

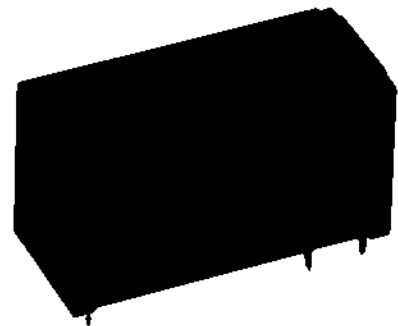
POWER RELAY

1 POLE - 16A 80A Inrush type

FTR-K1 Series

■ FEATURES

- Peak 80A inrush current (1 form A type)
 - Low profile (height: 15.7mm)
 - HIGH INSULATION
Insulation distance (between coil and contacts): 10mm min.
Dielectric strength: 5KV
Surge strength: 10KV
 - Class F coil wire
 - Low coil power (400mW)
 - Cadmium free contacts
 - SAFETY STANDARDS
UL, CSA, VDE, SEMKO approved
UL, CSA TV-5 rating approved (1 form A type)
 - Flux proof, RTII
 - RoHS compliant
- Please see page 6 for more information



■ PARTNUMBER INFORMATION

[Example] FTR-K1 C K 012 W - BG
 (a) (b) (c) (d) (e) (f)

| | | |
|-----|----------------------------|--|
| (a) | Relay type | FTR-K1: FTR-K1 Series |
| (b) | Contact configuration | A : 1 form A (SPST-NO) C : 1 form C (SPDT) (standard type "K" only) |
| (c) | Coil type | K : Standard type (400mW / Flux proof) |
| (d) | Coil rated voltage | 012 : 5...110VDC Coil rating table at page 3 |
| (e) | Contact material / TV type | W : AgSnO ₂ (1 form C contact type only) T : AgSnO ₂ / TV-5 rated (1 form A / TV-5 contact type only) |
| (f) | Special type | Nil : Standard type (without gold plate) BG : Gold plated 3μm |

Actual marking does not carry the type name : "FTR"

E.g.: Ordering code: FTR-K1CK012W

Actual marking: K1CK012W

FTR-K1 SERIES

■ SPECIFICATION

| Item | | | FTR-K1 AK () T Standard | FTR-K1 CK () W Standard |
|--------------|--------------------------------------|---|--|--------------------------------------|
| Contact Data | Configuration | | 1 form A | 1 form C |
| | Construction | | Single | |
| | Material | | AgSnO ₂ | |
| | Resistance (initial) | | Max. 100mOhm at 1A, 6VDC | |
| | Contact rating (resistive) | | 16A, 250VAC / 24VDC | |
| | Max. carrying current * ¹ | | 20A | |
| | Max. inrush current | | 80A (20ms) 250VAC (only make contact) | |
| | Max. switching voltage | | 440VAC / 300VDC | |
| | Max. switching power | | 4,000VA / 384W | |
| | Min. switching load * ² | | 100mA, 5VDC | |
| Life | Mechanical | | Min. 20 x 10 ⁶ operations | |
| | Electrical | AC contact rating | Min. 100 x 10 ³ operations | Min. 50 x 10 ³ operations |
| | | DC contact rating | Min. 100 x 10 ³ operations | Min. 30 x 10 ³ operations |
| | | Peak Inrush (80A) | Min. 10 x 10 ³ operations (only make contact) | |
| | Lamp load (UL TV-5) | Min. 25 x 10 ³ operations | Min. 25 x 10 ³ operations (only make contact) | |
| Coil Data | Rated power (20 °C) | | 400mW (430mW at 48V coil) | |
| | Operate power (20 °C) | | 200mW (210mW at 48V coil) | |
| | Operating temperature range | | -40 °C to +85 °C (no frost) | |
| Timing Data | Operate (at nominal voltage) | | Max. 15ms (without bounce) | |
| | Release (at nominal voltage) | | Max. 5ms (without bounce, no diode) | |
| Insulation | Resistance (initial) | | Min. 1,000MOhm at 500VDC | |
| | Dielectric strength | Open contacts | 1,000VAC (50/60Hz) 1min | |
| | | Contacts to coil | 5,000VAC (50/60Hz) 1min | |
| | Surge strength | Coil to contacts | 10,000V / 1.2 x 50µs standard wave | |
| | Clearance | | 10mm | |
| | Creepage | | 10mm | |
| | EN61810-1, VDE0435 | Voltage | 250V | |
| | | Pollution degree | 3 | |
| | | Material group | III a | |
| | Category | C / 250V (Reference voltage) (VDE0110b) | | |
| Other | Vibration resistance | Misoperation≥1us | 10 to 55Hz double amplitude 0.7mm | |
| | | Endurance | 10 to 55Hz double amplitude 1.5mm | |
| | Shock | Misoperation≥1us | 100m/s ² (11 ± 1ms) | |
| | | Endurance | 1,000m/s ² (6 ± 1ms) | |
| | Weight | | Approximately 13g | |
| | Sealing | | Flux proof, RTII | |

