

# 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 : 5,000 VAC  
Surge strength : 10,000 V
- Plastic sealed
- Plastic materials:UL94 Flammability class V-0
- Cadmium free relay
- RoHS compliant



#### ■ 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 See coil rating table
(f)	Special type	R : 8A

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

# FTR-F1L Series

## ■ SPECIFICATIONS

Item		FTR-F1L	Remarks
Contact data	Configuration	2 form A, 2 form C	
	Construction	Single	
	Material	AgSnO <sub>2</sub> (Movable: Gold plate)	
	Resistance	Max. 100mΩ at 6VDC, 1A	Initial
	Contact rating	8A, 250VAC / 24VDC	Resistive
	Max. carrying current	8A	
	Max. switching current	8A	
	Max. switching power	2000VA / 192W	
	Max. switching voltage	400VAC, 300VDC	
	Min. switching load *1	10 mA, 5VDC	
Coil data	Rated power (20°C)	1 coil: 400mW 2 coils: 600mW	
	Pulse width	30ms to 1000ms	
	Operating temperature range	-40°C ~ +85°C	No frost
Timing data	Set / reset	Max. 15ms	Without bounce, no diode
Life	Mechanical	Min. 3 x 10 <sup>6</sup> operations	
	Electrical	Min. 50 x 10 <sup>3</sup> operations	At rated load
Insulation	Insulation resistance		Min. 1000MΩ at 500VDC
	Dielectric strength	Open contacts	1000VAC (50/60Hz), 1 minute
		Coil contact	5000VAC (50/60Hz), 1 minute
		Adjacent contact	3000VAC (50/60Hz), 1 minute
	Surge strength	Coil to contacts	10000V / 1.2 x 50μs standard wave
Clearance / Creepage		8mm / 8mm	
Others	Vibration resistance	Misoperation	10Hz ~ 55Hz ~ 10Hz single amplitude 0.825mm
		Endurance	10Hz ~ 55Hz ~ 10Hz single amplitude 1.65mm
	Shock resistance	Misoperation	Min. 200m/s <sup>2</sup> (11 ± 1ms)
		Endurance	Min. 1,000m/s <sup>2</sup> (6 ± 1ms)
	Dimensions / weight		12.8 x 29.0 x 16.5 mm / approx. 13.0g

\*1: 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

1 coil

Coil Code	Set Voltage (VDC)	Reset Voltage (VDC)	Coil Resistance $\pm 10\%$ ( $\Omega$ )	Must Applied Voltage* (VDC)
5	+3.5	-3.5	62.5	9.0
12	+8.4	-8.4	360	21.2
24	+16.8	-16.8	1440	42.2

2 coils

Coil Code	Set Voltage (VDC)	Reset Voltage (VDC)	Coil Resistance $\pm 10\%$ ( $\Omega$ )	Must Applied Voltage* (VDC)
5	+3.5	-	P41.7	9.0
	-	+3.5	S41.7	
12	+8.4	-	P240	21.2
	-	+8.4	S240	
24	+16.8	-	P960	42.2
	-	+16.8	S960	

Note: All values in the table are valid at 20°C and zero contact current, unless otherwise specified.

\*: Specified operated values are valid for pulse wave voltage.

Note: Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage. Care shall be taken on the heat generated on PC board when maximum carrying current exceeds 10A. Please perform the confirmation test with actual conditions.

## ■ COIL DATA

Version	1 coil		2 coils			
Coil terminal division	1	8	8	9	10	1
Set	+	-			-	+
Reset	+	+	+	-		

## ■ SAFETY STANDARDS

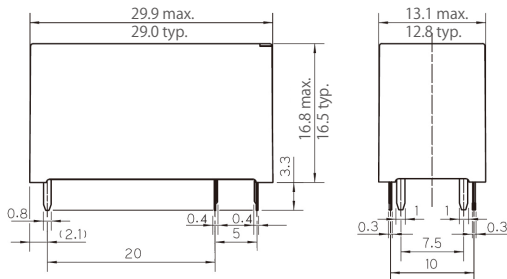
Type	Compliance	Contact Rating
UL	UL508 File No. E63614	Flammability: UL94-V0 (Plastics) 8A, 250VAC/ 24VDC (resistive), 85°C 1/6hp, 125VAC, 85°C 1/4hp, 250VAC, 85°C TV-3 (only make contact), 85°C Pilot duty: C300, R300
CSA	C22.2 No. 14 File No. LR40304	8A, 250VAC/ 24VDC (resistive)
VDE	IEC/EN61810-1 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 EN60065 clause 14.6.1	8A, 250VAC (cosφ=1) 8A, 24VDC (0ms) 3A/51A, 250VAC (1a)
CQC	GB15092.1 File No.17001164878	8A, 24VDC/250VAC

