

POWER RELAY

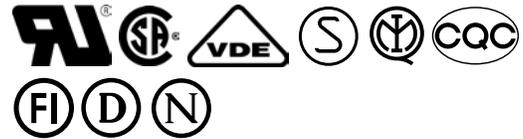
2 POLES—8 A LOW PROFILE TYPE

FTR-F1 R SERIES

RoHS compliant

■ FEATURES

- DPST/DPDT 8A
- Low profile power relay (height 16.5 mm) employing unique construction
- 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)
- Pin configuration compatible to VB/FBR620
- UL, CSA, VDE, SEMKO, CQC recognized
- Conforms to FIMKO, IMQ, DEMKO
- RoHS compliant since date code: 0434R
Please see page 8 for more information



■ ORDERING INFORMATION - 5A Rating Type

FTR-F1 A L 005 R -(**)

[Example] (a) (b) (c) (d) (e) (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	L	: High sensitive type (400 mW)		
(d)	Nominal Voltage	003	: 3 VDC (high sensitive type 'D' only)		
		005	: 5 VDC	012: 12 VDC	048: 48 VDC
		006	: 6 VDC	018: 18 VDC	060: 60 VDC
		009	: 9 VDC	024: 24 VDC	100: 100 VDC
(e)	Contact Rating	R	: 8A		
(f)	Custom Designation	RG	: Transparency cover		

Ordering Code: Actual Marking:
FTR-F1AL005V F1AL005V

FTR-F1 SERIES

■ PART NUMBERS

Ordering Part Number	Series	Contact	Coil Power	Coil Voltage	Contact Rating	Special Designation
FTR-F1AL003R(-RG)	FTR-F1	A: 2 form A	L: 400 mW	3	R: 8A	RG: Transparency coRer
FTR-F1AL005R(-RG)				5		
FTR-F1AL006R(-RG)				6		
FTR-F1AL009R(-RG)				9		
FTR-F1AL012R(-RG)				12		
FTR-F1AL024R(-RG)				24		
FTR-F1AL048R(-RG)				48		
FTR-F1CL003R(-RG)				C: 2 form C		
FTR-F1CL005R(-RG)		5				
FTR-F1CL006R(-RG)		6				
FTR-F1CL009R(-RG)		9				
FTR-F1CL012R(-RG)		12				
FTR-F1CL024R(-RG)		24				
FTR-F1CL048R(-RG)		48				

■ COIL DATA CHART

400mW type

Coil Voltage	Nominal Voltage (VDC)	Max. Coil Voltage*1	Coil Resistance (±10%)	Must Operate Voltage*2	Must Release Voltage*2	Nominal Power (mW)
003	3	6.0VDC	22.5 Ω	2.25 VDC	0.3 VDC	400
005	5	10.0 VDC	62 Ω	3.75 VDC	0.5 VDC	
006	6	12.0 VDC	90 Ω	4.5 VDC	0.6 VDC	
009	9	18.0 VDC	202 Ω	6.75 VDC	0.9 VDC	
012	12	24.0 VDC	360 Ω	9 VDC	1.2 VDC	
024	24	48.0 VDC	1,440 Ω	18 VDC	2.4 VDC	
048	48	96.0 VDC	5,760 Ω	36 VDC	4.8 VDC	

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

*1: No contact current at 20°C

*2: Specified values are subject to pulse wave voltage

FTR-F1 SERIES

■ SPECIFICATIONS

Item		Standard Type F1(A, C)L ()R	Transparent Cover F1(A, C)L ()R-RG
Contact	Arrangement	2 form A (DPST-NO), 2 form C (DPDT)	
	Material	Movable: gold plate silver tin oxide; Stationary: Silver tin oxide	
	Configuration	Single	
	Resistance (initial)	Maximum 100 mΩ at 1 A, 6 VDC	
	Rating (resistive)	8A, 250VAC / 24VDC	
	Maximum Carrying Current*1	8A	
	Maximum Switching Rating	2,000 VA / 192W	
	Maximum Switching Voltage	400 VAC / 300VDC	
	Maximum Switching Load*2	10mA 5 VDC	
Coil	Nominal Power (at 20°C)	400mW	
	Operate Power (at 20°C)	225mW	
	Operating Temperature	-40°C to +75°C (no frost)	-40°C to +70°C (no frost)
Time Value	Operate (without diode)	Maximum 15ms (at nominal voltage, no bounce)	
	Release (without diode)	Maximum 5ms (at nominal voltage, no bounce)	
Life	Mechanical	2 x 10 ⁷ ops minimum	
	Electrical	AC load	5 x 10 ⁴ ops min.
		DC load	5 x 10 ⁴ ops min.
Other	Vibration Resistance	Misoperation	10 to 55 Hz, at double amplitude of 1.65mm
		Endurance	10 to 55Hz, at double amplitude of 3.3mm
	Shock Resistance	Misoperation	100m/s ² (11±1ms)
		Endurance	1,000m/s ² (6±1ms)
	Weight	Approximately 12g	

*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.

