FUJITSU

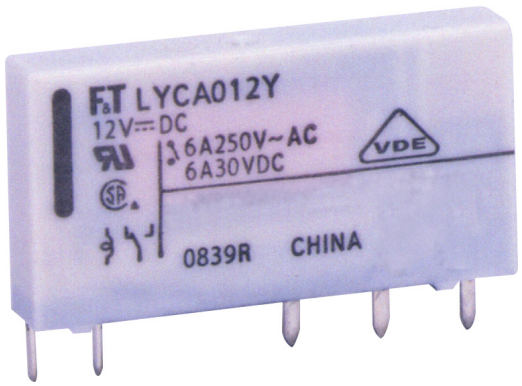
# POWER RELAY

## 1 POLE - 6A Slim Type (Medium Load Control)

# FTR-LY Series

### ■ FEATURES

- Slim 15.0mm (h) x 5.0 mm (w) x 28.0mm (l)
- 1 form C and right angle type available
- Mounting space: 140mm$^2$, weight: 5.0g
- High insulation in small package
  Insulation distance (between coil and contacts): 8mm (creepage/clearance)
  Dielectric strength: 4,000 VAC
  Surge strength: 6,000V
- Plastic sealed type RTIII
- UL, CSA, VDE compliance
- Socket type available
- RoHS compliant
  Please see page 7 for more information




### ■ PARTNUMBER INFORMATION

**[Example]**

| FTR-LY | A | A | 005 | Y | - | SK |
|---|---|---|---|---|---|---|
| (a) | (b) | (c) | (d) | (e) | | (f) |

| | | | |
|---|---|---|---|
| (a) | Relay type | FTR-LY | : FTR-LY-Series |
| (b) | Contact configuration | A<br>C<br>P<br>R | : 1 form A<br>: 1 form C<br>: 1 form A (right angle type)<br>: 1 form C (right angle type) |
| (c) | Coil type | A | : Standard type (170mW) |
| (d) | Coil rated voltage | 005 | : 5.....60 VDC<br>Coil rating table at page 3 |
| (e) | Contact material | E<br>Y<br>V | : AgNi<br>: $AgSnO_2$<br>: $AgSnO_2$ + Au ≥1.0 µm |
| (f) | Special type | Nil<br>SK | : PCB mounting type<br>: Socket mounting type (only contact configuration A and C |

Actual marking does not carry the type name : "FTR" and "SK"
E.g.: Ordering code: FTR-LYAA005Y-SK Actual marking: LYAA005Y

## ■ SPECIFICATION

| Item | | | LY (C,R) A ( ) (Y,E,V) | LY (A,P) A ( ) (Y,E,V) |
|---|---|---|---|---|
| Contact Data | Configuration | | 1 form C (SPDT) | 1 form A (SPST-NO) |
| | Construction | | Single | |
| | Material | | Y: $AgSnO_2$ / E: AgNi / V: $AgSnO_2$ + Au ≥1.0 μm | |
| | Resistance (initial) | | Y, E: Max. 100 mΩ at 6 VDC, 1 A<br>V: Max. 30 mΩ at 6 VDC, 1A | |
| | Contact rating | | 6A, 250VAC / 24VDC | |
| | Max. carrying current | | 6A | |
| | Max. switching voltage | | 250VAC | |
| | Max. switching power | | 1,500VA / 144W | |
| | Min. switching load * | | Y, E: 100 mA 5 VDC<br>V: 10mA 5 VDC | |
| Life | Mechanical | | Min. 10 x $10^6$ operations | |
| | Electrical | | Min. 50 x $10^3$ operations (N.O.)<br>Min. 30 x $10^3$ operations (N.C.) at 6A, 250VAC / 30VDC resistive | |
| Coil Data | Rated power | | 170 to 217 mW | |
| | Operate power | | 74 to 95 mW | |
| | Operating temperature range | | -40 ℃ to +85 ℃ (no frost) | |
| Timing Data | Operate (at nominal voltage) | | Max. 8ms (no diode, without bounce) | |
| | Release (at nominal voltage) | | Max. 4ms (no diode, without bounce) | |
| Insulation | Resistance (initial) | | Min. 1,000MΩ at 500VDC | |
| | Dielectric strength | Open contacts | 1,000VAC (50/60Hz) 1min.,10mA detection current | |
| | | Contacts to coil | 4,000VAC (50/60Hz) 1min.,10mA detection current | |
| | Surge strength | Coil to contacts | 6,000V / 1.2 x 50μs standard wave | |
| | Clearance | | 8 mm | |
| | Creepage | | 8 mm | |
| | EN61810-1, VDE0435 | Voltage | 250V | |
| | | Pollution degree | 3 | |
| | | Material group | III a | |
| | | Category | C / 250V | |
| Other | Vibration resistance | Misoperation | 10 to 55 to 10Hz single amplitude 0.5mm | |
| | | Endurance | 10 to 55 to 10hz single amplitude 0.75mm | |
| | Shock | Misoperation | Min. 50m/s² (11 ± 1ms) | Min. 100m/s² (11 ± 1ms) |
| | | Endurance | Min. 1,000m/s² (6 ± 1ms) | |
| | Weight | | Approximately 5 g | |
| | Sealing | | Plastic sealed RTIII | |

