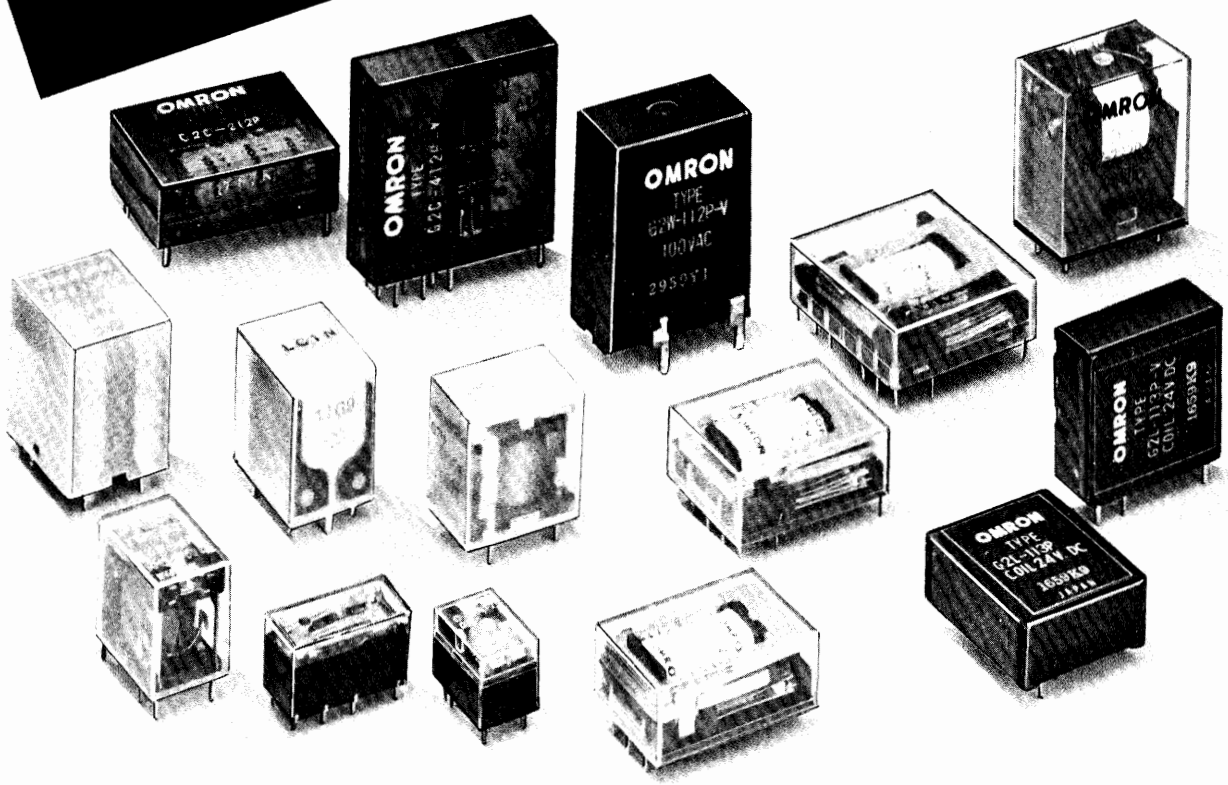
X33-E1-3

OMRON®

PC BOARD-USE RELAY SERIES

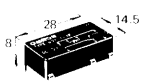
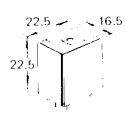
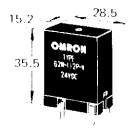
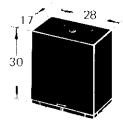
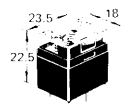
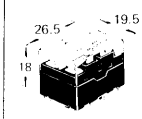
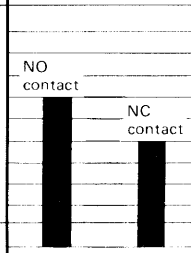
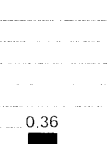
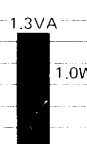
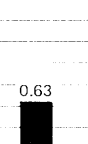
Models **LZN/G2C/G2L/LC/G2K/G2E/G2V/G2N/ G2T/G2P/G2U/G2W/G2Z/G4C/G4D**



OMRON TATEISI ELECTRONICS CO.

CONTENTS

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	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 8A 5A 3A 2A 1A 0.5A 0.3A 0.25A								
	Minimum permissible load 10mA 1mA 100μA 15μA	5 VDC 10mA	5 VDC 100mA	5 VDC 100mA		1 VDC 100μA	5 VDC 1mA	5 VDC 100mA	5 VDC 100mA
	Rated load (under resistive load)	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 5A 220 VAC 3A 24 VDC 5A	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) 1.4 1.2 1.0 0.8 0.6 0.4 0.2								
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		–							
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**

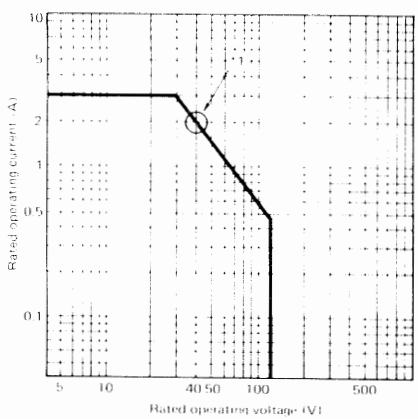
The maximum value of the load capacity which can be practically switched without any problem. When using a relay, be careful not to exceed this value.
For example, when operating voltage V_1 is known, maximum operating current I_1 can be obtained at the point of intersection on the characteristic curve of Maximum switching capacity below. Conversely, maximum operating voltage V_1 obtained if I_1 is known.

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

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

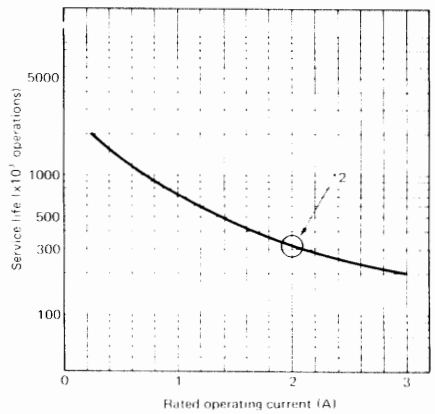
For instance, if operating voltage = 40V
Maximum operating current =2A . . . *1

Maximum switching capacity



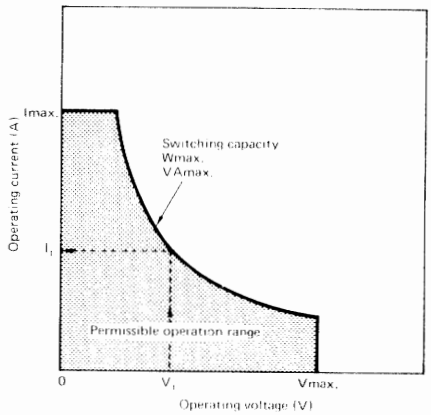
Next, the electrical service life of the relay can be determined from the service life curved based on the I_1 obtained above.
For instance, the electrical service life at the maximum operating current of 2A is slightly over 300,000 operations . . . *2

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% (λ_{60}).
$\lambda_{60} = 0.1 \times 10^{6}$/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.

