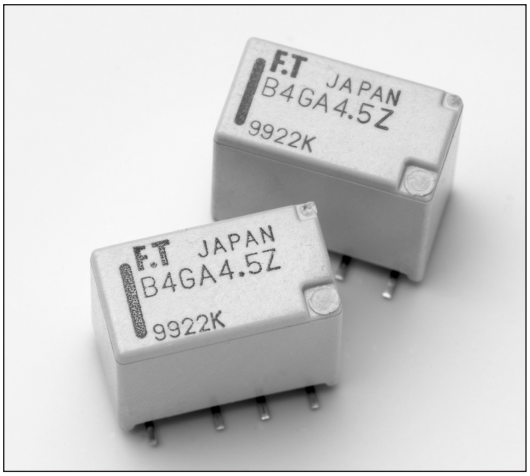
FUJITSU THE POSSIBILITIES ARE INFINITE

ULTRA MINIATURE RELAY
SLIM SIGNAL RELAY
FTR-B4 Series

RoHS compliant

■ FEATURES



- Ultra miniature slim type relay for surface mounting
  Height: 9.3 mm maximum (THT)
  10 mm maximum (SMT)
  Weight: Approximately 1.0 g
- UL/CSA recognized
- Conforms to Bellcore & FCC part 68, and Telcordia & FCC part 68
- Conforms to UL1950 / CSA 950, IEC 950 / EN60950 spacing and high breakdown voltage
  Clearance: 1.0mm
  Creepage: 1.6mm
  Basic insulation, 150V working voltage, pollution degree 2
- HIGH RELIABILITY
  Bifurcated contacts
- Low power consumption 140 mV (standard), 100 mW (latching)
- RoHS compliant since date code: 0430B8
  Please see page 8 for more information

■ ORDERING INFORMATION

	FTR-B4	C	A	4.5	Z	- B	05
[Example]	(a)	(b)	(c)	(d)	(e)	(f)	(g)

(a)	Series Name	FTR-B4 Series
(b)	Terminal type	C: Through hole type G: surface mount type S: surface mount type - reduced mounting area
(c)	Operation function	A: standard type B: latching type
(d)	Coil Number	Nominal voltage
(e)	Contact material	Z: gold plated silver alloy
(f)	Relay enclosing direction*	B: standard enclosing direction
(g)	Number of relays per reel*	05: 500 (standard)

Remarks: Actual marking on relay would not carry code FTR and be as below:
Ordering code Actual marking
Notes: *FTR-B4CA4.5Z → B4CA4.5Z
- Only surface mount types (G and S) are applicable
- All relays are packaged in tubes unles P/N ends with -B05

■ 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	16.1Ω	+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.

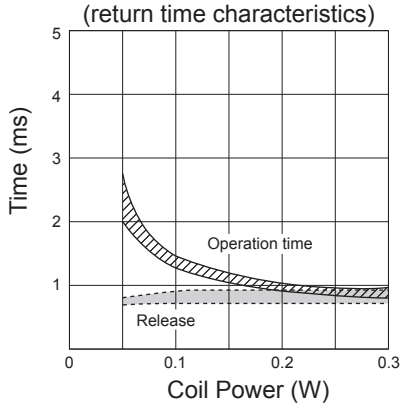
■ SPECIFICATIONS

			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)		100mΩ maximum at 6 VDC 1	
	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 1,000MΩ	
	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 10^6 operations (at 3 Hz)	
	Electrical (resistive load)		100 x 10^3 ops. min. at 1 A, 30 VDC (at 0.5 Hz) 100 x 10^3 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^2	
	Endurance		Min. 1000 m/s^2	
Weight			Approximately 1.0 g	
UL/CSA	Contact Rating		0.5 A, 125 VAC; 1A, 30 VDC; 0.3 A, 110 VDC	

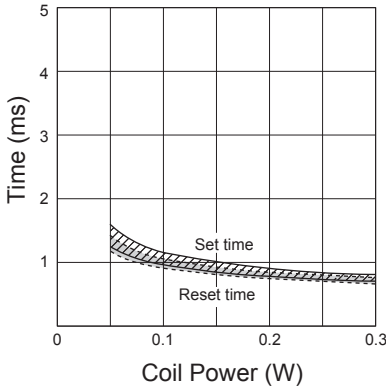
*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions adn expected reliability levels.

