

# POWER RELAY

## 1 POLE - High Capacity 32A Type

### FTR-K3-PS Series

#### ■ FEATURES

- 1 pole, 32A
- 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 4,000V
  - Surge strength: 6,000V
- Low coil power consumption: 1,400mW
- Coil holding voltage can be reduced up to 35% of nominal coil voltage (ambient temperature; +20 °C, contact current; 32A)  
Power consumption at the lowest coil holding voltage; 171.5mW
- \* 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]      FTR-K3    A    B    012    W    -    PS  
                   (a)    (b)   (c)   (d)   (e)   (f)

(a)	Relay type	FTR-K3 : FTR-K3-Series
(b)	Contact configuration	A : 1 form A / PCB type
(c)	Coil power	B : Standard (1,400mW)
(d)	Coil rated voltage	012 : 5.....48 VDC Coil rating table at page 3
(e)	Contact material	W : Silver alloy
(f)	Option code	PS : High current (32A) / contact gap 1.8mm

# FTR-K3-PS SERIES

## ■ SPECIFICATION

Item	FTR-K3-PS type		
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 *1	100mA, 5VDC (reference value)	
Life	Mechanical	Min. 100 x 10 <sup>3</sup> operations	
	Electrical (resistive)	32A / 250VAC, min. 30 x 10 <sup>3</sup> operations	
	Electrical (inductive)	Endurance: 32A, 250VAC, cos φ = 0.8, min. 30 x 10 <sup>3</sup> operations Overload: 48A, 250VAC, cos φ = 0.8, min. 50 operations	
Coil Data	Rated power (at 20 °C)	1,400mW	
	Operate power (at 20 °C)	686mW	
	Coil power at holding voltage	171.5mW (35% of nominal coil voltage)	
	Holding voltage *2	35~120% of nominal coil voltage (32A at + 20 °C) 45~80% of nominal coil voltage (32A 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)	
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	4,000VAC (50/60Hz) 1min
	Surge strength	Contacts to coil	6,000V / 1.2 x 50μs standard wave
	Clearance / creepage		Min. 6.0mm / min. 8.0mm
	EN61810-1, VDE0435	Voltage	250VAC
		Pollution degree	3
Material group		IIIa	
Other	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 26g

\*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 Coil holding voltage is the coil voltage after 100ms of applied 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-PS SERIES

## ■ COIL RATING

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC)* <sup>1</sup>	Must Release Voltage (VDC)* <sup>1</sup>	Min. Non Release Voltage (VDC)* <sup>1</sup>	Rated Power (mW)
005	5	18	3.5	0.5	1.75	1,400 (171.5) <sup>*2</sup>
006	6	26	4.2	0.6	2.1	
009	9	58	6.3	0.9	3.15	
012	12	103	8.4	1.2	4.2	
018	18	231	12.6	1.8	6.3	
024	24	410	16.8	2.4	8.4	
048	48	1,650	33.6	4.8	16.8	

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

\*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.