$\alpha = 0.002f^2A$

α : Acceleration of vibration
f : Frequency
A : Double amplitude

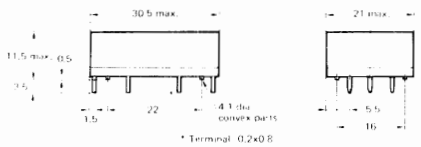
• CHARACTERISTICS

Item \ 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/sec² (approx. 100G's) Malfunction durability: When energized: 150m/sec² (approx. 15G's) When de-energized: 100m/sec² (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		

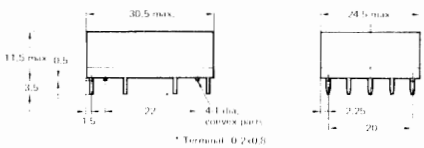
NOTE: The data shown are of initial value.

■ DIMENSIONS

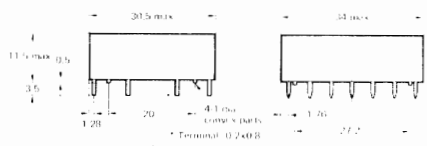
• LZN2, LZN203, LZN2M



• LZN4, LZN403, LZN4M(1)



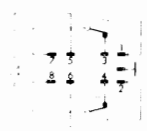
• LZN6, LZN6M1



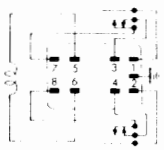
Bottom view

Terminal arrangement (Bottom view)

LZN2, LZN203

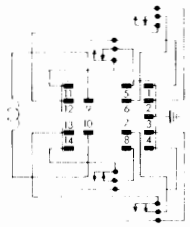


LZN2M



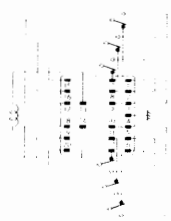
LZN4, LZN403

LZN4M



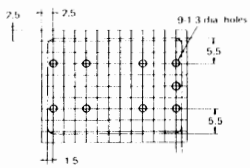
LZN4M1

LZN6

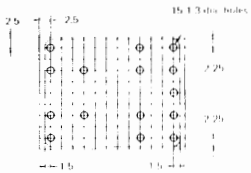


LZN6M1

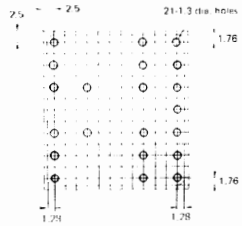
Mounting holes
DPDT



4PDT

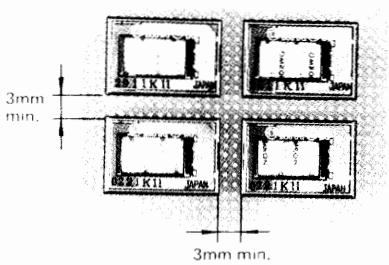


6PDT



■ 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)

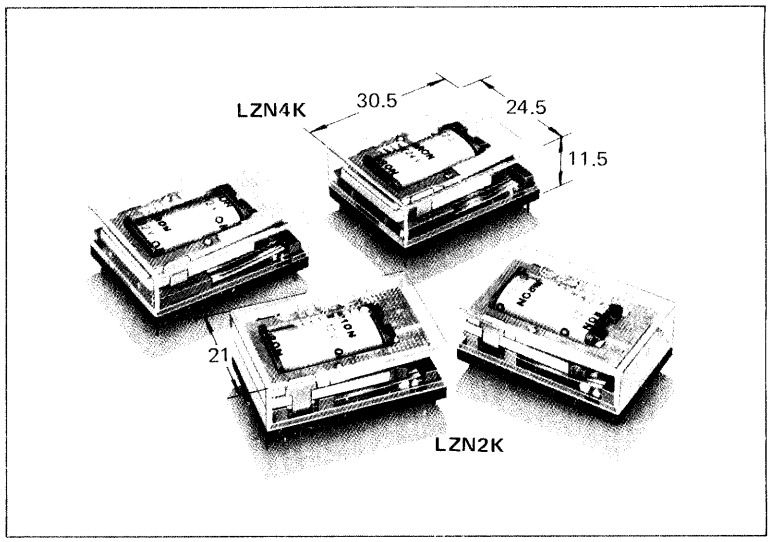
Type	Contact form	Coil ratings	Contact ratings
General purpose & make before break contact	DPDT 4PDT 6PDT	5 to 60 VDC	0.5A 100 VAC (resistive load) 0.4A 100 VAC (inductive load) 2A 30 VDC (inductive load)
High capacity			2A 100 VAC (resistive load) 1.6A 100 VAC (inductive load) 3A 30 VDC (inductive load)

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)
High capacity			2A 100 VAC (resistive load) 1.6A 125 VAC (inductive load) 3A 30 VDC (resistive load)

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: Unsealed	General purpose: Sealed	High capacity: Unsealed	High capacity: Sealed
Standard type	DPDT	LZN2K	LZNQ2K	LZN203K	LZNQ203K
	4PDT	LZN4K	LZNQ4K	LZN403K	LZNQ403K
Standard approved type	DPDT	LZN2K-US	LZNQ2K-US	LZN203K-US	LZNQ203K-US
	4PDT	LZN4K-US	LZNQ4K-US	LZN203K-US	LZNQ403K-US

OMRON

STANDARD TYPE

■ SPECIFICATIONS

• COIL RATINGS

Type	Rated voltage (V)	Set coil: Rated current (mA)	Set coil: Coil resistance (Ω)	Set coil: Coil inductance (ref. value) (H): Armature OFF	Set coil: Coil inductance (ref. value) (H): Armature ON	Reset coil: Rated current (mA)	Reset coil: Coil resistance (Ω)	Reset coil: Coil inductance (ref. value) (H): Armature OFF	Must set voltage (% of rated voltage)	Must reset voltage (% of rated voltage)	Maximum voltage (% of rated voltage)	Power consumption (VA, W): Set coil	Power consumption (VA, W): Reset coil
LZN2K LZN203K LZNQ2K LZNQ203K	5 VDC	204	24.5	0.051	0.094	192	26	0.014	80 max.	80 max.	110	Approx. 1	Approx. 1
	6 VDC	179	33.5	0.064	0.117	152	39.5	0.022					
	12 VDC	85.7	140	0.28	0.51	85.7	140	0.07					
	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 LZN403K LZNQ4K LZNQ403K	5 VDC	246	20.3	0.041	0.065	266	18.8	0.01					
	6 VDC	224	26.8	0.053	0.085	210	28.6	0.016					
	12 VDC	100	120	0.26	0.42	118	102	0.054				Approx. 1.3	Approx. 1.3
	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.

