

POWER RELAY

1 POLE - 16A / Inrush 120A relay

FTR-K1-KS Series

■ FEATURES

- 1 pole 16A, 1 form A or 1 form C Flux Proof
 - Peak inrush current 120A / TV-8
 - Coil power 400mW
 - High insulation in small package (between coil and contacts)
 - Insulation distance: 10mm min.
 - Dielectric strength: 5,000VAC
 - Surge strength: 10,000V
 - Glow wire compliant type available which satisfies GWT required for relay in IEC/EN60335-1
 - UL1446 Class F coil insulation wire
 - Cadmium-free contacts for eco-program
 - Flux proof, RTII
 - RoHS compliant
- Please see page 6 for more information



■ PARTNUMBER INFORMATION

[Example] FTR-K1 C K 005 T - KS - GW
 (a) (b) (c) (d) (e) (f) (g)

(a)	Relay type	FTR-K1	: FTR-K1-Series
(b)	Contact configuration	A C	: 1 form A : 1 form C
(c)	Coil type	K	: Standard (400mW)
(d)	Coil rated voltage	005	: 5.....110 VDC Coil rating table at page 3
(e)	Contact material / TV type	T	: AgSnO ₂ / TV-8 rating
(f)	Inrush type	KS	: Inrush 120A type
(g)	Special type	Nil GW	: Standard : Comply with GWEPT (IEC/EN60695-2-11)

Actual marking does not carry the type name : "FTR"
 E.g.: Ordering code: FTR-K1CK005T-KS Actual marking: K1CK005T-KS

FTR-K1-KS SERIES

■ SPECIFICATION

Item			FTR-K1CK () T-KS	FTR-K1AK () T-KS
Contact Data	Configuration		1 form C	1 form A
	Material		AgSnO ₂	
	Resistance (initial)		Max. 100mΩ at 1A, 6VDC	
	Contact rating		16A, 250VAC	
	Max. carrying current		20A	
	Max. switching voltage		440VAC	
	Max. switching power		4,000VA	
	Min. switching load *		100 mA, 5VDC	
	Max. inrush current		120A, 250VAC (N.O. contact)	120A, 250VAC
Life	Mechanical		Min. 20 x 10 ⁶ operations	
	Electrical	Resistive load	Min. 30 x 10 ³ operations	Min. 100 x 10 ³ operations
		Lamp load (TV-8)	Min. 25 x 10 ³ operations (N.O. contact)	Min. 25 x 10 ³ operations
		Peak inrush (120A 250VAC)	Min. 30 x 10 ³ operations (N.O. contact)	Min. 30 x 10 ³ operations
Coil Data	Rated power		400 to 430mW	
	Operate power		200 to 210mW	
	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 (no diode, without bounce)	
Insulation	Resistance (initial)		Min. 1,000MΩ at 500VDC	
	Dielectric strength	Open contacts	1,000VAC, 1min.	
		Contacts to coil	5,000VAC, 1min.	
	Surge strength	Coil to contacts	10,000V / 1.2 x 50μs standard wave	
	Clearance		10 mm	
	Creepage		10 mm	
Other	Vibration resistance	Misoperation ≥1μs	10 to 55 to 10Hz single amplitude 0.35mm	
		Endurance	10 to 55 to 10Hz single amplitude 0.75mm	
	Shock	Misoperation ≥1μs	Min. 100m/s ² (11 ± 1ms)	
		Endurance	Min. 1,000m/s ² (6 ± 1ms)	
	Weight		Approximately 13 g	
	Sealing		Flux proof RTII	

* 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-K1-KS SERIES

■ COIL RATING

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

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

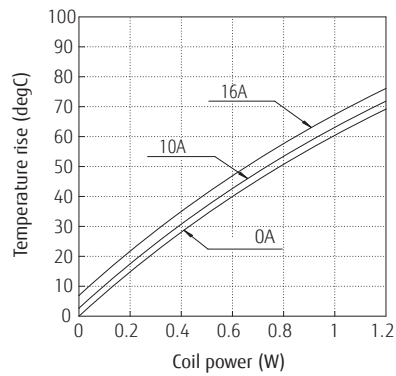
* Specified operate values are valid for pulse wave voltage.

■ SAFETY STANDARDS

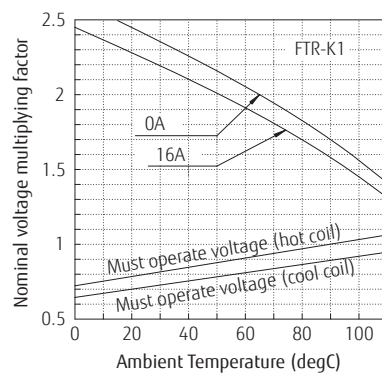
Type	Compliance	Contact rating	
		1 form A type	1 form C type
UL	UL 508 (No. E63614)	Flammability: UL 94-V0 (plastics)	
		16A, 277VAC (resistive), 105°C TV-8, 120VAC, 105°C	16A, 277VAC (resistive), 105°C TV-8, 120VAC, (N.O. contact), 105°C
CSA	C22.2 No. 14 (No. LR40304)	16A, 277VAC (resistive) TV-8, 120VAC	16A, 277VAC (resistive) TV-8, 120VAC (N.O. contact)
VDE	IEC/EN61810-1 EN60065 clause 14.6.1 EN60335-1 clause 15.3; 16.3; 29.1; 29.2; 29.3 EN60730-1 clause 12.2; 13.2; 20.1; 20.2; 20.3	16A, 250VAC, $\cos\phi=1$, 105°C 8/120A, 250VAC, 85°C	16A, 250VAC, $\cos\phi=1$, 105°C 8/120A, 250VAC, 85°C (N.O. contact)

