

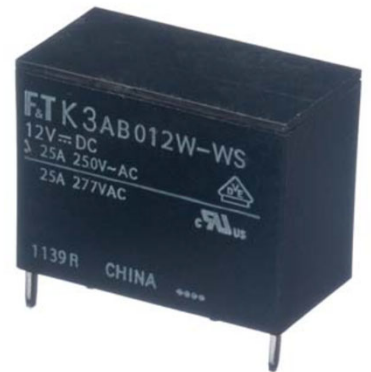
# POWER RELAY

## 1 POLE – 25A High Capacity Type

### FTR-K3-WS Series

#### ■ FEATURES

- 1 pole, 25A
- 1 form A contact
- Wide contact gap: 1.8mm  
(Compliant with European photovoltaic standard VDE0126)
- High insulation in small package (between coil and contacts)
  - Dielectric strength: AC 5,000V
  - Surge strength: 8,500V
- Low coil power consumption: 1,200mW
- Coil holding voltage can be reduced up to 35% of nominal coil voltage (ambient temperature; +20°C, contact current; 25A)  
Power consumption at the lowest coil holding voltage; 147mW
- \* Coil holding voltage is the coil voltage after 100ms of applied nominal coil voltage
- Plastic materials: Flammability; UL94 V-0
- Cadmium-free contacts
- Flux free, cat. RTII protection
- RoHS compliant.



#### ■ PARTNUMBER INFORMATION

[Example]  $\frac{\text{FTR-K3}}{\text{(a)}} \frac{\text{A}}{\text{(b)}} \frac{\text{B}}{\text{(c)}} \frac{\text{012}}{\text{(d)}} \frac{\text{W}}{\text{(e)}} - \frac{\text{WS}}{\text{(f)}}$

(a)	Relay type	FTR-K3	: FTR-K3 Series
(b)	Contact configuration	A	: 1 form A / PCB type
(c)	Coil power	B	: Standard (1,200mW)
(d)	Coil rated voltage	012	: 5...48VDC See coil rating table
(e)	Contact material	W	: Silver alloy
(f)	Option code	PS	: Contact gap 1.8mm

# FTR-K3-WS Series

## ■ SPECIFICATIONS

Item		FTR-K3-WS	
Contact data	Configuration	1 form A	
	Material	Silver alloy	
	Resistance (initial)	Max. 100 mΩ at 6VDC, 1A	
	Contact rating	25A, 250VAC (resistive)	
	Max. carrying current	25A	
	Max. switching voltage	250VAC	
	Max. switching power	6,250VA	
	Max. switching current	25A	
	Min. switching load *1	100mA, 5VDC (reference value)	
Coil data	Rated power (at 20°C)	1,200mW	
	Operate power (at 20°C)	588mW	
	Coil power at holding voltage	147mW (35% of nominal coil voltage)	
	Holding voltage *2	35~120% of nominal coil voltage (25A at + 20°C) 45~80% of nominal coil voltage (25A at + 85°C)	
	Operating temperature range	-40°C to +60°C (coil nominal voltage) -40°C to +85°C (holding voltage; 45~80% of nominal coil voltage)	
Timing data	Operate (at nominal voltage)	Max. 20ms (no diode, without bounce)	
	Release (at nominal voltage)	Max. 10ms (no diode, without bounce)	
Life	Mechanical	Min. 100 x 10 <sup>3</sup> operations	
	Electrical (resistive)	25A / 250VAC, min. 30 x 10 <sup>3</sup> operations	
	Electrical (inductive)	Endurance: 25A, 250VAC, cos φ = 0.8, min. 30 x 10 <sup>3</sup> operations Overload: 37.5A, 250VAC, cos φ = 0.8, min. 50 operations	
Insulation	Contact gap (initial)	Min. 1.8mm	
	Resistance	Min. 1,000MΩ at 500VDC	
	Dielectric strength	Open contacts	2,500VAC (50/60Hz), 1min
		Contacts to coil	5,000VAC (50/60Hz), 1min
	Surge strength	Contact to coil	8,500V / 1.2 x 50μs standard wave
Clearance / creepage		Min. 6.4mm / min. 9.5mm	
Others	Vibration resistance	Misoperation	10 to 55 to 10Hz single amplitude 0.75mm
		Endurance	10 to 55 to 10Hz single amplitude 0.75mm
	Shock	Misoperation	Min. 200m/s <sup>2</sup> (11 ± 1ms)
		Endurance	Min. 1,000m/s <sup>2</sup> (6 ± 1ms)
	Weight		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.

\*2 Reduction of minimum coil holding voltage to maximum coil voltage range, after 100msec energizing with nominal coil voltage.