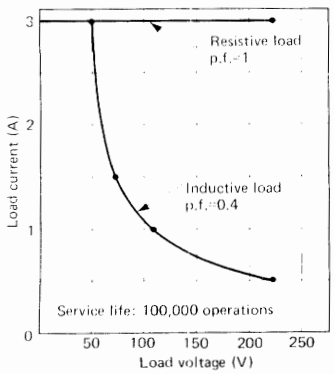
• CONTACT RATINGS

Item \ Load	General purpose type: Resistive load (p.f.=1)	General purpose type: Inductive load (p.f.=0.4, L/R=7msec)	High capacity type: Resistive load (p.f.=1)	High capacity type: 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)		—	

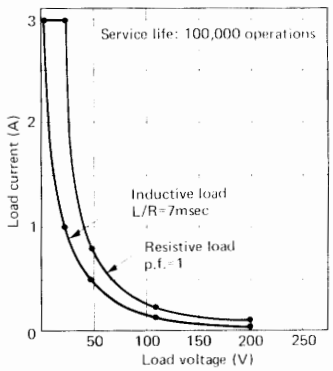
• CHARACTERISTIC DATA

Electrical service life

AC load



DC load



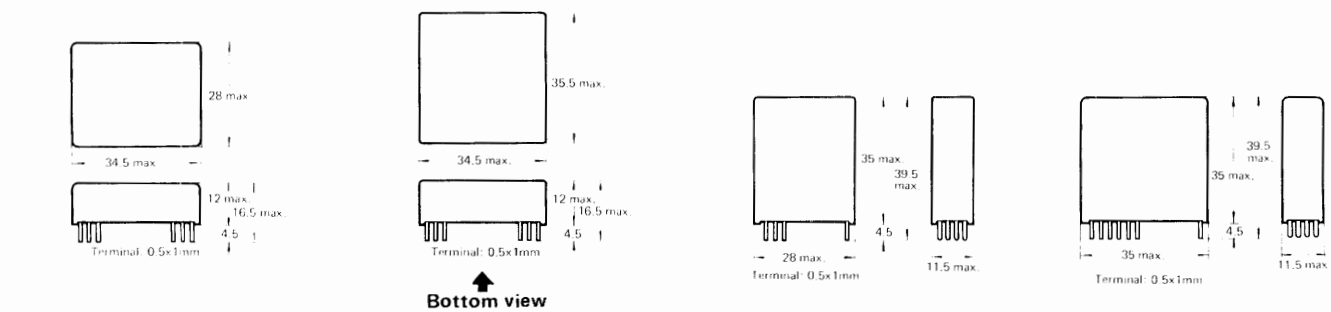
• CHARACTERISTICS

Item \ Type	Single crossbar	Bifurcated crossbar
Contact resistance	100mΩ max.	
Operate time	20msec max.	
Release time	AC: 20msec max. DC: 10msec max.	
Operating frequency	Mechanically: 18,000 operations/hour Under rated load: 1,800 operations/hour	
Insulation resistance	100MΩ min. (at 500 VDC)	
Dielectric strength	1,500 VAC, 50/60Hz for 1 minute (1,000 VAC, 50/60Hz for 1 minute between non-continuous contacts)	
Vibration	Mechanical durability: 10 to 55Hz; 1.5mm double amplitude Malfunction durability: 10 to 55Hz; 1.5mm double amplitude	
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 100m/sec² (approx. 10G's)	
Ambient temperature	Operating: −10 to +60°C	
Humidity	45 to 85% RH	
Service life	Mechanically: 50,000,000 operations min. (at operating frequency of 18,000 operations/hour)	Mechanically: 5,000,000 operations min. (at operating frequency of 18,000 operations/hour)
	Electrically: See "CHARACTERISTIC DATA."	
Weight	DPDT: Approx. 30g 4PDT: Approx. 35g	

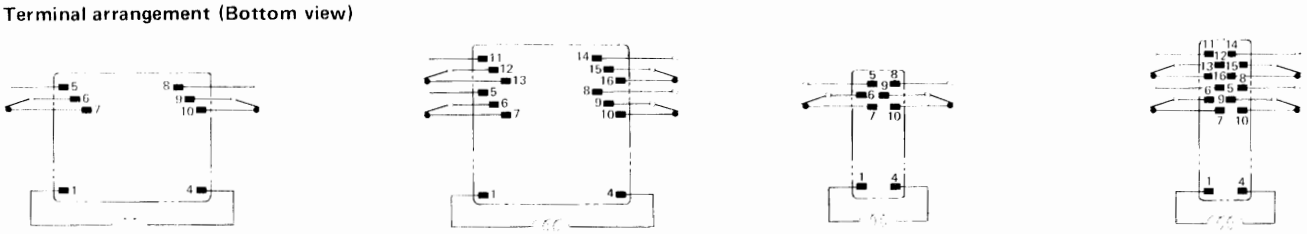
NOTE: The data shown above are of initial value.

■ DIMENSIONS

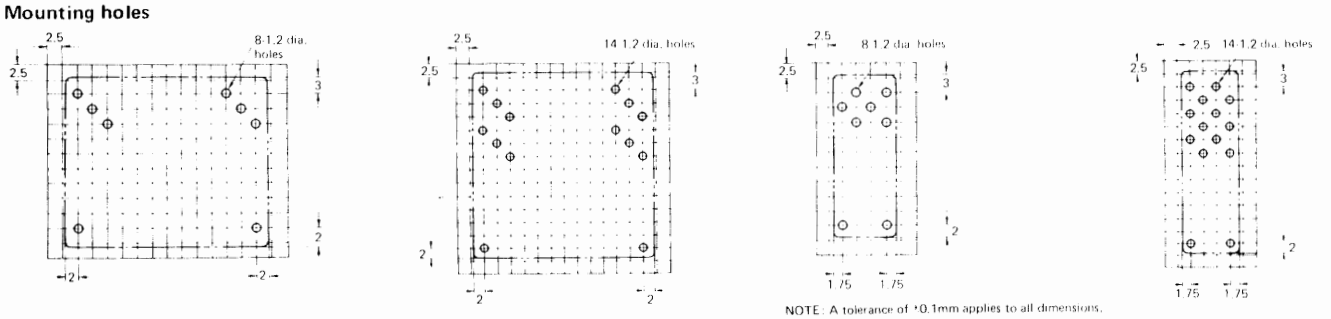
• G2C-212P, G2C-232P • G2C-412P, G2C-432P • G2C-212P-V, G2C-232P-V • G2C-412P-V, G2C-432P-V



Terminal arrangement (Bottom view)



Mounting holes



NOTE: A tolerance of ±0.1mm applies to all dimensions.

