

MINIATURE RELAY

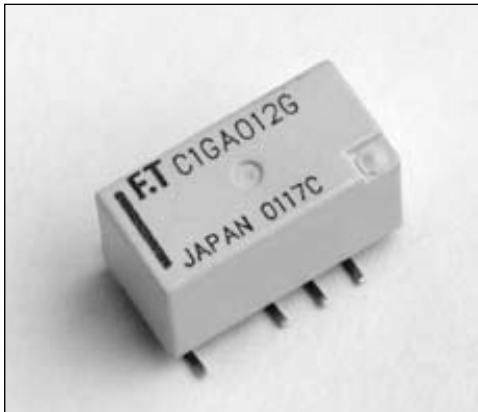
2 POLES, 2A HIGH INSULATION/WIDE GAP

FTR-C1 Series

RoHS compliant

■ FEATURES

- 2 Poles, 2 form C
- Contact gap: more than 0.6mm
- High surge voltage: 2,500V between open contacts
5,000V between coil & contact
comply with Telcordia (former Bellcore) 2nd level surge
- Dielectric strength: 1,500VAC between open contacts
3,000VAC between coil and contact
- Dimensions of large contact gap relay
Height: 9.3 mm maximum (THT)
9.65 mm maximum (SMT)
Length: 15 mm maximum
Width: 7.5 mm maximum
- Conforms to IEC60950 / EN60950 / UL1950/ CSA C 22.2 No.950 working voltage 250V (supplementary)
- High insulation: Clearance: min. 2.0 mm (coil and contacts)
Creepage: min. 2.5 mm (coil and contacts)
- HIGH RELIABILITY
Bifurcated contacts
- Low power consumption 280 mW (latching type 140mW)
- RoHS Compliant



■ ORDERING INFORMATION

[Example] FTR-C1 C A 012 G-(B05)*
(a) (b) (c) (d) (e) (f)

(a)	Series Name	FTR-C1
(b)	Terminal Appearance	C: Through hole type G: Surface mount type S: Surface mount type - reduced mounting area
(c)	Operation Function	A: Standard Type B: Single coil latching type
(d)	Coil Number	Nominal Voltage
(e)	Contact Material	G: Gold plated silver palladium

Remarks: Actual marking on relay would not carry code FTR and be as below:
Ordering code: FTR-C1CA003G Actual marking: C1CA003G

* If ordering tape and reel package, please add "B05" after the partnumber (tape and reel is only available for SMT type, example: FTR-C1GA003G-B05)

FTR-C1 Series

■ PART NUMBERS

Standard type

Ordering Part Number	Series	Terminals	Operation	Coil Voltage	Contact Material	
FTR-C1CA003G	FTR-C1	C: through hole	A: standard type	3	G: Au-Ag-Pd	
FTR-C1CA4.5G				4.5		
FTR-C1CA005G				5		
FTR-C1CA012G				12		
FTR-C1CA024G				24		
FTR-C1GA003G		G: surface mount		A: standard type		3
FTR-C1GA4.5G						4.5
FTR-C1GA005G						5
FTR-C1GA012G						12
FTR-C1GA024G						24
FTR-C1SA003G		S: space saving surface mount		A: standard type		3
FTR-C1SA4.5G						4.5
FTR-C1SA005G						5
FTR-C1SA012G						12
FTR-C1SA024G						24

Latching type

Ordering Part Number	Series	Terminals	Operation	Coil Voltage	Contact Material	
FTR-C1CB003G	FTR-C1	C: through hole	B: latching type	3	G: Au-Ag-Pd	
FTR-C1CB4.5G				4.5		
FTR-C1CB005G				5		
FTR-C1CB012G				12		
FTR-C1CB024G				24		
FTR-C1GB003G		G: surface mount		B: latching type		3
FTR-C1GB4.5G						4.5
FTR-C1GB005G						5
FTR-C1GB012G						12
FTR-C1GB024G						24
FTR-C1SB003G		S: space saving surface mount		B: latching type		3
FTR-C1SB4.5G						4.5
FTR-C1SB005G						5
FTR-C1SB012G						12
FTR-C1SB024G						24

