

## COMPACT POWER RELAY (automotive applications) 1 POLE - 6A (For 24V car battery)

### FTR-P3 Series

#### ■ FEATURES

- Compact for high density packaging.
- High contact capacity with proven contact material.  
(100,000 operations, 28V, 6A)
- Coil power saving  
(900mW nominal achieved with state-of-the-art magnetic design)
- Ease of PCB layout  
(all terminals on perimeter, coil and contact terminals separated)
- Over-voltage circuit breaking capability with 0.6mm gap.
- Packaging for auto-insertion.
- Application examples: lamp (LED)
- Reflowable & high stand-off
- RoHS compliant



#### ■ Part Numbers

[Example]    FTR-P3    C    P    024    W1    -    06  
                   (a)           (b)           (c)           (d)           (e)                   (f)

(a)	Relay type	FTR-P3	: FTR-P3-Series
(b)	Contact configuration	C	: 1 form C
(c)	Contact gap	P	: 0.6mm gap
(d)	Coil rated voltage	024	: 24VDC Coil rating table at page 3
(e)	Contact material	W1	: Silver oxide tin-indium
(f)	Special type	06	: High stand-off (Reflowable type)

Actual marking does not carry the type name: "FTR -06"  
 E.g.: Ordering code: "FTR-P3CP024W1-06", actual marking: "P3CP024W1"

## ■ Specification

Item			Characteristics	Remarks / conditions
Contact data	Configuration		1 form C (SPDT)	
	Material		Silver oxide tin-indium	
	Contact path voltage drop		Max. 100mV	At 1A/12VDC
	Contact rating		6A at 28VDC	Resistive load
	Max. carrying current <sup>*1</sup>		20A/ 1 hour <sup>*3</sup>	25°C, at rated coil voltage
	Max. switching voltage		28VDC	Reference
	Max. switching current		6A (resistive load) <sup>*2</sup>	Reference
	Min. switching load <sup>*2</sup>		6VDC, 1A	Reference
Coil data	Operating ambient temperature range		40°C ~ +125°C	No frost
	Storage temperature range		40°C ~ +125°C	No frost
Timing data	Operate		Max. 10ms	At nominal voltage, without bounce
	Release		Max. 5ms max. (without bounce, no diode) Max. 15ms max. (without bounce, with diode)	At nominal voltage
Life	Mechanical		Min. 1 × 10 <sup>6</sup> operations	
	Electrical		Min. 100 × 10 <sup>3</sup> operations	6A at 28VDC (resistive load)
Insulation	Resistance (initial)		100MΩ min. (at 500VDC)	
	Dielectric withstanding voltage (initial)		500VAC (50/60Hz, 1min.)	
Other	Vibration resistance	Misoperation	10 to 200Hz, acceleration 43m/s <sup>2</sup> (4.4G) constant acceleration	
		Endurance	10 to 200Hz, acceleration 43m/s <sup>2</sup> (4.4G) constant acceleration	
	Shock resistance	Misoperation	Min. 100m/s <sup>2</sup> (11 ± 1ms)	
		Endurance	Min. 1,000m/s <sup>2</sup> (6 ± 1ms)	
	Weight		Approx. 5g	

<sup>\*1</sup>: Need to consider the heat from PCB when max. current is more than 10A.

<sup>\*2</sup>: Minimum switching loads and maximum switching current 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.

<sup>\*3</sup>: Switching during 20A conduction may cause breaking failure.

## ■ Coil Data

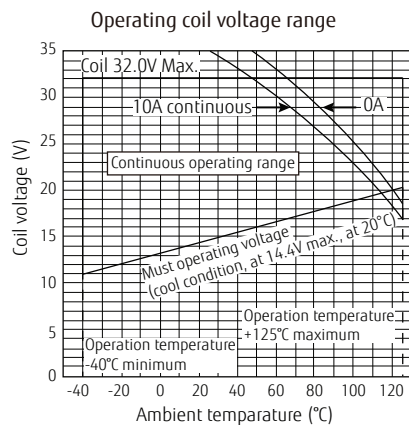
Coil code	Rated Coil Voltage	Coil Resistance +/-10%	Must Operate Voltage*	Must Release Voltage*	Power Consumption
	(VDC)	(Ω)	(VDC)	(VDC)	(W)
024	24	640	14.4	1.9	0.9

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

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

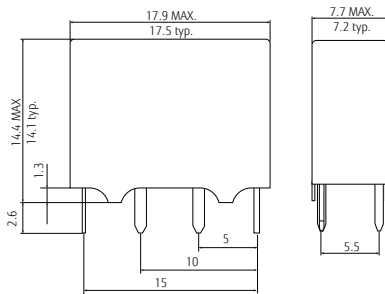
## ■ Characteristic Data (Reference)

\* Characteristic data is not a guaranteed value, but measured values of samples from production line.



## ■ Dimensions

### • Dimensions

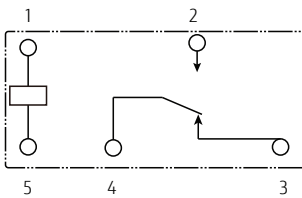


\* Dimensions of the terminals do not include thickness of pre-solder.

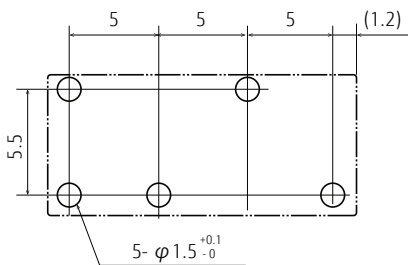
\* Dimensions do not include tolerances. Please ask specification in case you need tolerances.