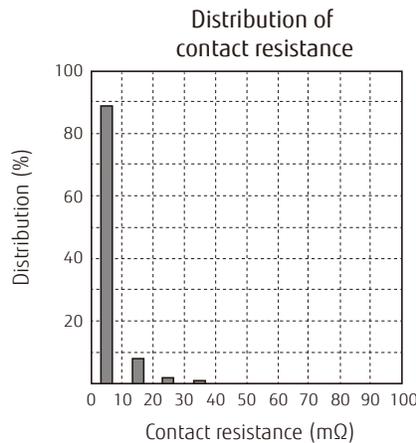
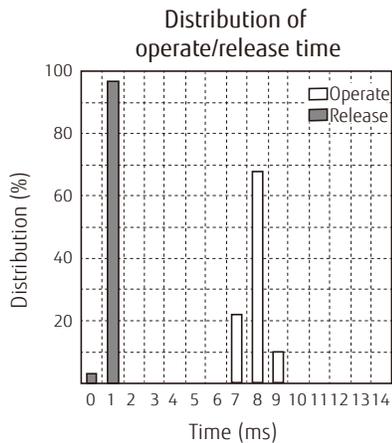
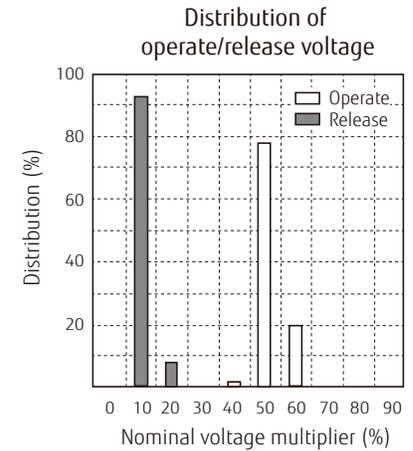
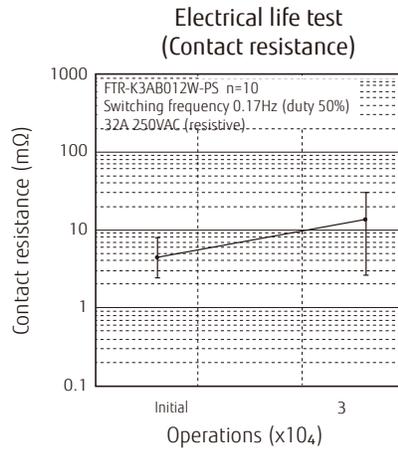
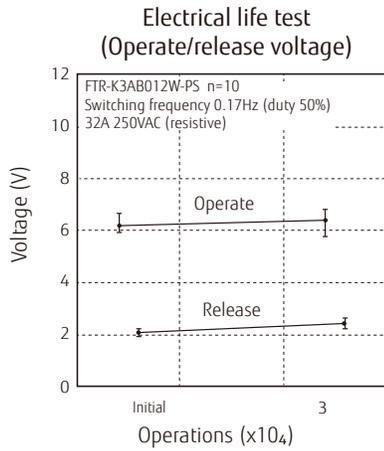
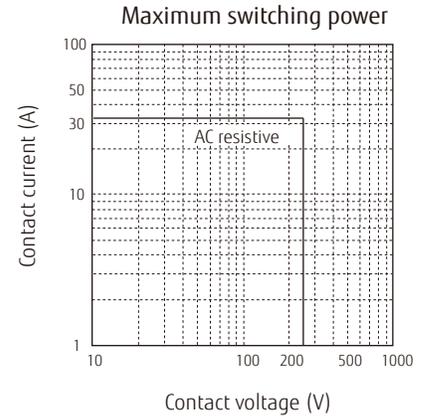
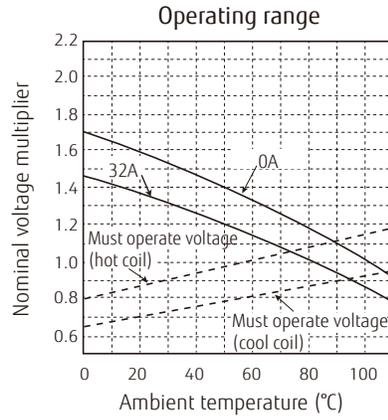
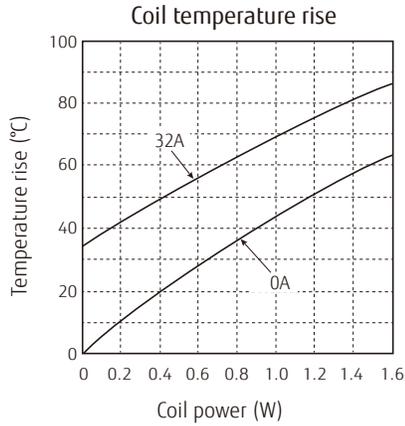
**!** Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

## ■ SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL 508 CSA 22.2 No.14 (cULus)	Flammability: UL 94 V0 (plastics)
	E63614	32A, 277VAC (General use, at 85 °C) 1hp 125VAC (at 60°C) 2hp 277VAC (at 60°C, 100K operations)
VDE	IEC/EN61810-1	32A, 250VAC (cos φ = 0.8, at 85 °C)

## CHARACTERISTIC DATA

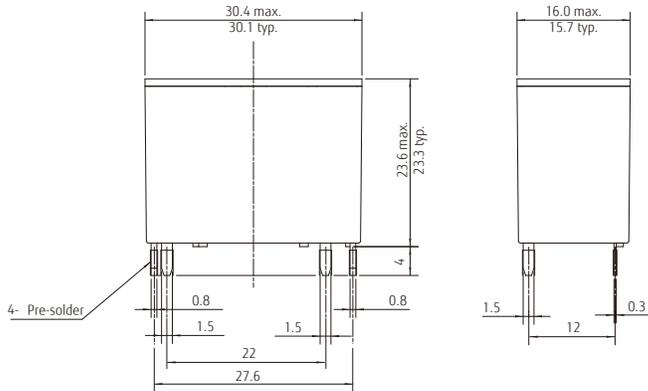
(Characteristic data is not guaranteed value but measured values of samples from production line.)



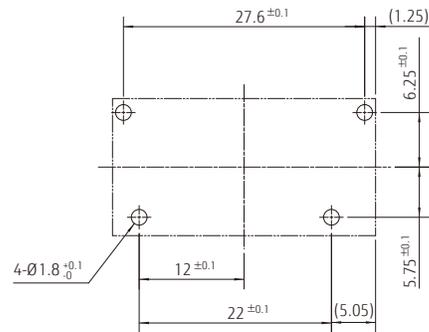
# FTR-K3-PS SERIES

## ■ DIMENSIONS

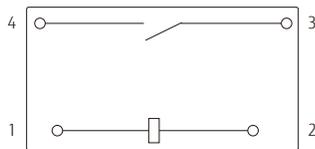
### ● Dimensions



### ● PC board mounting hole layout (BOTTOM VIEW)



### ● Schematics (BOTTOM VIEW)



- 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

## 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.

## RoHS Compliance and Lead Free Information

### 1. General Information

- All signal and power relays produced by Fujitsu Components are compliant with RoHS directive 2002/95EC including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives on October 21st, 2005. (Amendment to Directive 2002/95/EC)
- All of our signal and power relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: <http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>
- 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.

### 2. Recommended Lead Free Solder Profile

- **Recommended solder 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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