



# FTR-B4 Series

## ■ COIL DATA CHART

Standard type

MODEL	Rated coil voltage	Coil resistance (±10%)	Operating voltage	Release voltage*	Rated power consumption
FTR-B4( )A1.5Z	1.5VDC	16.1 Ω	+1.13V	+0.15V	140mW
FTR-B4( )A003Z	3VDC	64.3 Ω	+2.25V	+0.3V	140mW
FTR-B4( )A4.5Z	4.5VDC	145 Ω	+3.38V	+0.45V	140mW
FTR-B4( )A006Z	6VDC	257 Ω	+4.5V	+0.6V	140mW
FTR-B4( )A009Z	9VDC	579 Ω	+6.75V	+0.9V	140mW
FTR-B4( )A012Z	12VDC	1,028 Ω	+9.0V	+1.2V	140mW
FTR-B4( )A024Z	24VDC	2,504 Ω	+18.0V	+2.4V	230mW

\* Pulse driven

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

Latching type (1 coil)

MODEL	Rated coil voltage	Coil resistance (±10%)	Set voltage	Release voltage	Rated power consumption
FTR-B4 ( )B1.5Z	1.5VDC	22.5 Ω	+1.13V	-1.13V	100mW
FTR-B4 ( )B003Z	3VDC	90 Ω	+2.25V	-2.25V	100mW
FTR-B4 ( )B4.5Z	4.5VDC	203 Ω	+3.38V	-3.38V	100mW
FTR-B4 ( )B006Z	6VDC	360 Ω	+4.5V	-4.5V	100mW
FTR-B4 ( )B009Z	9VDC	810 Ω	+6.75V	-6.75V	100mW
FTR-B4 ( )B012Z	12VDC	1,440 Ω	+9.0V	-9.0V	100mW
FTR-B4 ( )B024Z	24VDC	4,800 Ω	+18.0V	-18.0V	120mW