FTR-C1 Series

■ COIL DATA CHART

Non-latch type

Coil Voltage	Nominal Voltage (VDC)	Max. Coil Voltage* ¹	Coil Resistance (±10%)	Must Operate Voltage* ²	Must Release Voltage* ²	Nominal Operating Power (±10%)
003	3	4.5 VDC	32.1 Ω	2.25 VDC	0.3 VDC	230
4.5	4.5	6.75 VDC	72.3 Ω	3.38 VDC	0.45 VDC	
005	5	7.5 VDC	89.3 Ω	3.75 VDC	0.5 VDC	
012	12	18 VDC	514 Ω	9.0 VDC	1.2 VDC	
024	24	36 VDC	1,920 Ω	18.0 VDC	2.4 VDC	300

Latch type

Coil Voltage	Nominal Voltage (VDC)	Max. Coil Voltage* ¹	Coil Resistance (±10%)	Must Operate Voltage* ²	Must Release Voltage* ²	Nominal Operating Power (±10%)
003	3	4.5 VDC	64.0 Ω	+2.25 VDC	2.25 VDC	140
4.5	4.5	6.75 VDC	145 Ω	+3.38 VDC	3.38 VDC	
005	5	7.5 VDC	179 Ω	+3.75 VDC	3.75 VDC	
012	12	18 VDC	1,029 Ω	+9.0 VDC	9.0 VDC	
024	24	36 VDC	3,200 Ω	+18.0 VDC	18.0 VDC	180

Note: All values in the table are measured at 20°C.

FTR-C1 Series

■ SPECIFICATIONS

Item		Non-latch		Latch		
		FTR-C1 () A		FTR-C1 () B		
Contact	Arrangement		2 form C			
	Material		AgNi+Au / AgPd+Au			
	Resistance (initial)		Maximum 100 mΩ at 6 VDC, 1 A			
	Rating (resistive)		0.3A, 110VDC / 0.3A 125VAC / 1A 30VDC			
	Min. Switching load (reference)*		10mA, 10mVDC			
	Maximum Switching Power		62.5VA / 30W			
	Maximum Switching Voltage		250VAC / 220 VDC			
	Maximum Carry Current		2A			
Coil	Nominal Power (20°C)		280 to 300 mW		140 to 180 mW	
	Operate Power (20°C)		158 to 162 mW		158 to 162 mW	
	Operating Temperature		-40°C to +85°C (no frost)			
Time Value	Operate Time		Maximum 6 ms (at nominal voltage, without bounce)			
	Release Time (without diode)		Maximum 6 ms (at nominal voltage, without bounce)			
Life	Mechanical		2 x 10 ⁶ operations minimum			
	Electrical	AC contact rating	100 x 10 ³ operations min. at 0.3A, 125VAC			
		DC contact Rating	100 x 10 ³ operations minimum at 1A, 30VDC			
Other	Vibration Resistance	Misoperation	10 to 55 Hz, at double amplitude of 3.3 mm			
		Endurance	10 to 55Hz, at double amplitude of 5 mm			
	Shock Resistance	Misoperation	Min. 500m/s ²			
		Endurance	Min. 1,000m/s ²			

