

POWER RELAY

1 POLE—1, 3, 5, 10 A (MEDIUM LOAD CONTROL)

LZ SERIES

Lead Free /
RoHS Compliant*

■ FEATURES

- UL, CSA
- 4 kinds of contact ratings
—Low level to 10 amps switching
- Standard and high sensitivity types available
- High surge strength version available
- UL class B (130°C) insulation type available (only plastic sealed type)
- Printed circuit terminals—fits grid with 0.1 inch
- Plastic sealed type available
- Lead Free since date code: 0437L2
Please see page 9 for more information

* some part numbers still contain cadmium and are not RoHS compliant



■ ORDERING INFORMATION

[Example] LZ - B 12 H M S E - K HV - UC
 (a) (b) (c) (d) (e) (f) (g) (h) (i) (j)

(a)	Series Name	LZ : LZ Series
(b)	Coil Heat Proof Class	Nil : Standard type B : UL class B insulation type (130°C)
(c)	Nominal Voltage	Refer to the COIL DATA CHART
(d)	Contact Rating	Nil : 3 A H : 5 A V : 10 A W : 1 A (bifurcated)
(e)	Contact Arrangement	Nil : 1 form C (SPDT) M : 1 form A (SPST-NO)
(f)	Coil Type	Nil : Standard type S : High sensitive type
(g)	Contact Material (Rating)	Nil : Gold overlay silver-palladium (only LZ-W) Nil : Gold overlay silver-nickel (3 A, 5 A) Nil : Silver alloy (10 A) (only LZ-V) (contains cadmium) E : Silver-nickel (3 A, 5 A)
(h)	Enclosure	Nil : Flux free type K : Plastic sealed type (recommended for new designs) C : Plastic sealed type (with tape)
(i)	Surge Strength	Nil : Standard type (4,000 V) HV : High dielectric strength type (6,000 V)
(j)	Standard	UC: UL, CSA approved type

■ SAFETY STANDARD AND FILE NUMBERS

UL508 (File No. E56140, E45026)

C22.2 No. 14 (File No. LR35579)

Please note that UL/CSA ratings may differ from the standard ratings.

Please request when the approval markings are required on the cover and/or relay recognized by SEV is required.

Type	Nominal voltage	Contact rating
LZ- ()W LZ- ()WS	1.5 to 48 VDC 1.5 to 24 VDC	0.8 A 240 VAC resistive 1 A 30 VDC/120 VAC resistive
LZ- () LZ- ()S	1.5 to 48 VDC 1.5 to 24 VDC	1/10 HP 120 VAC/240 VAC 2.5 A 240 VAC resistive 3 A 30 VDC/120 VAC resistive Pilot duty D 150
LZ- ()H LZ- ()HS	1.5 to 48 VDC 1.5 to 24 VDC	1/8 HP 120 VAC/240 VAC 4 A 240 VAC resistive 5 A 30 VDC/120 VAC resistive Pilot duty C 150
LZ- ()V	1.5 to 48 VDC	1/4 HP 120 VAC/240 VAC 7 A 240 VAC resistive 10 A 24 VDC/120 VAC resistive Pilot duty C 150

LZ SERIES

■ SPECIFICATIONS

LZ-()Type (Standard Type)