\* Pulse driven

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

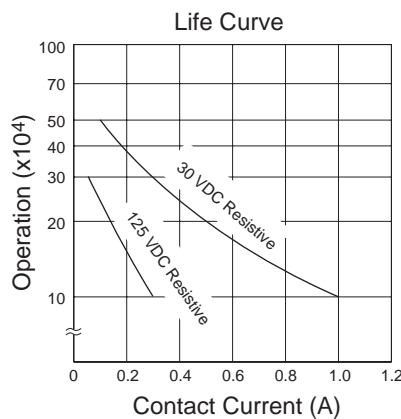
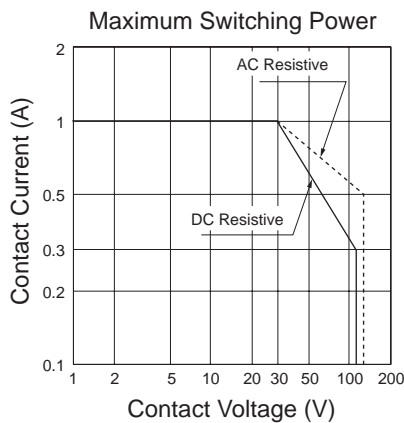
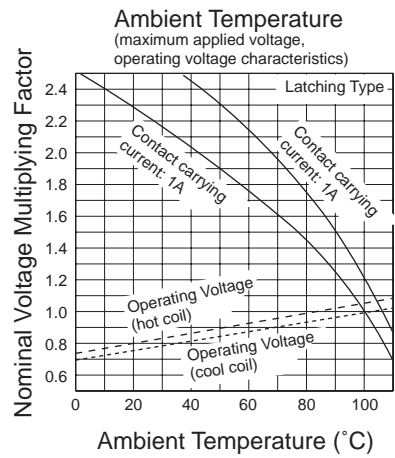
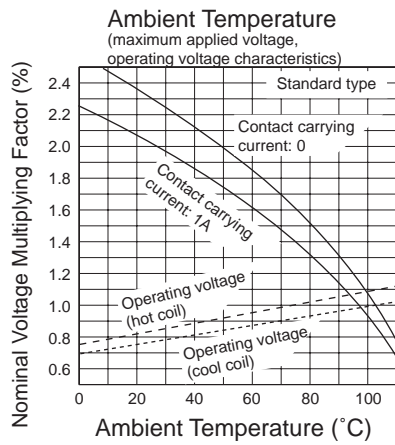
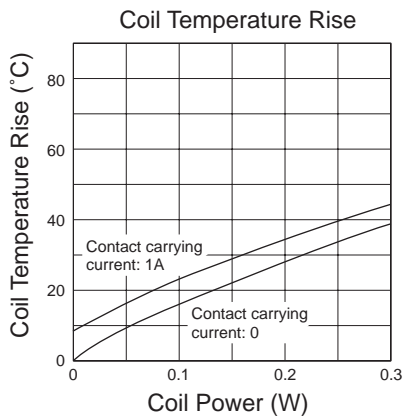
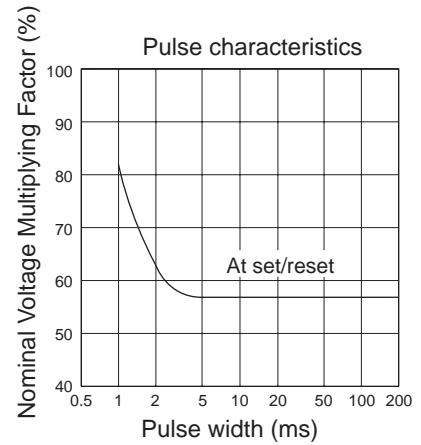
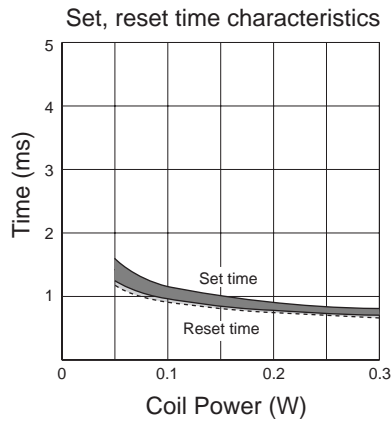
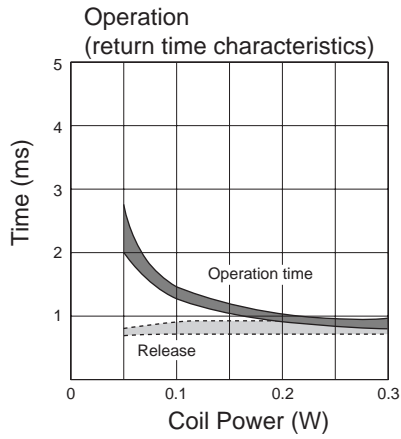
# FTR-B4 Series

## ■ SPECIFICATIONS

		Standard Type	Latching Type
		FTR-B4CA ( ) Z FTR-B4GA ( ) Z FTR-B4SA ( ) Z	FTR-B4CB ( ) Z FTR-B4GB ( ) Z FTR-B4SB ( ) Z
Contact	Arrangement	2Form C	
	Contact material	Gold overlay silver alloy	
	Contact resistance (initial value)	100m maximum at 6VDC 1A	
	Maximum switching current	1A	
	Maximum switching power	62.5 VA / 30W	
	Maximum switching voltage	250 VAC, 220 VDC	
Coil	Operating temperature (no frost)	-40° C to +85° C	
Time Value	Operate (at nominal voltage, without bounce)	3ms maximum	
	Release (at nominal voltage, without bounce)	3ms maximum	
Insulation	Resistance (at 500VDC)		Minimum 1,000 M
	Dielectric Strength	between open contacts	1,000 VAC 1 minute
		between adjacent contacts	1,000 VAC 1 minute
		between coil and contacts	1,500 VAC 1 minute
	Surge Strength	between open contacts	1,500V (at 10 x 160µs) [FCC Part 68]
		between adjacent contacts	1,500V (at 10 x 160µs) [FCC Part 68]
between coil and contacts		1,500V (at 10 x 160µs) [FCC Part 68] 2,500V (at 2 x 10µs) [Bellcore]	
Life	Mechanical	50 x 10 <sup>6</sup> operations (at 3 Hz)	
	Electrical (resistive load)	100 x 10 <sup>3</sup> ops. min. at 1 A, 30 VDC (at 0.5 Hz) 100 x 10 <sup>3</sup> ops. min. at 0.3 A, 30 VAC (at 0.5 Hz)	
Vibration Resistance	Misoperation	10 to 55 Hz at double amplitude of 3 mm	
	Endurance	10 to 55 Hz at double amplitude of 5 mm	
Shock Resistance	Misoperation	Min. 750 m/s <sup>2</sup>	
	Endurance	Min. 1000 m/s <sup>2</sup>	
Weight		Approximately 1.0 g	
UL/CSA	Contact Rating	0.5 A, 125 VAC; 1A, 30 VDC; 0.3 A, 110 VDC	

