

## POWER RELAY

# 1 POLE—5,10, 16 A (TV-5 rated Cadmium free type)

## FTR-F2 / H2 / K2 Series

**RoHS compliant**

### ■ FEATURES

- HIGH DENSITY MOUNTING  
25mm height and 275mm<sup>2</sup> mounting space
- HIGH ISOLATION  
Insulation Distance: Minimum 6mm between coil and contact  
Dielectric Strength: 4KV  
Surge Strength: 10KV
- TV-5 rated slim type suitable for power supply
- HEAT RESISTANCE, FLAMMABILITY  
Class B (130° C) insulation, flammability 94V-0
- CADMIUM FREE CONTACT FOR ECO-PROGRAM
- SAFETY STANDARDS  
UL, CSA, VDE approved, SEMKO  
UL/CSA TV-5 rating approved
- RoHS compliant since date code: 0437L2  
Please see page 8 for more information



### ■ ORDERING INFORMATION

[Example] FTR-F2 A K 012 T -\*\*  
(a) (b)(c) (d) (e) (f)

(a) Series Name	FTR-F2: FTRF2 series (5A) FTR-H2: FTR-H2 series (10A) FTR-K2: FTR-K2 series (16A)		
(b) Contact Arrangement	A: 1 Form A (SPST-NO)		
(c) Coil Type	K: Standard (530mW) L: High sensitivity (250mW) only FTR-F2 / H2		
(d) Coil Nominal Voltage	005: 5VDC 006: 6VDC 009: 9VDC	012: 12VDC 018: 18VDC* 024: 24VDC	048: 48VDC* *: standard type only
(e) Contact / TV-Rating	T: Silver alloy and TV-5		
(f) Custom Designation (option)	To be assigned custom specification TH: TV-8		

## ■ SAFETY STANDARD AND FILE NUMBERS

UL508 (File No. E63614)

C22.2 No.1and No. 14 (File No. LR40304)

VDE 0435, 0860 (File No. 11039-4940-1020)

	Nominal voltage	Contact rating
FTR-F2	5 to 48 VDC	TV-5 125 VAC 1/2 HP 250 VAC 1/6 HP 125 VAC 5 A 250 VAC/ 30 VDC resistive 2 A 250 VAC inductive (PF=0.4) Pilot duty C 300
FTR-H2	5 to 48 VDC	TV-5 120 VAC 1/2 HP 250 VAC 1/6 HP 125 VAC 10 A 30 VDC/250 VAC resistive 3A 250VAC inductive (PF=0.4) Pilot duty C300
FTR-K2	5 to 48 VDC	TV-5 120 VAC 1/3 HP 125VAC / 1HP 277VAC 10A 277VAC 16 A 30 VDC / 125VAC resistive Pilot duty C300

# FTR-F2/H2/K2 Series

## ■ SPECIFICATIONS

Item		FTR-F2 series		FTR-H2 series		FTR-K2 series
		Standard	Sensitive	Standard	Sensitive	Standard
Contact	Arrangement	1 Form A (SPST-NO)				
	Material	Silver alloy				
	Resistance (initial)	Maximum 100 m ohm (at 1A 6 VDC)				
	Rating (resistive)	250 VAC / 30VDC, 5A		250 VAC / 30VDC, 10A		250 VAC / 30VDC, 16A
	Maximum carrying current	5A		10A		16A
	Maximum switching rating	1,250VA /150W		2,500VA / 300W		4,000VA / 480W
	Maximum switching voltage	400VAC / 300VDC				
	Maximum switching current	5A		10A		16A
	Maximum switching load	100 mA, 5VDC				
	Maximum inrush current	78A, 120 VAC (at lamp load)				
Coil	Nominal power (at 20°C)	530mW	250mW	530mW	250mW	530mW
	Operate power (at 20°C)	260mW	160mW	260mW	160mW	260mW
	Operating temperature	-40°C to +70°C (no frost)				
Time value	Operate time (at nominal voltage)	Maximum 15ms				
	Release time (at nominal voltage)	Maximum 5ms				
Insulation	Resistance (at 500VDCI)	Minimum 1,000M ohm				
	Dielectric strength	between open contacts	1,000 VAC1 minute			
		between coil and contacts	4,000 VAC 1 minute			
	Surge strength	10,000V (at 1.2 x 50µs)				
Life	Mechanical	2x10 <sup>6</sup> operations minimum				
	Electrical	Contact rating	100x10 <sup>3</sup> operations minimum			
		Lamp load	25x10 <sup>3</sup> operations minimum			
Other	Vibration resistance	Misoperation	10-55 Hz )double amplitude of 1.5mm)			
		Endurance	10-55 Hz )double amplitude of 1.5mm)			
	Shock resistance	Misoperation	200m/s <sup>2</sup> (11±1ms)			
		Endurance	1,00m/s <sup>2</sup> (11±1ms)			
	Weight	Approximately 12g				