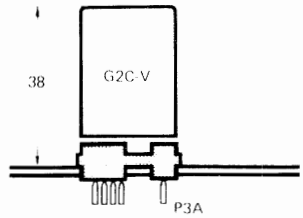
■ ACCESSORIES

• CONNECTING SOCKETS

Type of relay	Back connecting socket		Applicable relay hold-down clip	Applicable socket mounting plate
	Solder terminals	P.C. terminals		
G2C-212P-V G2C-232P-V	P3A-08A	P3A-08P	PYC	P3A-P1*
G2C-412P-V G2C-432P-V	P3A-14A	P3A-14P	P3A-C	P3A-P*

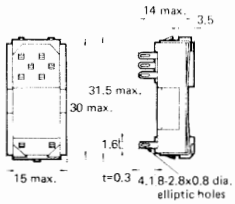
NOTE: * A total of 24 relays can be mounted on a mounting plate.

Mounting height of relay with socket

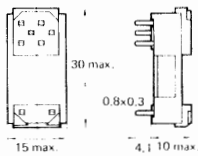


• P3A-08A

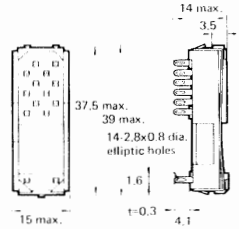
➡ Bottom view



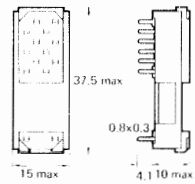
• P3A-08P



• P3A-14A



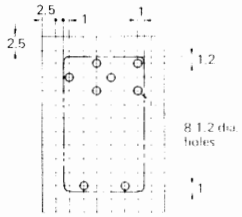
• P3A-14P



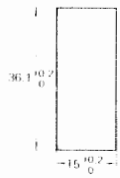
Mounting holes

P3A-08A

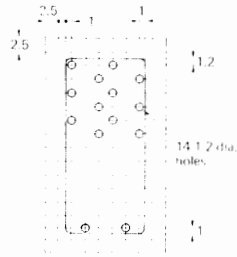
P3A-08P (Bottom view)



P3A-14A



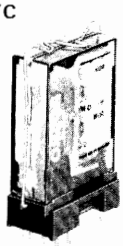
P3A-14P (Bottom view)



NOTES: 1. Recommended panel thickness is 1 to 1.6mm.
2. Provide a distance of 3mm min. between two juxtaposed relays.

• RELAY HOLD-DOWN CLIPS

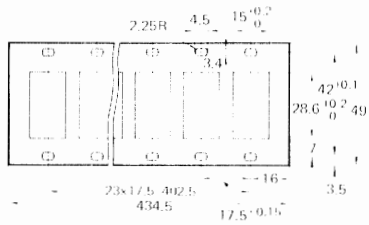
PYC



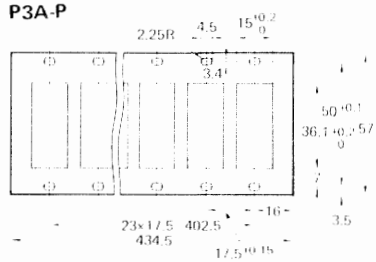
P3A-C

• SOCKET MOUNTING PLATES (t=1.6)

P3A-P1

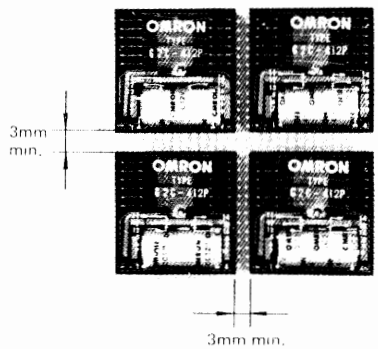


P3A-P



■ 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)/
CSA certified type (File No. LR31928-13, -14, -15)

Type	Contact form	Coil ratings	Contact ratings
G2C-212P(-V)-US G2C-412P(-V)-US	DPDT 4PDT	6 to 220 VAC 6 to 100 VAC	3A 120 VAC (inductive load) 3A 30 VDC (resistive load)

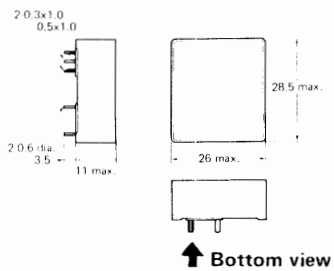
• CHARACTERISTICS

Contact resistance	30mΩ 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	2,500 VAC, 50/60Hz for 1 minute (1,000 VAC between non-continuous contacts)
Vibration	Mechanical durability: 10 to 55Hz; 1.5mm double amplitude Malfunction durability: 10 to 55Hz; 0.8mm double amplitude
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 100m/sec² (approx. 10G's)
Ambient temperature	Operating: −40 to +70°C
Humidity	45 to 85%RH
Service life	Mechanically: 20,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: See "CHARACTERISTIC DATA."
Weight	Approx. 15g

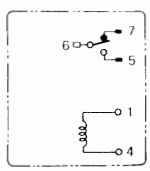
NOTE: The data shown are of initial value.

■ DIMENSIONS

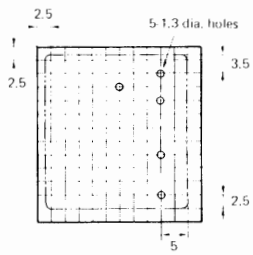
• G2L-113P



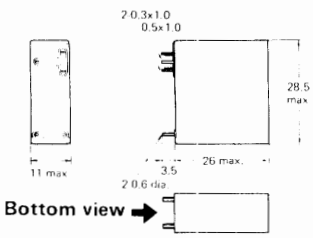
Terminal arrangement/ Internal connections (Bottom view)

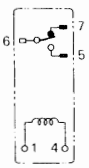


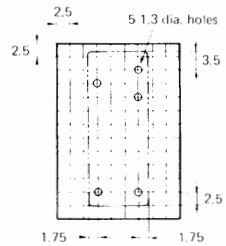
Mounting holes (Bottom view)