* 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.

## ■ COIL RATING

| Coil Code | Rated Coil Voltage (VDC) | Coil Resistance +/- 10% (Ohm) | Must Operate Voltage (VDC) * | Must Release-Voltage (VDC) * | Rated Power (mW) |
|---|---|---|---|---|---|
| 005 | 5 | 147 | 3.3 | 0.25 | 170 |
| 006 | 6 | 211 | 4 | 0.3 | |
| 009 | 9 | 476 | 5.9 | 0.45 | |
| 012 | 12 | 847 | 7.9 | 0.6 | |
| 018 | 18 | 1,910 | 11.9 | 0.9 | |
| 024 | 24 | 3,390 | 15.9 | 1.2 | |
| 048 | 48 | 10,600 | 31.7 | 2.4 | 217 |
| 060 | 60 | 20,570 | 39.6 | 3 | 175 |

Note 1: All values given in the coil table(s) are valid at 20°C ambient temperature, at zero contactcurrent, without pre-energizing and are specified at pulse wave voltage.
Note 2: When applying a higher than rated coil voltage, please refer to the "coil temperature rise" and "operating range" reference graphs, for the effects on the relay operating behaviour.

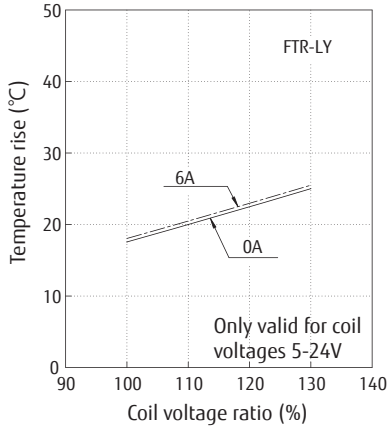
## ■ SAFETY STANDARDS

| Type | Compliance | Contact rating |
|---|---|---|
| UL | UL 508<br><br>E63614 | Flammability: UL 94-V0 (plastics)<br>6A, 277 VAC (resistive)<br>6A, 30 VDC (resistive)<br>1/10 HP, 277VAC /125VAC 1/8hp, 277VAC/125VAC<br>Pilot duty: D300, C300, R300, B300 |
| CSA | C22.2 No. 14<br>LR 40304 | |
| VDE 40006591 | DIN/EN61810-1 (VDE 0435-part 201) 2009-02<br>IEC 61810-1:2008 | 250VAC; 6A / 30VDC; 6A :<br>- 10K ops. FTR-LY(A;P)A...(E;Y;V) -40 °C to +85 °C<br>- 5K ops. FTR-LY(C;R)A...(E;Y;V) -40 °C to +85 °C |
| | EN 60730-1 (VDE 0631-Part 1) *1 | 250VAC; 6(1,5)A, 30K ops. : FTR-LY(A;P)A...(Y;V) +85 °C<br>250VAC; 3(1,5)A, 100K ops. : FTR-LY(A;P)A...(Y;V) +85 °C |
| | EN 61984 (VDE 0627)<br>EN 60335-1 (VDE 0700-Part 1) *2 | - |

