

# 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
  - RoHS compliant.
- Please see page 5 for more information



#### ■ PARTNUMBER INFORMATION

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

|     |                       |                                                   |
|-----|-----------------------|---------------------------------------------------|
| (a) | Relay type            | FTR-K3L : FTR-K3L-Series                          |
| (b) | Contact configuration | A : 1 form A / PCB type                           |
| (c) | Coil type             | B : Standard sensitive (1,200mW)                  |
| (d) | Coil rated voltage    | 012 : 5.....24 VDC<br>Coil rating table at page 3 |
| (e) | Contact material      | W : Silver alloy                                  |
| (f) | Version               | PV : High current (32A) / contact gap 1.5mm       |

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

Actual marking: K3LAB012W-PV

# FTR-K3L-PV SERIES

## ■ SPECIFICATION

|              |                                           |                      |                                                         |
|--------------|-------------------------------------------|----------------------|---------------------------------------------------------|
| 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)                           |
| Life         | Mechanical                                |                      | Min. 1 x 10 <sup>6</sup> operations                     |
|              | Electrical                                | Resistive            | 32A / 250VAC, min. 30 x 10 <sup>3</sup> operations      |
|              |                                           | Inductive            | 32A, 250VAC (cosφ 0.8), 30 x 10 <sup>3</sup> operations |
|              |                                           | Inductive (overload) | 48A, 250VAC (cosφ 0.8), 50 operations                   |
| Coil Data    | Rated power (at 20 °C)                    |                      | 1,200mW                                                 |
|              | Operating temperature range               |                      | -40 °C to +85 °C                                        |
| Timing Data  | Set (at nominal voltage)                  |                      | Max. 20ms (without bounce)                              |
|              | Reset (at nominal voltage)                |                      | Max. 20ms (without bounce)                              |
|              | Coil excitation time (at nominal voltage) |                      | Min. 30ms, max. 1000ms                                  |
| Insulation   | Contact gap                               |                      | Min. 1.5mm                                              |
|              | 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                                 |                      | Min. 6.0mm                                              |
|              | Creepage                                  |                      | Min. 8.0mm                                              |
| Other        | Vibration resistance                      | Misoperation         | 10 to 55Hz double amplitude 1.5mm                       |
|              |                                           | Endurance            | 10 to 55Hz double amplitude 1.5mm                       |
|              | Shock                                     | Misoperation         | Min. 200m/s <sup>2</sup> (11 ± 1ms)                     |
|              |                                           | Endurance            | Min. 1,000m/s <sup>2</sup> (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.

# FTR-K3L-PV SERIES

## ■ COIL RATING

| Coil Code | Rated Coil Voltage (VDC) | Coil Resistance +/- 10% (Ohm) | Must Set Voltage (VDC) * | Must Reset Voltage (VDC) * | Max. Set/Reset Voltage (VDC) | Rated Power (mW) |
|-----------|--------------------------|-------------------------------|--------------------------|----------------------------|------------------------------|------------------|
| 005       | 5                        | P 21                          | +4.0                     | -                          | 9.0                          | 1,200            |
|           |                          | S 21                          | -                        | +4.0                       |                              |                  |
| 006       | 6                        | P 30                          | +5.4                     | -                          | 10.8                         |                  |
|           |                          | S 30                          | -                        | +5.4                       |                              |                  |
| 012       | 12                       | P 120                         | +9.6                     | -                          | 21.6                         |                  |
|           |                          | S 120                         | -                        | +9.6                       |                              |                  |
| 024       | 24                       | P 480                         | +19.2                    | -                          | 43.2                         |                  |
|           |                          | S 480                         | -                        | +19.2                      |                              |                  |