■ CHARACTERISTIC DATA

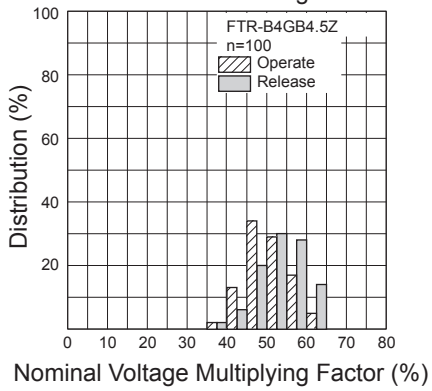
Operation
(return time characteristics)



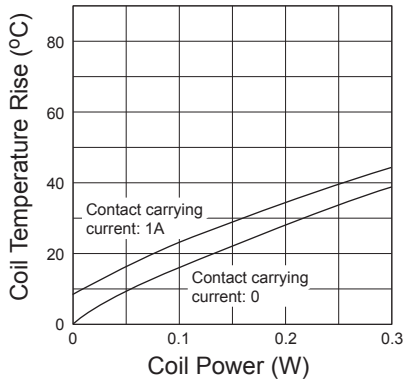
Set, reset time characteristics



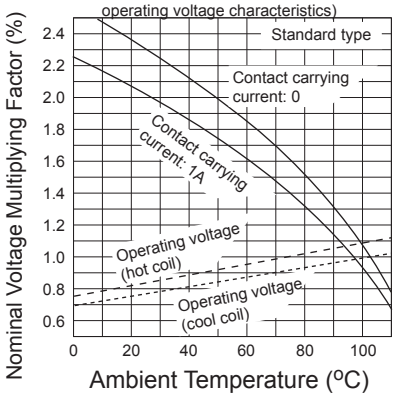
Distribution of Operate
and Release Voltage



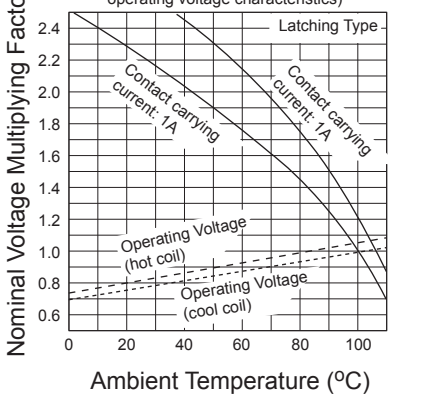
Coil Temperature Rise



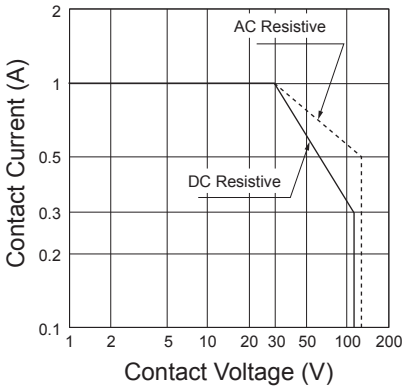
Ambient Temperature
(maximum applied voltage,
operating voltage characteristics)



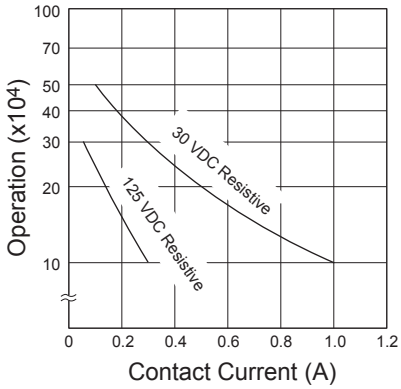
Ambient Temperature
(maximum applied voltage,
operating voltage characteristics)



