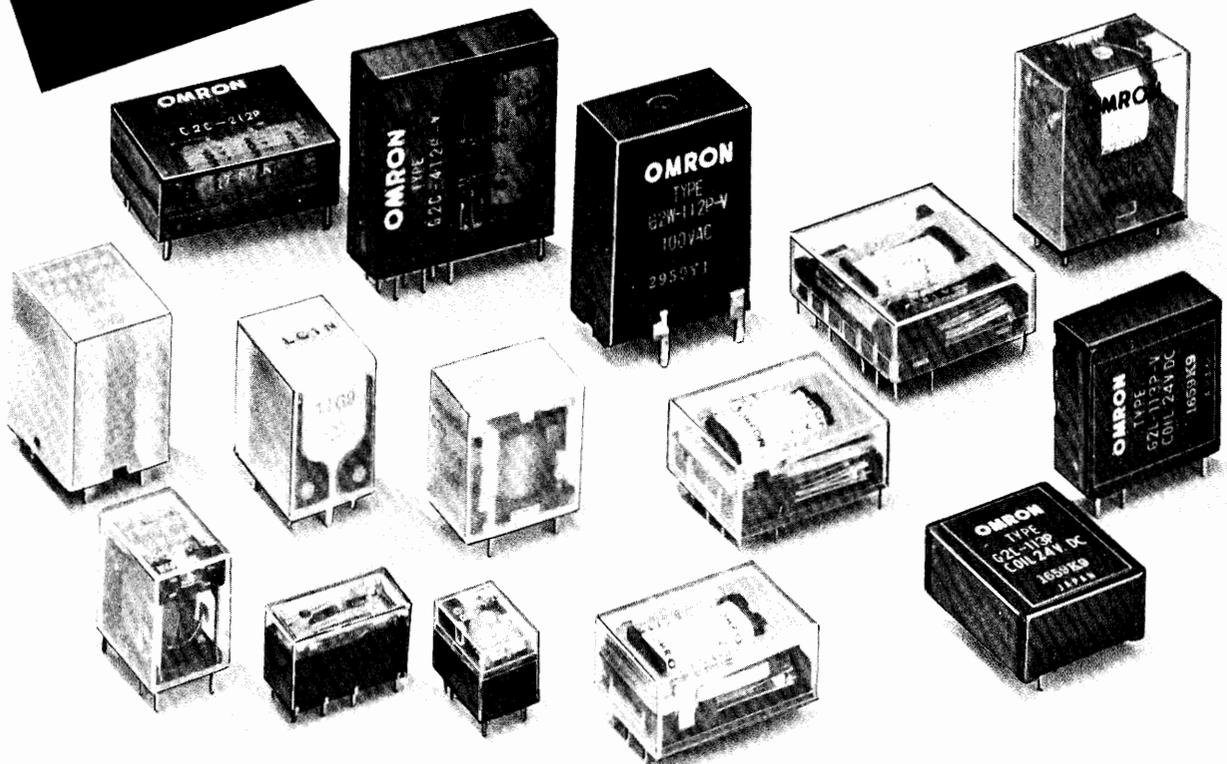


OMRON®

PC BOARD-USE RELAY SERIES
Models LZN/G2C/G2L/LC/G2K/G2E/G2V/G2N/
G2T/G2P/G2U/G2W/G2Z/G4C/G4D



OMRON TATEISI ELECTRONICS CO.



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Since all the models listed may not normally be marketed in your area, please contact OMRON's distributor or sales representative for detailed information.

