

# POWER RELAY

## 1 POLE - 6A (MEDIUM LOAD CONTROL)

## SLIM TYPE

## FTR-LY Series

RoHS compliant

### ■ FEATURES

- Slim(15.0mm(h) x 5.0 mm(w) x 28.0mm (l))
- 1 form C available
- Mounting space: 140mm<sup>2</sup>, 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
- UL, CSA, VDE, SEMKO, FIMKO, DEMKO, NEMKO compliance
- Contains no lead and features cadmium-free contacts
- Socket type available
- RoHS Compliant since production
- Plastic sealed



### ■ ORDERING INFORMATION

[Example]     FTR-LY    A    A    005    Y    SK  
                   (a)    (b)    (c)    (d)    (e)    (f)

|     |                     |                                                                                            |                                                                  |
|-----|---------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| (a) | Series Name         | FTR-LY : FTR-LY Series                                                                     |                                                                  |
| (b) | Contact Arrangement | A : 1 form A<br>C : 1 form C                                                               | P: 1 form A (Right Angle Type)<br>R: 1 form C (Right Angle Type) |
| (c) | Coil Type           | A : Standard (170 mW)                                                                      |                                                                  |
| (d) | Nominal Voltage     | 005 : 5 VDC, 012 : 12VDC,                                                                  | 006 : 6VDC, 024 : 24VDC, 048 : 48VDC (refer to COIL DATA chart)  |
| (e) | Contact Material    | E : Silver nickel<br>Y : Silver alloy silver tin oxide<br>V : Gold plated silver tin oxide |                                                                  |
| (f) | Socket Type         | Nil : PCB mounting type<br>SK : Socket mounting type (contact arrangement A&C only)        |                                                                  |

Actual marking does not carry the type name : "FTR" and "SK"