• G2L-113P-V

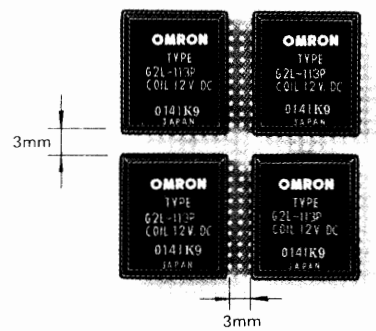






■ HINTS ON CORRECT USE

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
G2L-113P-US	SPDT	3 to 60 VDC	10A 250 VAC or 8A 24 VDC (resistive load) TV-5
G2L-113P-V-US			

CSA certified type (File No. LR24825-25)

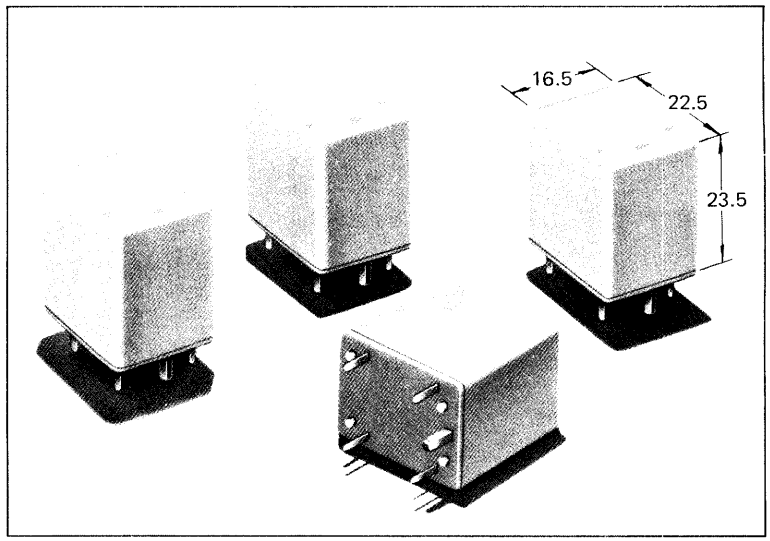
Type	Contact form	Coil ratings	Contact ratings
G2L-113P-US	SPDT	3 to 60 VDC	10A 250 VAC or 8A 24 VDC (resistive load) TV-5
G2L-113P-V-US			

SEV listed type (File No. D791/262)

Type	Contact form	Coil ratings	Contact ratings
G2L-113P-US	SPDT	3 to 60 VDC	8A 220 VAC (resistive load)
G2L-113P-V-US			

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.

Subminiature, Economical Relay with 10A Switching Capacity



■ FEATURES

- Space saver ideal for equipment miniaturization, satisfying all requirements for use in household electric appliances.
- Direct soldering to PCB is possible.

■ AVAILABLE TYPES

Classification \ Contact form \ Type	General purpose	High capacity
Standard type — SPDT	LC1N-05	LC1N-10
Standard type — SPST-NO	–	LC1N-10-100
Standard approved type — SPDT	LC1-05-US	LC1-10-US
Standard approved type — SPST-NO	–	LC1N-10-100-US

STANDARD TYPE

■ SPECIFICATIONS

• COIL RATINGS

Rated voltage \ Item	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Must operate voltage	Must dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
6 VDC	60	100	0.34	0.51	75 max.	10 min.	130 max.	Approx. 360
12 VDC	30	400	1.2	2.3				
24 VDC	15	1,600	4.8	8.0				

NOTE: The rated current and coil resistance are measured at a coil temperature of 20°C with tolerances of +15%, −20% for rated current and ±10% for rated coil resistance.

• CONTACT RATINGS

Item \ Type \ Load	LC1N-05		LC1N-10(-100)	
	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/24 VDC 5A 220 VAC 2A	–	110 VAC/24 VDC 10A 220 VAC 5A	–
Carry current	5A		10A	
Max. operating voltage	250 VAC, 60 VDC			
Max. operating current	5A	–	10A	–
Max. switching capacity	600VA 120W	–	1200VA 240W	–
Minimum permissible load (ref. value)	–			

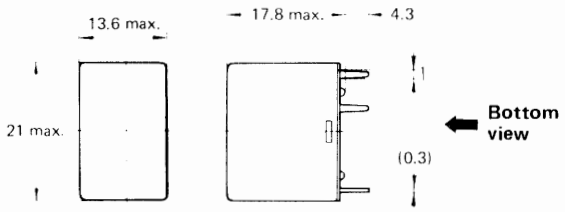
- CHARACTERISTICS

Item \ Type	G2K	G2K-3
Contact resistance	50mΩ max.	100mΩ max.
Operate time	15msec max.	
Release time	5msec 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 (500 VAC between non-continuous contacts)	
Vibration	Mechanical and malfunction durability: 10 to 55Hz; 1.5mm double amplitude	
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 100m/sec² (approx. 10G's)	
Ambient temperature	Operating: −30 to +70°C	
Humidity	45 to 85% RH	
Service life	Mechanically: 10,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: See "CHARACTERISTIC DATA."	
Weight	Approx. 11g	

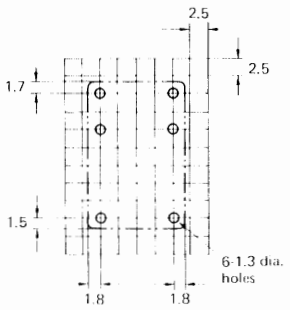
NOTE: The data shown are of initial value.

■ DIMENSIONS

- G2K(-3)

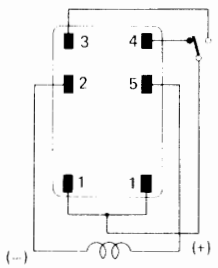


Mounting holes



(Bottom view)

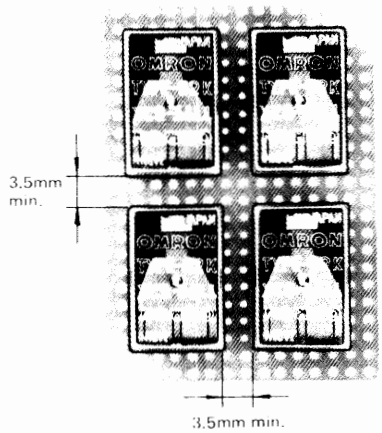
Terminal arrangement/ Internal connections



(Bottom view)

■ 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

When placing your order for UL or CSA approved versions, please indicate "UL" or "CSA" as desired in addition to the model number.

■ SPECIFICATIONS/DIMENSIONS

Same as the Standard Type with the following exception.