# FTR-F2/H2/K2 Series

## COIL DATA CHART

Standard Type (530mW)

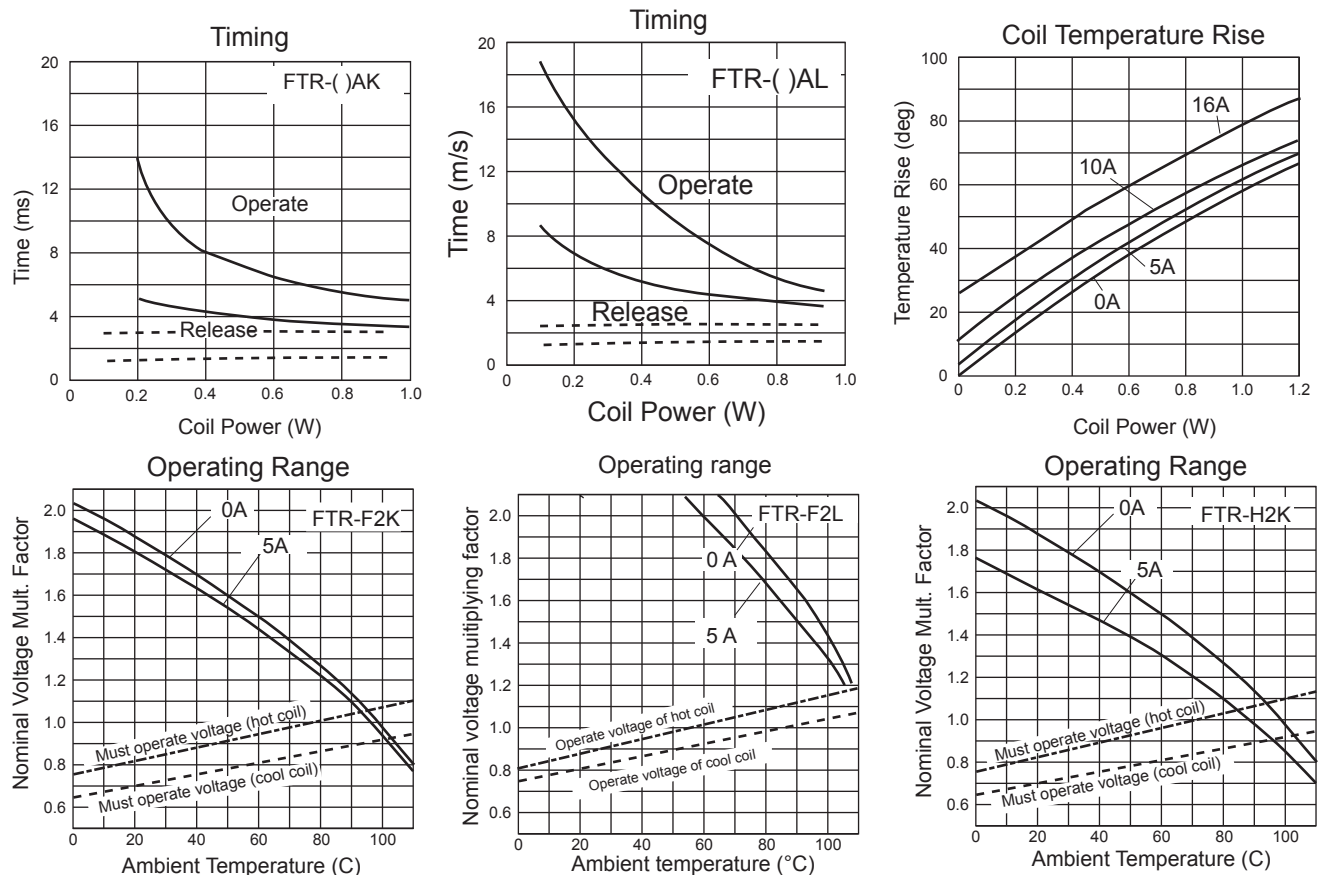
MODEL			Nominal Voltage	Coil Resistance ( $\pm 10\%$ )	Must Operate Voltage	Must Release Voltage
FTR-F2 series	FTR-H2 series	FTR-K2 series				
FTR-F2AK005T	FTR-H2AK005T	FTR-K2AK005T	5 VDC	47 $\Omega$	3.5 VDC	0.25 VDC
FTR-F2AK006T	FTR-H2AK006T	FTR-K2AK006T	6 VDC	68 $\Omega$	4.2 VDC	0.30 VDC
FTR-F2AK009T	FTR-H2AK009T	FTR-K2AK009T	9 VDC	155 $\Omega$	6.3 VDC	0.45 VDC
FTR-F2AK012T	FTR-H2AK012T	FTR-K2AK012T	12 VDC	270 $\Omega$	8.4 VDC	0.60 VDC
FTR-F2AK018T	FTR-H2AK018T	FTR-K2AK018T	18 VDC	610 $\Omega$	12.6 VDC	0.90 VDC
FTR-F2AK024T	FTR-H2AK024T	FTR-K2AK024T	24 VDC	1,100 $\Omega$	16.8 VDC	1.20 VDC
FTR-F2AK048T	FTR-H2AK048T	FTR-K2AK048T	48 VDC	4,400 $\Omega$	33.6 VDC	2.40 VDC