* 1: Need to consider the heat from PCB when max. current is more than 10A.

* 2: 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

FTR-K1 SERIES

■ COIL RATING

| Coil Code | Rated Coil Voltage (VDC) | Coil Resistance +/- 10% (Ohm) | Must Operate Voltage (VDC) * | Must Release-Voltage (VDC) * | Max. Coil Voltage (VDC) | Rated Power (mW) |
|-----------|--------------------------|-------------------------------|------------------------------|------------------------------|-------------------------|------------------|
| 005 | 5 | 62 | 3.5 | 0.5 | 12.2 | 400 |
| 006 | 6 | 90 | 4.2 | 0.6 | 14.7 | |
| 009 | 9 | 202 | 6.3 | 0.9 | 22 | |
| 012 | 12 | 360 | 8.4 | 1.2 | 29.4 | |
| 018 | 18 | 810 | 12.6 | 1.8 | 44.1 | |
| 022 | 22 | 1,210 | 15.4 | 2.2 | 53.9 | |
| 024 | 24 | 1,440 | 16.8 | 2.4 | 58.8 | |
| 028 | 28 | 1,960 | 19.6 | 2.8 | 68.6 | |
| 048 | 48 | 5,360 | 33.6 | 4.8 | 117.6 | 430 |
| 060 | 60 | 8,570 | 42.0 | 6.0 | 147.0 | 420 |
| 110 | 110 | 28,800 | 77.0 | 11.0 | 269.5 | |

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

* Specified operate values are valid for pulse wave voltage.