Item		10 A Type		5 A Type		3 A Type		1 A Type	
		LZ-()V	LZ-()VM	LZ-()H, LZ-()HE		LZ(), LZ-()E		LZ-()W	
Contact	Arrangement	1 form A (SPST-NO) or 1 form C (SPDT)							
	Material	Silver alloy (contains cadmium)		Gold overlay silver alloy Silver alloy (LZ-HE, E)				Gold overlay silver-palladium	
	Style	Single						Bifurcated	
	Resistance (initial) (at 1 A 6 VDC)	Maximum 100 mΩ		Maximum 70 mΩ (LZ-H,LZ) Maximum 100 mΩ (LZ-HE, E)				Max. 50 mΩ	
	Rating (resistive)	10 A 120 VAC/24 VDC 1/4 H 120 VAC		5 A 120 VAC/24 VDC 1/8 H 120 VAC		3 A 120 VAC/30 VDC 1/10 H 120 VAC		1 A 120 VAC/30 VDC	
	Maximum Carrying Current	10 A		5 A				1 A	
	Maximum Switching Power	1,680 VA, 240 W		960 VA, 120 W		600 VA, 90 W		190 VA, 30 W	
	Maximum Switching Voltage	250 VAC, 150 VDC							
	Maximum Switching Current	10 A		5 A		3 A		1 A	
	Minimum Switching Load*1	100 mA 5 VDC		10 mA 5 VDC (LZ-H) 100 mA 5 VDC (LZ-HE)		10 mA 5 VDC (LZ-)		0.1 mA 100 VDC 100 mA 5 VDC (LZ-E)	
Coil	Nominal Power (at 20°C)	0.45 to 0.60 W							
	Operate Power (at 20°C)	0.29 to 0.39W		0.17 to 0.22 W					
	Operating Temperature	-30°C to +70°C (no frost) (refer to the CHARACTERISTIC DATA)							
Time Value	Operate (at nominal voltage)	Maximum 7 ms							
	Release (at nominal voltage)	Maximum 4 ms							
Insulation	Resistance (at 500 VDC)	Minimum 250 MΩ							
	Dielectric Strength	between open contacts	750 VAC 1 minute						
		between coil and contacts	2,000 VAC 1 minute						
Surge Strength	Standard type: 4,000 V (at 1.2 × 50 μs) High dielectric strength Type: 6,000 V (at 1.2 × 50 μs)								
Life	Mechanical	2 × 10 ⁷ operations minimum							
	Electrical	1 × 10 ⁵ operations minimum (contact rating)							
Other	Vibration Resistance	Misoperation	10 to 55 Hz (double amplitude of 3.3 mm)						
		Endurance	10 to 55 Hz (double amplitude of 3.3 mm)						
	Shock Resistance	Misoperation	100 m/s ² (11 ± 1 ms)						
		Endurance	1,000 m/s ² (6 ± 1 ms)						
	Weight	Approximately 7.7 g							

*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.

■ SPECIFICATIONS

LZ-() S Type (High Sensitive Type)

Item		5 A Type	3 A Type	1 A Type	
		LZ-()HS, LZ()HSE	LZ-()S, LZ-()SE	LZ-()WS	
Contact	Arrangement	1 form A (SPST-NO) or 1 form C (SPDT)			
	Material	Gold overlay silver alloy (single type)		Gold overlay silver-palladium (bifurcated type)	
	Resistance (initial) (at 1 A 6 VDC)	Maximum 70 mΩ (LZ-HS, S) Maximum 100 mΩ (LZ-HSE, SE)		Maximum 50 mΩ	
	Rating	Resistive	5 A 120 VAC/24 VDC	3 A 120 VAC/24 VDC	1 A 120 VAC/24 VDC
		Motor Load	1/8 H 120 VAC	1/10 H 120 VAC	
	Maximum Carrying Current	5 A		1 A	
	Maximum Switching Power	960 VA, 120 W	600 VA, 90 W	190 VA, 30 W	
	Maximum Switching Voltage	250 VAC, 150 VDC			
	Maximum Switching Current	5 A	3 A	1 A	
	Minimum Switching Load*1	10 mA 5 VDC (LZ-HS, S) 100 mA 5 VDC (LZ-HSE, SE)		0.1 mA 100 mVDC	
Coil	Nominal Power (at 20°C)	0.33 W			
	Operate Power (at 20°C)	0.14 W			
	Operating Temperature	-30°C to +80°C (no frost) (refer to the CHARACTERISTIC DATA)			
Time Value	Operate (at nominal voltage)	Maximum 7 ms			
	Release (at nominal voltage)	Maximum 4 ms			
Insulation	Resistance	Minimum 250 MΩ			
	Dielectric Strength	between open contacts	750 VAC 1 minute		
		between coil and contacts	2,000 VAC 1 minute		
Surge Strength	Standard type : 4,000 V (at 1.2 × 50 μs) High dielectric strength type: 6,000 V (at 1.2 × 50 μs)				
Life	Mechanical	2 × 10 ⁷ operations minimum			
	Electrical	1 × 10 ⁵ operations minimum (rated load)			
Other	Vibration	Misoperation	10 to 55 Hz (double amplitude of 3.3 mm)		
		Endurance	10 to 55 Hz (double amplitude of 3.3 mm)		
	Shock	Misoperation	100 m/s ² (11 ±1 ms)		
		Endurance	1,000 m/s ² (6 ±1 ms)		
	Weight	Approximately 7.7 g			