SENSITIVE TYPE (250MW)

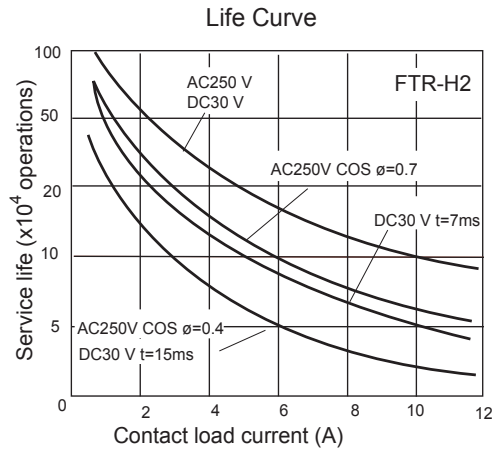
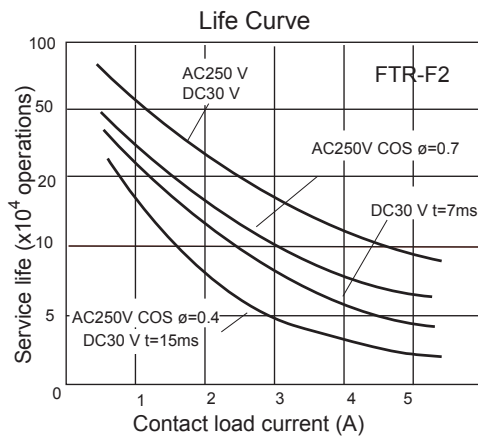
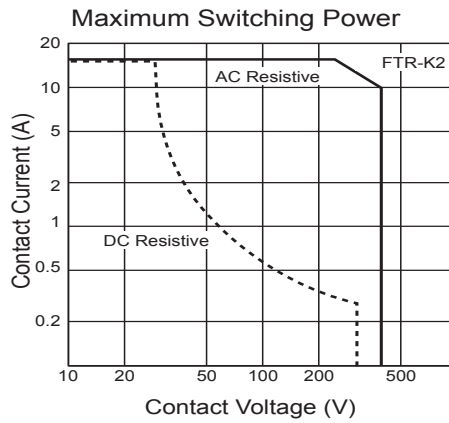
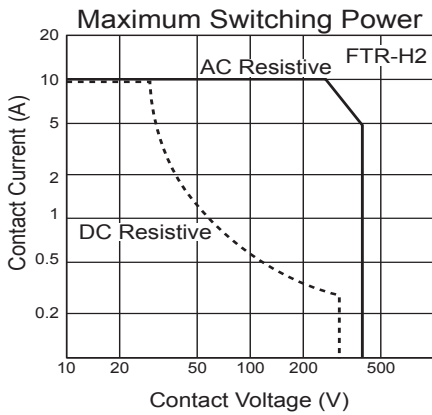
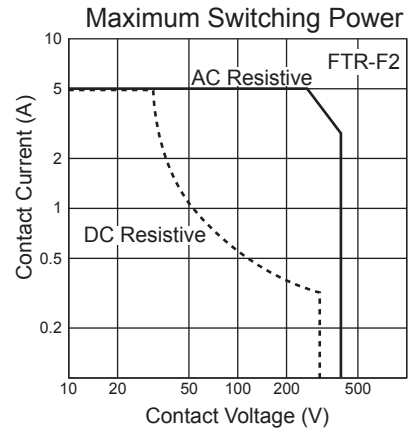
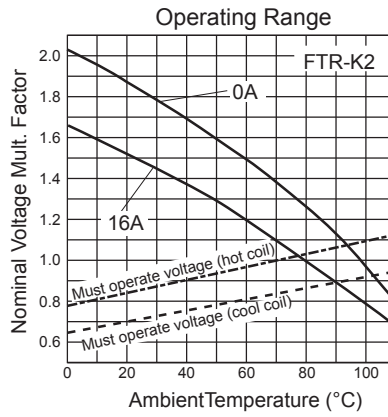
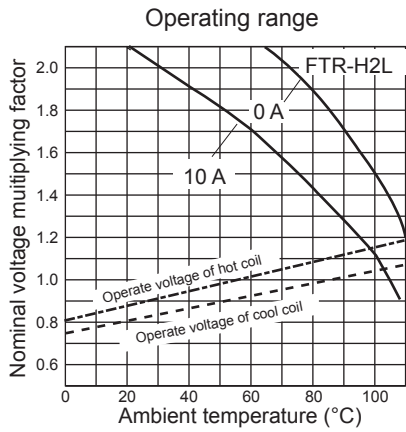
MODEL		Nominal Voltage	Coil Resistance ( $\pm 10\%$ )	Must Operate Voltage	Must Release Voltage
FTR-F2 series	FTR-H2 series				
FTR-F2AL005T	FTR-H2AL005T	5VDC	100 $\Omega$	4.0 VDC	0.25 VDC
FTR-F2AL006T	FTR-H2AL006T	6VDC	145 $\Omega$	4.8 VDC	0.30 VDC
FTR-F2AL009T	FTR-H2AL009T	9VDC	325 $\Omega$	7.2 VDC	0.45 VDC
FTR-F2AL012T	FTR-H2AL012T	12VDC	575 $\Omega$	9.6 VDC	0.60 VDC
FTR-F2AL024T	FTR-H2AL024T	24VDC	2,310 $\Omega$	19.2 VDC	1.20 VDC