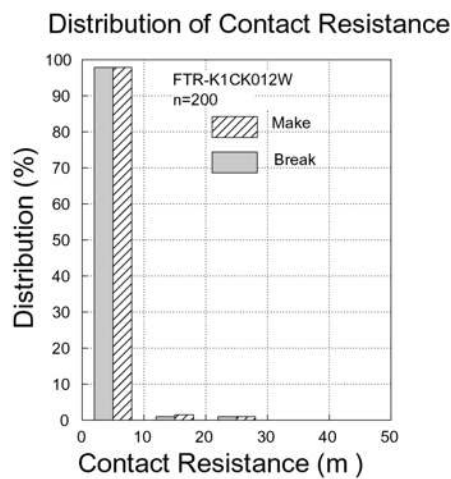
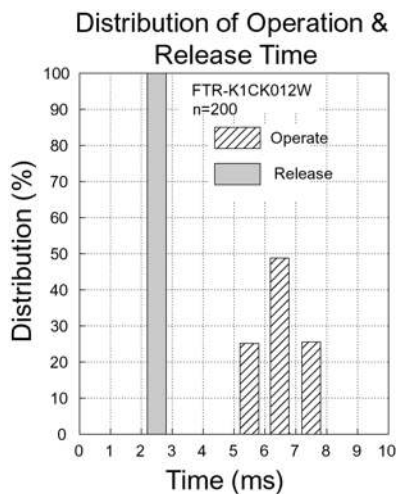
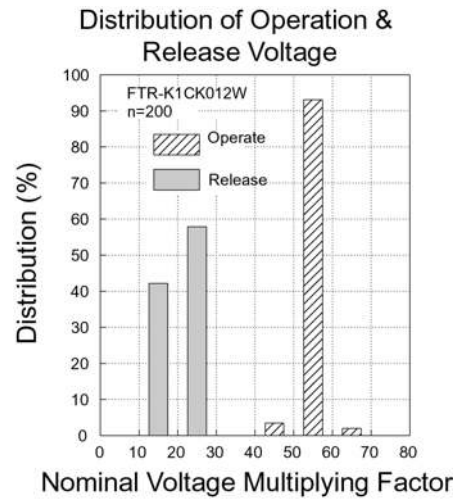
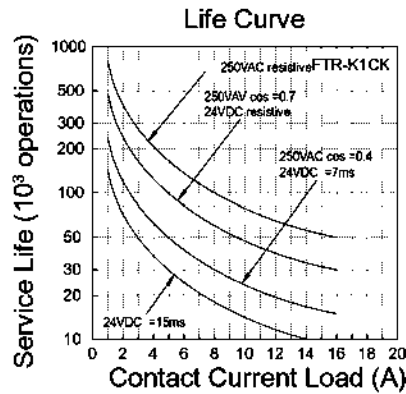
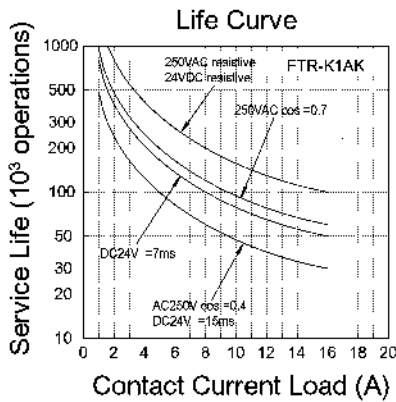
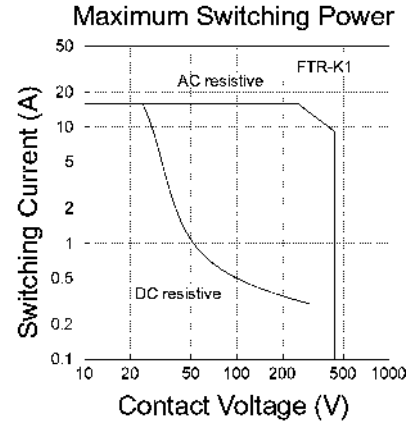
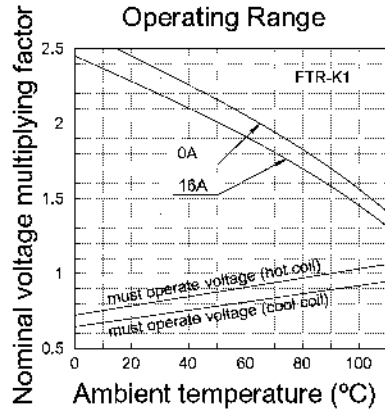
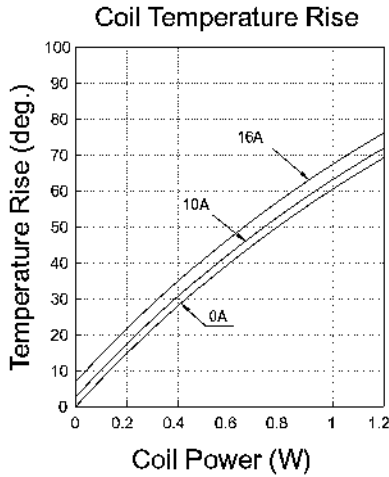
■ SAFETY STANDARDS

| Type | Compliance | Contact rating | |
|-------|--|--|--|
| UL | UL 508 E63614 | FTR-K1CK () W | FTR-K1AK () T |
| | | Flammability: UL 94-V0 (plastics) | |
| CSA | C22.2 No. 14 LR 40304 | 16A, 277VAC/24VDC (resistive) 20A, 277VAC (resistive) 1 HP, 277VAC 1/2 HP, 125VAC 1/8 HP, 125VAC TV-5, 120VAC, 25,000 cycles (only make contact) Pilot duty: B300 | 16A, 24VAC (resistive) 16A, 277VAC (resistive) 20A, 277VAC (resistive) 1 HP, 277VAC 1/2 HP, 125VAC TV-5, 120VAC 25,000 cycles Pilot duty: A300 |
| VDE | 0435, 0631, 0700, 0860, 40013848 | 16A, 250VAC (cosφ=1), 85°C 3.5A, 250VAC (cosφ=0.4), 85°C 16 A 24VDC (0ms), 85°C 5A/80A, 250VAC 10,000 times, 85°C (only make contact) | |
| SEMKO | EN 61058-1:1992 and A1 EN 61095:1993 and A1+A11 | 250VAC, 16 (3)A 40T85 5A/80A 250VAC 40T85 (only make contact) | |