■ INSULATION

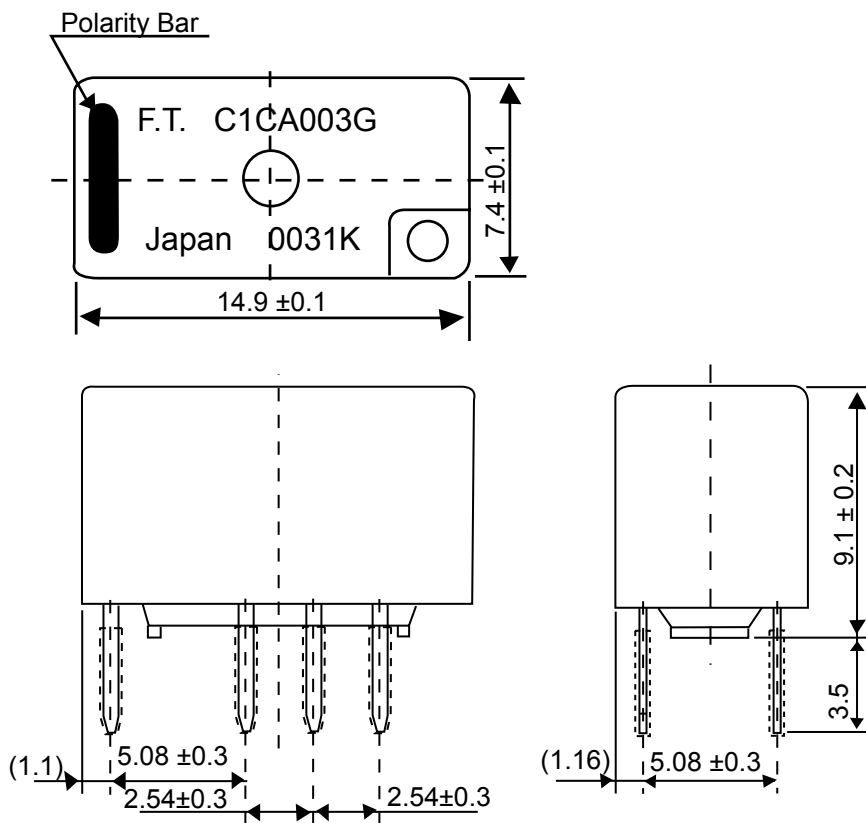
Item		FTR-C1
Resistance (initial) (500 VDC)		Minimum 1,000 MΩ 1 min.
Dielectric Strength	open contacts	1,500 VAC (50/60 Hz) 1 min.
	adjacent contacts	1,500 VAC (50/60 Hz) 1 min.
	coil and contacts	3,000 VAC (50/60 Hz) 1 min.
Surge Voltage (coil and contact)		5,000 V (2 x 10μs standard wave)
Clearance	open contacts	1.0mm
	adjacent contacts	0.6mm
	coil and contacts	2.0mm
Creepage	open contacts	1.0mm
	adjacent contacts	0.6mm
	coil and contacts	2.5mm

■ SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL 508	Flammability: UL 94-V0 (plastics) 0.3A, 125VAC (resistive) 1A, 30VDC
	E63615	
CSA	C22.2 No. 14 LR 40304	0.3A, 110VDC

■ DIMENSIONS AND SCHEMATICS

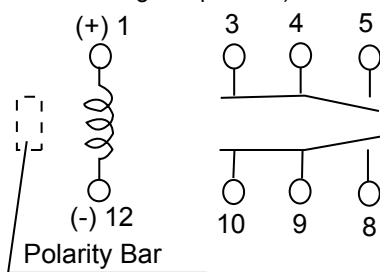
Through hole type



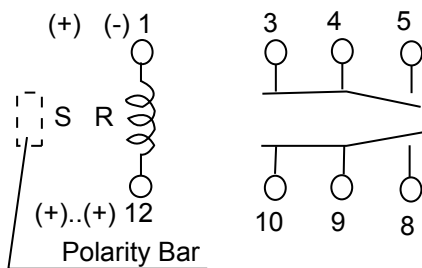
Unit: mm

■ TERMINAL DESIGNATIONS

Standard type
(Bottom view de-energized position)

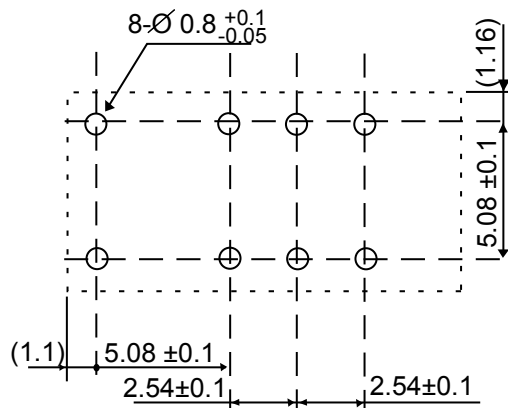


Single Coil Latching type
(Bottom view reset position)



