FUJITSU

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 (Please see page 7 for more information)

■ Part Numbers

[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)	Special type	R : 8A

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

■ Specifications

Item			FTR-F1L	Remarks / conditions
Contact data	Configuration		2 form A, 2 form C	
	Construction		Single	
	Material		$AgSnO_2$ (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 10^6 operations	
	Electrical		Min. 50 x 10^3 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	
		Adjecent contacts	3000VAC (50/60Hz), 1 minute	
	Surge strength	Coil to contacts	10000V / 1.2 x 50μs standard wave	
	Clearance		8mm	
	Creepage		8mm	
Other	Vibration resistance	Misoperation	10Hz ~ 55Hz ~ 10Hz single amplitude 0.825mm	
		Endurance	10Hz ~ 55Hz ~ 10Hz single amplitude 1.65mm	
	Shock resistance	Misoperation	Min. 200m/s² (11 ± 1ms)	
		Endurance	Min. 1,000m/s² (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 contions and expected reliability levels.

■ Coil Data

1 coil

Coil code	Set voltage (VDC)	Reset voltage (VDC)	Coil Resistance +/-10% (Ω)	Max. 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 +/-10% (Ω)	Max. applied Voltage* (VDC)
5	+3.5	-	P 41.7	9.0
	-	+3.5	S 41.7	
12	+8.4	-	P 240	21.2
	-	+8.4	S 240	
24	+16.8	-	P 960	42.2
	-	+16.8	S 960	

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	+	+	+	-		

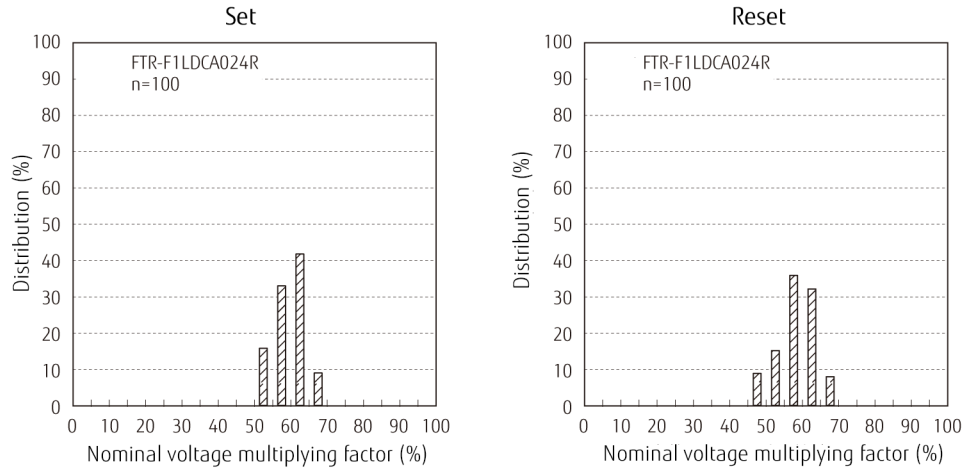
■ Safety Standards

Type	Compliance	Contact rating
UL	UL 508 (No. E63614)	Flammability: UL 94-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 (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 (No.17001164878)	8A, 24VDC/250VAC

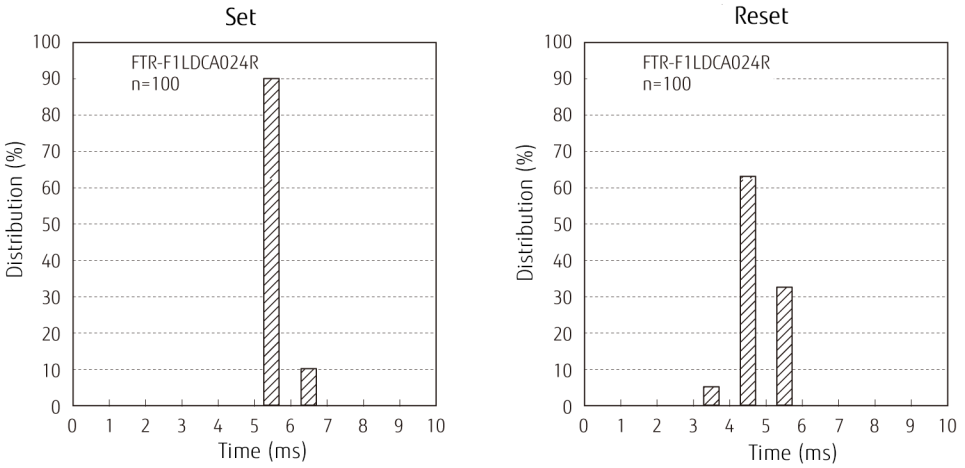
■ Characteristic Data (Reference)