\*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

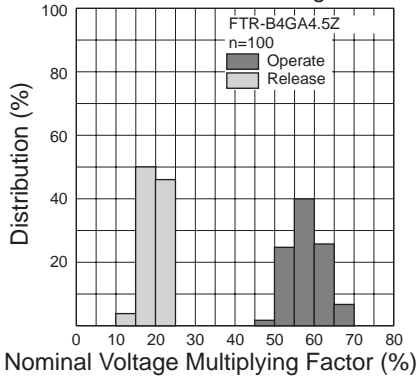
## CHARACTERISTIC DATA



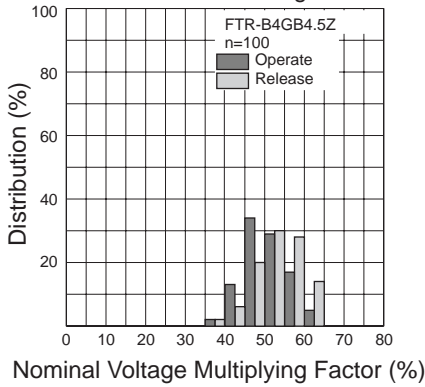
# FTR-B4 Series

## REFERENCE DATA

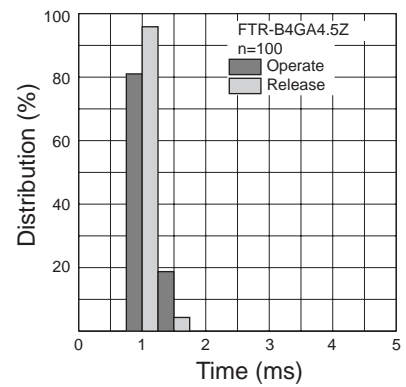
Distribution of Operate and Release Voltage



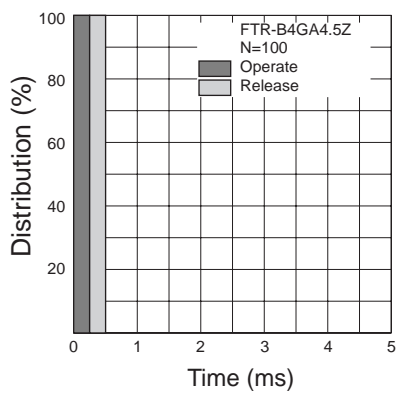
Distribution of Operate and Release Voltage



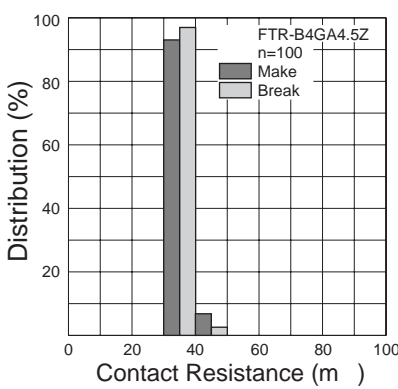
Distribution of Operate and Release Time