E.g.: Ordering code: FTR-LYAA012Y

Actual marking: LYAA012Y

# FTR-LY SERIES

## ■ PART NUMBERS

| Ordering P/N     | Series | Contact  | Coil Power | Coil Voltage | Contact                         |
|------------------|--------|----------|------------|--------------|---------------------------------|
| FTP-LY(A,P)A005Y | FTR-LY | 1 form A | 170 mW     | 5            | Y: Silver tin oxide             |
| FTP-LY(A,P)A006Y |        |          |            | 6            |                                 |
| FTP-LY(A,P)A009Y |        |          |            | 9            |                                 |
| FTP-LY(A,P)A012Y |        |          |            | 12           |                                 |
| FTP-LY(A,P)A018Y |        |          |            | 18           |                                 |
| FTP-LY(A,P)A024Y |        |          |            | 24           |                                 |
| FTP-LY(A,P)A048Y |        |          | 217 mW     | 48           |                                 |
| FTP-LY(A,P)A060Y |        |          | 175 mW     | 60           |                                 |
| FTP-LY(C,R)A005Y |        | 1 form C | 170 mW     | 5            |                                 |
| FTP-LY(C,R)A006Y |        |          |            | 6            |                                 |
| FTP-LY(C,R)A009Y |        |          |            | 9            |                                 |
| FTP-LY(C,R)A012Y |        |          |            | 12           |                                 |
| FTP-LY(C,R)A018Y |        |          |            | 18           |                                 |
| FTP-LY(C,R)A024Y |        |          |            | 24           |                                 |
| FTP-LY(C,R)A048Y |        |          | 217 mW     | 48           |                                 |
| FTP-LY(C,R)A060Y |        |          | 175 mW     | 60           |                                 |
| FTP-LY(A,P)A005V |        | 1 form A | 170 mW     | 5            | V: Gold plated silver tin oxide |
| FTP-LY(A,P)A006V |        |          |            | 6            |                                 |
| FTP-LY(A,P)A009V |        |          |            | 9            |                                 |
| FTP-LY(A,P)A012V |        |          |            | 12           |                                 |
| FTP-LY(A,P)A018V |        |          |            | 18           |                                 |
| FTP-LY(A,P)A024V |        |          |            | 24           |                                 |
| FTP-LY(A,P)A048V |        |          | 217 mW     | 48           |                                 |
| FTP-LY(A,P)A060V |        |          | 175 mW     | 60           |                                 |
| FTP-LY(C,R)A005V |        | 1 form C | 170 mW     | 5            |                                 |
| FTP-LY(C,R)A006V |        |          |            | 6            |                                 |
| FTP-LY(C,R)A009V |        |          |            | 9            |                                 |
| FTP-LY(C,R)A012V |        |          |            | 12           |                                 |
| FTP-LY(C,R)A018V |        |          |            | 18           |                                 |
| FTP-LY(C,R)A024V |        |          |            | 24           |                                 |
| FTP-LY(C,R)A048V |        |          | 217 mW     | 48           |                                 |
| FTP-LY(C,R)A060V |        |          | 175 mW     | 60           |                                 |
| FTP-LY(A,P)A005E |        | 1 form A | 170 mW     | 5            | E: Silver nickel                |
| FTP-LY(A,P)A006E |        |          |            | 6            |                                 |
| FTP-LY(A,P)A009E |        |          |            | 9            |                                 |
| FTP-LY(A,P)A012E |        |          |            | 12           |                                 |
| FTP-LY(A,P)A018E |        |          |            | 18           |                                 |
| FTP-LY(A,P)A024E |        |          |            | 24           |                                 |
| FTP-LY(A,P)A048E |        |          | 217 mW     | 48           |                                 |
| FTP-LY(A,P)A060E |        |          | 175 mW     | 60           |                                 |
| FTP-LY(C,R)A005E |        | 1 form C | 170 mW     | 5            |                                 |
| FTP-LY(C,R)A006E |        |          |            | 6            |                                 |
| FTP-LY(C,R)A009E |        |          |            | 9            |                                 |
| FTP-LY(C,R)A012E |        |          |            | 12           |                                 |
| FTP-LY(C,R)A018E |        |          |            | 18           |                                 |
| FTP-LY(C,R)A024E |        |          |            | 24           |                                 |
| FTP-LY(C,R)A048E |        |          | 217 mW     | 48           |                                 |
| FTP-LY(C,R)A060E |        |          | 175 mW     | 60           |                                 |

# FTR-LY SERIES

## ■ COIL DATA CHART

| Coil Voltage | Nominal Voltage | Max. Coil Voltage* <sup>1</sup> | Coil Resistance (±10%) | Must Operate Voltage* <sup>2</sup> | Must Release Voltage | Nominal Power |
|--------------|-----------------|---------------------------------|------------------------|------------------------------------|----------------------|---------------|
| 5            | 5 VDC           | 11.5 VDC                        | 147 Ω                  | 3.3 VDC                            | 0.25 VDC             | 170 mW        |
| 6            | 6 VDC           | 13.8 VDC                        | 211 Ω                  | 4.0 VDC                            | 0.3 VDC              | 170 mW        |
| 9            | 9 VDC           | 20.7 VDC                        | 476 Ω                  | 5.9 VDC                            | 0.45 VDC             | 170 mW        |
| 12           | 12 VDC          | 27.6 VDC                        | 847 Ω                  | 7.9 VDC                            | 0.6 VDC              | 170 mW        |
| 18           | 18 VDC          | 41.4 VDC                        | 1,910 Ω                | 11.9 VDC                           | 0.9 VDC              | 170 mW        |
| 24           | 24 VDC          | 55.2 VDC                        | 3,390 Ω                | 15.9 VDC                           | 1.2 VDC              | 170 mW        |
| 48           | 48 VDC          | 110.4 VDC                       | 10,600 Ω               | 31.7 VDC                           | 2.4 VDC              | 217 mW        |
| 60           | 60 VDC          | 138.0 VDC                       | 20,570 Ω               | 39.6 VDC                           | 3.0 VDC              | 175 mW        |