*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.

LZ SERIES

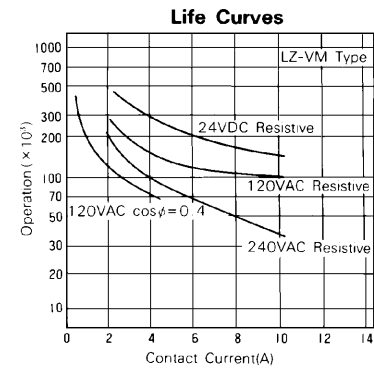
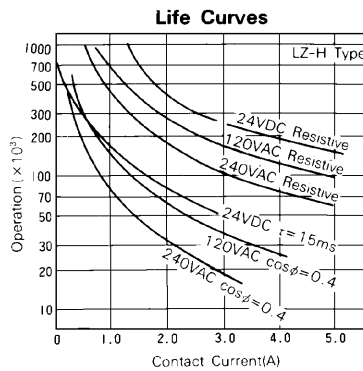
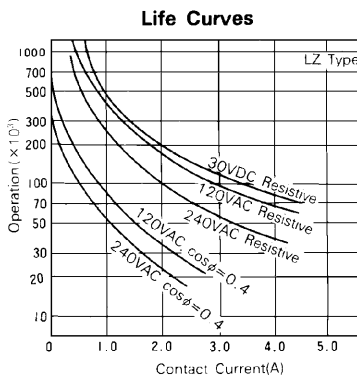
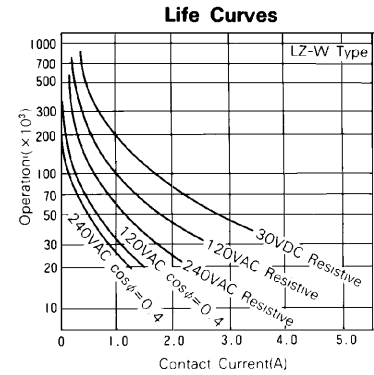
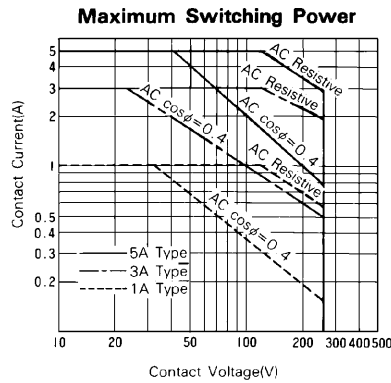
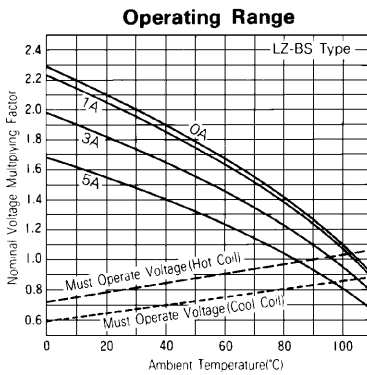
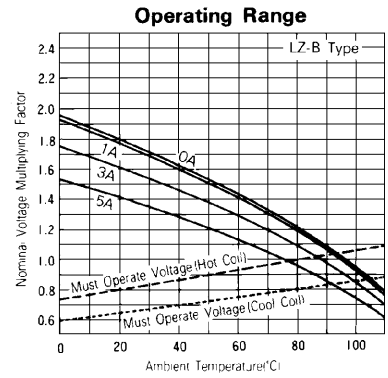
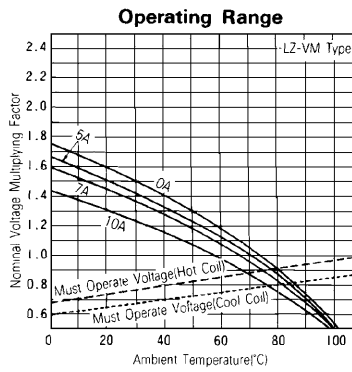
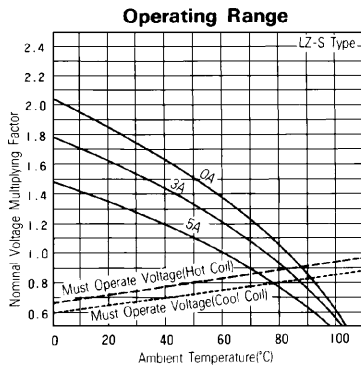
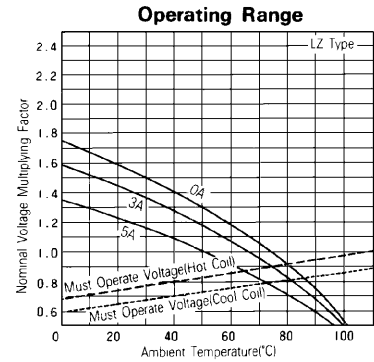
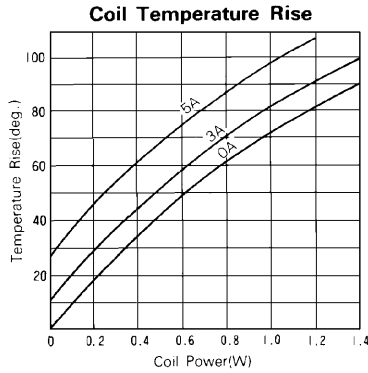
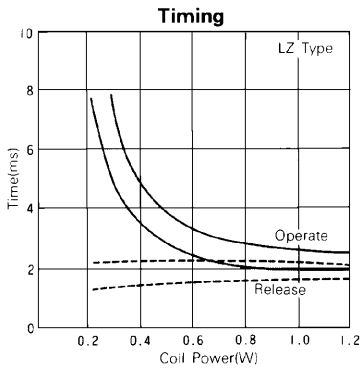
■ COIL DATA CHART