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

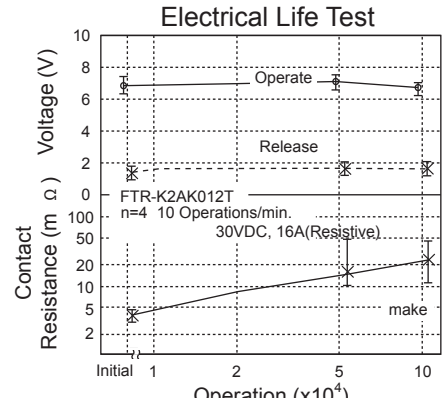
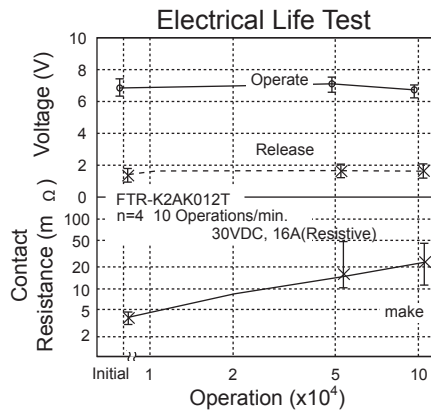
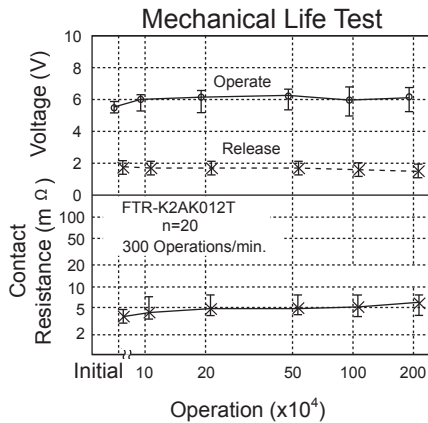
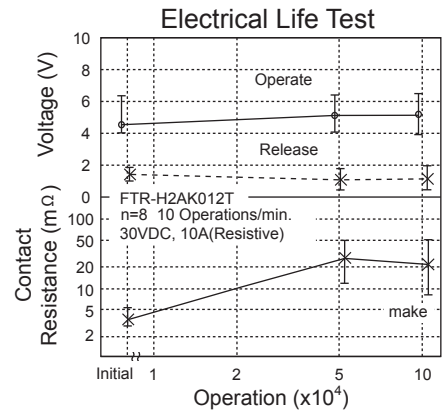
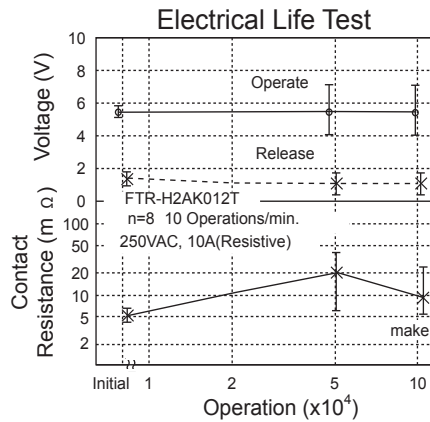
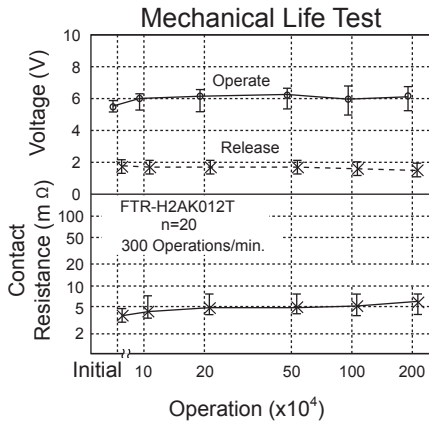