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

## ■ SPECIFICATIONS

| Item       |                              | FTR-LY (C, R) A ( ), (Y, E, V)                                                                                            | FTR-LY (A, P) A ( ), (Y, E, V)             |
|------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Contact    | Arrangement                  | 1 form C                                                                                                                  | 1 form A                                   |
|            | Material                     | Y: silver tin oxide, E: silver nickel, V: gold plated silver tin oxide                                                    |                                            |
|            | Configuration                | Single                                                                                                                    |                                            |
|            | Resistance (initial)         | Y, E: Maximum 100 mΩ at 6 VDC, 1 A<br>V: Maximum 30 mΩ at 6 VDC, 1A                                                       |                                            |
|            | Rating                       | 6 A, 250 VAC / 24 VDC                                                                                                     |                                            |
|            | Maximum Carrying Current     | 6A                                                                                                                        |                                            |
|            | Maximum Switching Power      | 1,500 VA / 144 W                                                                                                          |                                            |
|            | Maximum Switching Voltage    | 250 VAC                                                                                                                   |                                            |
|            | Maximum Switching Load*1     | Y, E: 100 mA 5 VDC<br>V: 10mA 5 VDC                                                                                       |                                            |
| Coil       | Operating Temperature        | -40°C to +85°C (no frost)                                                                                                 |                                            |
|            | Rating Power                 | 170 to 217 mW                                                                                                             |                                            |
|            | Must Operate Power           | 74 to 76 mW                                                                                                               |                                            |
| Time Value | Operate Time (without diode) | Maximum 8 ms (at nominal voltage, no bounce)                                                                              |                                            |
|            | Release Time (without diode) | Maximum 4 ms (at nominal voltage, no bounce)                                                                              |                                            |
| Life       | Mechanical                   | 10 x 10 <sup>6</sup> operations minimum                                                                                   |                                            |
|            | Electrical                   | 50 x 10 <sup>3</sup> operations min. (N.O.)<br>30 x 10 <sup>3</sup> operations min. (N.C.) at 6 A, 250VAC/30VDC resistive |                                            |
| Other      | Vibration Resistance         | Misoperation                                                                                                              | 10 to 55 Hz, at double amplitude of 1,0 mm |
|            |                              | Endurance                                                                                                                 | 10-55Hz, at double amplitude of 1.5 mm     |
|            | Shock Resistance             | Misoperation                                                                                                              | Min. 50m/s <sup>2</sup> (11±1ms)           |
|            |                              | Endurance                                                                                                                 | Min. 1,000m/s <sup>2</sup> (6±1ms)         |
|            | Weight                       | Approximately 5g                                                                                                          |                                            |

