

POWER RELAY

2 POLES—5 A LOW PROFILE TYPE

FTR-F1 SERIES

■ 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 construction
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



■ ORDERING INFORMATION

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

(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	005	: 5 VDC	012:	12 VDC
		006	: 6 VDC	024:	24 VDC
		009	: 9 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

FTR-F1 SERIES

■ 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)

	Type	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

Item			Standard Type		Sensitive Type		TV-3 Rating Type	
Contact	Arrangement		2 form A (DPST-NO), 2 form C (DPDT)				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 Switching 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	between open contacts	1,000 VAC 1 minute (3,000 VAC between adjacent contacts)					
		between 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)					
		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 expected reliability levels.

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■ COIL DATA CHART

MODEL		Nominal voltage	Coil resistance (±10%)	Must operate voltage	Must release voltage
Standard Type	TV-3 Rating Type				
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.

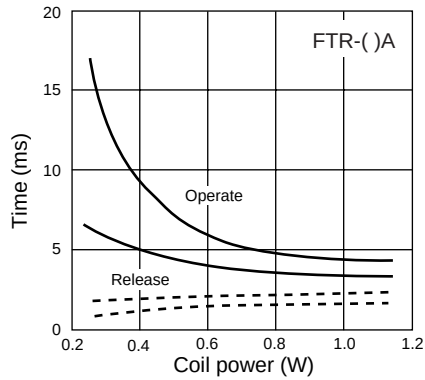
Sensitive Type

MODEL	Nominal voltage	Coil resistance (±10%)	Must operate voltage	Must release voltage
Standard Type				
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