Maximum Switching Power

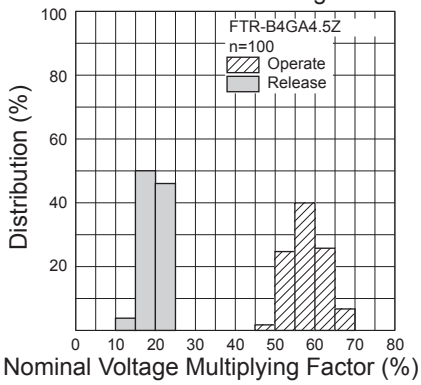


Life Curve

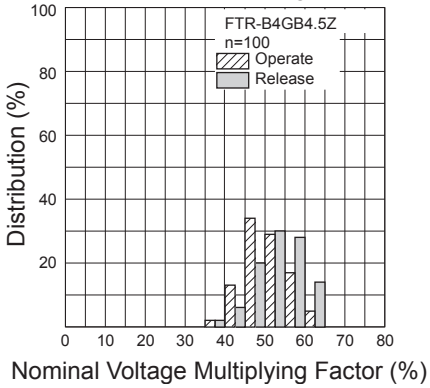


■ REFERENCE DATA

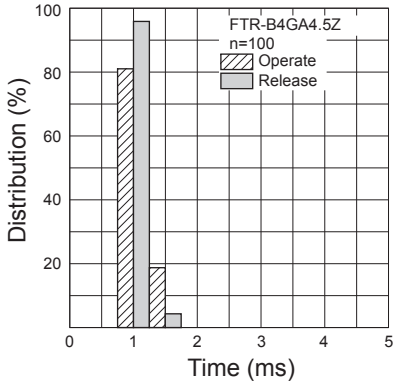
Distribution of Operate and Release Voltage



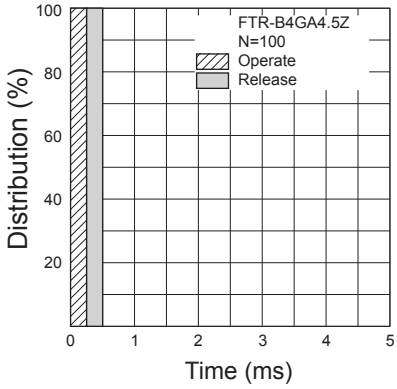
Distribution of Operate and Release Voltage



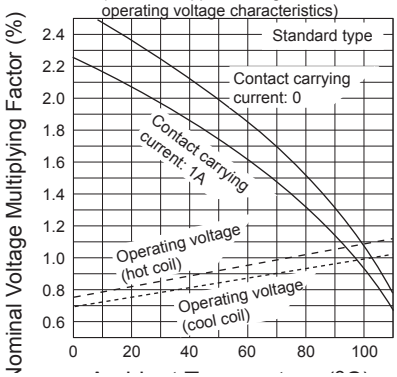
Distribution of Operate and Release Time



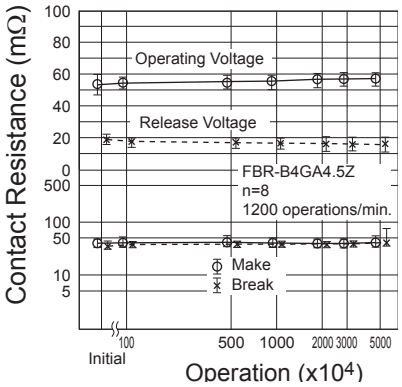
Distribution of Bounce Time



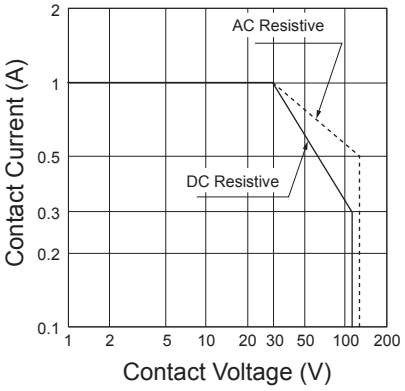
Ambient Temperature
(maximum applied voltage, operating voltage characteristics)