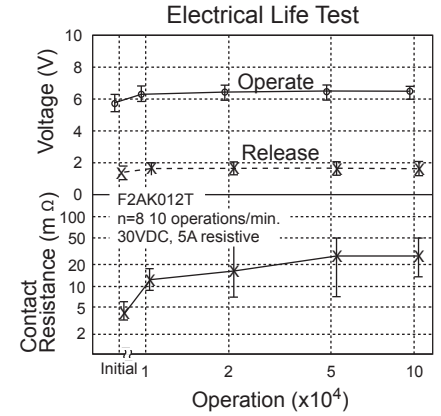
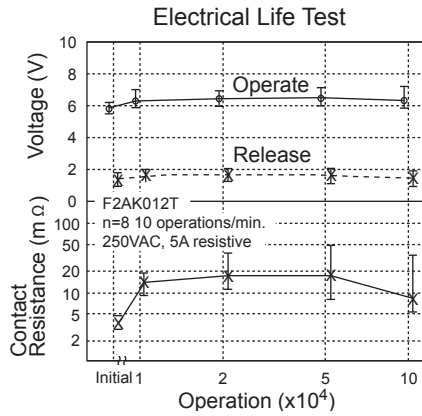
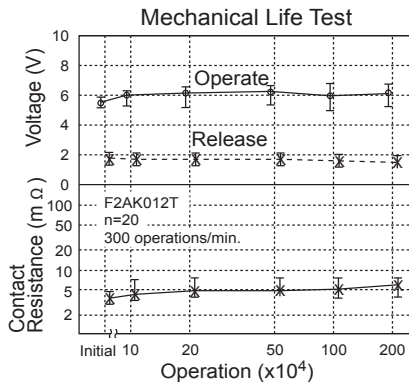
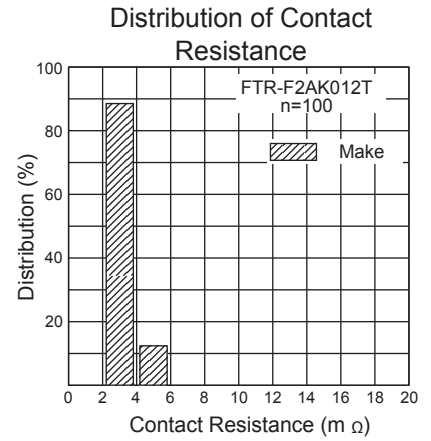
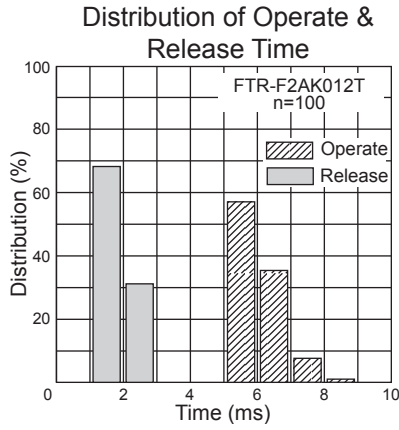
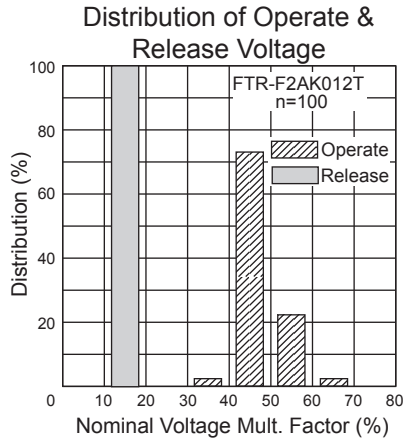
## REFERENCE DATA