S shows the polarity of set position
R shows the polarity of reset position

■ RECOMMENDED MOUNTING PAD

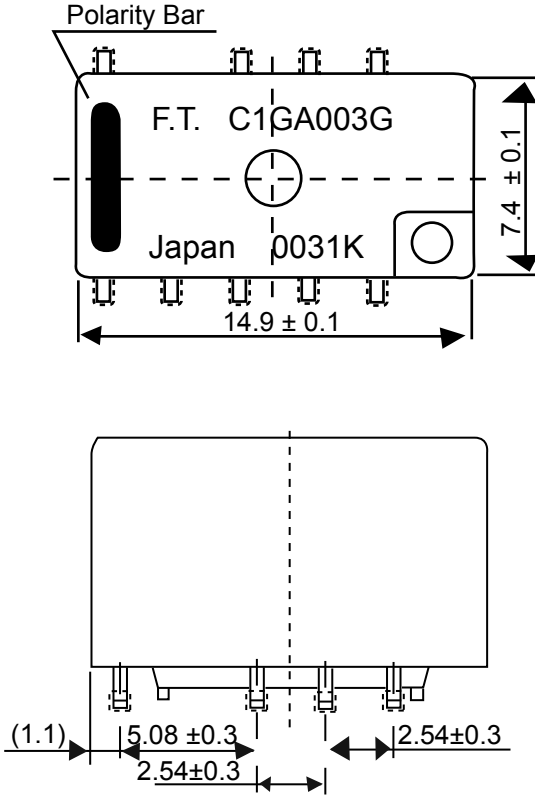


Unit: mm

FTR-C1 Series

■ DIMENSIONS AND SCHEMATICS

Surface mount type

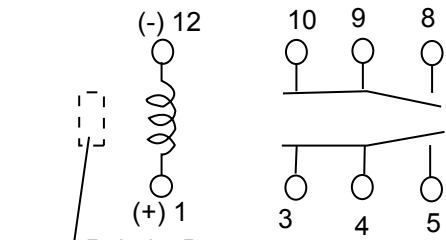


Unit: mm

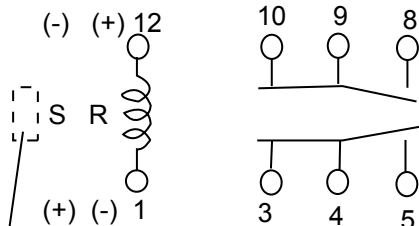
■ TERMINAL DESIGNATIONS

Standard type

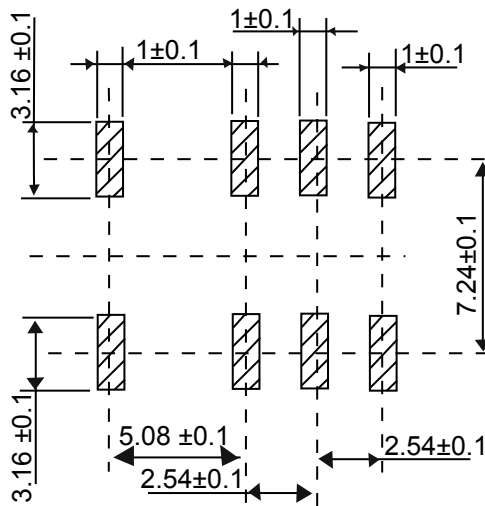
(Top view de-energized position)



Single Coil Latching type
(Bottom view reset position)



■ RECOMMENDED MOUNTING PAD



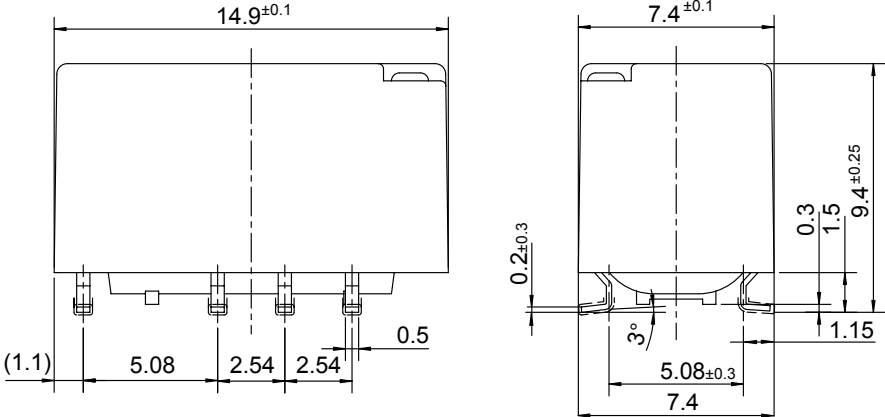
S shows the polarity of set position
R shows the polarity of reset position