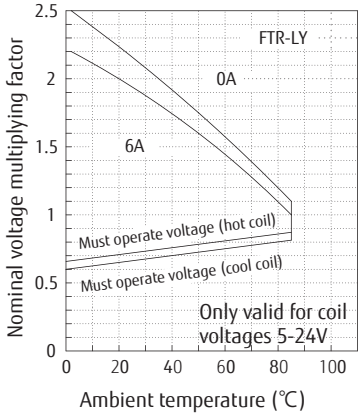
*1: Clause 12.2, 13.2, 20.1, 20.2, 20.3, 17.5, 17.7, 17.8
*2: Clause 15.3, 16.3, 29.1, 29.2, 29.3

## ■ CHARACTERISTIC DATA (For reference only)

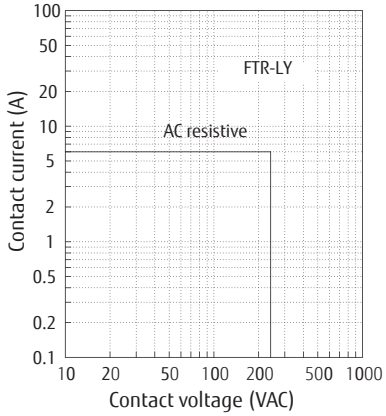
Coil temperature rise



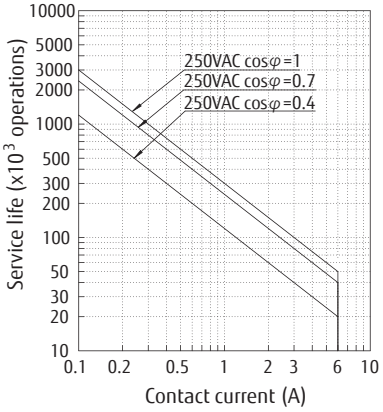

Operating range



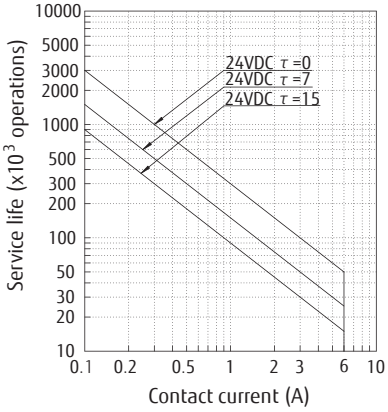

Maximum switching power



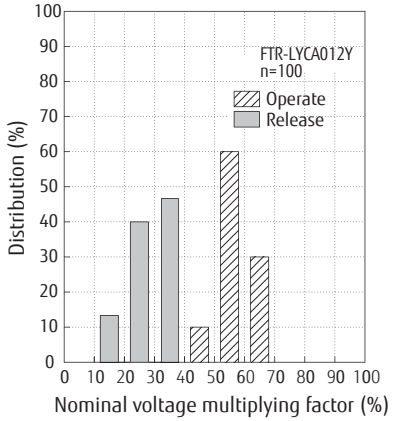

Life curve 1



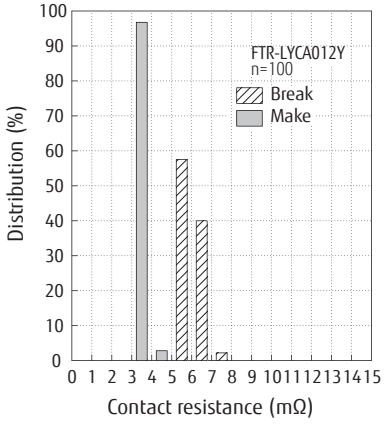

Life curve 2



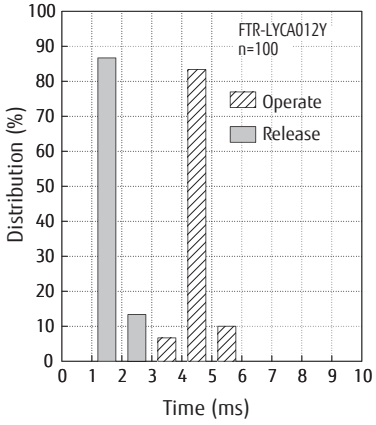

