

POWER RELAY

2 POLES—5 A LOW PROFILE TYPE

FTR-F1 SERIES

RoHS compliant

■ FEATURES

- Low profile power relay (height 16.5 mm) employing unique construction
- DPST/DPDT 5 A, TV-3 rating available
- Higher isolation by employing reinforced insulation co struction

Insulation distance: 8 mm (between coil and contact)
Dielectric strength: 5 kV (between coil and contact)
Surge strength: 10 kV (between coil and contact)

- Plastic sealed relay
- Pin configuration compatible to VB/FBR620
- UL, CSA, VDE, SEMKO, BSI recognized
- Conforms to FIMKO, IMQ, DEMKO (under approval)
- Environmentally friendly cadmium free contact type is available
- RoHS compliant since date code: 0434R
 Please see page 7 for more information



ORDERING INFORMATION

[Example] $\frac{\text{FTR-F1}}{\text{(a)}} \quad \frac{A}{\text{(b)}} \quad \frac{A}{\text{(c)}} \quad \frac{005}{\text{(d)}} \quad \frac{V}{\text{(e)}} \quad \frac{-**}{\text{(f)}}$

(a)	Series Name	FTR-F1: FTR-F1 Series				
(b)	Contact Arrangement	A : 2 form A (DPST-NO) C : 2 form C (DPDT)				
(c)	Coil Type	A : Standard type (0.53 W) D : High sensitive type (0.4W)				
(d)	Nominal Voltage	003 : 3 VDC (high sensitive type 'D' only) 005 : 5 VDC 009: 9 VDC 024: 24 VDC 006 : 6 VDC 012: 12 VDC 048: 48 VDC				
(e)	Contact Material/TV Type	V : Gold plate silver alloy (standard type) T : Gold plate silver alloy (TV-3 rating type, only standard make type)				
(f)	Custom Designation	To be assigned custom specification				

Ordering Code: Actual Marking: FTR-F1AA005V F1AA005V

1

■ SAFETY STANDARD AND FILE NUMBERS

UL508, 873 (File No. E63614)

C 22.2 No. 14 (File No. LR40304-30/ LR107822)

VDE 0435, 0631, 0700, 0860 (File No. 11039-4940-1019)

	Туре	Nominal voltage	Contact rating
TV-Rating	FTR-F1AA()T	5 to 48 VDC	TV-3 120 VAC 1/6 HP 125 VAC 1/4 HP 250 VAC 5 A 24 VDC/250 VAC resistive Pilot duty R 300
Standard/ sensitive	FTR-F1CA()V	5 to 48 VDC	Same as above without TV-3 2A 250VAC inductive (PF=0.4)

■ SPECIFICATIONS

ltem			Standard Type	Sensitive Type	TV-3 Rating Type		
Contact	Arrangement		2 form A (DPST-NO), 2 form	2 form A (DPST-NO)			
	Material		Gold plate silver alloy				
	Style		Single				
	Resistance (initial)		Maximum100 mΩ (at 1 A 6 VDC)				
	Rating (resistive)		5 A 250 VAC/24 VDC				
	Maximum Carrying Current		7 A				
	Maximum Sv	witching Rating	1,250 VA/120 W				
	Maximum Switching Voltage		400 VAC 300 VDC				
	Maximum Switching Current		5 A				
	Minimum Switching Load*1		10 mA 5 VDC				
	Maximum Inrush Current		_		51 A 120 VAC (at lamp load)		
Coil	Nominal Power (at 20°C)		0.53 W	0.4 W	0.53 W		
	Operate Power (at 20°C)		0.26 W	0.225W	0.26W		
	Operating Temperature		-40°C to +75°C (no frost) (refer to the CHARACTERISTIC DATA)				
Time Value	Operate (at nominal voltage)		Maximum 15 ms				
	Release (at nominal voltage)		Maximum 5 ms				
Insulation	Resistance (at 500 VDC)		Minimum 1,000 MΩ				
	Dielectric Strength bet	tween open contacts	1,000 VAC 1 minute (3,000 VAC between adjacent contacts)				
		tween coil and contacts	5,000 VAC 1 minute				
	Surge Strength		10,000 V (at 1.2 × 50 μs)				
Life	Mechanical		2 × 10 ⁷ operations minimum				
	Electrical	Contact Rating	1 × 10 ⁵ operations minimum				
		Lamp Load	_		2.5 x 10 ⁴ ops. minimum		
Other	Vibration Resistance	Misoperation	10 to 55 Hz (double amplitude of 1.65 mm)				
	resistance	Endurance	10 to 55 Hz (double amplitude of 3.3 mm)				
	Shock Resistance	Misoperation	100 m/s ² (11 ±1 ms)				
		Endurance	1,000 m/s ² (6 ±1 ms)				
	Weight		Approximately 12 g				

