

# POWER RELAY

## 2 POLES - 8A Polarized Latching Relay

### FTR-F1L Series

#### ■ FEATURES

- Low profile (height: 16.5mm)
- High insulation  
Insulation distance (between coil and contacts): 8mm min.  
Dielectric strength: 5KV  
Surge strength: 10KV
- Plastic materials  
- UL94 Flammability class V-0
- Cadmium free relay
- RoHS compliant  
Please see page 5 for more information



#### ■ PARTNUMBER INFORMATION

[Example]     FTR-F1L   D   C   A   012   R  
                   (a)    (b)   (c)   (d)   (e)   (f)

(a)	Relay type	FTR-F1L : FTR-F1L-Series
(b)	Coil type	Nil : 1 Coil D : 2 Coil
(c)	Contact configuration	A : 2 form A C : 2 form C
(d)	Coil power	A : Standard, 400mW (1 Coil) 600mW (2 Coil)
(e)	Coil rated voltage	012 : 5.....24 VDC Coil rating table at page 3
(f)	Contact rating	R : 8A

Actual marking does not carry the type name : "FTR"  
 E.g.: Ordering code: FTR-F1LDCA012R Actual marking: F1LDCA012R

# FTR-F1L SERIES

## ■ SPECIFICATION

Item			FTR-F1L
Contact Data	Configuration		2 form A, 2 form C
	Construction		Single
	Material		AgSnO <sub>2</sub>
	Resistance (initial)		Max. 100mΩ at 1A, 6VDC
	Contact rating		8A, 250VAC / 24VDC
	Max. carrying current		8A
	Max. switching voltage		400VAC, 300VDC
	Max. switching power		2,000VA, 192W
	Min. switching load *		10mA, 5VDC
Life	Mechanical		Min. 3 x 10 <sup>6</sup> operations
	Electrical		Min. 50 x 10 <sup>3</sup> operations
Coil Data	Rated power (20 °C)		1 coil : 400mW 2 coils: 600mW
	Operating temperature range		-40 °C to +85 °C (no frost)
Timing Data	Set / reset (at nominal voltage)		Max. 15ms (without bounce, without diode)
	Coil excitation (at nominal coil voltage)		Min. 30ms, max. 1,000ms
Insulation	Resistance (initial)		Min. 1,000MΩ at 500VDC
	Dielectric strength	Open contacts	1,000VAC, 1min. 50/60Hz
		Adjacent contacts	3,000VAC, 1min. 50/60Hz
		Coil to contacts	5,000VAC, 1 min. 50/60Hz
	Surge strength	coil to contacts	10,000V/ 1.2 x 50μs standard wave
	Clearance		8mm
Creepage		8mm	
Other	Vibration resistance	Misoperation >1μs	10 to 55Hz double amplitude 1.65 mm
		Endurance	10 to 55Hz double amplitude 3.3 mm
	Shock	Misoperation >1μs	Min. 200m/s <sup>2</sup> (11±1ms)
		Endurance	Min. 1,000m/s <sup>2</sup> (6±1ms)
	Weight		Approximately 13g

\* 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-F1L SERIES

## COIL DATA

Coil Code	1 coil			2 coils		
	Operating range		Coil Resistance +/- 10% (Ohm)	Operating range		Coil Resistance +/- 10% (Ohm)
	Min. VDC	Max. VDC		Min. VDC	Max. VDC	
5	3.5	9	62.5	3.5	9	41.7
12	8.4	21.2	360	8.4	21.2	240
24	16.8	42.2	1,440	16.8	42.2	960

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

\* Specified operate values are valid for pulse wave voltage.

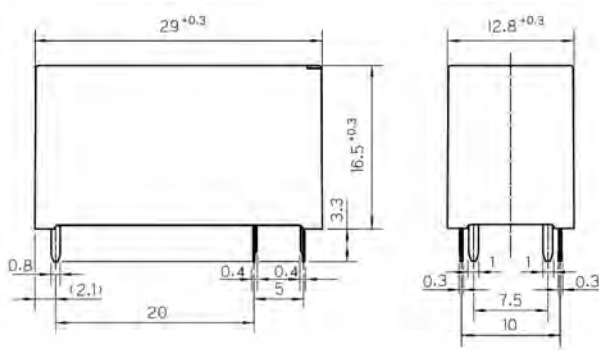
## COIL POLARITY

Version	1 coil		2 coils			
Coil terminal division	4	7	4	5	6	7
Set	-	+			-	+
Reset	+	-	+	-		