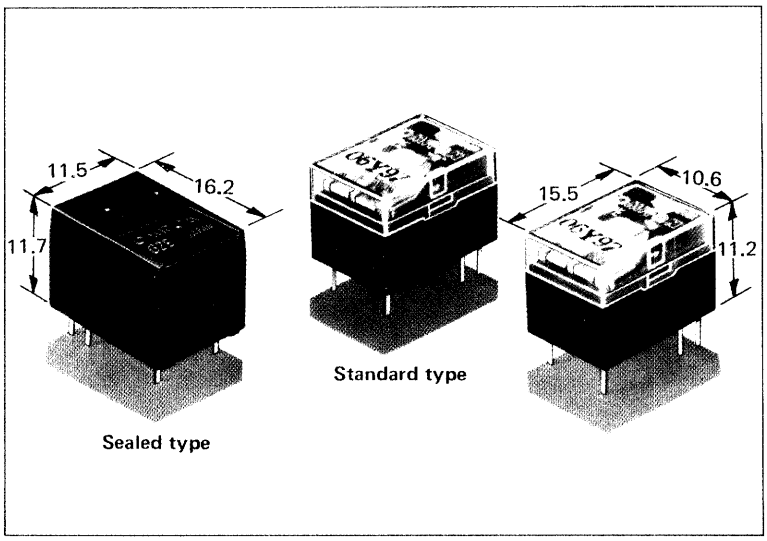
- RATINGS

UL recognized type (File No. E41515)/CSA certified type (File No. LR34815, -6, -7, -8)

Type	Contact form	Coil ratings	Contact ratings
G2K-US	SPDT	3 to 48 VDC	0.5A 120 VAC or 1A 28 VDC (resistive load)
G2K-3-US			3A 120 VAC or 3A 28 VDC (resistive load)

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.

High-sensitivity (290mW), Sugar Cube-Sized PCB Relay



■ FEATURES

- Standard terminal arrangement on 2.5mm grid.
- Fast response (5msec operate time).
- Crossbar contacts (gold-clad silver-palladium).
- Contact section located opposite the terminal section and dust-proof cover prevent solder flux wicking.
- Sealed type is available.

■ AVAILABLE TYPES

Contact form \ Type		General purpose		High-sensitivity	
		Standard type	Sealed type	Standard type	Sealed type
SPDT	Single crossbar	G2E	G2E-184P	G2E-182P-H	G2E-184P-H
	Bifurcated crossbar	G2E-132P	G2E-134P	G2E-132P-H	G2E-134P-H

■ SPECIFICATIONS

• COIL RATINGS (Value in parentheses applies to High-sensitivity type.)

Rated voltage (Color code on coil) \ Item	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Must operate voltage	Must dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
1.5 VDC (Brown)	300(—)	5(—)	0.005(—)	0.009(—)	70 max. (80 max.)	10 min.	110 max. (130 max.)	Approx. 450 (Approx. 200)
3 VDC (Purple)	150(—)	20(—)	0.017(—)	0.034(—)				
5 VDC (Orange)	89.3(41.7)	56(120)	0.044(—)	0.091(—)				
6 VDC (Red)	75(33.3)	80(180)	0.067(—)	0.136(—)				
9 VDC (Yellow)	50(22.5)	180(400)	0.137(—)	0.297(—)				
12 VDC (Blue)	37.5(17.1)	320(700)	0.229(—)	0.496(—)				
24 VDC (Green)	18.8(8.6)	1,280(2,800)	0.94 (—)	2.1 (—)				

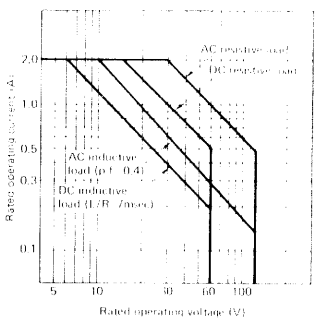
NOTE: The rated current and coil resistance are measured at a coil temperature of 20°C with tolerances of +15%, −20% for rated current and ±10% for coil resistance.

• CONTACT RATINGS

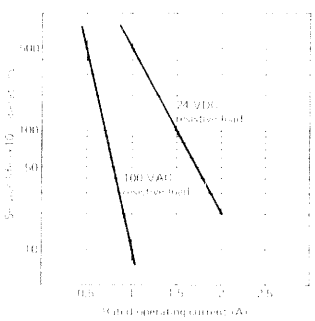
Item \ Load	Resistive load (p.f.=1)	Inductive load (p.f.=0.4, L/R=7msec)
Rated load	110 VAC 0.5A 24 VDC 1A	110 VAC 0.2A 24 VDC 0.3A
Carry current	2A	
Max. operating voltage	125 VAC, 60 VDC	
Max. operating current	1A	
Max. switching capacity	120VA 30W	60VA 15W
Minimum permissible load (reference value)	5 VDC 1mA	

• CHARACTERISTIC DATA

Maximum switching capacity



Electrical service life



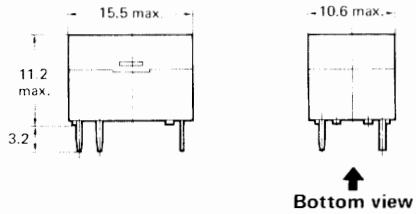
• CHARACTERISTICS

Contact resistance	100mΩ max.
Operate time	5msec max. (General purpose type), 10msec max. (High-sensitivity type)
Release time	5msec 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	500 VAC, 50/60Hz for 1 minute
Vibration	Mechanical and malfunction durability: 10 to 55Hz; 3.3mm double amplitude
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 100m/sec² (approx. 10G's)
Ambient temperature	Operating: −25 to +55°C (General purpose type), −25 to +65°C (High-sensitivity type)
Humidity	45 to 85% RH
Service life	Mechanically: 5,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: See "CHARACTERISTIC DATA."
Weight	Approx. 3.7g

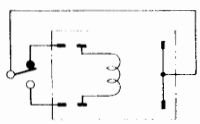
NOTE: The data shown are of initial value.