^{*1} Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and ex-

■ COIL DATA CHART

MODEL		Nominal	Coil resistance	Must operate	Must release
Standard Type	TV-3 Rating Type	voltage	(±10%)	voltage	voltage
FTR-F1 (C, A) A005 V	FTR-F1AA005 T	5 VDC	47 Ω	3.5 VDC	0.5 VDC
FTR-F1 (C, A) A006 V	FTR-F1AA006 T	6 VDC	68 Ω	4.2 VDC	0.6 VDC
FTR-F1 (C, A) A009 V	FTR-F1AA009 T	9 VDC	155 Ω	6.3 VDC	0.9 VDC
FTR-F1 (C, A) A012 V	FTR-F1AA012 T	12 VDC	270 Ω	8.4 VDC	1.2 VDC
FTR-F1 (C, A) A024 V	FTR-F1AA024 T	24 VDC	1,100 Ω	16.8 VDC	2.4 VDC
FTR-F1 (C, A) A048 V	FTR-F1AA048 T	48 VDC	4,400 Ω	33.6 VDC	4.8 VDC

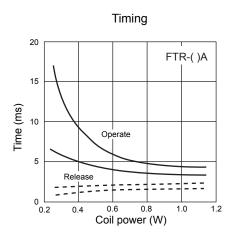
Note: All values in the table are measured at 20°C.

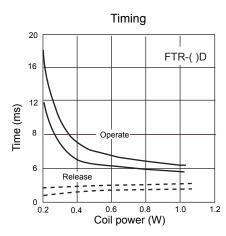
Sensitive Type

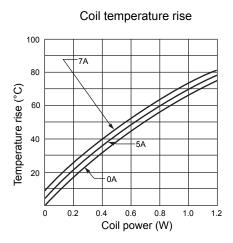
MODEL	Nominal	Coil resistance	Must operate voltage	Must release
Standard Type	voltage	(±10%)	voitage	voltage
FTR-F1 (C, A) D003 V	3 VDC	22.5 Ω	2.25 VDC	0.3 VDC
FTR-F1 (C, A) D005 V	5 VDC	62 Ω	3.75 VDC	0.5 VDC
FTR-F1 (C, A) D006 V	6 VDC	90 Ω	4.5 VDC	0.6 VDC
FTR-F1 (C, A) D009 V	9 VDC	202 Ω	6.75 VDC	0.9 VDC
FTR-F1 (C, A) D012 V	12 VDC	360 Ω	9.0 VDC	1.2 VDC
FTR-F1 (C, A) D024 V	24 VDC	1,440 Ω	18.0 VDC	2.4 VDC
FTR-F1 (C, A) D048 V	48 VDC	5,760 Ω	36.0 VDC	4.8 VDC