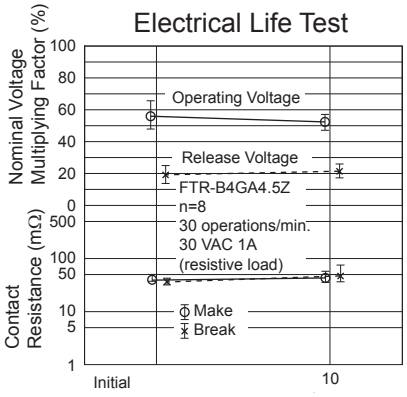
Mechanical Life Test



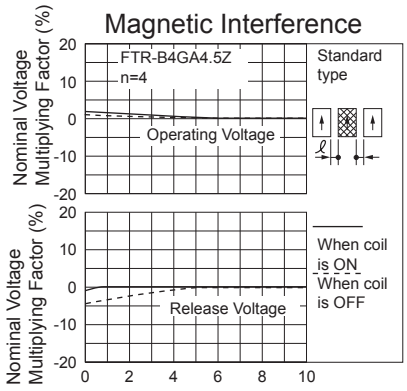
Maximum Switching Power



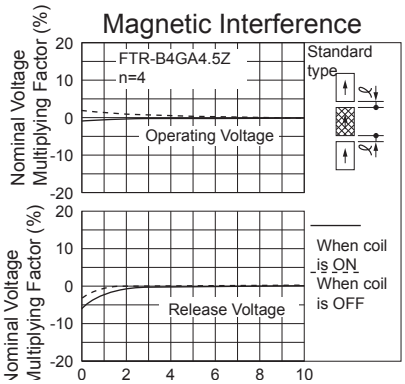
Electrical Life Test



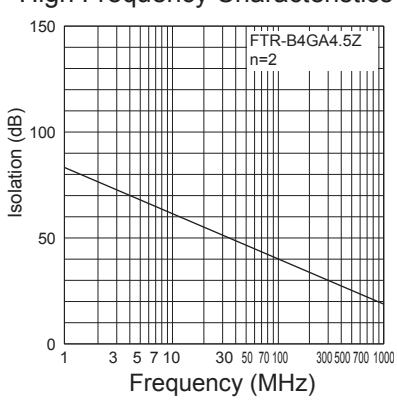
Magnetic Interference



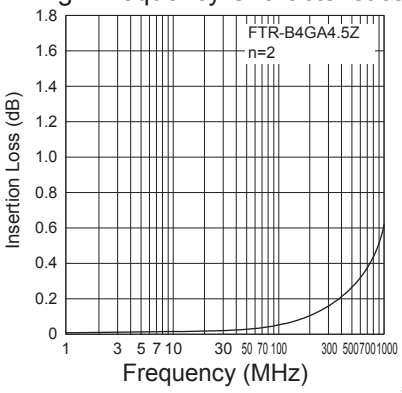
Magnetic Interference



High Frequency Characteristics

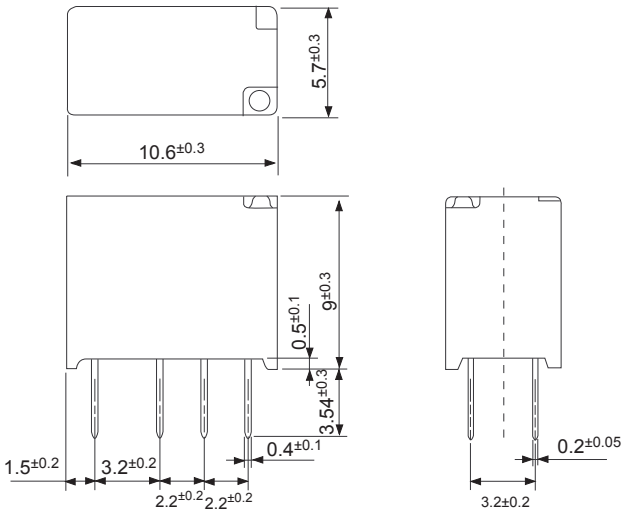


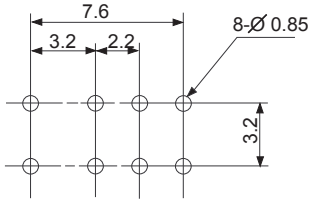
High Frequency Characteristics



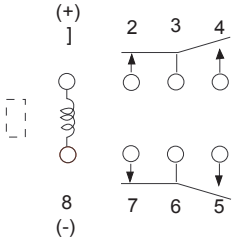