■ DIMENSIONS

• G2E, G2E-132P(-H), G2E-182P(-H)

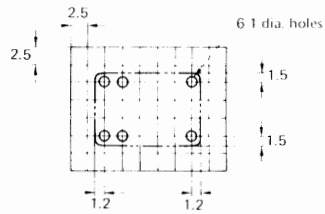


Terminal arrangement/ Internal connections



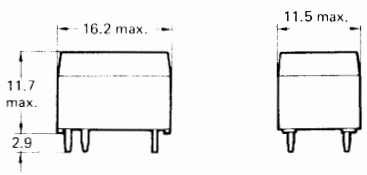
(Bottom view)

Mounting holes



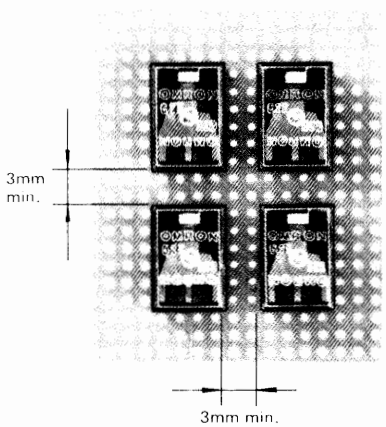
(Bottom view)

• G2E-184P(-H), G2E-134P(-H)



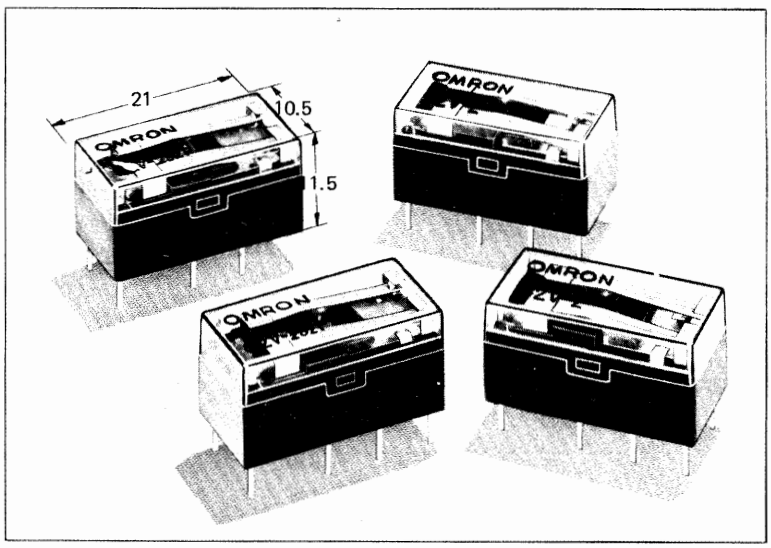
■ HINTS ON CORRECT USE

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



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.

Ultra Small, Highly Reliable DIP Type Relay



■ FEATURES

- High contact reliability with bifurcated crossbar contacts. Single crossbar contact type also available.
- Wide switching capacity from 100μA to 2A loads.
- Construction resistant to flux wicking—automatic flow soldering is possible.
- Permits 15.5mm pitch PC board rack mounting.
- 16-pin DIP IC socket can be used.

■ AVAILABLE TYPES

Contact form \ Contact type	Bifurcated crossbar	Single crossbar
DPDT	G2V-2	G2V-282P

■ SPECIFICATIONS

• COIL RATINGS

Item / Rated voltage	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Must operate voltage	Must dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
3 VDC	188	16	0.031	0.041	80 max.	10 min.	125 max.	Approx. 560
5 VDC	111	45	0.075	0.113				
6 VDC	100	60	0.12	0.168				
12 VDC	42.9	280	0.537	0.789				
24 VDC	22.9	1,050	1.36	2.06				

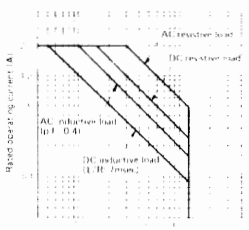
NOTE: The rated current and coil resistance are measured at a coil temperature of 20°C with tolerances of ±10%.

• CONTACT RATINGS

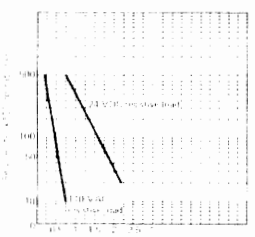
Item / Type / Load	G2V-2		G2V-282P	
	Resistive load (p.f.=1)	Inductive load (p.f.=0.4; L/R =7msec)	Resistive load (p.f.=1)	Inductive load (p.f.=0.4; L/R =7msec)
Rated load	110 VAC 0.3A 24 VDC 1A	110 VAC 0.2A 24 VDC 0.3A	110 VAC 0.3A 24 VDC 1A	110 VAC 0.2A 24 VDC 0.3A
Carry current	2A			
Max. operating voltage	125 VAC, 125 VDC			
Max. operating current	2A			
Max. switching capacity	60VA 30W	20VA 10W	60VA 30W	20VA 10W
Minimum permissible load (reference value)	0.1 VDC 100μA		1 VDC 1mA	

• CHARACTERISTIC DATA

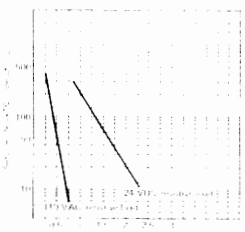
Maximum switching capacity
G2V-2, G2V-282P



Electrical service life
G2V-2



G2V-282P



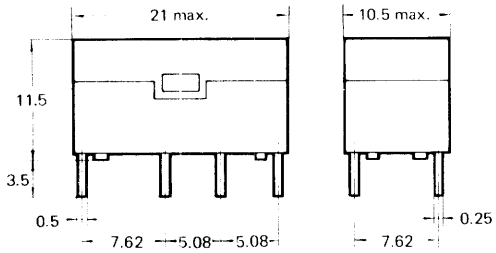
• CHARACTERISTICS

Item \ Type	G2V-2	G2V-282P
Contact resistance	100mΩ max.	
Operate time	8msec max.	
Release time	5msec max.	
Operating frequency	Mechanically: 18,000 operations/hour; Electrically: 3,600 operations/hour (under rated load)	
Insulation resistance	100MΩ min. (at 500 VDC)	
Dielectric strength	1,000 VAC, 50/60Hz for 1 minute (500 VAC between non-continuous contacts)	
Vibration	Mechanical and malfunction durability: 10 to 55Hz; 1.5mm double amplitude	
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 200m/sec² (approx. 20G's)	
Ambient temperature	Operating: −25 to +50°C	
Humidity	45 to 85% RH	
Service life	Mechanically: 10,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: See "CHARACTERISTIC DATA."	
Weight	Approx. 4.5g	

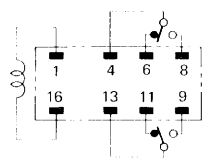
NOTE: The data shown are of initial value.

■ DIMENSIONS

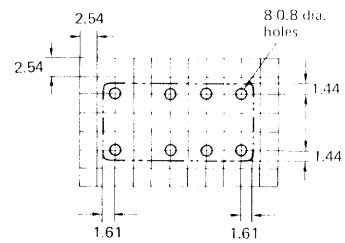
• G2V-2, G2V-282P



Terminal arrangement/Internal connections (Bottom view)



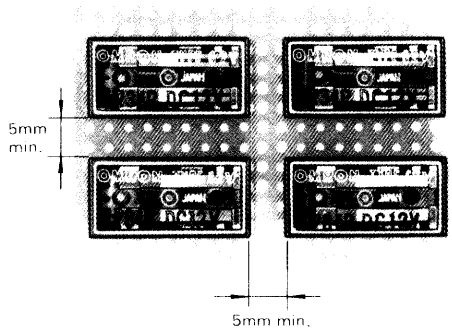
Mounting holes



NOTE: When a socket is to be used, use of a DIN 16-pin IC socket is recommended.