# FTR-F1L Series

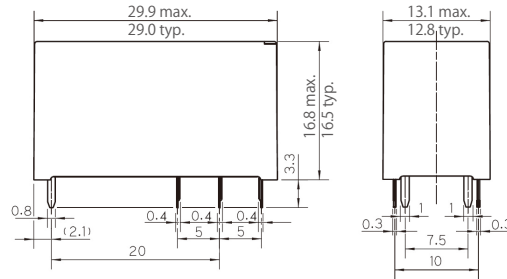
## ■ DIMENSIONS

- Dimensions

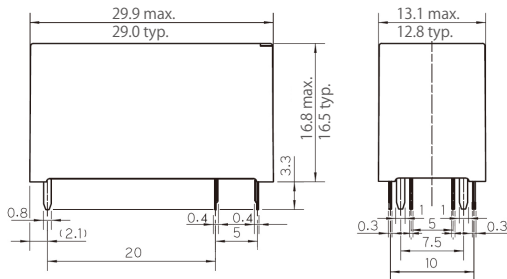
FTR-F1LA type



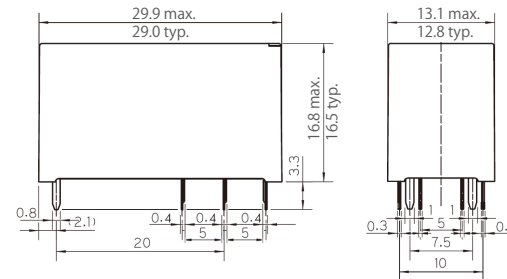
FTR-F1LC type



FTR-F1LDA type



FTR-F1LDC type



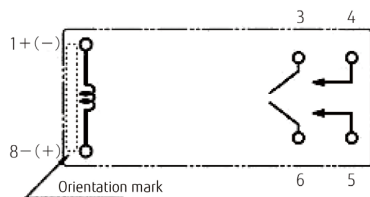
Unit: mm

\* Dimensions of the terminals do not include thickness of pre-solder.

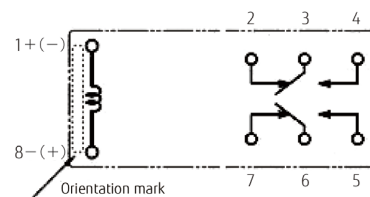
Note: This datasheet provide only + tolerance for outer dimensions. Please ask specification in case you need other tolerances.

- Schematics (Bottom view)

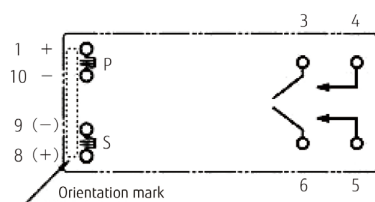
FTR-F1LA type



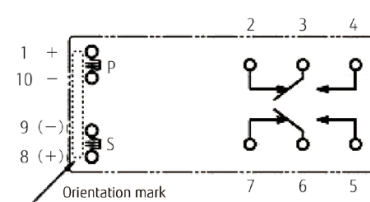
FTR-F1LC type



FTR-F1LDA type



FTR-F1LDC type



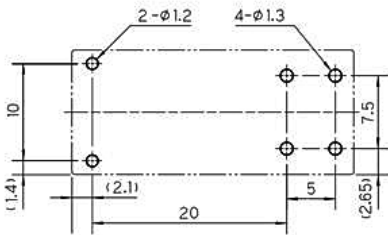
- +/-: Set voltage, (+)(-): Reset voltage
- P: Set coil, S: Reset coil
- Contact drawn in reset condition

# FTR-F1L Series

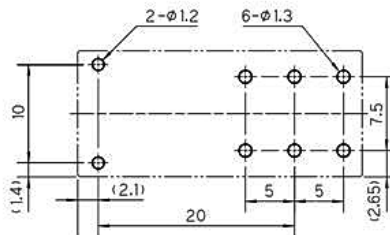
## ■ DIMENSIONS

- PC board mounting hole layout (Bottom view)

