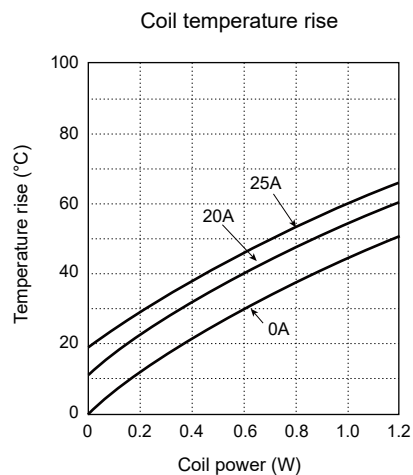
- Dimensions of the terminals do not include thickness of pre-soldering.
- Dimensions do not include tolerance.
- Tolerance of PC board mounting hole layout : ± 0.1 unless otherwise specified.

Unit: mm
(): Reference

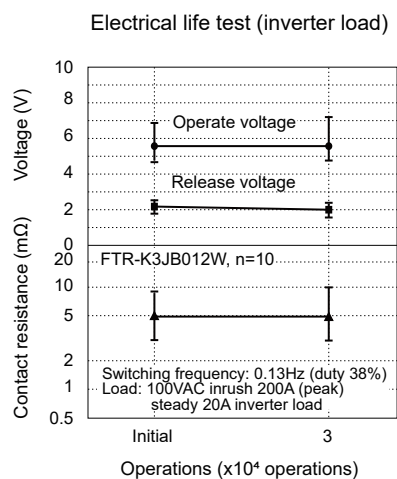
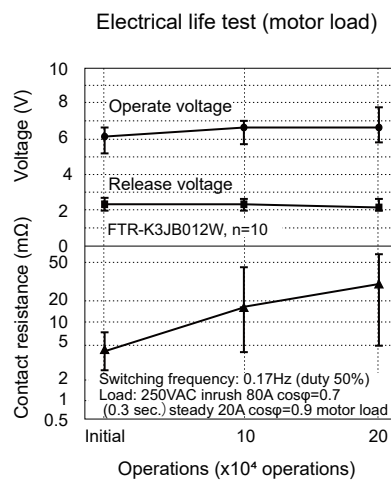
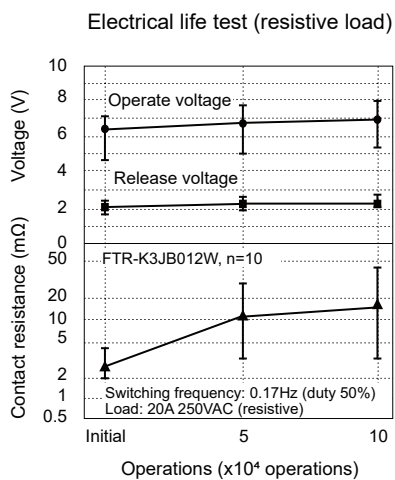
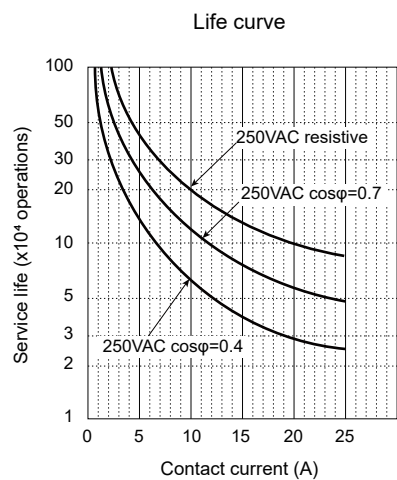
■ CHARACTERISTIC DATA

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

■ FTR-K3 / FTR-K3-LS / FTR-K3-HC



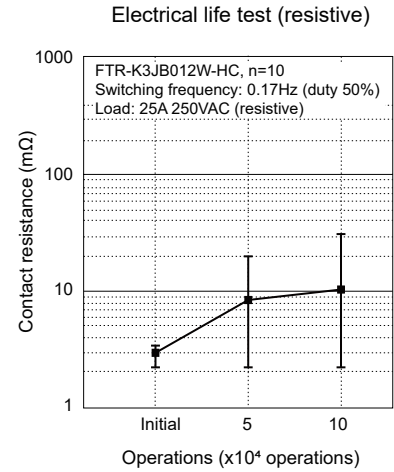
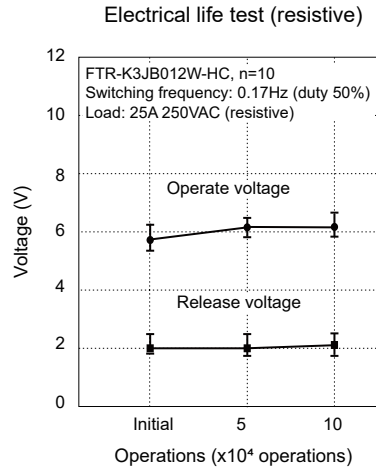
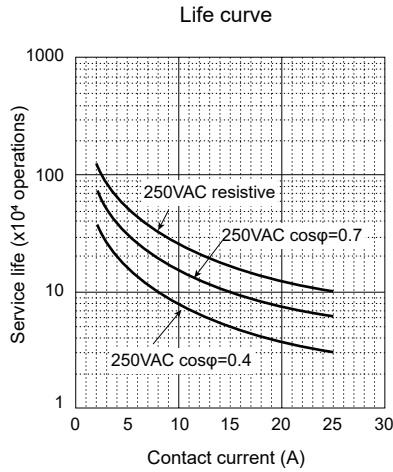
■ FTR-K3 / FTR-K3-LS



CHARACTERISTIC DATA

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

FTR-K3-HC



PART NUMBER LIST

Part Number	Contact Configuration	Contact Rating	Contact Material	Rated Power	Clearance	Remarks		
FTR-K3AB()W	1a (1 Form A) PCB terminal	20A, 250VAC	Silver alloy	780mW	6.4mm	Standard		
FTR-K3AB()W-GW					6.4mm	Glow wire compliant		
FTR-K3AB()W-LS		25A, 250VAC			8.0mm	High isolation		
FTR-K3AB()W-HC					6.4mm	High current		
FTR-K3JB()W	1a (1 Form A) Tab terminal	20A, 250VAC	Silver alloy	780mW	6.4mm	Standard		
FTR-K3JB()W-LS		25A, 250VAC			8.0mm	High isolation		
FTR-K3JB()W-HC					6.4mm	High current		

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.us

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.
51 Changi Business Park Central 2, #06-07
The Signature Singapore 486066
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/

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