Applications	Interface									
	Signal control									
	Power drive									
Model (Type)		G2P	G2U	G2W		G2Z	G4C		G4D	
				G2W -112P-V	G2W -1112P-V		G4C -182P	G4C -112C		
Features		DIP type relay for power drive with 3A, 250 VAC switching capacity.	Switches 5A loads Sealed type is also available.	Power output relay for power switching in printed circuit		Audio equipment protective relay ideal for protection of amplifiers, speakers, muting circuits	High impulse withstand voltage (7kV) – ideal for applications requiring resistance to voltage surges		Double-pole relay that breaks 5A loads	
Appearance & dimensions										
Contact ratings	Contact form	SPDT		SPDT	SPST-NO	DPDT	SPDT		DPDT	
	Contact type	Single button		Single button	Single button	Fixed, single button Movable, bifurcated button	Single crossbar	Single button	Single button	
	Contact material	Ag (Au clad)		AgCdO	AgCdO	Ag (Au plated)	AgPd (Au clad)	AgCdO	AgCdO	
		Ag (Au clad)		AgCdO	AgCdO	Ag (Au plated)	AgPd (Au clad)	AgCdO	AgCdO	
	Max. operating current (under resistive load)	10A	NO contact		NO contact		NO contact		NO contact	
		8A	NC contact		NC contact		NC contact		NC contact	
Minimum permissible load	5A									
	3A									
Rated load (under resistive load)	2A	5 VDC 10mA		5 VDC 100mA	5 VDC 100mA	1 VDC 100µA	5 VDC 1mA	5 VDC 100mA	5 VDC 100mA	
	1A	NO contact 110 VAC 3A 220 VAC 1.5A 24 VDC 2A		NC contact 110 VAC 1A 220 VAC 0.5A 24 VDC 1A	110 VAC/ 24 VDC 5A	220 VAC/ 24 VDC 10A	220 VAC 15A	110 VAC/ 24 VDC 1A	110 VAC/ 24 VDC 5A	
Coil ratings	Rated voltage (V)	DC 5, 6, 12, 24		DC 6, 12, 24	AC 6, 12, 24, 50, 100, 110, 120, 200, 220, 240 DC 6, 12, 24, 48, 100	DC 6, 12, 24, 48	DC 6, 12, 24		DC 5, 6, 12, 24	
	Power consumption (W)	0.24		0.36	1.3VA 1.0W	0.63	0.36		0.8	
Service life	Mechanically	10 x 10 ⁶ min.		10 x 10 ⁶ min.	10 x 10 ⁶ min. 5 x 10 ⁶ min.	10 x 10 ⁶ min.	10 x 10 ⁶ min.		10 x 10 ⁶ min.	
	Approved standards	-		UL	UL	UL	UL		UL	
Page		30		32	34	36	38		40	

GLOSSARY

• Carry current

The value of the current which can be continuously applied to the relay contacts without opening or closing them and within the permissible temperature rise limit.

• Dielectric strength

The critical value at which a dielectric can withstand without rupturing when a high-tension voltage is applied for 1 minute between the same points as those in the measurement of insulation resistance.

• Electrical service life

The life of a relay when it is switched at the rated operating frequency with the rated load applied to its contacts.

• Impulse withstand voltage

The critical value indicating the durability of a relay against momentary voltage surges caused by lightning or generated when an inductive load is switched.

• Insulation resistance

The resistance offered by an insulating material when a voltage is applied between an electric circuit such as a relay contact or coil and a grounded non-current-carrying metallic part such as an iron core or core frame, or between contacts.

• Maximum operating current

A current which serves as a reference in determining the performance of the relay contacts. This value will never exceed the carry current. When using a relay, be careful not to exceed this value.

• Maximum operating voltage

A voltage which serves as a reference in determining the performance of the relay contacts. When using a relay, be careful not to exceed this value.

• Maximum switching capacity

The maximum value of the load capacity which can be practically switched without any problem. When using a relay, be careful not to exceed this value.

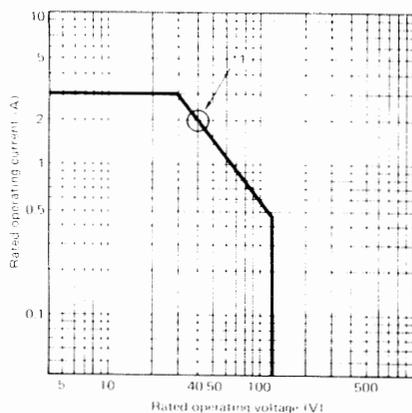
For example, when operating voltage V_1 is known, maximum operating current I_1 can be obtained at the point of intersection on the characteristic curve of Maximum switching capacity below. Conversely, maximum operating voltage V_1 obtained if I_1 is known.

$$\text{Maximum operating current } (I_1) = \frac{\text{Maximum switching capacity [W (VA)]}}{\text{Operating voltage } (V_1)}$$

$$\text{Maximum operating voltage } (V_1) = \frac{\text{Maximum switching capacity [W (VA)]}}{\text{Operating current } (I_1)}$$

For instance, if operating voltage = 40V
Maximum operating current = 2A ... *1

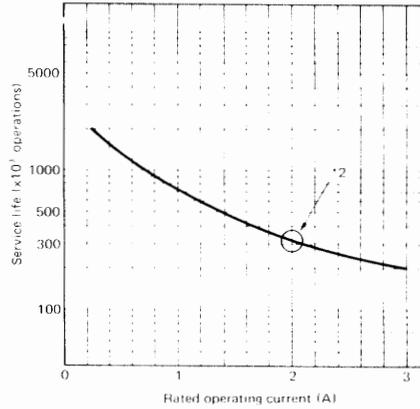
Maximum switching capacity



Next, the electrical service life of the relay can be determined from the service life curve based on the I_1 obtained above.