### • Schematics

(BOTTOM VIEW)



### • PC Board Mounting Hole Layout (BOTTOM VIEW)



( ): Reference value

Unit: mm

\* Tolerance of PC board mounting hole layout :  $\pm 0.1$  unless otherwise specified.

## 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 Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Use of Cadmium in electrical contacts is exempted as per Annex III of the RoHS directive 2011/65/EU. Please consider expiry date of exemption. Relays with Cadmium containing contacts are not to be used for new designs.
- All relays are lead-free. Please refer to Lead-Free Status Info for older date codes at:  
<http://www.fujitsu.com/downloads/MICRO/fcai/relays/lead-free-letter.pdf>
- Characteristic data is not guaranteed values, but measured values of samples from production line.

### 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

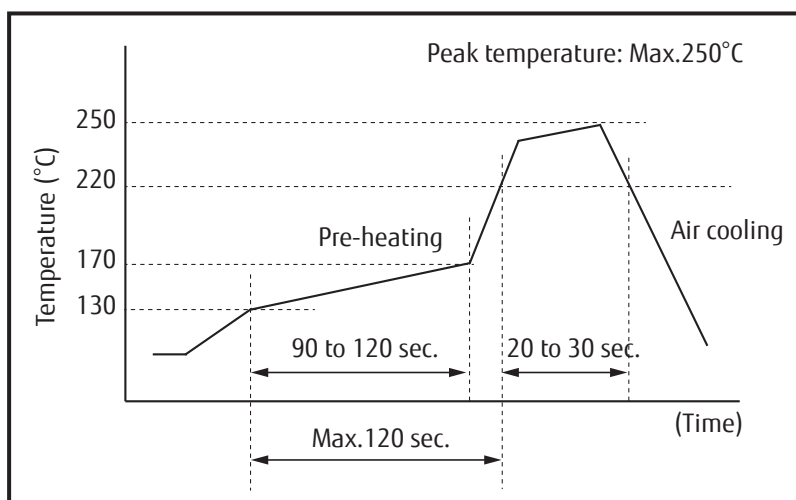
Relay must be cooled by air immediately after soldering

#### 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.

## Fujitsu Components International Headquarter Offices

<b>Japan</b> FUJITSU COMPONENT LIMITED Shinagawa Seaside Park Tower 19F, 12-4, Higashi-shinagawa 4-chome, Shinagawa-ku, Tokyo, 140-0002, Japan Tel: (81-3) 3450-1682 Fax: (81-3) 3474-2385 Email: fcl-contact@cs.jp.fujitsu.com Web: www.fujitsu.com/jp/fcl/	<b>Asia Pacific</b> FUJITSU COMPONENTS ASIA, LTD. 102E Pasir Panjang Road #01-01 Citilink Warehouse Complex Singapore 118529 Tel: (65) 6375-8560 Fax: (65) 6273-3021 Email: fcal@sg.fujitsu.com Web: www.fujitsu.com/sg/products/devices/components	<b>Korea</b> FUJITSU COMPONENTS KOREA LIMITED Alpha Tower #403, 645 Sampyeong-dong, Bundang-gu, Seongnam-si, Gyeonggi-do, 13524 Korea Tel: (82) 31-708-7108 Fax: (82) 31-709-7108 Email: fcal@sg.fujitsu.com www.fujitsu.com/sg/products/devices/components/
<b>North and South America</b> FUJITSU COMPONENTS AMERICA, INC 2290 North First Street, Suite 212 San Jose, CA 95131, USA Tel: (1-408) 745-4900 Fax: (1-408) 745-4970 Email: components@us.fujitsu.com Web: us.fujitsu.com/components	<b>China</b> FUJITSU ELECTRONIC COMPONENTS (SHANGHAI) CO., LTD. Unit 4306, InterContinental Center 100 Yu Tong Road, Shanghai 200070, China Tel: (86-21) 3253 0998 Fax: (86-21) 3253 0997 Email: fcal@sg.fujitsu.com Web: www.fujitsu.com/sg/products/devices/components	
<b>Europe</b> FUJITSU COMPONENTS EUROPE B.V. Diamantlaan 25 2132 WV Hoofddorp Netherlands Tel: (31-23) 5560910 Fax: (31-23) 5560950 Email: info@fceu.fujitsu.com Web: www.fujitsu.com/uk/components	<b>Hong Kong</b> FUJITSU COMPONENTS HONG KONG CO., LTD Unit 506, Inter-Continental Plaza No.94 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong Tel: (852) 2881-8495 Tex: (852) 2894-9512 Email: fcal@sg.fujitsu.com Web: www.fujitsu.com/sg/products/devices/components/	

©2018 Fujitsu Components Europe B.V. All rights reserved. All trademarks or registered trademarks are the property of their respective owners.

The contents, data and information in this datasheet are provided by Fujitsu Component Ltd. as a service only to its user and only for general information purposes.

The use of the contents, data and information provided in this datasheet is at the users' own risk.

Fujitsu has assembled this datasheet with care and will endeavor to keep the contents, data and information correct, accurate, comprehensive, complete and up to date.

Fujitsu Components Europe B.V. and affiliated companies do however not accept any responsibility or liability on their behalf, nor on behalf of its employees, for any loss or damage, direct, indirect or consequential, with respect to this datasheet, its contents, data, and information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof.

Nor do Fujitsu Components Europe B.V. and affiliated companies accept on their behalf, nor on behalf of its employees, any responsibility or liability for any representation or warrant of any kind, express or implied, including warranties of any kind for merchantability or fitness for particular use, with respect to these datasheets, its contents, data, information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof. Rev. September 26, 2018

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Fujitsu:

[FTR-P3CP024W1-06](#)