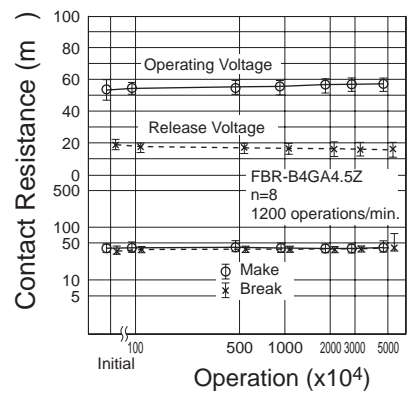
Distribution of Bounce Time



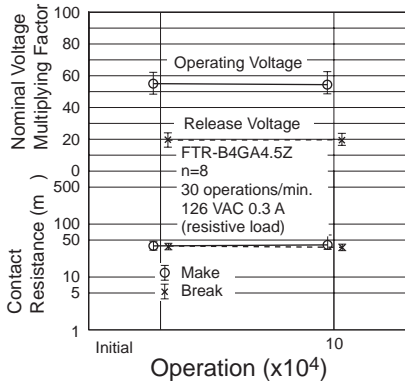
Distribution of Contact Resistance



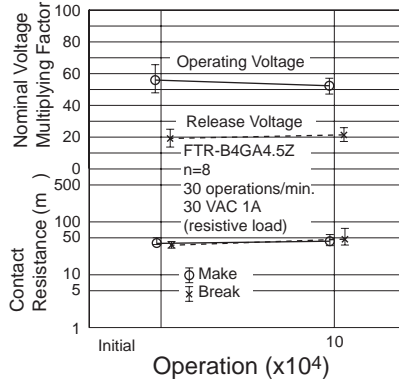
Mechanical Life Test



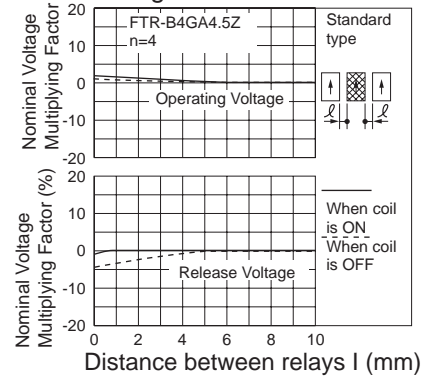
Electrical Life Test



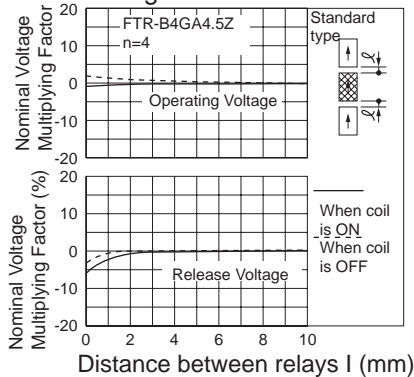
Electrical Life Test



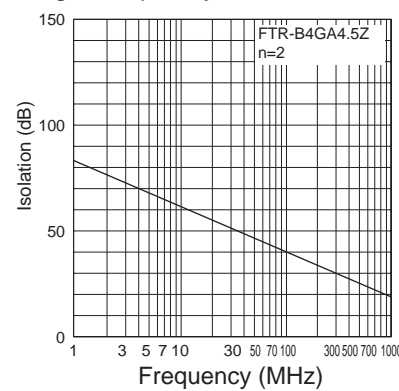
Magnetic Interference



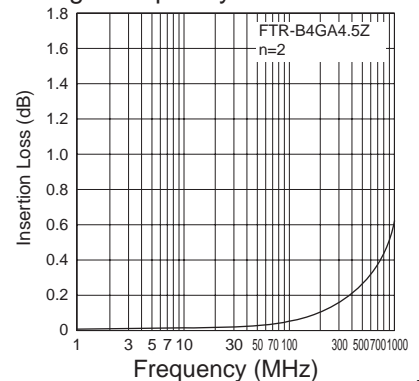
Magnetic Interference



High Frequency Characteristics

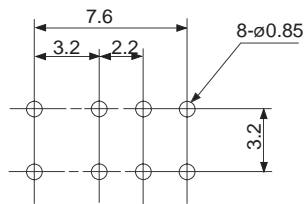
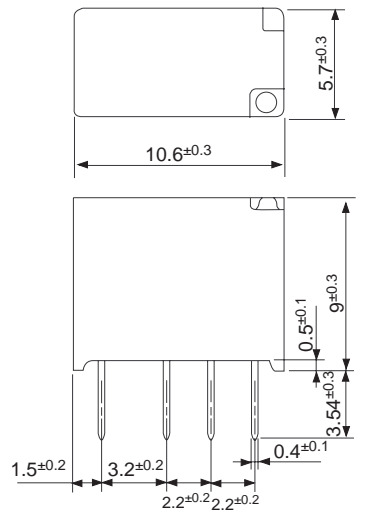