MODEL				Nominal Voltage	Coil Resistance (±10%)	Must Operate Voltage	Must Release Voltage	Nominal Power
Single			Bifurcated					
10 A Type	5 A Type	3 A Type	1 A Type					
LZ-(B) 1.5VM	LZ-(B)1.5H(M)(E)	LZ-(B) 1.5(M)(E)	LZ-(B)1.5W(M)	1.5 VDC	5	0.97 VDC	0.08 VDC	450 mW
LZ-(B) 3VM	LZ-(B) 3H(M)(E)	LZ-(B) 3 (M)(E)	LZ-(B) 3 W(M)	3 VDC	20	1.95 VDC	0.15 VDC	450 mW
LZ-(B) 5VM	LZ-(B) 5H(M)(E)	LZ-(B) 5 (M)(E)	LZ-(B) 5 W(M)	5 VDC	56	3.25 VDC	0.25 VDC	450 mW
LZ-(B) 6VM	LZ-(B) 6H(M)(E)	LZ-(B) 6 (M)(E)	LZ-(B) 6 W(M)	6 VDC	80	3.9 VDC	0.3 VDC	450 mW
LZ-(B) 9VM	LZ-(B) 9H(M)(E)	LZ-(B) 9 (M)(E)	LZ-(B) 9 W(M)	9 VDC	180	5.85 VDC	0.45 VDC	450 mW
LZ-(B) 12VM	LZ-(B) 12H(M)(E)	LZ-(B) 12 (M)(E)	LZ-(B) 12 W(M)	12 VDC	320	7.8 VDC	0.6 VDC	450 mW
LZ-(B) 18VM	LZ-(B) 18H(M)(E)	LZ-(B) 18 (M)(E)	LZ-(B) 18 W(M)	18 VDC	720	11.7 VDC	0.9 VDC	450 mW
LZ-(B) 24VM	LZ-(B) 24H(M)(E)	LZ-(B) 24 (M)(E)	LZ-(B) 24 W(M)	24 VDC	1,280	15.6 VDC	1.2 VDC	450 mW
LZ-(B) 48VM	LZ-(B) 48H(M)(E)	LZ-(B) 48 (M)(E)	LZ-(B) 48W(M)	48 VDC	3,800	28.8 VDC	2.4 VDC	600 mW
LZ-(B)100VM	LZ-(B)100H(M)(E)	LZ-(B)100(M)(E)	LZ-(B)100W(M)	100VDC	22,200	65.0 VDC	5.0 VDC	450 mW
LZ-(B) 1.5 V				1.5 VDC	5	1.2 VDC	0.08 VDC	450 mW
LZ-(B) 3V				3 VDC	20	2.4 VDC	0.15 VDC	450 mW
LZ-(B) 5V				5 VDC	56	4.0 VDC	0.25 VDC	450 mW
LZ-(B) 6V				6 VDC	80	4.8 VDC	0.3 VDC	450 mW
LZ-(B) 9V				9 VDC	180	7.2 VDC	0.45 VDC	450 mW
LZ-(B) 12V				12 VDC	320	9.6 VDC	0.6 VDC	450 mW
LZ-(B) 18V				18 VDC	720	14.4 VDC	0.9 VDC	450 mW
LZ-(B) 24V				24 VDC	1,280	19.2 VDC	1.2 VDC	450 mW
LZ-(B) 48V				48 VDC	3,800	38.4 VDC	2.4 VDC	600 mW
LZ-(B) 100V				100VDC	22,200	80.0 VDC	5.0 VDC	450 mW