Unit: mm

FTR-C1 Series

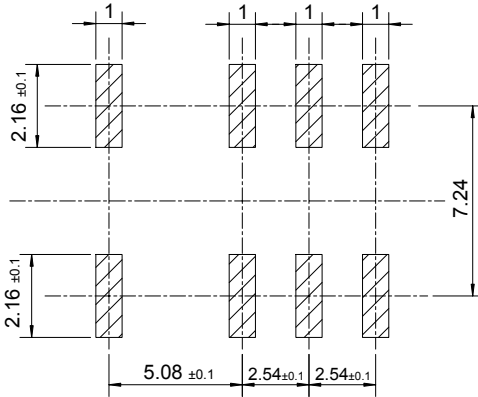
■ **DIMENSIONS AND SCHEMATICS**

Space saving type



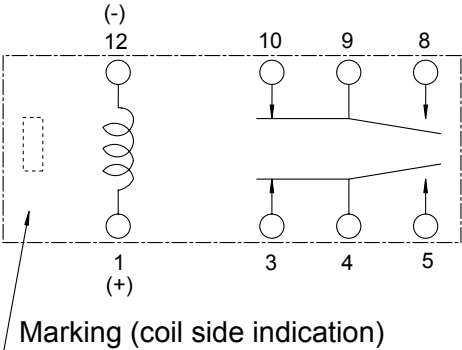
PC board mounting pad layout

Top view



Schematics

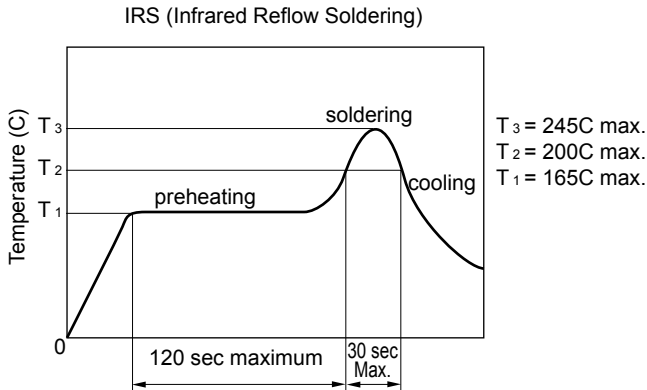
Top view



Unit: mm

FTR-C1 Series

RECOMMENDED SOLDERING CONDITIONS (TEMPERATURE PROFILE)

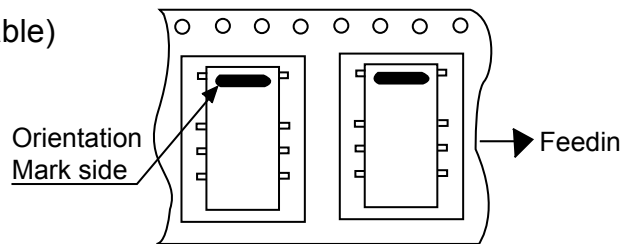


- Note:
1. Temperature profiles show the temperature of PC board surface.
 2. Please perform soldering test with your actual PC board before mass production, since the temperatures of PC board surfaces vary according to the size of PC board, status of parts mounting and heating method.