■ CHARACTERISTIC DATA (For reference only)

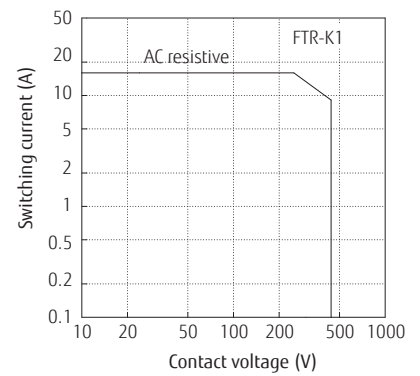
Coil Temperature Rise



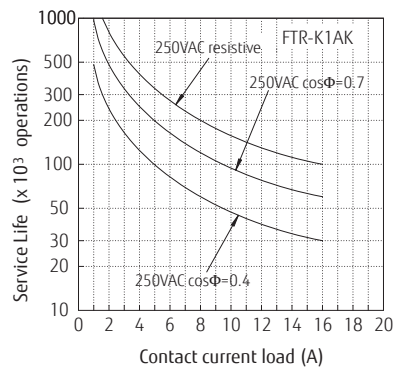
Operating Range



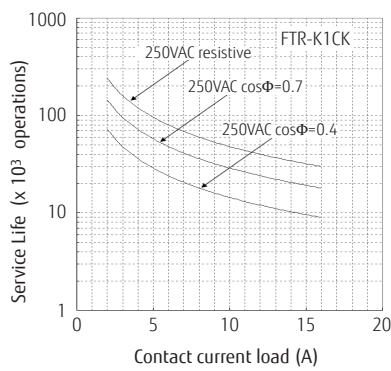
Maximum Switching Power



Life Curve



Life Curve

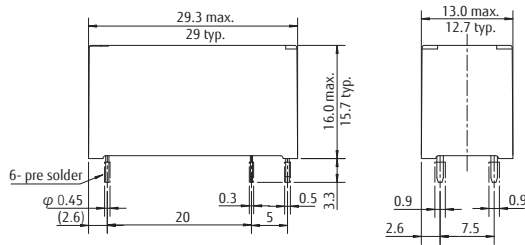


FTR-K1-KS SERIES

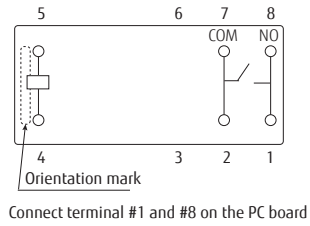
■ DIMENSIONS

FTR-K1AK()T-KS

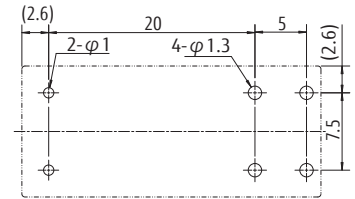
● Dimensions



● Schematics

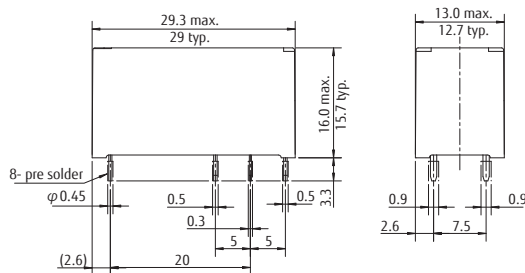


● PC board mounting hole layout (BOTTOM VIEW)

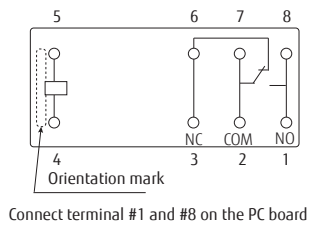


FTR-K1CK()T-KS

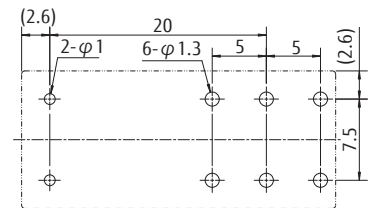
● Dimensions



● Schematics



● PC board mounting hole layout (BOTTOM VIEW)



Unit: mm

Dimensions of the terminals do not include thickness of pre-solder.
Tolerance of PC board mounting hole layout : ± 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.
- Please connect relay coils according to specified polarity.
- 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 relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives. As per Annex III of directive 2011/65/EU.
- 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>
- 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 Condition

- 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.

Fujitsu Components International Headquarter Offices

<p>Japan 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/</p>	<p>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@sg.fujitsu.com Web: www.fujitsu.com/sg/products/devices/components</p>	<p>Korea FUJITSU COMPONENTS KOREA LIMITED Alpha Tower #403, 645 Samsyeong-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/</p>
<p>North and South America 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</p>	<p>China 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</p>	
<p>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: www.fujitsu.com/uk/components</p>	<p>Hong Kong 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/</p>	

©2020 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. December 10, 2020