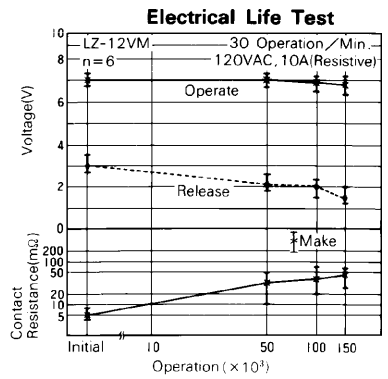
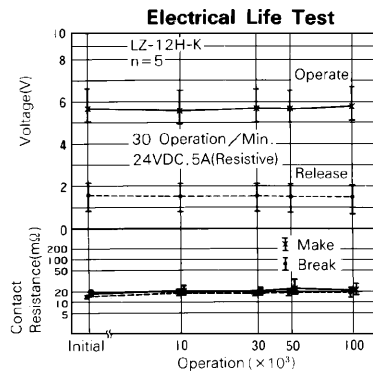
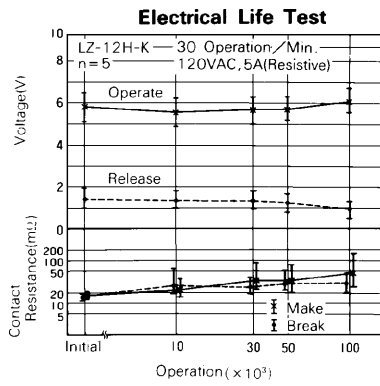
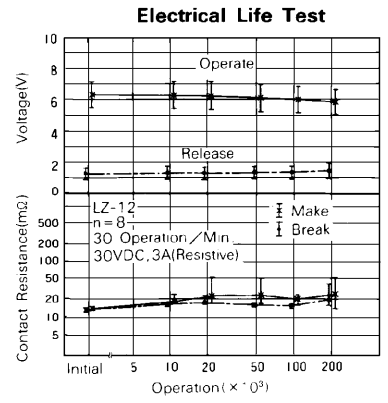
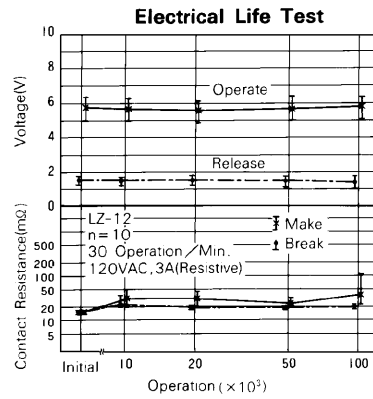
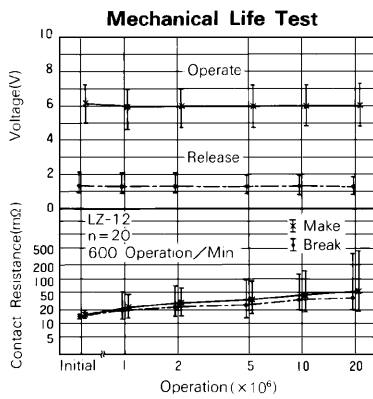
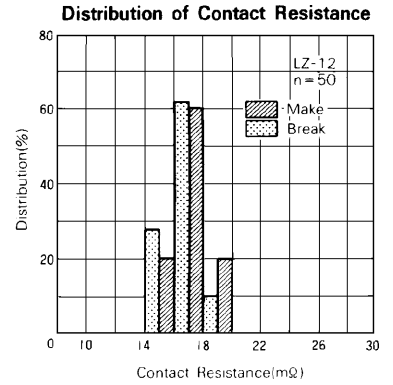
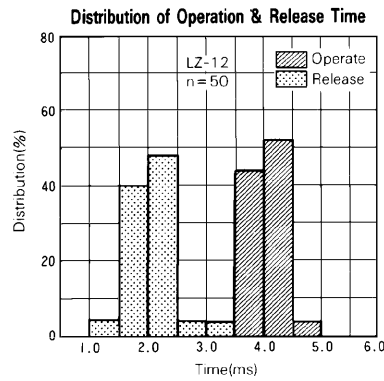
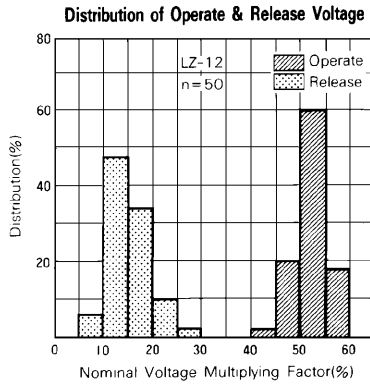
MODEL				Nominal Voltage	Coil Resistance (±10%)	Must Operate Voltage	Must Release Voltage	Nominal Power
Single			Bifurcated					
10 A Type	5 A Type	3 A Type	1 A Type					
	LZ-(B)1.5H(M)S, (E)	LZ-(B)1.5(M)S, (E)	LZ-(B)1.5W(M)S	1.5 VDC	6.8	0.97 VDC	0.08 VDC	330 mW