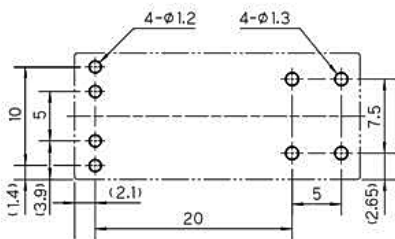
FTR-F1LA type



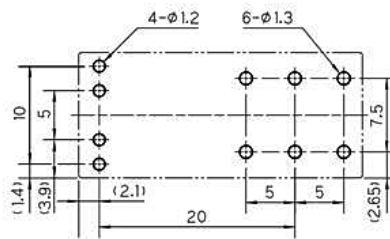
FTR-F1LC type



FTR-F1LDA type



FTR-F1LDC type



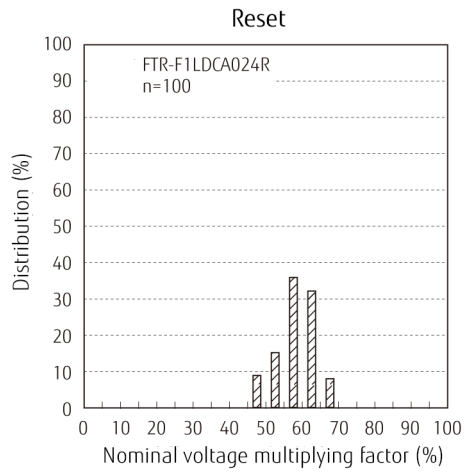
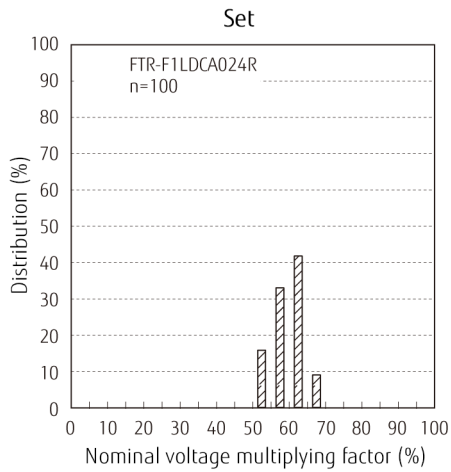
\* Tolerance of PC board mounting hole layout :  $\pm 0.1$  unless otherwise specified.

# FTR-F1L Series

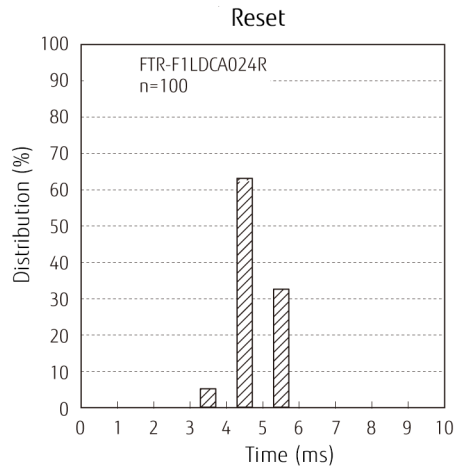
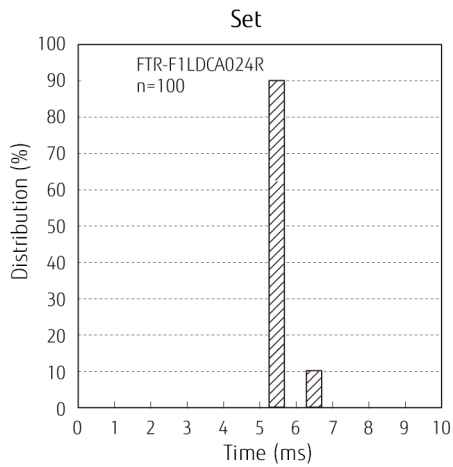
## ■ CHARACTERISTIC DATA

(Characteristic data is not guaranteed value but measured values of samples from production line)

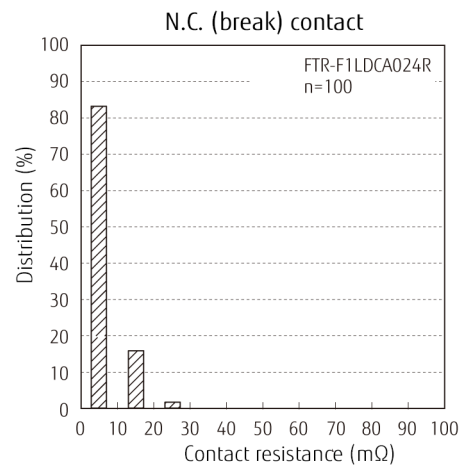
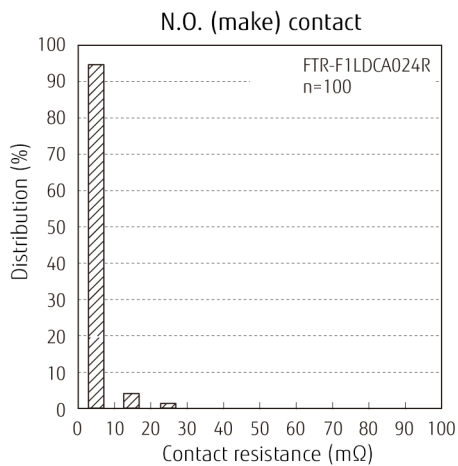
Distribution of set/reset voltage



Distribution of set/reset time



Distribution of contact resistance



# FTR-F1L Series

## CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited for standard type.
- 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.

### Notes for latching relays

- Latching relays are shipped in the state set, but state may change due to shock during transportation or mounting. Before using the relays, it is advisable to bring the relays in necessary state (set or reset) and program a circuit sequence. Otherwise, it will or will not operate simultaneously with power activation.
- Please connect relay coils according to specified polarity.
- Do not apply voltage to both set coil and reset coil at a time.

## GENERAL INFORMATION

### 1. ROHS Compliance

- All relays produced by FCL Components are compliant with RoHS directive 2011/65/EU, including commission delegated directive 2015/863.

### 2. Recommended lead free solder condition

- 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.
- Recommended solder for assembly: 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.

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## Contact

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