

POWER RELAY

1 POLE – 32A, 1.5mm contact gap latching relay

FTR-K3L-PV Series

■ FEATURES

- 1 pole, 32A
- 1 form A contact
- Wide contact gap: 1.5mm
Surge strength (B/T open contacts) 2.5kV
Compliant with European photovoltaic standard (VDE0126)
- High insulation in small package (between coil and contacts)
 - Dielectric strength: AC 4,000V
 - Surge strength: 6,000V
- Low coil power consumption: 1,200mW
- Plastic materials: Flammability; UL94 V-0
- Cadmium-free contacts
- Flux proof
- RoHS compliant



■ PARTNUMBER INFORMATION

[Example] $\frac{\text{FTR-K3L}}{\text{(a)}} \frac{\text{A}}{\text{(b)}} \frac{\text{B}}{\text{(c)}} \frac{\text{012}}{\text{(d)}} \frac{\text{W}}{\text{(e)}} \frac{\text{- PV}}{\text{(f)}}$

(a)	Relay type	FTR-K3L	: FTR-K3L-PV Series
(b)	Contact configuration	A	: 1 form A / PCB type
(c)	Coil power	B	: Standard sensitive (1,200mW)
(d)	Coil rated voltage	012	: 5....24VDC See coil data chart
(e)	Contact material	W	: Silver alloy
(f)	Version	PV	: High current (32A) / contact gap 1.5mm

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

E.g.: Ordering code: FTR-K3LAB012W-PV Actual marking: K3LAB012W-PV

FTR-K3L-PV Series

■ SPECIFICATIONS

Item		FTR-K3L-PV	
Contact data	Configuration	1 form A	
	Material	Silver alloy	
	Resistance (initial)	Max. 100 mΩ at 6VDC, 1A	
	Contact rating (resistive)	32A, 250VAC	
	Max. carrying current	32A	
	Max. switching voltage	250VAC	
	Max. switching power	8,000VA	
	Max. switching current	32A	
	Min. switching load *	100mA, 5VDC (reference value)	
Coil data	Rated power (20°C)	1,200mW	
	Operating temperature range	-40°C to +85°C	
Timing data	Set (at nominal voltage)	Max. 20ms (without bounce, without diode)	
	Reset (at nominal voltage)	Max. 20ms (without bounce, without diode)	
	Coil excitation time (at nominal voltage)	Min. 30ms, max. 1000ms	
Life	Mechanical	Min. 1 x 10 ⁶ operations	
	Electrical	Resistive	32A / 250VAC, min. 30 x 10 ³ operations
		Inductive	32A, 250VAC (cosφ =0.8), 30 x 10 ³ operations
		Inductive (overload)	48A, 250VAC (cosφ =0.8), 50 operations
Insulation	Contact gap	Min. 1.5mm	
	Resistance	Min. 1,000MΩ at 500VDC	
	Dielectric strength	Open contacts	2,500VAC (50/60Hz) 1min
		Coil to contacts	4,000VAC (50/60Hz) 1min
	Surge strength	Coil to contacts	6,000V / 1.2 x 50μs standard wave
	Clearance		Min. 6.0mm
	Creepage		Min. 8.0mm
Others	Vibration resistance	Misoperation	10 to 55 to 10Hz single amplitude 0.825mm
		Endurance	10 to 55 to 10Hz single amplitude 1.0mm
	Shock	Misoperation	Min. 200m/s ² (11 ± 1ms)
		Endurance	Min. 1,000m/s ² (6 ± 1ms)
	Weight		Approximately 25g

* 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 and expected reliability levels.

! 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-K3L-PV Series

■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance $\pm 10\%$ (Ω)	Must Set Voltage* (VDC)	Must Reset Voltage* (VDC)	Max. Applicable Voltage (VDC)	Rated Power (mW)
005	5	P 21	+4.0	-	9.0	1,200
		S 21	-	+4.0		
006	6	P 30	+4.8	-	10.8	
		S 30	-	+4.8		
012	12	P 120	+9.6	-	21.6	
		S 120	-	+9.6		
024	24	P 480	+19.2	-	43.2	
		S 480	-	+19.2		

P: Set coil, S: Reset coil

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

* Specified operate values are valid for pulse wave voltage.

- !** Please use at rated coil voltage. DO NOT apply voltage that exceeds maximum applied voltage continuously. Insulation may decrease.
- !** DO NOT apply voltage that exceeds maximum applied voltage on to reset coil. It may cause operation failure.

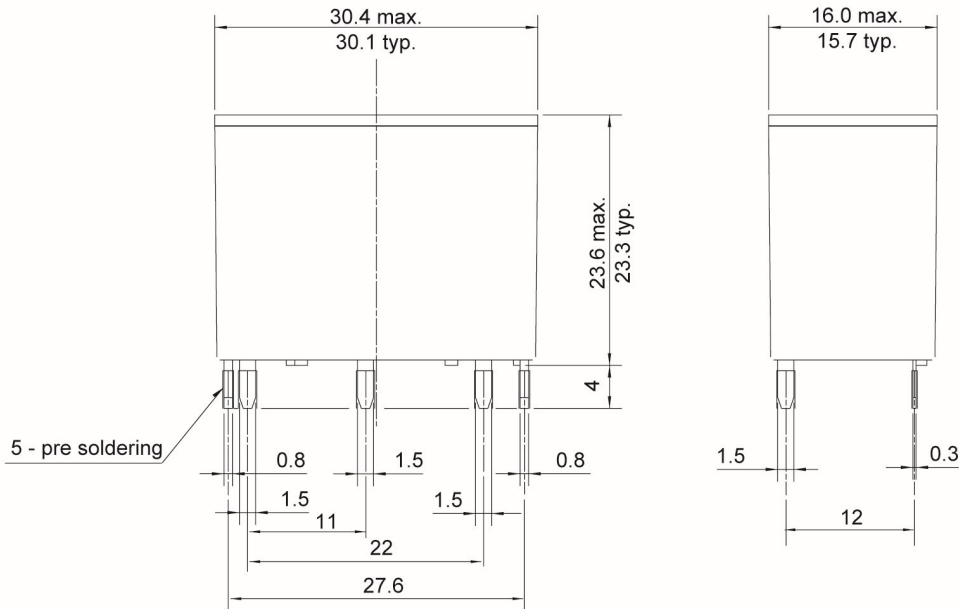
■ SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL508 CSA 22.2 No. 14 (by cULus) (E63614)	Flammability: UL 94-V0 (plastics)
		32A, 277VAC (General use at 85°C)
VDE	IEC/EN61810-1	32A, 250VAC ($\cos\phi = 0.8$) at 85°C

