POWER RELAY
1 POLE - 25A LATCHING RELAY

FTR-K3L-WG Series

RoHS Compliant

■ FEATURES

- 1 pole, 25A
- 2 coils latching type
- 1 Form A
- Contact gap 1.5mm
  2,500V surge breakdown voltage
  Compliance with European photovoltaic standard (VDE0126)
- High insulation in small package (between coil and contact)
  - Insulation distance: Clearance > 6.4mm, Creepage > 9.5mm
  - Dielectric strength: 5,000VAC
  - Surge strength: 8,500V
- Flammability UL94V-0 (plastics)
- Flux proof
- RoHS complian

■ APPLICATIONS

Photovoltaic power generation system (power conditioner), Uninterruptible Power Supply (UPS)

■ PART NUMBERS

[Example] FTR-K3L A B 012 W - WG
(a) (b) (c) (d) (e) (f)

(a)	Relay type	FTR-K3L series
(b)	Contact configuration	A : 1a (1 Form A)
(c)	Coil type	B : Standard type (900mW)
(d)	Coil rated voltage	012 : 5....24VDC Please refer to coil rating table
(e)	Contact material	W : Silver alloy
(f)	Version	WG : Contact gap 1.5mm

Actual marking does not carry the type name : “FTR”
E.g.: Ordering code: FTR-K3LAB012W-WG Actual marking: K3LAB012W-WG

■ SPECIFICATIONS

Item			Specifications	Remarks/Conditions
Contact Data	Configuration		1a (1 Form A)	
	Material		Silver alloy	
	Resistance (initial)		Max. 100 mΩ	At 1A, 6VDC
	Contact rating		25A, 250VAC	Resistive
	Max. carrying current		30A	
	Max. switching power		6,250VA	
	Max. switching voltage		250VAC	
	Max. switching current		25A	
	Min. switching load *1		100mA, 5VDC	Reference
Coil	Rated power (20°C)		900mW	
	Operating temperature range		-40°C to +85°C	No frost
Time	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	Min. 100 x 10^3 operations (at 25A, 250VAC)	
		Inductive	30 x 10^3 operations (at 25A, 250VAC, cosφ =0.8)	
		Inductive (overload)	50 operations (at 37.5A, 250VAC, cosφ =0.8)	
Insulation	Contact gap		Min. 1.5mm	
	Resistance		Min. 1,000MΩ at 500VDC	
	Dielectric strength	Open contacs	2,500VAC, 1 minute	
		Coil to contacts	5,000VAC, 1 minute	
	Surge strength	Coil to contacts	8,500V / 1.2 x 50μs standard wave	
	Clearance		6.4mm	
	Creepage		9.5mm	
Others	Vibration resistance	Misoperation	10 to 55 to 10Hz single amplitude 0.825mm	Coil ON/OFF, 3 axis, total 6 cycles
		Endurance	10 to 55 to 10Hz single amplitude 1.0mm	Coil OFF, 3 axis, total 6 hours
	Shock resistance	Misoperation	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 x 30.1 x 23.3mm / Approximately 25g	

*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 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*1 (VDC)	Must Reset Voltage*1 (VDC)	Max. Set/Reset Voltage (VDC)	Rated Power (mW)
005	5	P 28	+4.0	-	9.0	900
		S 28	-	+4.0		
006	6	P 40	+4.8	-	10.8	
		S 40	-	+4.8		
012	12	P 160	+9.6	-	21.6	
		S 160	-	+9.6		
024	24	P 640	+19.2	-	43.2	
		S 640	-	+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

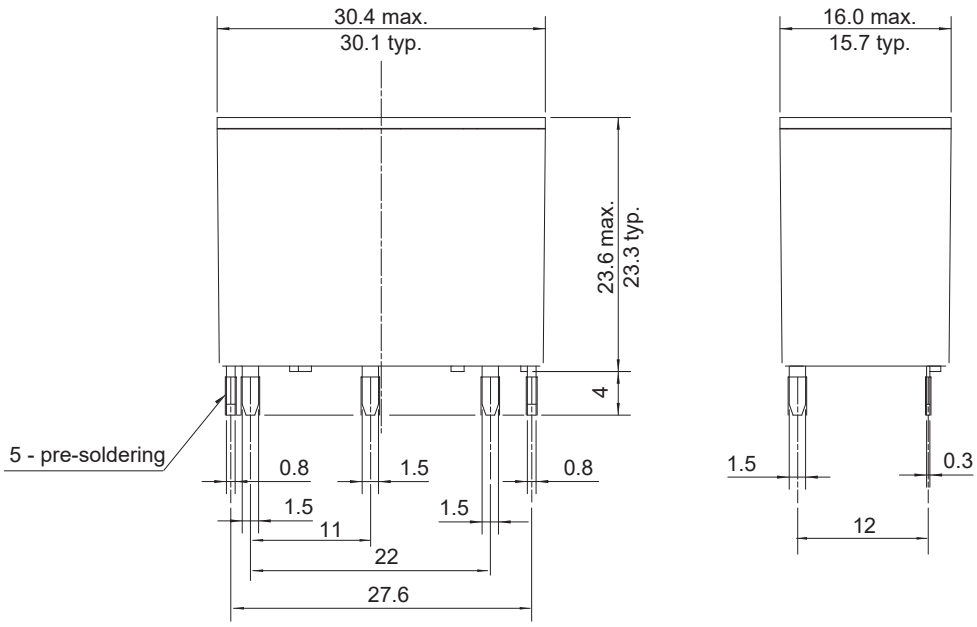
Type	Compliance	Contact Rating
UL	Flammability: UL 94-V-0 (plastics)	
	UL508 CSA 22.2 No. 14 (by cULus) File No. E63614	25A, 277VAC (General Use, at 85°C)
VDE	IEC/EN61810-1	25A, 250VAC, (cosφ=1) at 85°C 25A, 250VAC, (cosφ=0.8) at 85°C