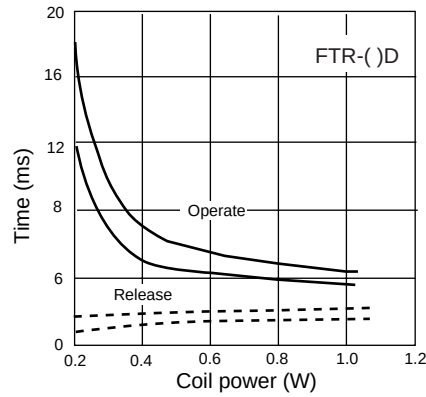
FTR-F1 SERIES

CHARACTERISTIC DATA

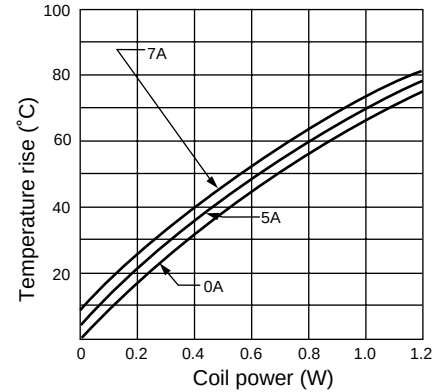
Timing



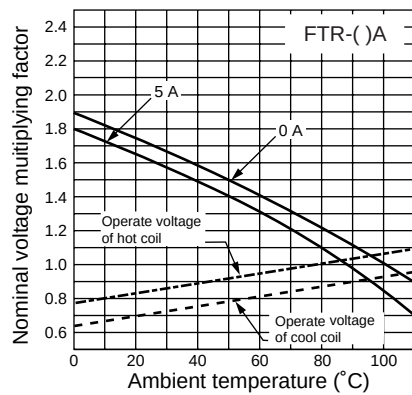
Timing



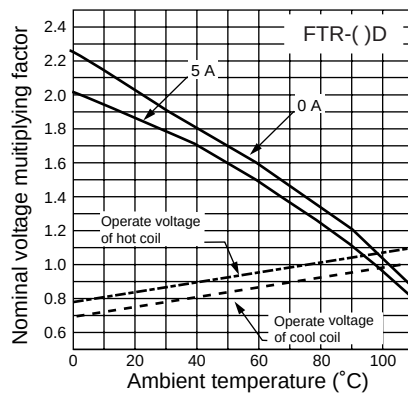
Coil temperature rise



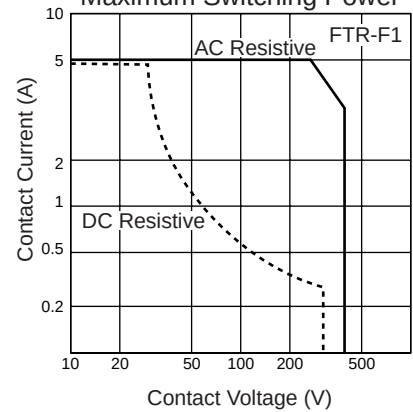
Operating range



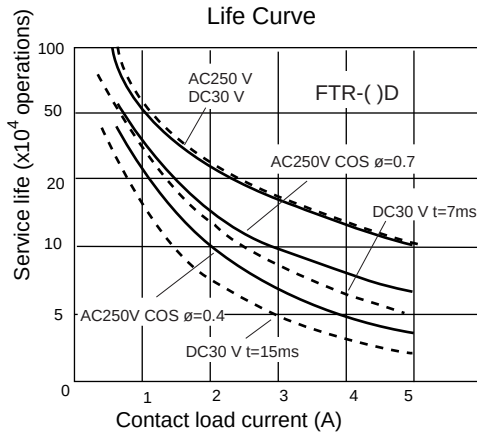
Operating range



Maximum Switching Power

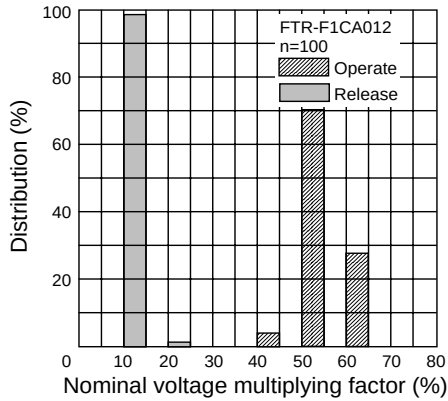


Life Curve

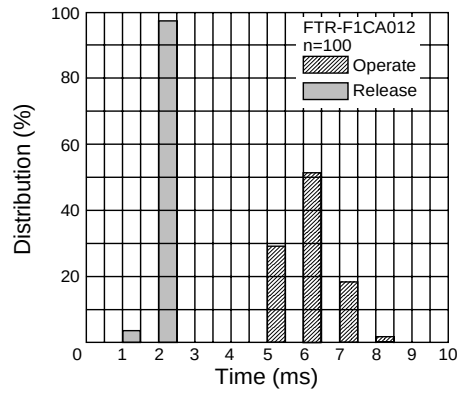


REFERENCE DATA

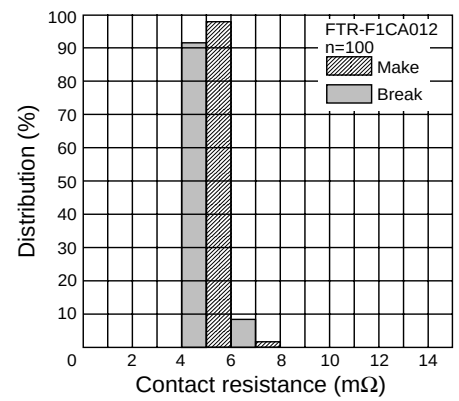
Distribution of operate and release voltage



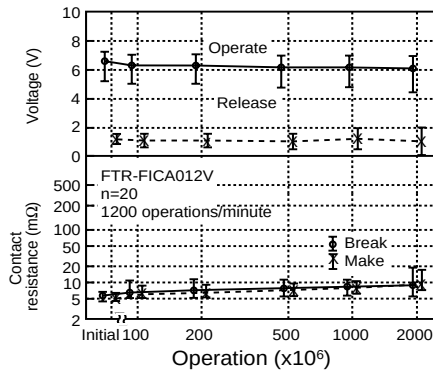
Distribution of operate and release time



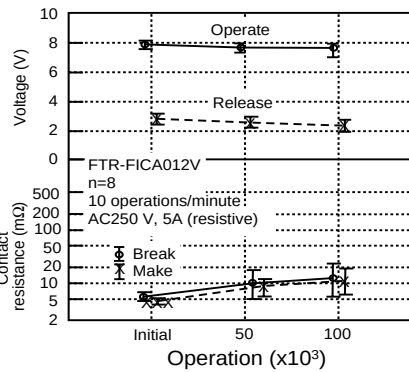
Distribution of contact resistance



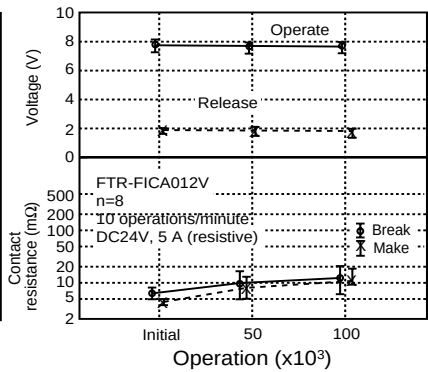
Mechanical life test



Electrical life test



Electrical life test

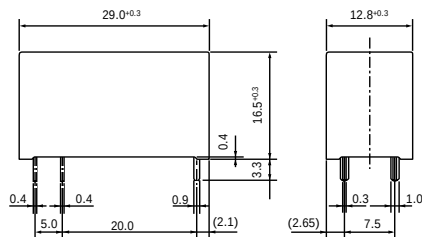


FTR-F1 SERIES

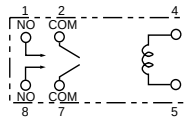
■ DIMENSIONS

● Dimensions

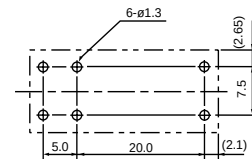
FTR-F1A type



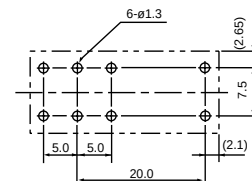
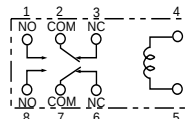
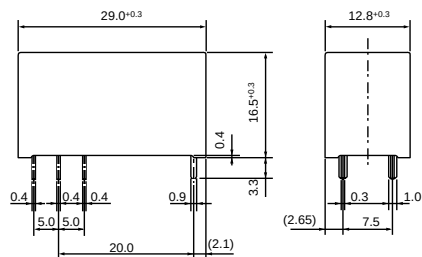
● **Schematics**
(BOTTOM VIEW)



● PC board mounting
hole layout
(BOTTOM VIEW)



FTR-F1C type



Unit: mm

**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: www.fcai.fujitsu.com

Europe

Fujitsu Components Europe B.V.
Diamantlaan 25
2132 WV Hoofddorp
Netherlands
Tel: (31-23) 5560910
Fax: (31-23) 5560950
Email: info.marketing@fceu.fujitsu.com
Web: www.fceu.fujitsu.com

Asia Pacific

Fujitsu Components Asia Ltd.
102E Pasir Panjang Road
#04-01 Citilink Warehouse Complex
Singapore 118529
Tel: (65) 375-8560
Fax: (65) 273-3021
Email: fcgal@fcgal.fujitsu.com
www.fcgal.fujitsu.com