	LZ-(B) 3H(M)S, (E)	LZ-(B) 3 (M)S, (E)	LZ-(B) 3 W(M)S	3 VDC	27	1.95 VDC	0.15 VDC	330 mW
	LZ-(B) 5H(M)S, (E)	LZ-(B) 5 (M)S, (E)	LZ-(B) 5 W(M)S	5 VDC	80	3.25 VDC	0.25 VDC	330 mW
	LZ-(B) 6H(M)S, (E)	LZ-(B) 6(M)S, (E)	LZ-(B) 6 W(M)S	6 VDC	110	3.9 VDC	0.3 VDC	330 mW
	LZ-(B) 9H(M)S, (E)	LZ-(B) 9(M)S, (E)	LZ-(B) 9 W(M)S	9 VDC	250	5.85 VDC	0.45 VDC	330 mW
	LZ-(B) 12H(M)S, (E)	LZ-(B) 12(M)S, (E)	LZ-(B)12 W(M)S	12 VDC	440	7.8 VDC	0.6 VDC	330 mW
	LZ-(B) 18H(M)S, (E)	LZ-(B)18 (M)S, (E)	LZ-(B)18 W(M)S	18 VDC	990	11.7 VDC	0.9 VDC	330 mW
	LZ-(B) 24H(M)S, (E)	LZ-(B) 24(M)S, (E)	LZ-(B)24 W(M)S	24 VDC	1,780	15.6 VDC	1.2 VDC	330 mW