■ PART NUMBER LIST

Part Number	Contact Configuration	Contact Gap	Contact Material	Contact Rating	Rated Coil Power
FTR-K3LAB( )W-WG	1a (1 Form A)	Min. 1.5mm	Silver alloy	25A, 250VAC	900mW

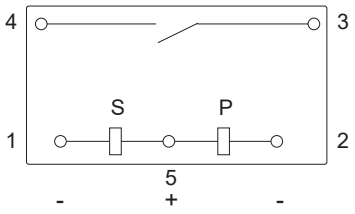
■ DIMENSIONS

Dimensions



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

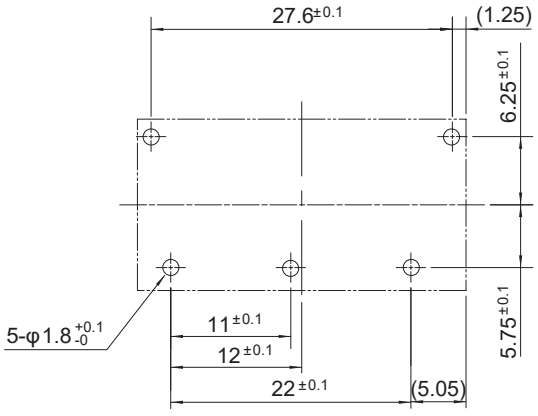
Schematics (BOTTOM VIEW)



P: Set coil
S: Reset coil

* Contacts drawin in resent condition.
* To operate (set), apply + to pin 4 and -to pin 2.
  To release (reset), apply + to pin 5 and - to pin 1.

PC board mounting hole layout (BOTTOM VIEW)

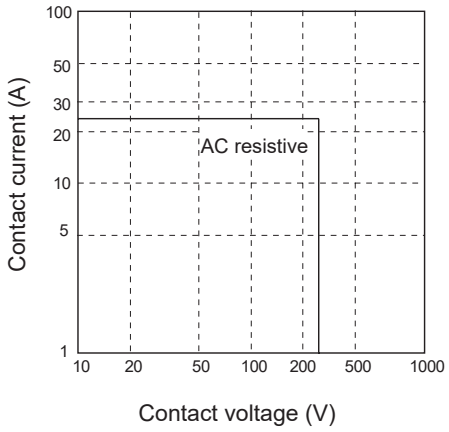


( ) : Reference
Unit: mm

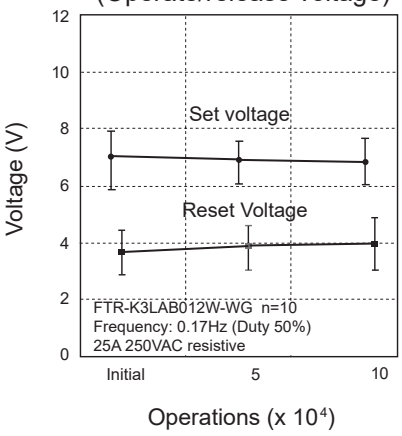
■ CHARACTERISTIC DATA

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

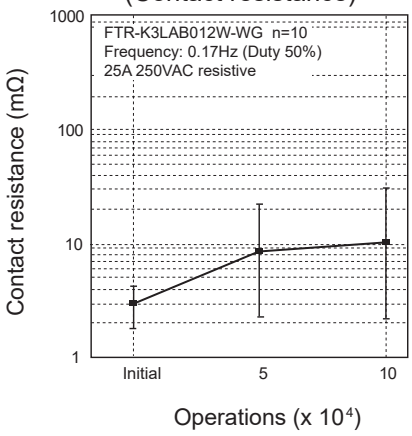
Maximum switching power



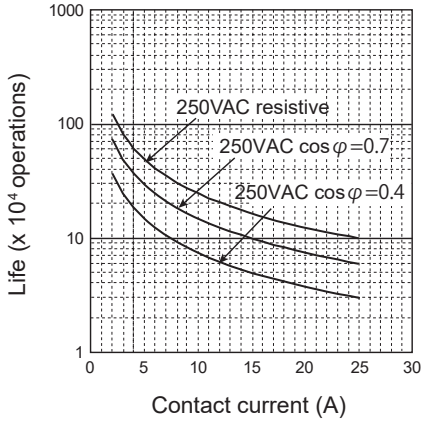
Electric life test (resistive)
(Operate/release voltage)



Electric life test (resistive)
(Contact resistance)



Life curve



xxx 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 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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