# FTR-LY SERIES

## ■ INSULATION

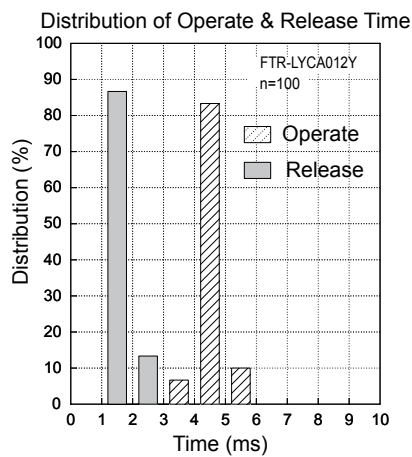
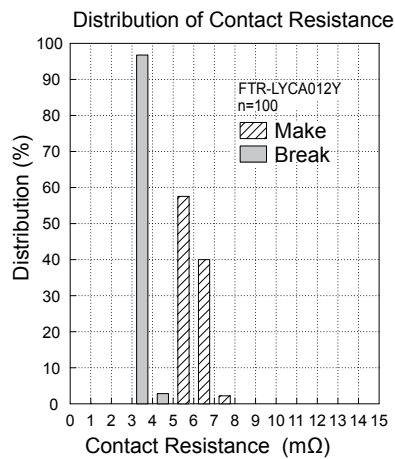
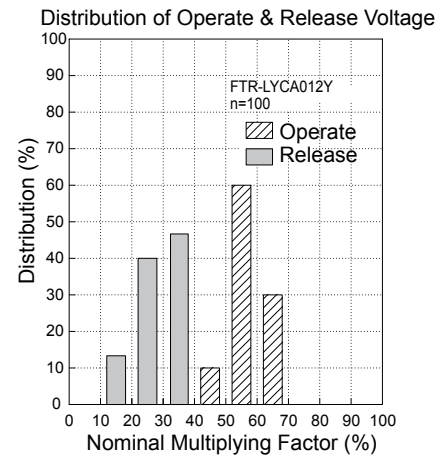
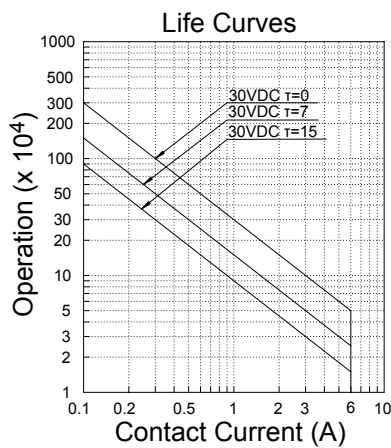
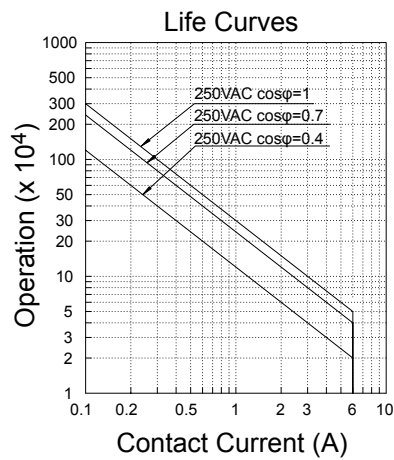
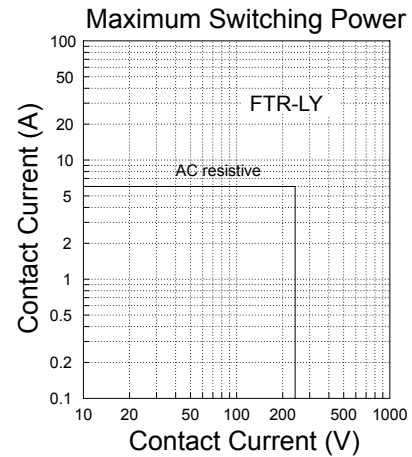
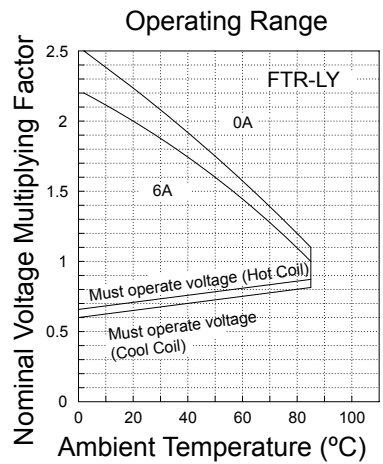
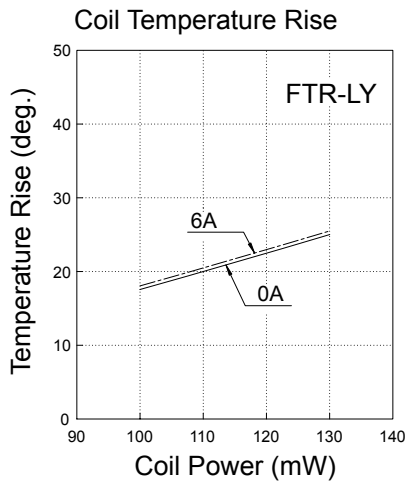
|                                                   |                   |                                                    |
|---------------------------------------------------|-------------------|----------------------------------------------------|
| Item                                              |                   | FTR-LY                                             |
| Resistance (at 500 VDC)                           |                   | Minimum 1,000 MΩ 1 min.                            |
| Dielectric Strength                               | open contacts     | 1,000 VAC (50/60 Hz) 1 min. 10mA detection current |
|                                                   | coil and contacts | 4,000 VAC (50/60 Hz) 1 min. 10mA detection current |
| Surge Voltage (coil and contact)                  |                   | 6,000 V (1.2 x 50μs standard wave)                 |
| Clearance/Creepage                                |                   | 8 mm / 8 mm                                        |
| (DIN EN61810-1 VDE0435)                           |                   |                                                    |
| Voltage                                           |                   | 250 V                                              |
| Pollution                                         |                   | 3                                                  |
| Isolation material group                          |                   | IIIa                                               |
| Isolation category / Reference voltage (VDE01106) |                   | C / 250 V                                          |