For instance, the electrical service life at the maximum operating current of 2A is slightly over 300,000 operations ... *2

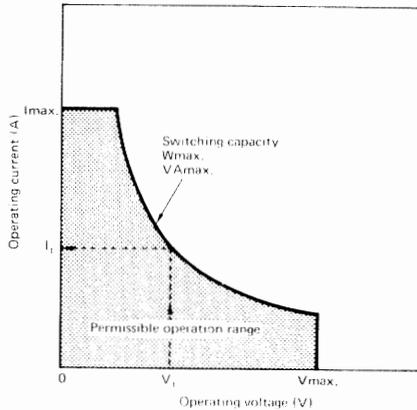
Electrical service life



However, with a DC load, it may become difficult to break the circuit of 48V or more due to arcing. Be sure to check this using the relay actually.

Correlation between the contact ratings is as shown in the following figure.

Maximum switching capacity



• Maximum voltage

The maximum value of permissible voltage fluctuations in the operating power supply of the relay coil.

• Mechanical service life

The life of a relay in terms of its mechanical functions when it is operated at the maximum mechanical operating frequency without applying any load to its contacts.

• Must dropout voltage

The value of a voltage at which a relay releases when the rated input voltage applied to the relay coil in the operating state is decreased gradually.

• Must operate voltage

The value of a voltage at which a relay operates when the input voltage applied to the relay coil in the reset state is increased gradually.

• Minimum permissible load

The value indicated as a standard to show the limit of the switching capability of a relay at minute load levels such as micro-electronic circuits. This value may vary depending on the operating frequency, ambient conditions, expected reliability level, etc. of the relay. It is recommended to doublecheck this under the actual load condition.

In this catalog, the minimum permissible load of each relay is indicated as a reference value. It indicates failure level at a reliability level of 60% ($\lambda_{6.0}$).

$\lambda_{6.0} = 0.1 \times 10^6$ /operation means that one failure is presumed to occur per 10,000,000 operations at the reliability level of 60%.

• Operating frequency

The switching frequency at which a relay operates and releases continuously. The maximum operating frequency of a relay must satisfy its electrical or mechanical life.

• Power consumption

The power consumption of a relay is indicated as the value of the power (rated voltage x rated current) to be consumed by the relay coil when the rated voltage is applied to the coil. With AC operated relays, their power consumption values are at the power frequency of 60Hz.

• Rated load

The value which serves as a reference in determining the performance of the relay contacts and is indicated by a combination of operating voltage and operating current.

• Rated voltage

A voltage which serves as a reference for control input.

• Shock

The shock resistance of a relay is divided into two categories; "Mechanical durability" which regulates the characteristic changes of, or damage to, the relay due to considerably large shocks which may develop during the transportation or mounting of the relay and "Malfunction durability" which regulates the malfunction of the relay while it is in operation.

• Vibration

The value of a voltage at which a relay releases when the rated input voltage applied to the relay coil in the operating state is decreased gradually.

large vibrations which may develop during the transportation or mounting of the relay, and "Malfunction durability" which regulates malfunction of the relay due to vibrations while it is in operation.