* Characteristic data is not a guaranteed value, but measured values of samples from production line.

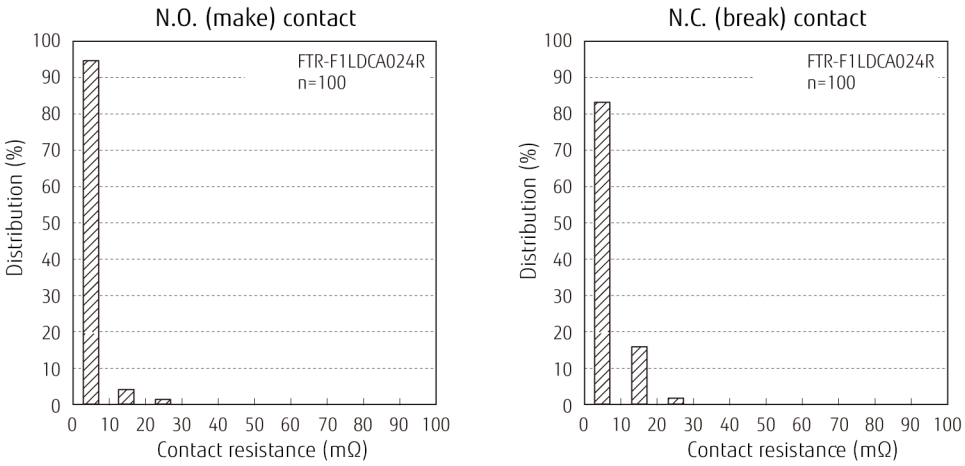
Distribution of set/reset voltage



Distribution of set/reset time



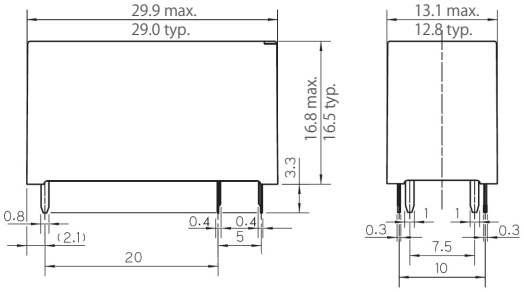
Distribution of contact resistance



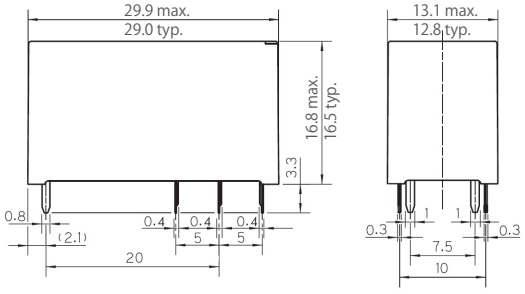
■ Dimensions

- Dimensions

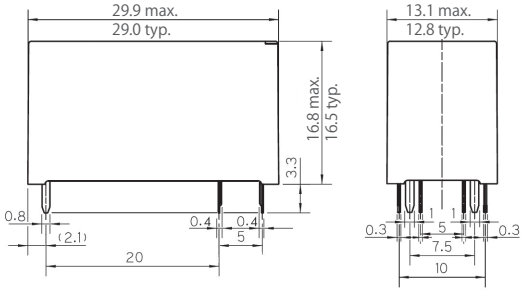
FTR-F1LA type



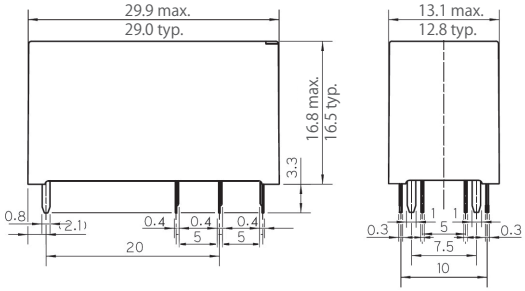
FTR-F1LC type



FTR-F1LDA type



FTR-F1LDC type

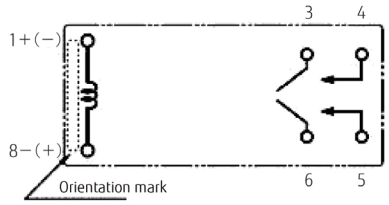


Unit: mm

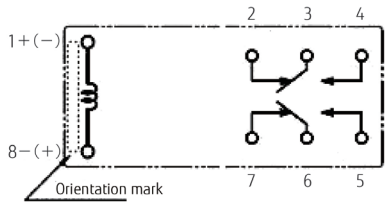
* Dimensions of the terminals do not include thickness of pre-solder.
Note: This datasheet provide only + tolerance for outer dimensions. Please ask specification in case you need other tolerances.

- Schematics
  (BOTTOM VIEW)

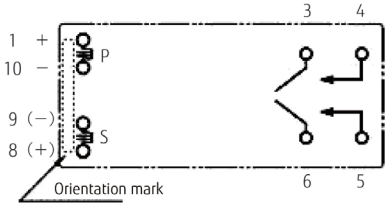
FTR-F1LA



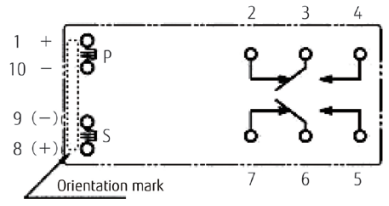
FTR-F1LC



FTR-F1LDA



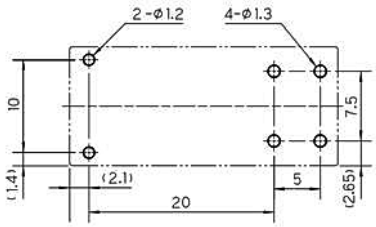
FTR-F1LDC



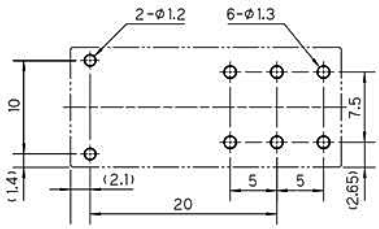