**!** 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-K3-WS Series

## ■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance $\pm 10\%$ ( $\Omega$ )	Must Operate Voltage <sup>*1</sup> (VDC)	Must Release Voltage <sup>*1</sup> (VDC)	Min. Non Release Voltage <sup>*1</sup> (VDC)	Rated Power (mW)
005	5	21	3.5	0.5	1.75	1,200 (147) <sup>*2</sup>
006	6	30	4.2	0.6	2.1	
009	9	68	6.3	0.9	3.15	
012	12	120	8.4	1.2	4.2	
018	18	270	12.6	1.8	6.3	
024	24	480	16.8	2.4	8.4	
048	48	1,920	33.6	4.8	16.8	

Note: All values in the table are valid for 20°C and zero contact current. or mis-operation may occur.

\*1: Specified operate values are valid for pulse wave voltage.

\*2: This value is the coil power at 35% of nominal voltage at 20°C.

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

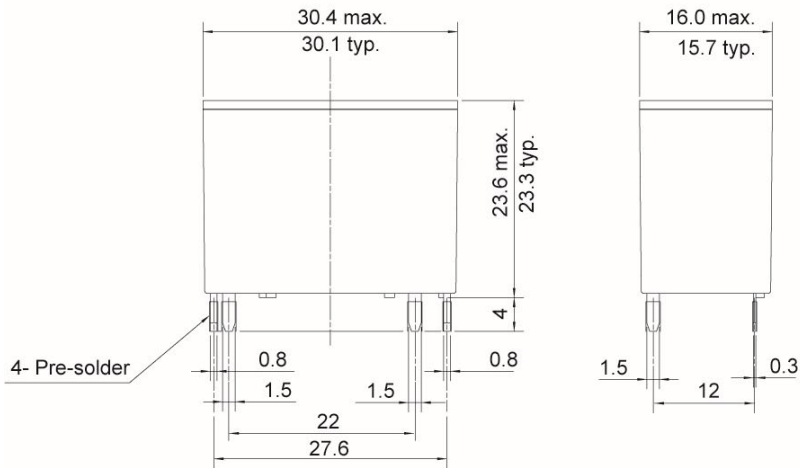
## ■ SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL 508 CSA 22.2 No.14 (cULus)  E63614	Flammability: UL 94 V0 (plastics)
		25A, 277VAC (General Use, at 85°C) 1HP, 125VAC (at 60°C) 2HP, 277VAC, (at 60°C, 100K operations)
VDE	IEC/EN61810-1	25A, 250VAC (cos $\phi$ = 0.8, at 85°C)