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

CHARACTERISTIC DATA



REFERENCE DATA

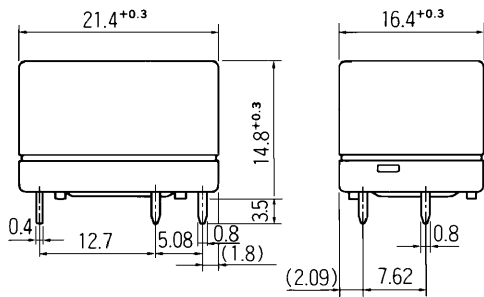


LZ SERIES

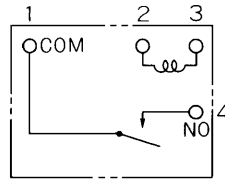
■ DIMENSIONS

● Dimensions

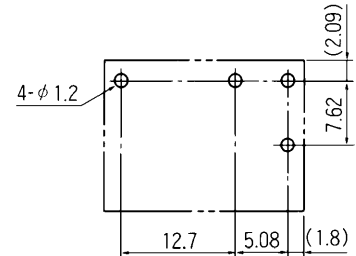
LZ-M type



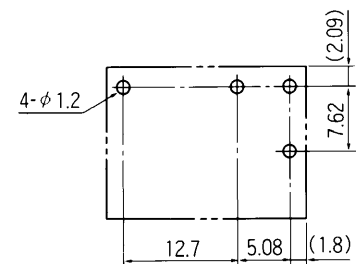
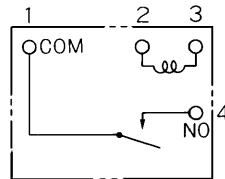
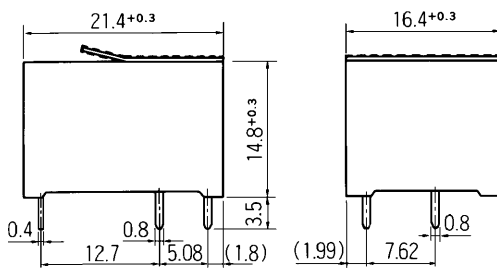
● Schematics (BOTTOM VIEW)



● PC board mounting hole layout (BOTTOM VIEW)

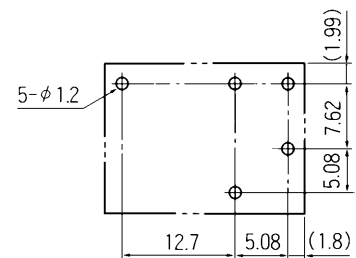
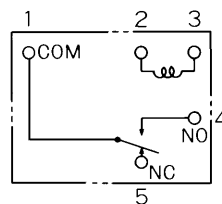
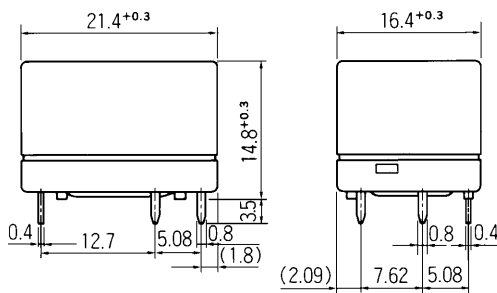


LZ-M-K, LZ-M-C type (Plastic sealed type)