High Frequency Characteristics

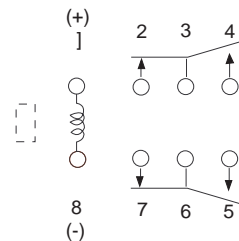
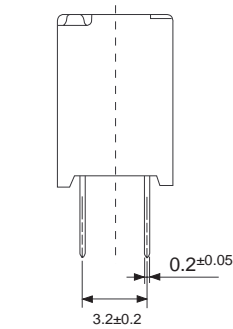


## ■ DIMENSIONS AND SCHEMATICS

### Through hole type

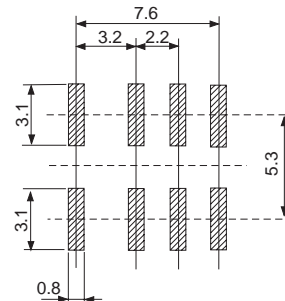
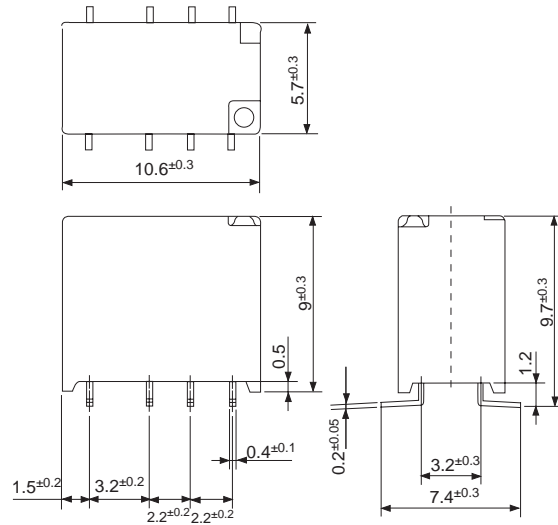


Recommended mounting pad  
(Tolerance:  $\pm 0.1\text{mm}$ )

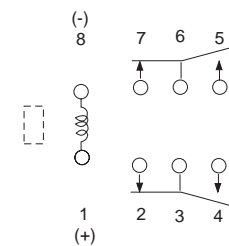
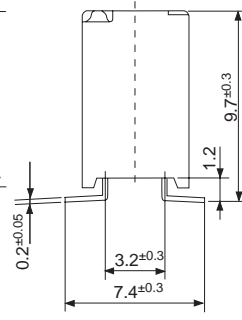


Terminal designations  
(Bottom view de-energized position)

### Surface mount type (standard)



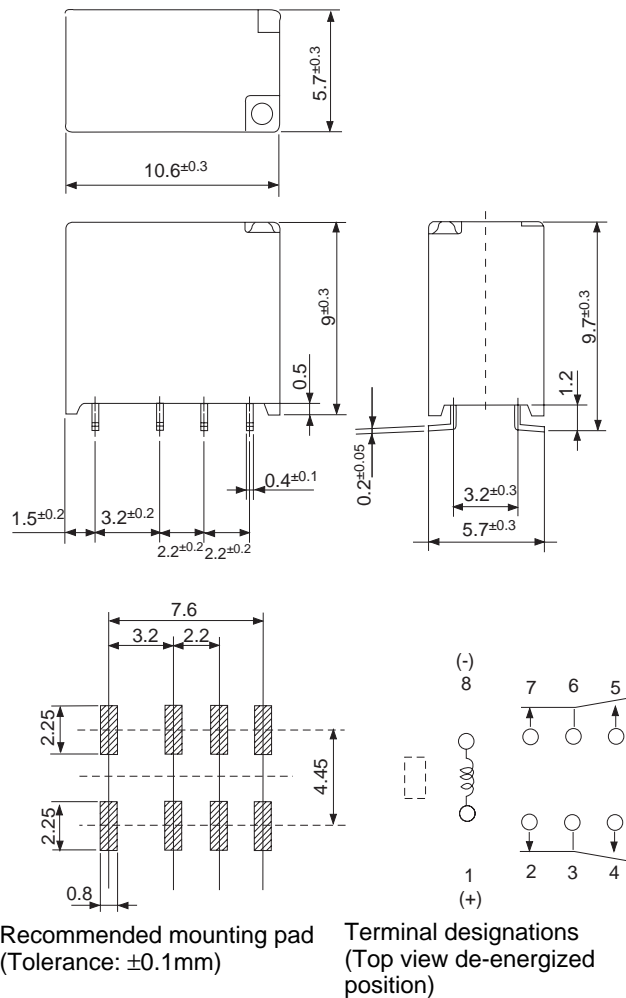
Recommended mounting pad  
(Tolerance:  $\pm 0.1\text{mm}$ )