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

P: Set coil      S: Reset coil

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

## ■ SAFETY STANDARDS

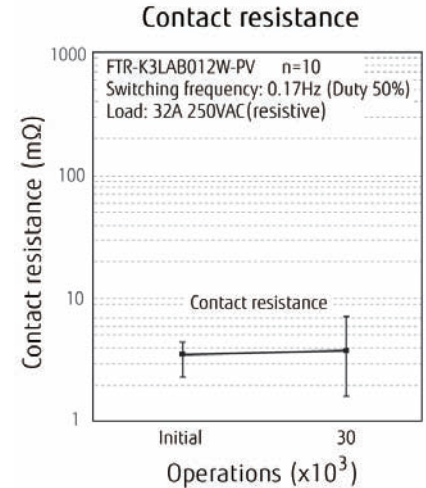
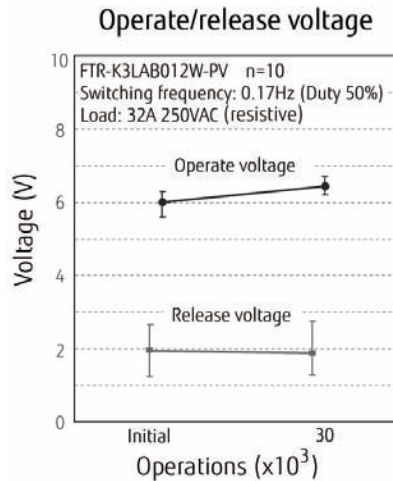
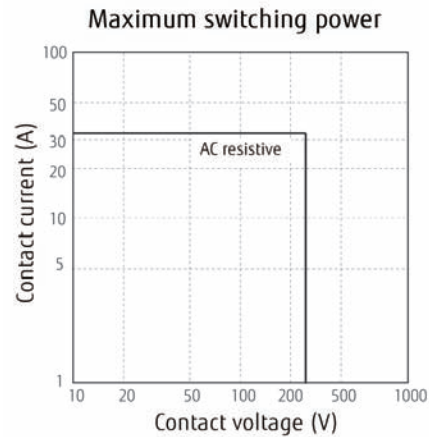
| Type | Compliance                | Contact rating                        |
|------|---------------------------|---------------------------------------|
| UL   | UL 508                    | Flammability: UL 94-V0 (plastics)     |
|      | CSA 22.2 No.14 (by cULus) | 32A, 277VAC<br>(General use at 60 °C) |
| VDE  | IEC61810-1                | 32A, 250VAC (cosφ = 0.8) at +85 °C    |

# FTR-K3L-PV SERIES

## ■ CHARACTERISTIC DATA

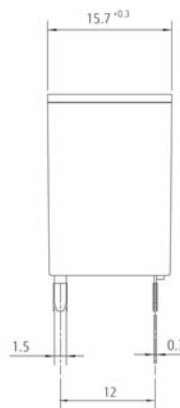
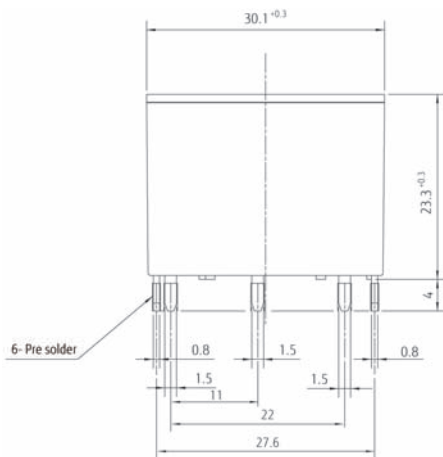
The graphs are based on measurement data and are typical values.

Electrical life tests (resistive load)

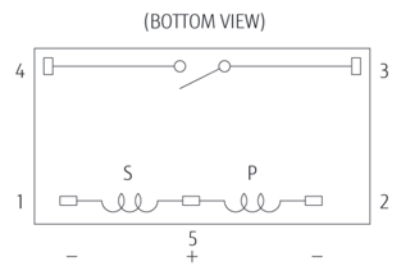


## ■ DIMENSIONS

### ● Dimensions



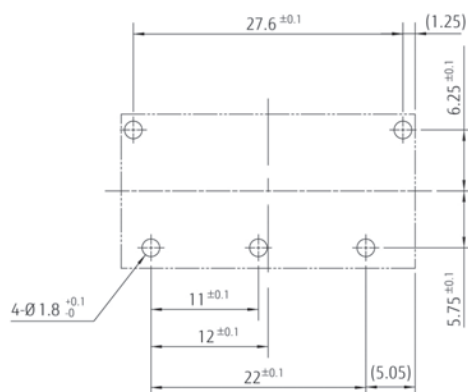
### ● Schematics



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 (BOTTOM VIEW)



## 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  
Soldering: dip within 5 sec. at  
260°C solder bath

**Solder by Soldering Iron:**

Soldering Iron  
Temperature: maximum 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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