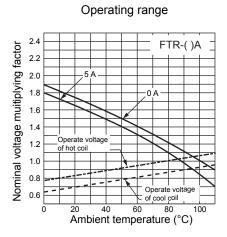
3

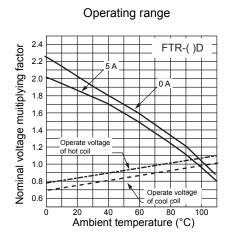
■ CHARACTERISTIC DATA

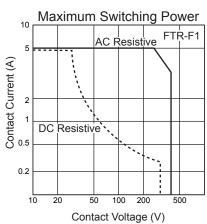


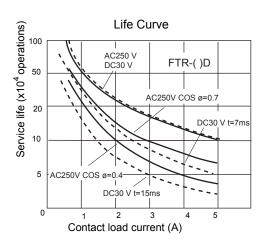




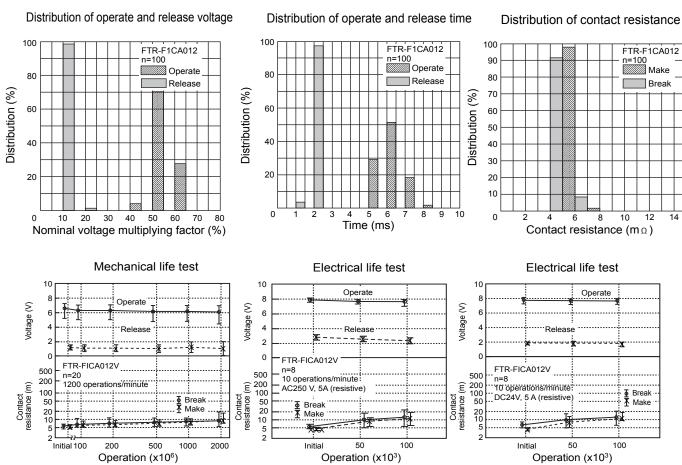








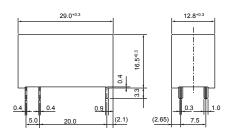
■ REFERENCE DATA



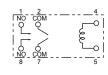
■ DIMENSIONS

Dimensions

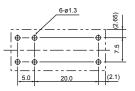
FTR-F1A type



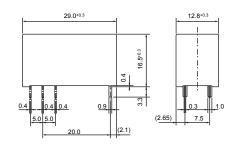
• Schematics (BOTTOM VIEW)

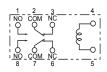


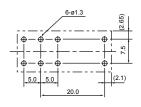
PC board mounting hole layout (BOTTOM VIEW)



FTR-F1C type







Unit: mm

RoHS Compliance and Lead Free Relay Information

1. General Information

- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. Most of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf)
- Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu.
- All signal and most power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 5 hazardous materials that are restricted by RoHS directive (lead, mercury, chromium IV, PBB, PBDE).
- It has been verified that using lead-free relays in leaded assembly process will not cause any problems (compatible).
- "LF" is marked on each outer and inner carton. (No marking on individual relays).
- To avoid leaded relays (for lead-free sample, etc.) please consult with area sales office.
- We will ship leaded relays as long as the leaded relay inventory exists.

Note: Cadmium was exempted from RoHS on October 21, 2005. (Amendment to Directive 2002/95/EC)

2. Recommended Lead Free Solder Profile

Recommended solder paste Sn-3.0Ag-0.5Cu.

Reflow Solder condtion

Flow Solder condtion:

Pre-heating: maximum 120°C dip within 5 sec. at 260°C soler 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 realys.

4. Tin Whisker

 Dipped SnAgCu solder is known as low risk tin whisker. 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: marcom@fcai.fujitsu.com

Web: http://www.fujitsu.com/us/services/edevices/components/

Europe

Fujitsu Components Europe B.V. Diamantlaan 25

Diamantlaan 25 2132 WV Hoofddorp Netherlands

Tel: (31-23) 5560910 Fax: (31-23) 5560950 Email: info@fceu.fujitsu.com

Web: http://www.fujitsu.com/emea/services/components/

Asia Pacific

Fujitsu Components Asia Ltd. 102E Pasir Panjang Road

#04-01 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/

©2005 Fujitsu Components America, Inc. All rights reserved. All trademarks or registered trademarks are the property off their respective owners.

Fujitsu Components America does not warrant that the content of datasheet is error free. In a continuing effort to improve our products Fujitsu Components America, Inc. reserves the right to change specifications/datasheets without prior notice. Rev. 11/18/2005.