$$\alpha = 0.002f^2 A$$

α : Acceleration of vibration

f : Frequency

A : Double amplitude

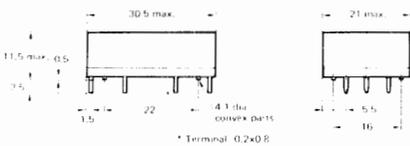
CHARACTERISTICS

Type	General purpose	High capacity	Make-before-break contact
Contact resistance		100mΩ max.	
Operate time		15msec max.	
Release time		10msec max.	
Operating frequency	Mechanically: 18,000 operations/hour	Electrically: 1,800 operations/hour (under rated load)	
Insulation resistance		100MΩ min. (at 500 VDC)	
Dielectric strength	1,000 VAC, 50/60Hz for 1 minute (750 VAC between non-continuous contacts)		1,000 VAC, 50/60Hz for 1 minute (400 VAC between non-continuous contacts)
Vibration	Mechanical durability: 10 to 55Hz; 3mm double amplitude Malfunction durability: 10 to 110Hz; 0.85mm double amplitude (10 to 50Hz; 0.85mm double amplitude in the direction of armature operation)		
Shock	Mechanical durability: 1,000m/sec ² (approx. 100G's) Malfunction durability: When energized: 150m/sec ² (approx. 15G's) When de-energized: 100m/sec ² (approx. 10G's) (4G's min. in the direction of armature operation)		
Ambient temperature		Operating: -10 to +60°C	
Humidity		45 to 85% RH	
Service life	Mechanically: 100,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: See "CHARACTERISTIC DATA."		
Weight		DPDT: 13g 4PDT: 15g 6PDT: 17g	

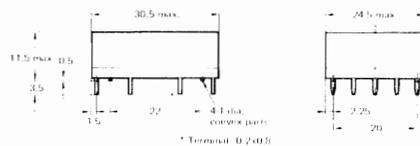
NOTE: The data shown are of initial value.

DIMENSIONS

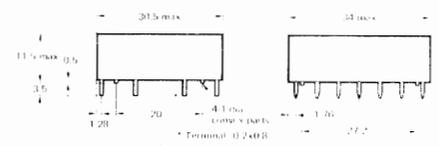
LZN2, LZN203, LZN2M



LZN4, LZN403, LZN4M(1)



LZN6, LZN6M1



Terminal arrangement (Bottom view)

LZN2, LZN203

LZN2M

LZN4, LZN403

LZN4M

LZN4M1

LZN6

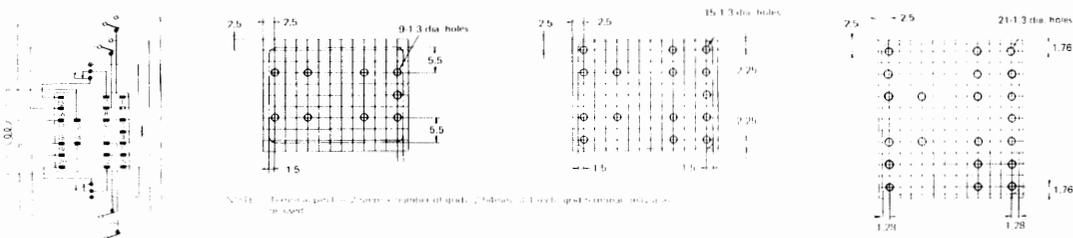


LZN6M1

Mounting holes DPDT

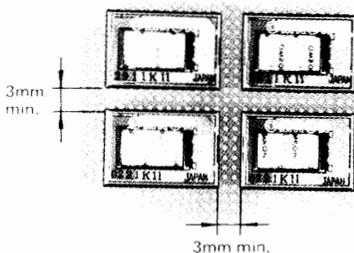
4PDT

6PDT



HINTS ON CORRECT USE

When a number of relays are to be mounted on a PC board, be sure to provide mounting space as shown below.



STANDARD APPROVED TYPE

SPECIFICATIONS/DIMENSIONS

Same as the Standard Type with the following exception.

RATINGS

UL recognized type (File No. E41515)

Type	Contact form	Coil ratings	Contact ratings
General purpose & make before break contact	DPDT 4PDT 6PDT	5 to 60 VDC	0.5A 100 VAC (resistive load) 0.4A 100 VAC (inductive load) 2A 30 VDC (inductive load)
			2A 100 VAC (resistive load) 1.6A 100 VAC (inductive load) 3A 30 VDC (inductive load)
High capacity			

CSA certified type (File No. LR24825-24)

