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] FTR-K3L (a) A (b) B (c) 012 (d) W (e) - PV (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

■ 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℃)		1,200mW
	Operating temperature range		-40℃ to +85℃
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.

■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance ±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℃ and zero contact current.
＊Specified operate values are valid for pulse wave voltage.

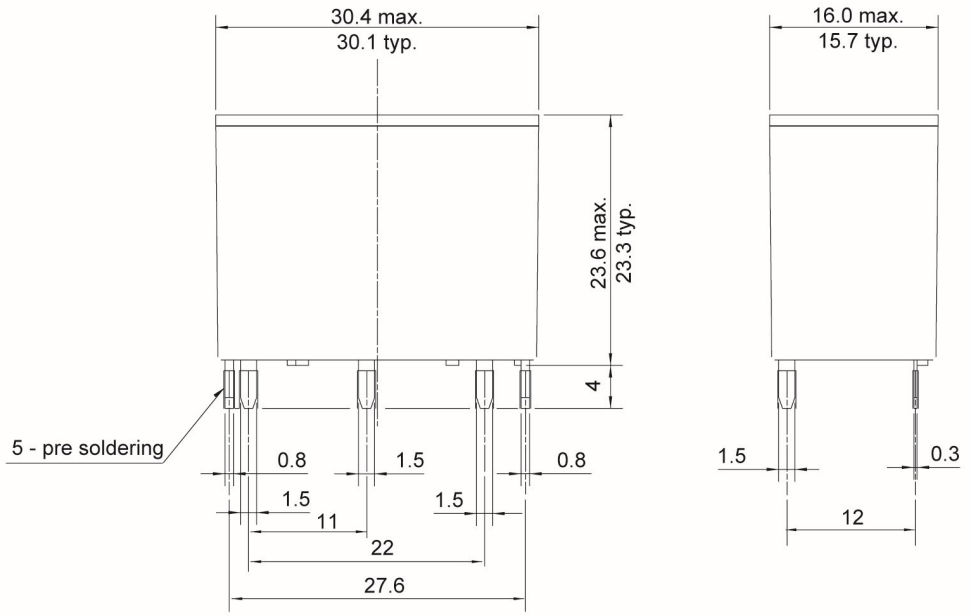
- Please use at rated coil voltage. DO NOT apply voltage that exceeds maximum applied voltage continuously. Insulation may decrease.
- DO NOT apply voltage that exceeds maximum applied voltage on to reset coil. It may cause operation failure.

■ 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℃)
VDE	IEC/EN61810-1	32A, 250VAC (cosφ = 0.8) at 85℃

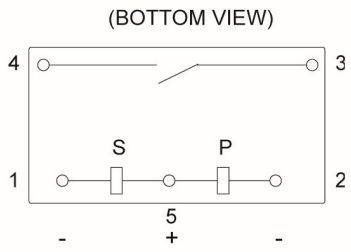
■ DIMENSIONS

Dimensions



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

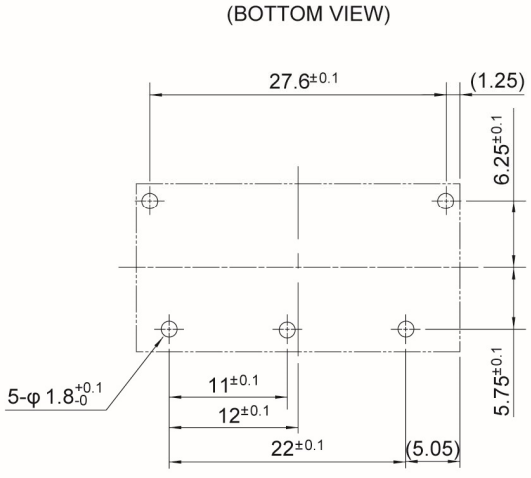
Schematics



P: Set coil
S: Reset coil

* Contacts drawin in resent 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

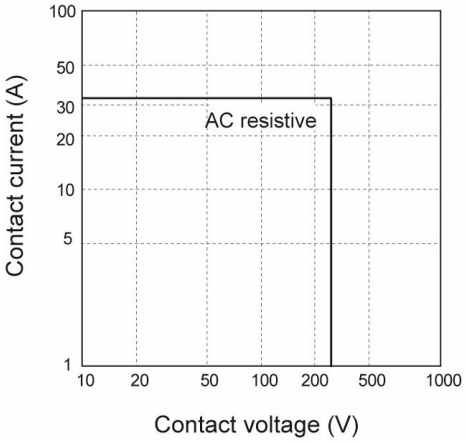


( ): Reference
Unit: mm

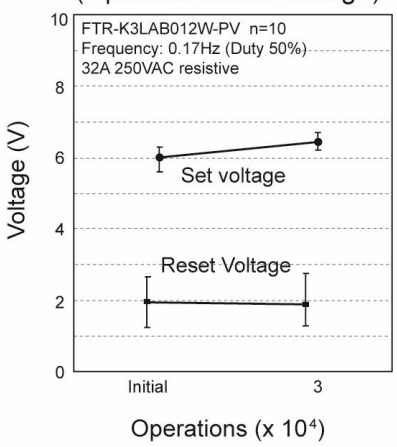
■ CHARACTERISTIC DATA

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

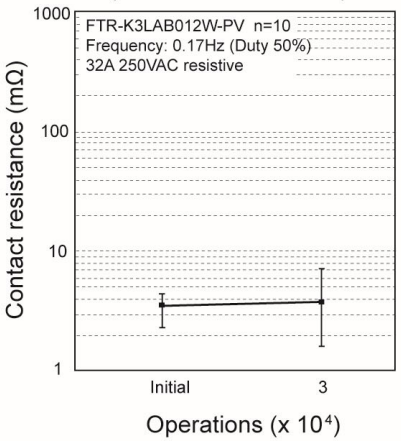
Maximum switching power



Electric life test (resistive)
(Operate/release voltage)



Electric life test (resistive)
(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.
- 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 uing 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.

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