Distribution of operate/release voltage




Distribution of contact resistance

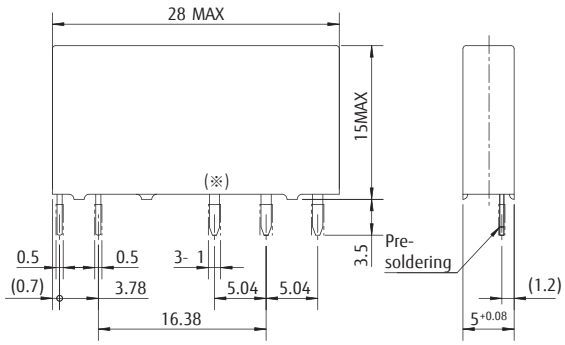



Distribution of operate/release time

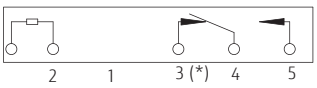


## ■ DIMENSIONS

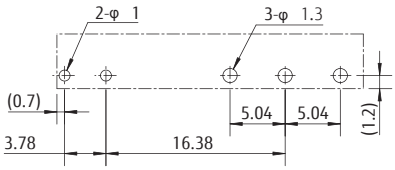
Straight type




Schematics
(BOTTOM VIEW)



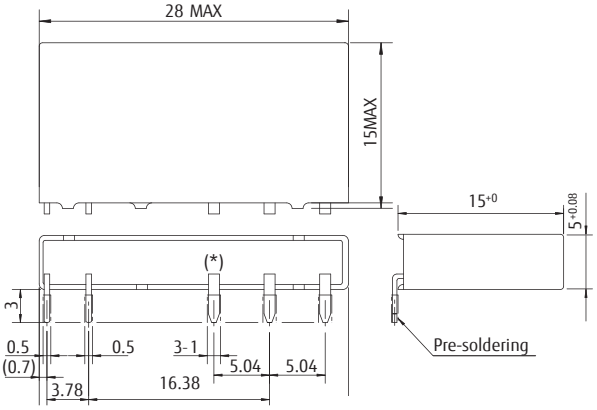

PCB Layout
(BOTTOM VIEW)




Tolerance: +/-0.1

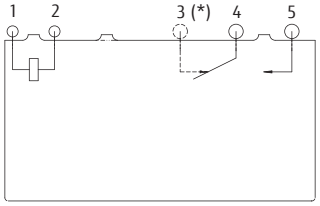
Right angle type

Right angle type

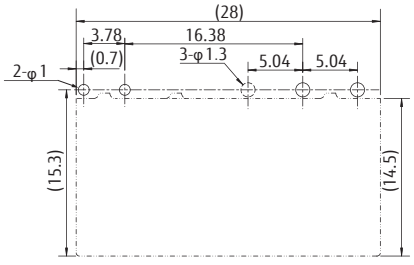



* This terminal is not applicable for 1 form A type.