FTR-K3L-PV Series

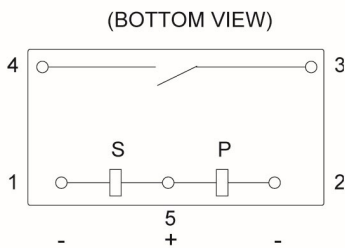
■ DIMENSIONS

Dimensions



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

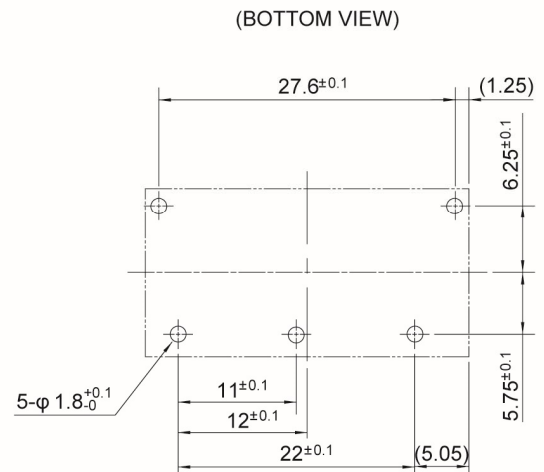
Schematics



P: Set coil
S: Reset coil

* Contacts drawn in reset condition.
* To operate (set), apply + to pin 5 and - to pin 2.
To release (reset), apply + to pin 5 and - to pin 1.

PC board mounting hole layout

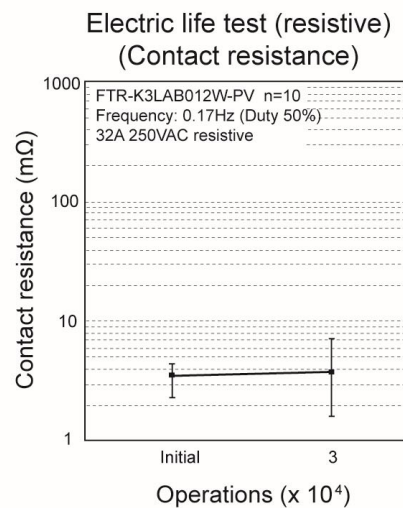
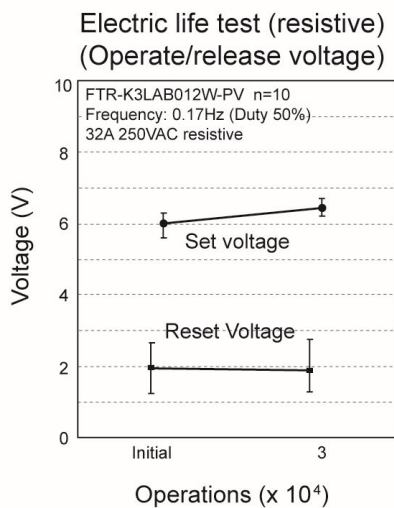
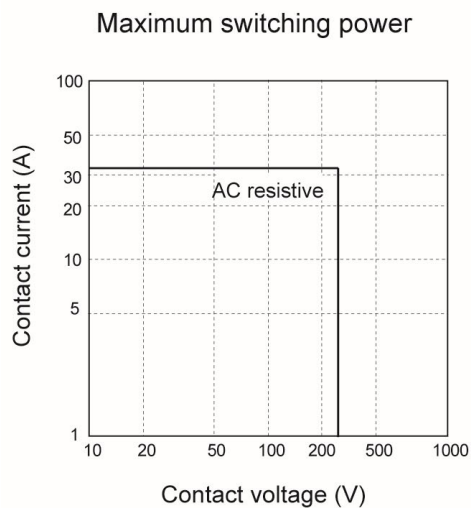


(): Reference
Unit: mm

FTR-K3L-PV Series

■ CHARACTERISTIC DATA

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



FTR-K3L-PV 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.
- Please connect relay coils according to specified polarity.

Notes for latching relays

- Latching relays are shipped in the state set, but state may change due to shock during transportation or mounting. Before using the relays, it is advisable to bring the relays in necessary state (set or reset) and program a circuit sequence. Otherwise, it will or will not operate simultaneously with power activation.
- Please connect relay coils according to specified polarity.
- Do not apply voltage to both set coil and reset coil at a time.

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 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.

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/

© 2024 FCL Components Limited. All rights reserved. All trademarks or registered trademarks are the property of their respective owners.

FCL 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 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 Products without securing the sufficient safety and reliability required for the High Safety Required Applications. In addition, FCL 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 Products in the High Safety Required Applications.

FCL 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 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. February 1, 2024.