Terminal designations  
(Top view de-energized position)

## DIMENSIONS AND SCHEMATICS

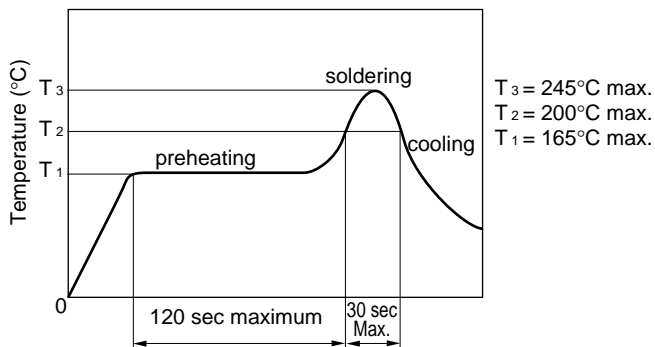
### Reduced mounting area



## RECOMMENDED SOLDERING CONDITIONS

### (TEMPERATURE PROFILE)

IRS (Infrared Reflow Soldering)



- 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.

## PRECAUTIONS

- For details on general precautions, refer to the section on technical descriptions.
- Since this is a polar relay, follow the instructions of the internal wiring diagram for the +- connections of the coil.
- Note that the terminal array and internal wiring of the surface mount relay are a top view.

## RoHS Compliance and Lead Free Relay Information

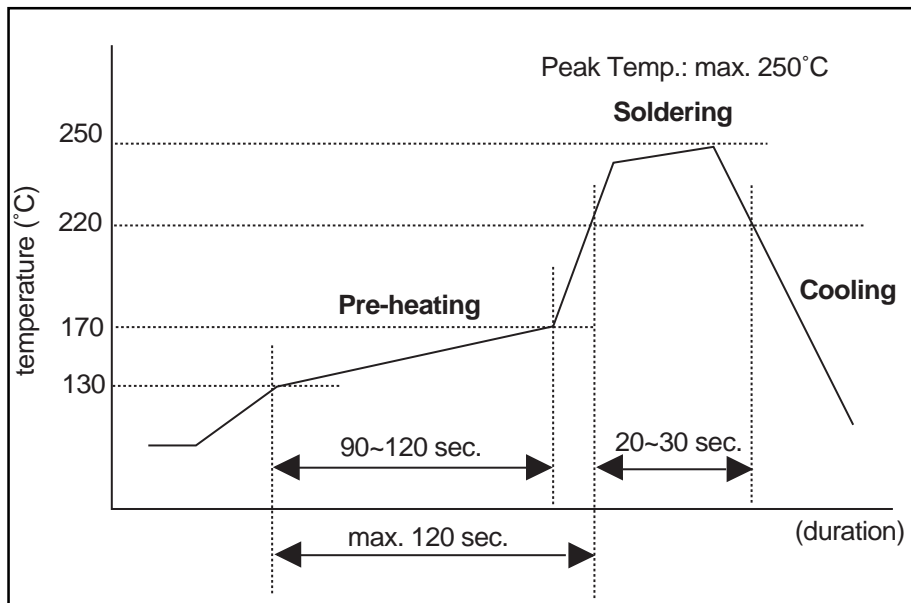
### 1. General Information

- 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.fcai.fujitsu.com/pdf/LeadFreeLetter.pdf>)
- Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu. From February 2005 forward Sn-3.0Cu-Ni will be used for FTRB3 and FTR-B4 series relays.
- Most signal and some power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 6 hazardous materials that are restricted by RoHS directive (lead, mercury, cadmium, chromium IV, PBB, PBDE).
- It has been verified that using lead-free relays in lead 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.

### 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



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

### 5. Solid State Relays

- Each lead terminal will be changed from solder plating to Sn plating and Nickel plating. A layer of Nickel plating is between the terminal and the Sn plating to avoid whisker.



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