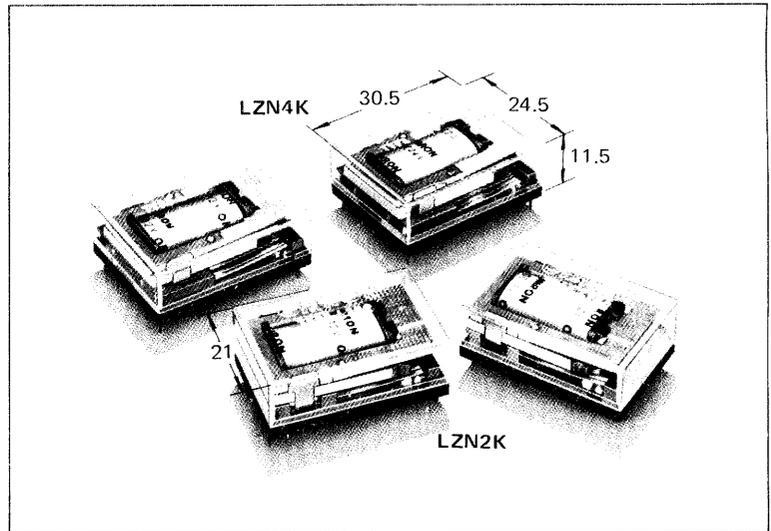
Type	Contact form	Coil ratings	Contact ratings
General purpose & make before break contact	DPDT 4PDT 6PDT	5 to 60 VDC	0.5A 125 VAC (resistive load) 0.4A 125 VAC (inductive load) 2A 30 VDC (resistive load)
			2A 100 VAC (resistive load) 1.6A 125 VAC (inductive load) 3A 30 VDC (resistive load)
High capacity			

NOTE: ALL DIMENSIONS SHOWN IN THIS CATALOG ARE IN UNITS OF MILLIMETERS. To convert millimeters into inches multiply by 0.03937. To convert grams into ounces multiply by 0.03527.

**Low Profile, PC Board-use
Magnetic Latching Relay
Ideal for Memory Circuit**

FEATURES

- Latching ability little affected by aging, and excellent resistance to vibration and shock.
- Continuous coil ratings.
- Long life – 100 million mechanical operations.
- Sealed type is also available.


AVAILABLE TYPES

Classification	Type Contact form	General purpose		High capacity	
		Unsealed	Sealed	Unsealed	Sealed
Standard type	DPDT	LZN2K	LZNO2K	LZN203K	LZNO203K
	4PDT	LZN4K	LZNO4K	LZN403K	LZNO403K
Standard approved type	DPDT	LZN2K-US	LZNO2K-US	LZN203K-US	LZNO203K-US
	4PDT	LZN4K-US	LZNO4K-US	LZN203K-US	LZNO403K-US

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STANDARD TYPE
SPECIFICATIONS
COIL RATINGS

Type	Rated voltage (V)	Set coil				Reset coil			Must set voltage	Must reset voltage	Maximum voltage	Power consumption (VA, W)		
		Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)				% of rated voltage	Set coil	Reset coil
				Armature OFF	Armature ON									
LZN2K	5 VDC	204	24.5	0.051	0.094	192	26	0.014	80 max.	80 max.	110	Approx. 1	Approx. 1	
LZN203K	6 VDC	179	33.5	0.064	0.117	152	39.5	0.022						
LZNO2K	12 VDC	85.7	140	0.28	0.51	85.7	140	0.07						
LZNO203K	24 VDC	44	545	1.1	2	45.7	525	0.25						
	48 VDC	20.7	2,320	4.4	8	17.8	2,700	1.2						
LZN4K	5 VDC	246	20.3	0.041	0.065	266	18.8	0.01	80 max.	80 max.	110	Approx. 1.3	Approx. 1.3	
LZN403K	6 VDC	224	26.8	0.053	0.085	210	28.6	0.016						
LZNO4K	12 VDC	100	120	0.26	0.42	118	102	0.054						
LZNO403K	24 VDC	57.8	415	0.82	1.3	53.3	450	0.24						
	48 VDC	30	1,600	2.8	4.5	24.6	1,950	0.87						

NOTES: 1. The rated current is measured at a coil temperature of 20°C with tolerances of +15%, -20%.
2. Performance characteristic data are measured at a coil temperature of 5 to 35°C.

CONTACT RATINGS

Load	General purpose type		High capacity type	
	Resistive load (p.f.=1)	Inductive load (p.f.=0.4, L/R=7msec)	Resistive load (p.f.=1)	Inductive load (p.f.=0.4, L/R=7msec)
Rated load	110 VAC 0.5A 24 VDC 1A	110 VAC 0.25A 24 VDC 0.5A	110 VAC 2A 24 VDC 3A	110 VAC 1A 24 VDC 1.5A
Carry current	3A		3A	
Max. operating voltage	250 VAC 125 VDC		250 VAC 125 VDC	
Max. operating current	2A	1A	3A	1.5A
Max. switching capacity	110VA, 60W	60VA, 30W	220VA, 120W	110VA, 60W
Minimum permissible load	0.1 VDC 0.1mA (ref. value)		-	