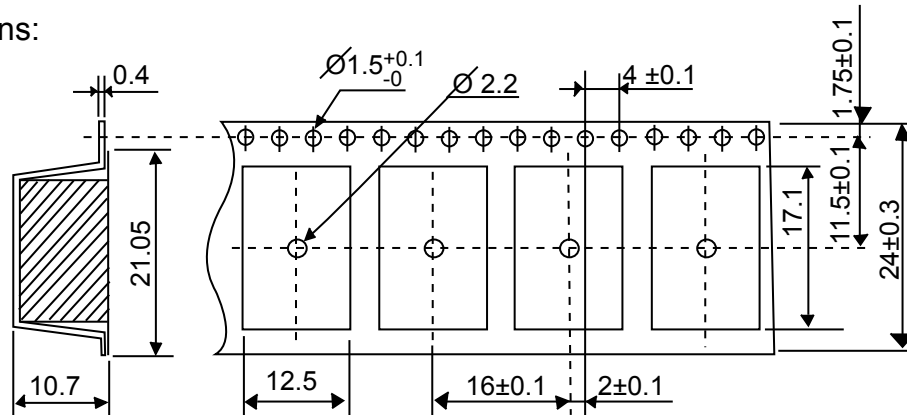
PACKAGING

Packaging method (only tape packaging is available)

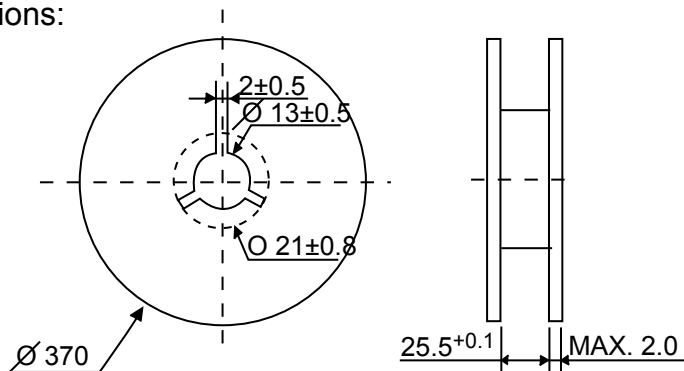
1. Taping standards: JIS C 0806 and RC-10092B (EIAJ)
2. Reel type: TB2416 or TB2416
3. Reel type: RD24D
4. Quantity of 1 reel: 500 pieces



Tape Dimensions:



Reel Dimensions:



Unit: mm

RoHS Compliance and Lead Free Relay Information

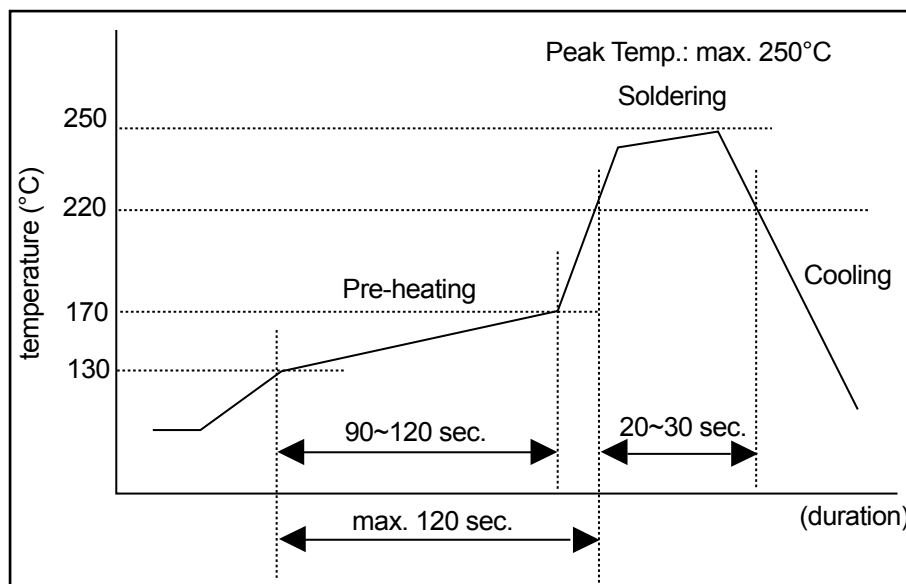
1. General Information

- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. Please refer to Lead-Free 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.
 - All signal and power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 5 hazardous materials that are restricted by RoHS directive (lead, mercury, chromium IV, PBB, PBDE and DecaBDE).
 - 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).
- 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 and Sn-3.0 Cu-Ni (only FTR-B3 and FTR-B4 from February 2005).

Reflow Solder condition for SMT



Flow Solder condition:

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

- SnAgCu and SnCuNi solder is known as low risk of tin whisker. No considerable length whisker was found by our in-house test.

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