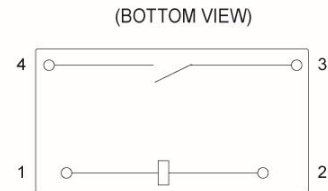
# FTR-K3-WS Series

## ■ DIMENSIONS

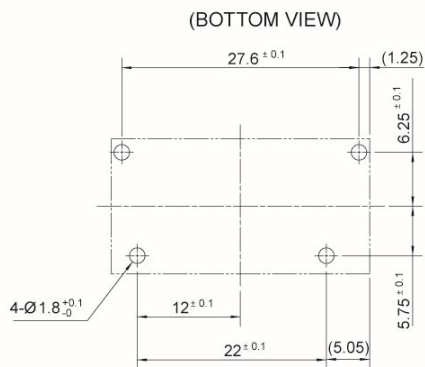
### ● Dimensions



### ● Schematics



### ● PC board mounting hole layout



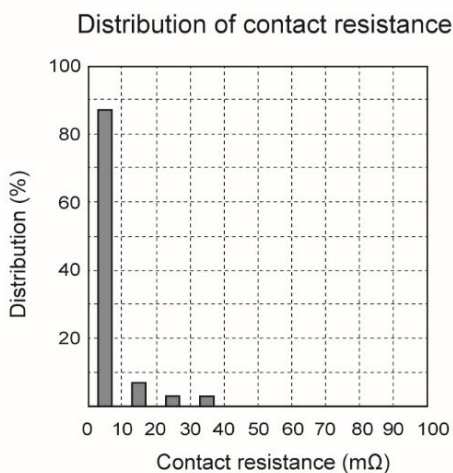
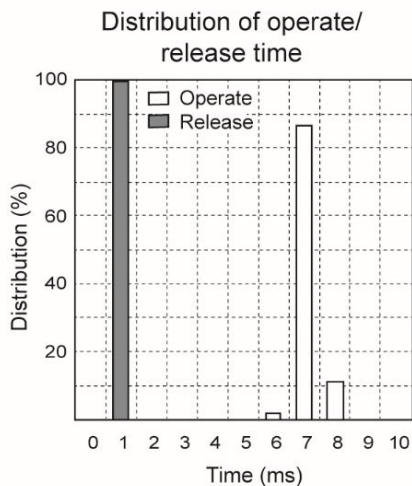
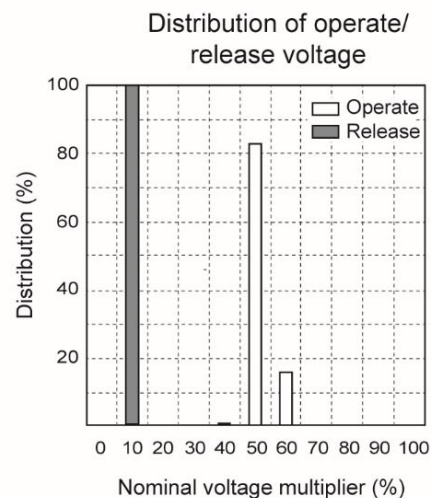
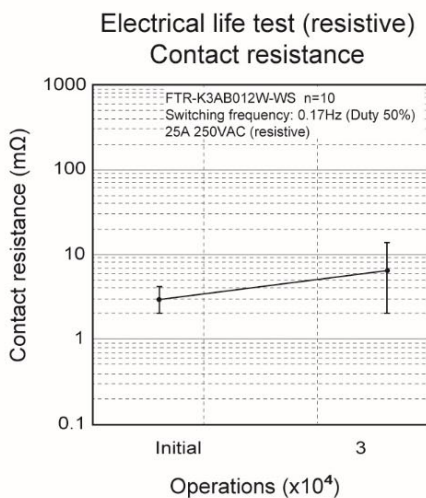
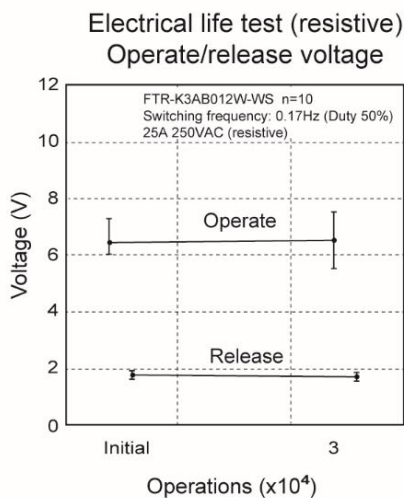
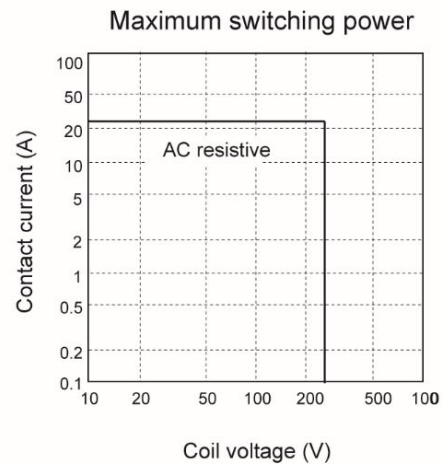
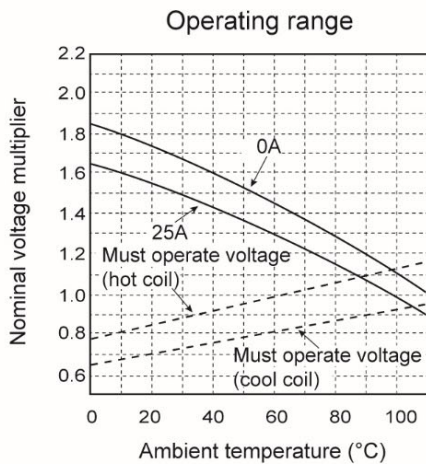
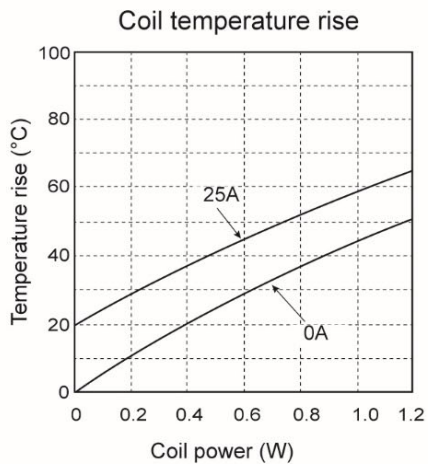
- Dimensions of the terminals do not include thickness of pre-solder.
- Tolerance of PC board mounting hole layout :  $\pm 0.1$  unless otherwise specified.

Unit; mm  
( ): Reference

# FTR-K3-WS Series

## ■ CHARACTERISTIC DATA

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



# FTR-K3-WS 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.

## 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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## Contact

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