Schematics
(BOTTOM VIEW)




PCB Layout
(BOTTOM VIEW)

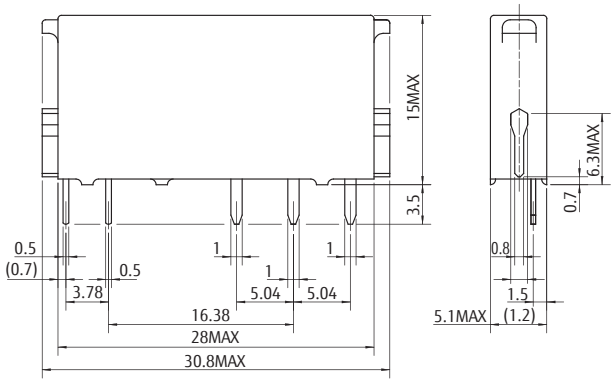



Tolerance: +/-0.1

* This terminal is not applicable for 1 form A type.

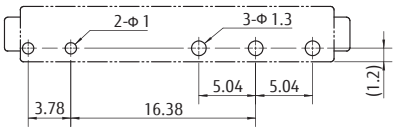
( ) : Reference value
Unit: mm

Socket type




Schematics
(BOTTOM VIEW)

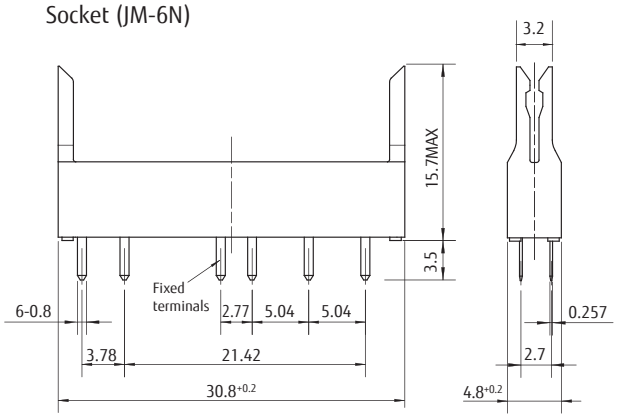
PCB layout
(BOTTOM VIEW)



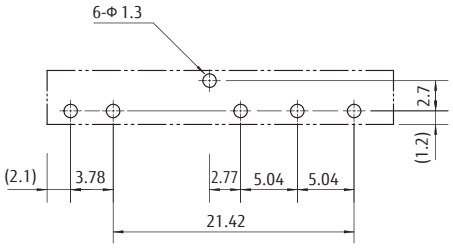

Tolerance: +/-0.1

JM-6N

Socket (JM-6N)




PCB layout
(BOTTOM VIEW)




Tolerance: +/-0.1

( ): Reference value
Unit: 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 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 Temperature: | 30-60W 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
Shinagawa Seaside Park Tower 19F,
12-4, Higashi-shinagawa 4-chome, Shinagawa-ku,
Tokyo,140-0002, Japan
Tel: (81-3) 3450-1681
Fax: (81-3) 3474-2385
Email: fcl-contact@cs.jp.fujitsu.com
Web: www.fcl.fujitsu.com

**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
Web: emea.fujitsu.com/components/

**China**
Fujitsu Electronic Components (Shanghai) Co., Ltd.
Unit 4306, InterContinental Center
100 Yu Tong Road, Shanghai 200070,
China
Tel: (86-21) 3253 0998
Fax: (86-21) 3253 0997
Email: fcal@sg.fujitsu.com
Web: www.fujitsu.com/sg/services/micro/components/

**North and South America**
Fujitsu Components America, Inc.
2290 North 1st Street, Suite 212
San Jose, CA 95131, USA
Tel: (1-408) 745-4900
Fax: (1-408) 745-4970
Email: components@us.fujitsu.com
Web: us.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@sg.fujitsu.com
Web: www.fujitsu.com/sg/services/micro/components/

**Hong Kong**
Fujitsu Components Hong Kong Co., Ltd.
Unit 506, Inter-Continental Plaza
No.94 Granville Road, Tsim Sha Tsui, Kowloon,
Hong Kong
Tel: (852) 2881-8495
Tex: (852) 2894-9512
Email: fcal@sg.fujitsu.com
Web: www.fujitsu.com/sg/services/micro/components/