# FTR-F2/H2/K2 Series

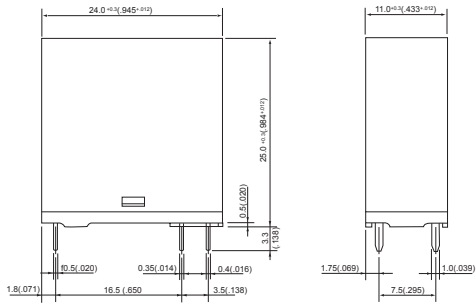


# FTR-F2/H2/K2 Series

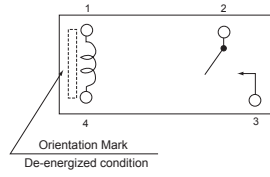


## ■ DIMENSIONS

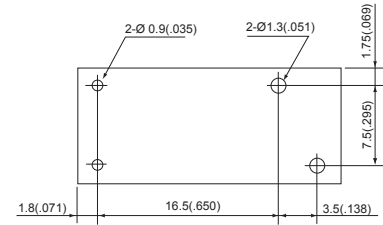
### ● Dimensions



### ● Schematics (BOTTOM VIEW)



### ● PC board mounting hole layout (BOTTOM VIEW)



Unit: mm (in.)

## 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. Most of our signal and power relays are lead-free. 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 most 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).
- 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 condition

**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

- 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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