■ DIMENSIONS AND SCHEMATICS

Through hole type



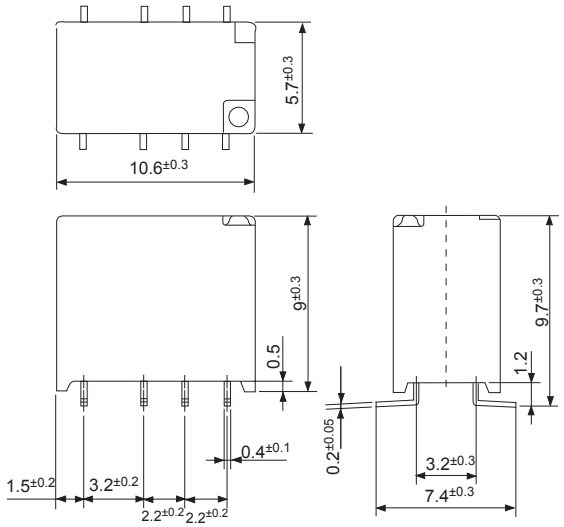


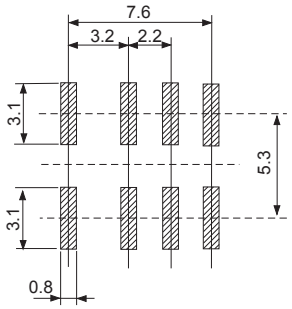
Recommended mounting pad
(Tolerance: ±0.1mm)



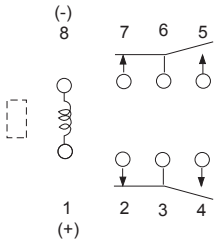
Terminal designations
(Bottom view de-energized position)

Surface mount type (standard)





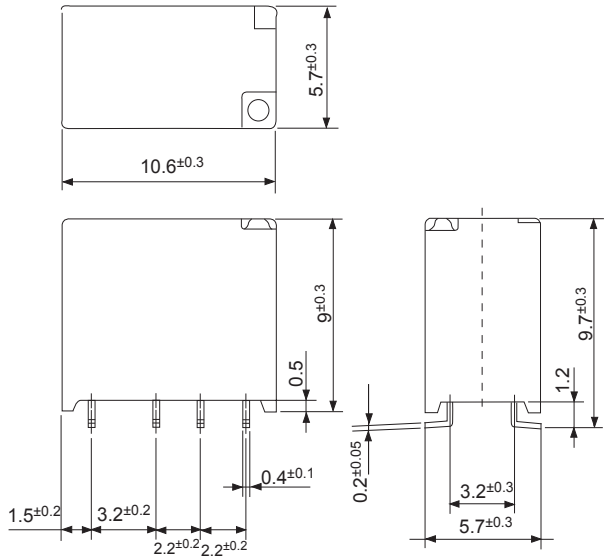
Recommended mounting pad
(Tolerance: ±0.1mm)

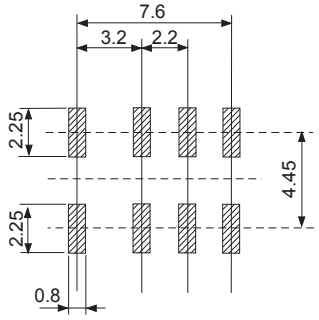


Terminal designations
(Top view de-energized position)