* +/-: Set voltage, (+)/(-): Reset voltage
* P: Set coil, S: Reset coil
* Contacts drawn in reset condition.

- PC board mounting hole layout
  (BOTTOM VIEW)

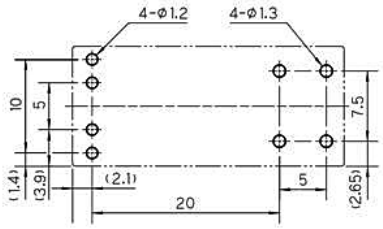
FTR-F1LA type



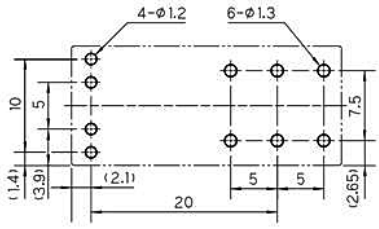
FTR-F1LC type



FTR-F1LDA type



FTR-F1LDC type



* Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

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 relay

- 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 Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Use of Cadmium in electrical contacts is exempted as per Annex III of the RoHS directive 2011/65/EU. Please consider expiry date of exemption. Relays with Cadmium containing contacts are not to be used for new designs.
- 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
- Characteristic data is not guaranteed values, but measured values of samples from production line.

2. Recommended lead free solder condition

- 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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