Complies with NEMKO, DEMKO, FIMKO

FTR-K1 SERIES

CHARACTERISTIC DATA

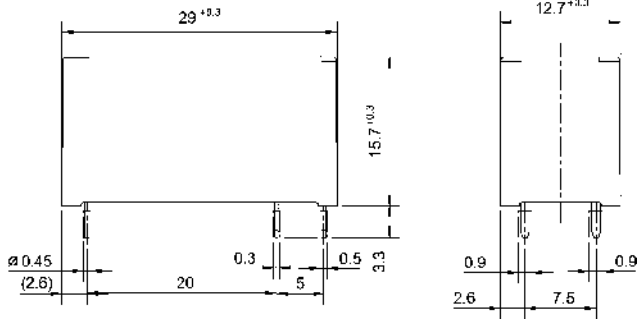


FTR-K1 SERIES

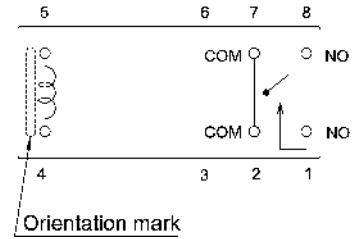
■ DIMENSIONS

• Dimensions

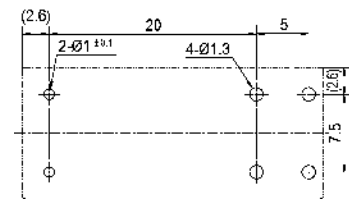
FTR-K1AK () T



• Schematics (BOTTOM VIEW)

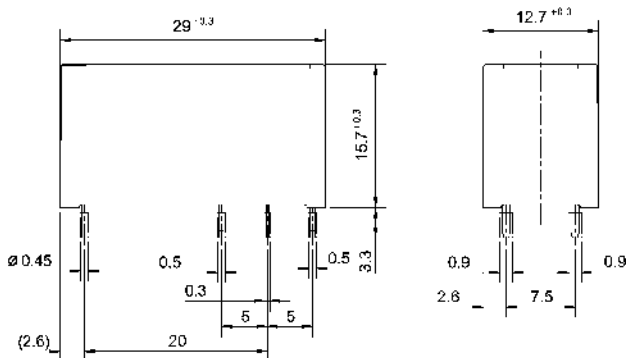


• PC board mounting hole layout (BOTTOM VIEW)

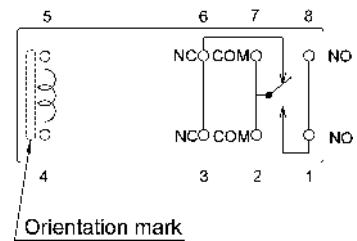


• Dimensions

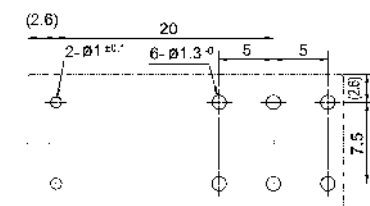
FTR-K1CK () W



• Schematics (BOTTOM VIEW)



• PC board mounting hole layout (BOTTOM VIEW)



Unit: mm

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.

Fujitsu Components International Headquarter Offices

Japan

Fujitsu Component Limited
Gotanda-Chuo Building
3-5, Higashigotanda 2-chome, Shinagawa-ku
Tokyo 141, Japan
Tel: (81-3) 5449-7010
Fax: (81-3) 5449-2626
Email: promothq@ft.ed.fujitsu.com
Web: www.fcl.fujitsu.com

North and South America

Fujitsu Components America, Inc.
250 E. Caribbean Drive
Sunnyvale, CA 94089 U.S.A.
Tel: (1-408) 745-4900
Fax: (1-408) 745-4970
Email: components@us.fujitsu.com
Web: <http://us.fujitsu.com/components>

Europe

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: emea.fujitsu.com/components/

Asia Pacific

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@fcal.fujitsu.com
Web: <http://www.fujitsu.com/sg/services/micro/components/>

©2010 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. July 28, 2010