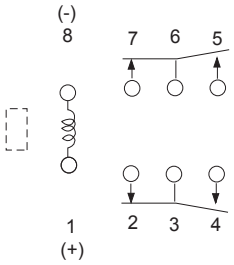
■ DIMENSIONS AND SCHEMATICS

Reduced mounting area





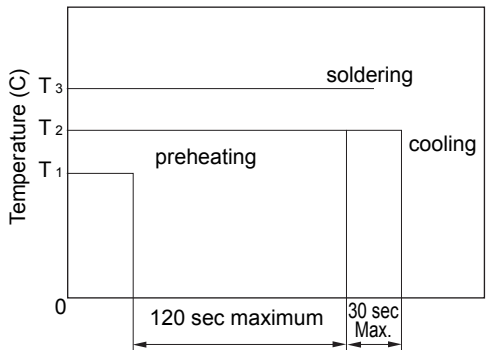
Recommended mounting pad
(Tolerance: ±0.1mm)



Terminal designations
(Top view de-energized position)

■ RECOMMENDED SOLDERING CONDITIONS (TEMPERATURE PROFILE)

IRS (Infrared Reflow Soldering)



T 3 = 245C max.
T 2 = 200C max.
T 1 = 165C max.

Note: 1.Temperature profiles show the tempera ture of PC board surface.
2. Please perform soldering test with your actual PC board before mass produc tion, since the temperatures of PC board surfaces vary according to the size of PC board, status of parts mount ing 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

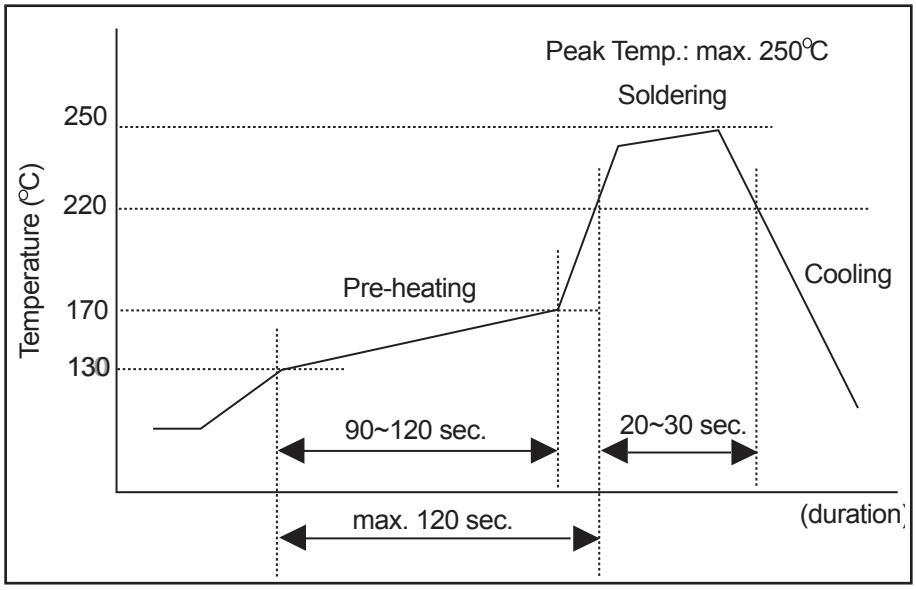
- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. Most of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf)
- Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu. From February 2005 forward Sn-3.0CU-Ni will be used for the FTR-B3 and FTR-B4 series relays.
- 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 amd Sm-3.0 Cu-Ni (only FTR-B3 and FTR-B4 from February 2005.

Reflow Solder condtion



Flow Solder condtion:

Pre-heating:	maximum 120˚C
Soldering:	dip within 5 sec. at 260˚C soler 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 realys.

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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Web: http://www.fujitsu.com/sg/services/micro/components/