## ■ SAFETY STANDARDS

| Type  | Compliance                              | Contact rating                                                                                               |
|-------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------|
| UL    | UL 508                                  | Flammability: UL 94-V0 (plastics)                                                                            |
|       | E63614                                  | 5A, 277 VAC (resistive)<br>5A, 30 VDC (resistive)                                                            |
| CSA   | C22.2 No. 14<br>LR 40304                | 1/10 HP, 277VAC /125VAC<br>Pilot duty: D300, C300, R300                                                      |
| VDE   | 0435, 0631, 0700                        | Flammability: UL 94-V0 (plastics)                                                                            |
| SEMKO | EN 61058-1+A1:1993<br>EN 61095:1993+A11 | 5A, 277 VAC (resistive)<br>5A, 30 VDC (resistive)<br>1/10 HP, 277VAC /125VAC<br>Pilot duty: D300, C300, R300 |

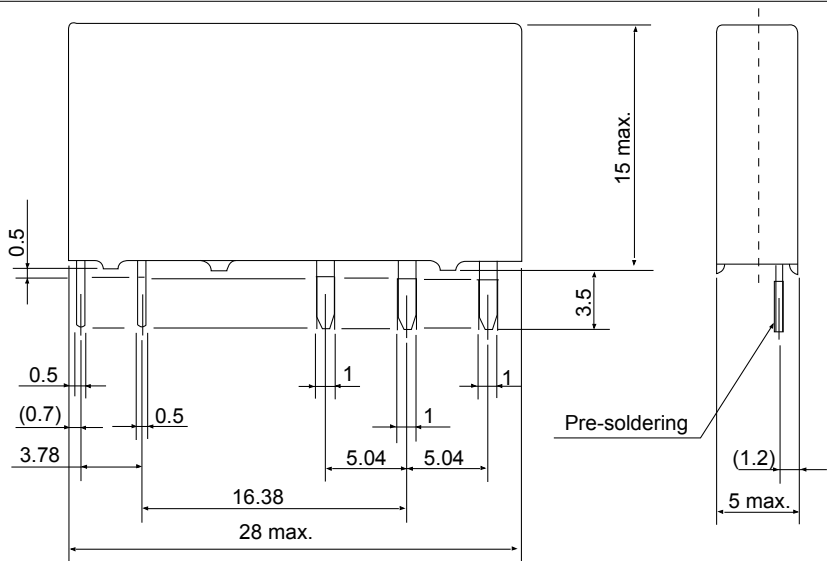
# FTR-LY SERIES

## ■ REFERENCE DATA

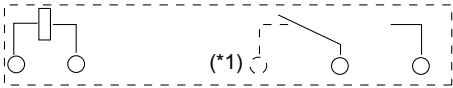


■ DIMENSIONS

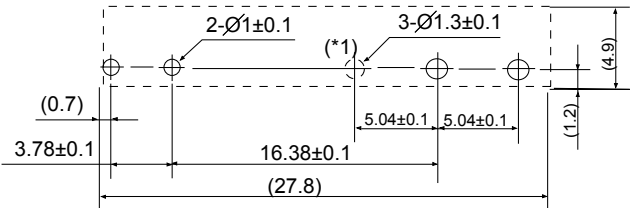
Thru hole type



Drilling Plan (BOTTOM VIEW)



Wiring Diagram (BOTTOM VIEW)