■ INSULATION

Item	FTR-F1	Note
Resistance (initial)	Minimum 1,000 MΩ	at 500 VDC
Dielectric Strength	open contacts	1,000 VAC (50/60 Hz) 1 min.
	coil and contacts	5,000 VAC (50/60 Hz) 1 min.
	adjacent contacts	3,000 VAC (50/60 Hz) 1 min.
Surge Voltage (coil and contact)	10,000 V	1.2 x 50μs standard wave
Clearance/Creepage	8 mm / 8 mm	
Insulation (DIN EN61810-1 VDE0435)		
Voltage	250 V	
Pollution	3	
Isolation material group	IIIa	
Isolation category / Reference voltage (VDE0110b)	C / 250 V	

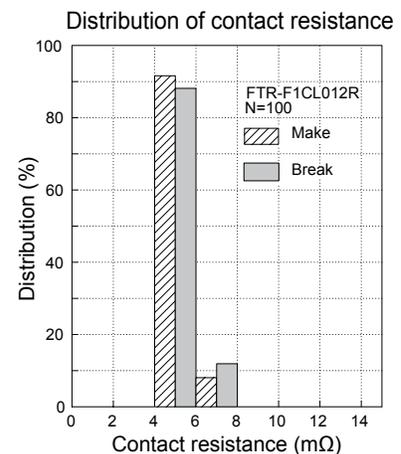
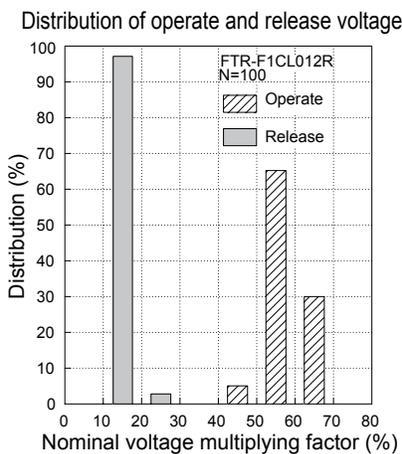
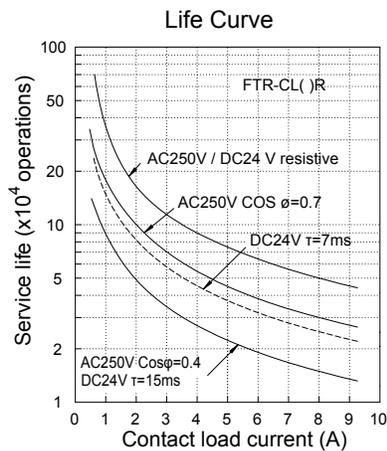
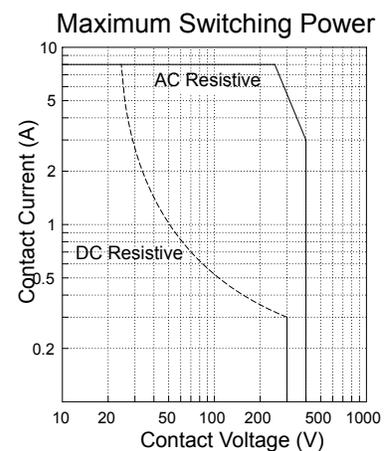
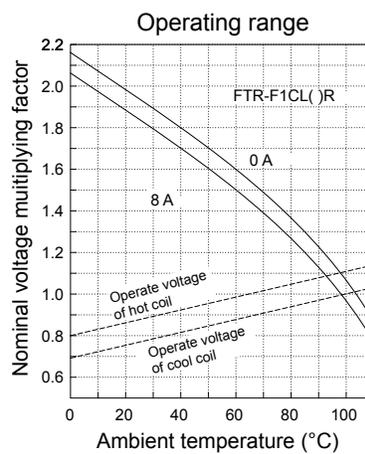
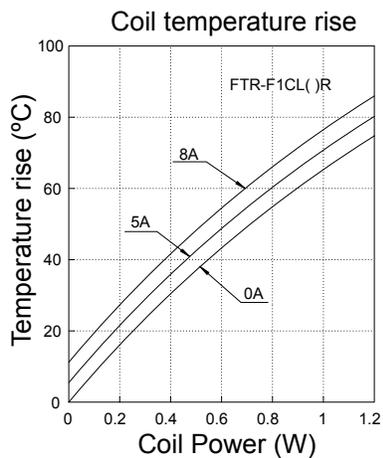
SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL 508	Flammability: UL 94-V0 (plastics) 8A, 24VDC (resistive) 8A, 250 VAC (resistive)
	E63614	
CSA	C22.2 No. 14 LR 40304	1/6 HP, 125VAC 1/4 HP, 250VAC Pilot duty: C300, R300
VDE	0435, 0631, 0700, 0860	8A, 250 VAC (cos ϕ =1) 8 A 24VDC (0ms)

Complies with BSI, IMC, CQC, NEMKO, DEMKO, FIMKO

CHARACTERISTIC DATA

8A Rating Type

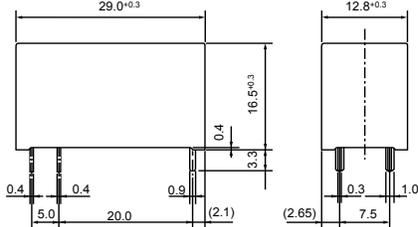


FTR-F1 SERIES

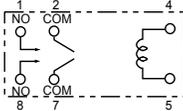
■ DIMENSIONS

● Dimensions

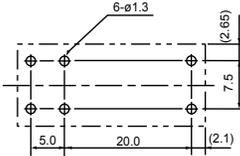
FTR-F1A type



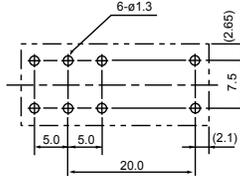
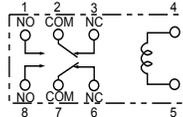
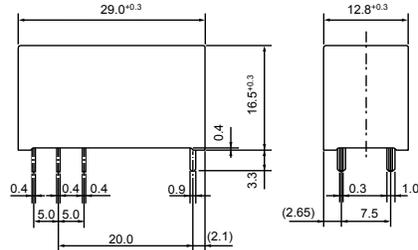
● Schematics (BOTTOM VIEW)



● 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. All 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 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 condition

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.

4. Tin Whisker

- Dipped SnAgCu solder is known as low risk tin whisker. No considerable length whisker was found by our in house test.

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