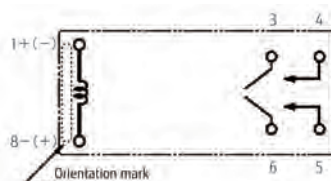
## DIMENSIONS

FTR-F1LA type

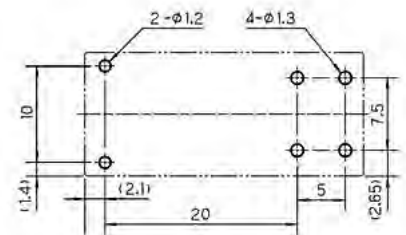
### Dimensions



### Schematics



### PC board mounting hole layout (BOTTOM VIEW)



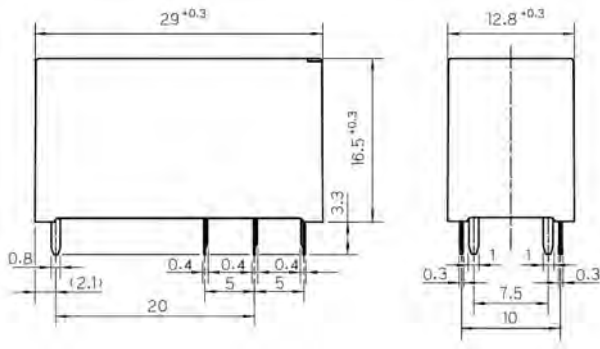
(...) dimension tolerance  $\pm 0.1$ mm

# FTR-F1L SERIES

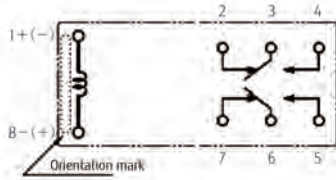
## ■ DIMENSIONS

FTR-F1LC type

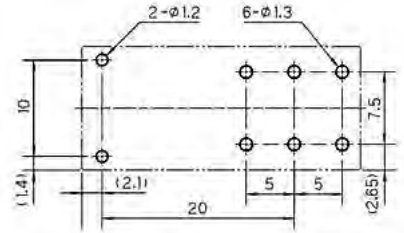
### ● Dimensions



### ● Schematics



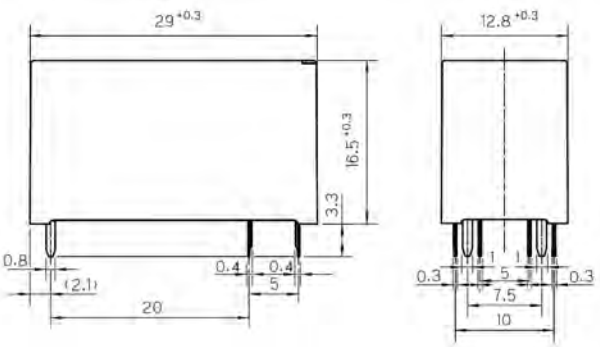
### ● PC board mounting hole layout (BOTTOM VIEW)



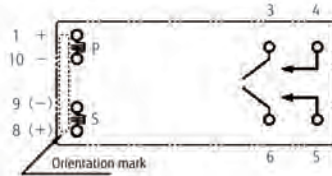
(...) dimension tolerance  $\pm 0.1$ mm

FTR-F1LDA type

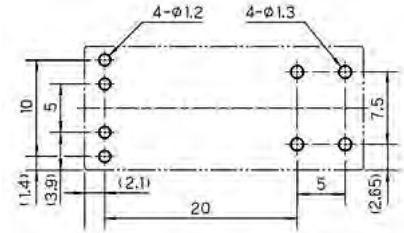
### ● Dimensions



### ● Schematics



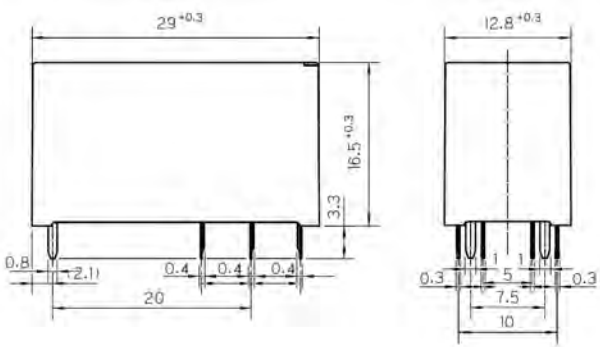
### ● PC board mounting hole layout (BOTTOM VIEW)



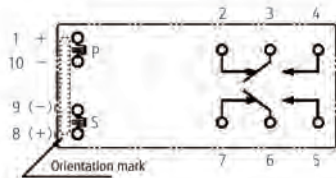
(...) dimension tolerance  $\pm 0.1$ mm

FTR-F1LDC type

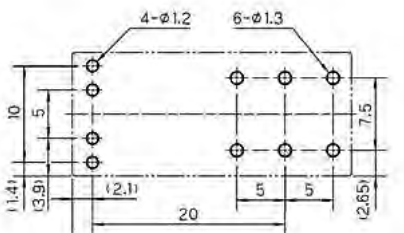
### ● Dimensions



### ● Schematics



### ● PC board mounting hole layout (BOTTOM VIEW)



(...) dimension tolerance  $\pm 0.1$ mm

## 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 9 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

### 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](mailto:promothq@ft.ed.fujitsu.com)  
Web: [www.fcl.fujitsu.com](http://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](mailto: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](mailto:info@fceu.fujitsu.com)  
Web: [emea.fujitsu.com/components/](http://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](mailto:fcal@fcal.fujitsu.com)  
Web: <http://www.fujitsu.com/sg/services/micro/components/>

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