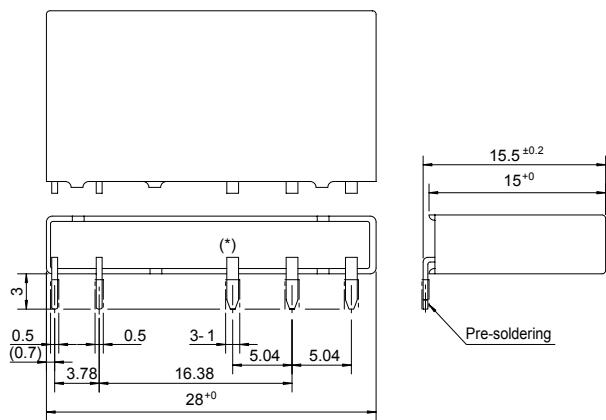


\*1: This terminal is not applicable for 1 form A type

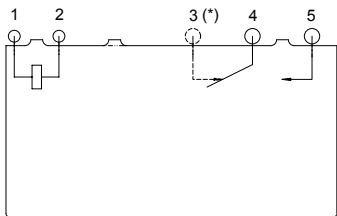
Unit: mm

■ DIMENSIONS

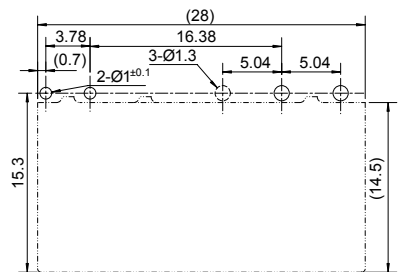
Right Angle type



Drilling Plan (BOTTOM VIEW)



Wiring Diagram (BOTTOM VIEW)



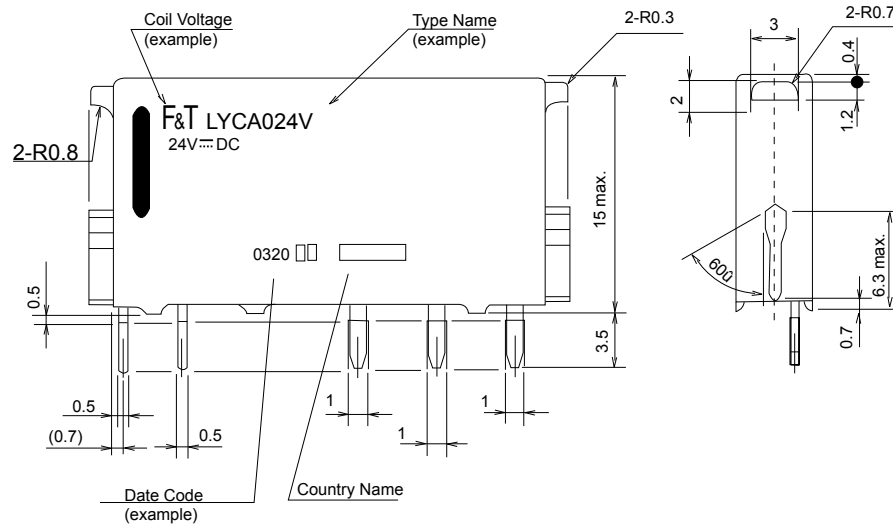
\*: This terminal is not applicable for 1 form A type

Unit: mm

# FTR-LY SERIES

## ■ DIMENSIONS

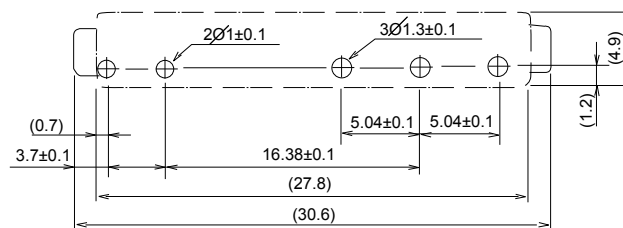
Socket type



### Schematics (BOTTOM VIEW)



PC Board Mounting Hole Layout (BOTTOM VIEW)



Unit: mm

Notes: 1. Socket ordering code

2. Standard IC socket is not recommended. Please use JM-6N

## 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 RoHS-compliant now. Please refer to RoHS-compliant 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.
- 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 condtion

**Flow Solder condtion:**

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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Rev. September 24, 2007