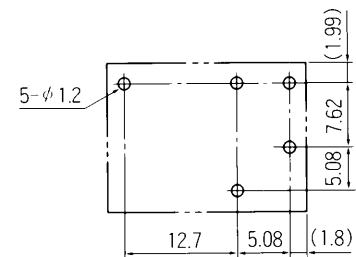
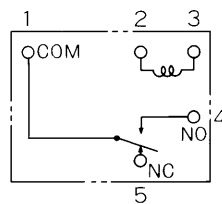
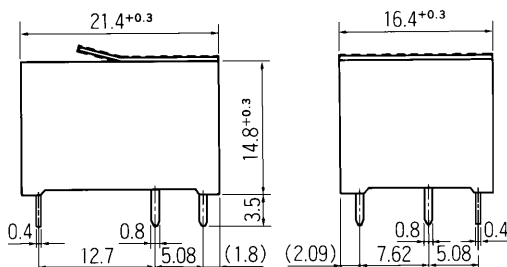


Dotted line: Seal tape [LZ-M-C Type]

LZ type



LZ-K, LZ-C type (Plastic sealed type)



Dotted line: Seal tape [LZ-C Type]

Unit: mm

RoHS Compliance and Lead Free Relay Information

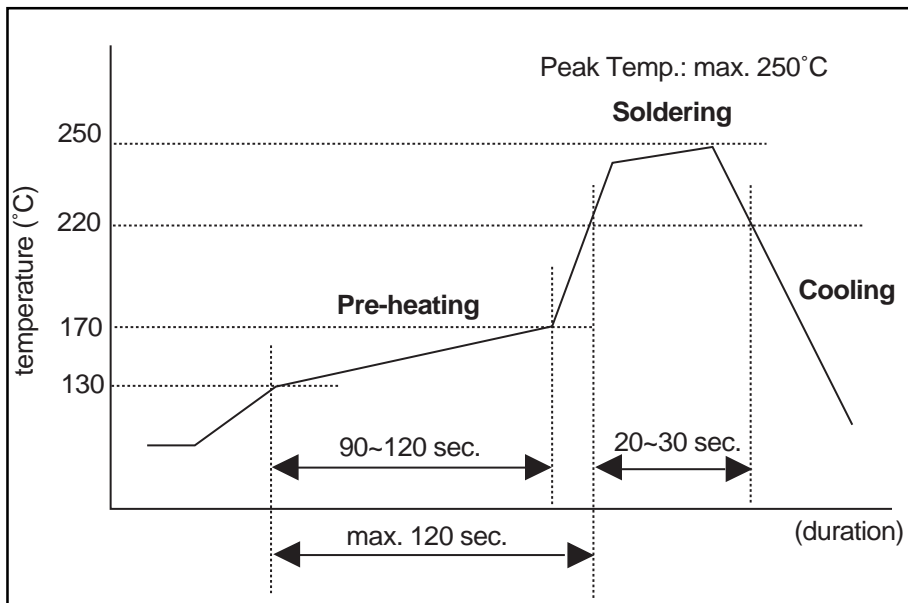
1. General Information

- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. 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.

Fujitsu Components International Headquarter Offices

Japan

Fujitsu Component Limited
Gotanda-Chuo Building
3-5, Higashigotanda 2-chome, Shinagawa-ku
Tokyo 141, Japan
Tel: (81-3) 5449-7010
Fax: (81-3) 5449-2626
Email: promothq@ft.ed.fujitsu.com
Web: www.fcl.fujitsu.com

North and South America

Fujitsu Components America, Inc.
250 E. Caribbean Drive
Sunnyvale, CA 94089 U.S.A.
Tel: (1-408) 745-4900
Fax: (1-408) 745-4970
Email: marcom@fcai.fujitsu.com
Web: www.fcai.fujitsu.com

Europe

Fujitsu Components Europe B.V.
Diamantlaan 25
2132 WV Hoofddorp
Netherlands
Tel: (31-23) 5560910
Fax: (31-23) 5560950
Email: info@fceu.fujitsu.com
Web: www.fceu.fujitsu.com

Asia Pacific

Fujitsu Components Asia Ltd.
102E Pasir Panjang Road
#04-01 Citilink Warehouse Complex
Singapore 118529
Tel: (65) 6375-8560
Fax: (65) 6273-3021
Email: fcal@fcal.fujitsu.com
www.fcal.fujitsu.com

© 2005 Fujitsu Components America, Inc. All company and product names are trademarks or registered trademarks of their respective owners. Rev. 06/06/2005.