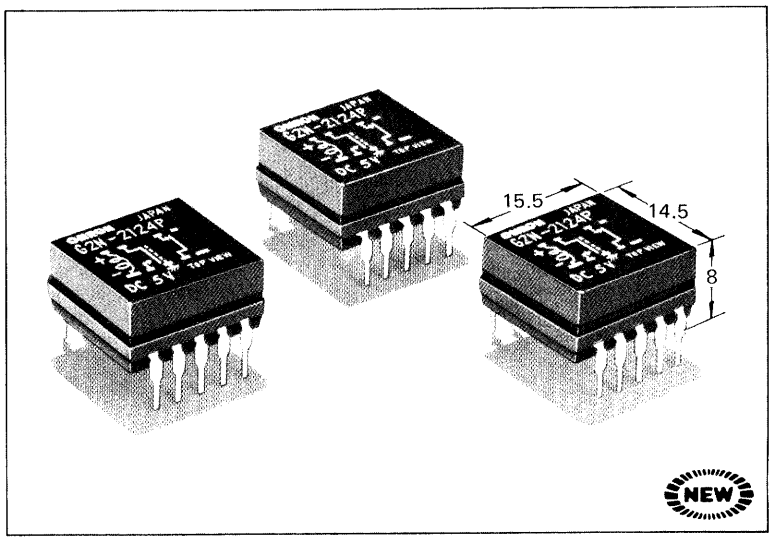
■ HINTS ON CORRECT USE

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



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.

High-sensitivity (80mW), DIP Type Relay for Interface Devices



■ FEATURES

- Sealed and 8mm thick.
- Direct drive by TTL, DTL or IC is possible.
- Bifurcated contact construction employing gold alloy assures high reliability at low signal levels.
- Short contact bounce time (approx. 20μsec).
- Shield plate prevents contacts from being affected adversely by noise generated by coil.
- High shock and vibration resistance is assured by the balanced armature system.
- Thermoelectromotive force as low as 5μV max., ideal for analog signals.
- Conforms to UL, CSA and VDE.

■ AVAILABLE TYPES

Contact form \ Type	General purpose
SPST-NO+SPST-NC	G2N-2124P

■ SPECIFICATIONS

• COIL RATINGS

Rated voltage \ Item	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Must operate voltage	Must dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
3 VDC	41.7	72	0.09	0.12	80 max.	10 min.	110 max.	Approx. 125
5 VDC	25.0	200	0.23	0.31				
12 VDC	10.4	1,150	1.44	1.91				
24 VDC	6.1	3,940	4.31	5.72				Approx. 150

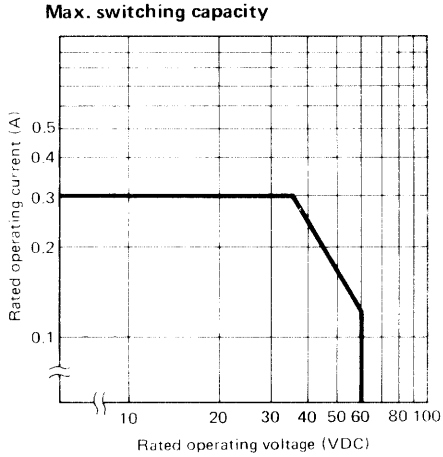
NOTE: The rated current and coil resistance are measured at a coil temperature of 20°C with tolerances of ±10%.

• CONTACT RATINGS

Item \ Load	Resistive load (p.f.=1)
Rated load	24 VDC 0.3A
Carry current	0.3A
Max. operating voltage	60 VDC
Max. operating current	0.3A
Max. switching capacity	10W
Min. permissible load (ref. value)	0.1 VDC 100μA

• CHARACTERISTIC DATA

Max. switching capacity

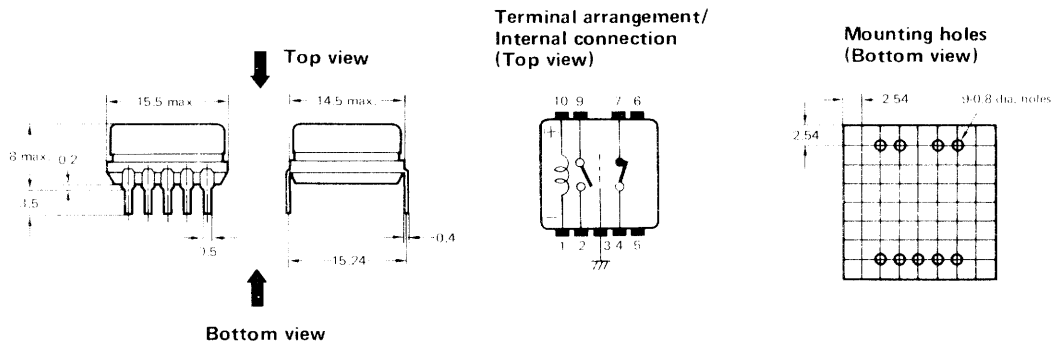


• CHARACTERISTICS

Contact resistance	50mΩ max.
Stray capacitance	2pF max. between contacts of same poles 5pF max. between coil or ground terminal and contact 10pF max. between ground terminal and coil terminals
Thermoelectromotive force	5μV max. (when the rated voltage is applied to the coil at an ambient temperature of 20°C)
Operate time	7msec max.
Release time	3msec max.
Max. operating frequency	Mechanically: 36,000 operations/hour Electrically: 1,800 operations/hour (under rated load)
Insulation resistance	100MΩ min. (at 500 VDC)
Dielectric strength	500 VAC, 50/60Hz for 1 minute (250 VAC between contacts of same pole)
Vibration	Mechanical durability: 10 to 55Hz; 1.5mm double amplitude Malfunction durability: 10 to 55Hz; 1.5mm double amplitude
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 150m/sec² (approx. 15G's)
Ambient operating temperature	Operating: −25 to +70°C
Humidity	45 to 85% RH
Service life	Mechanically: 50,000,000 operations min. (at operating frequency of 36,000 operations/hour) Electrically:
Weight	Approx. 3.5g

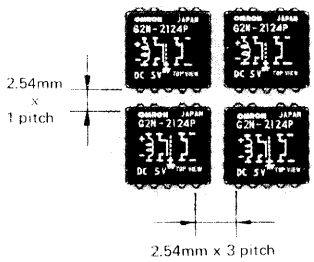
NOTE: The data shown above are of initial value.

■ DIMENSIONS



■ 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.



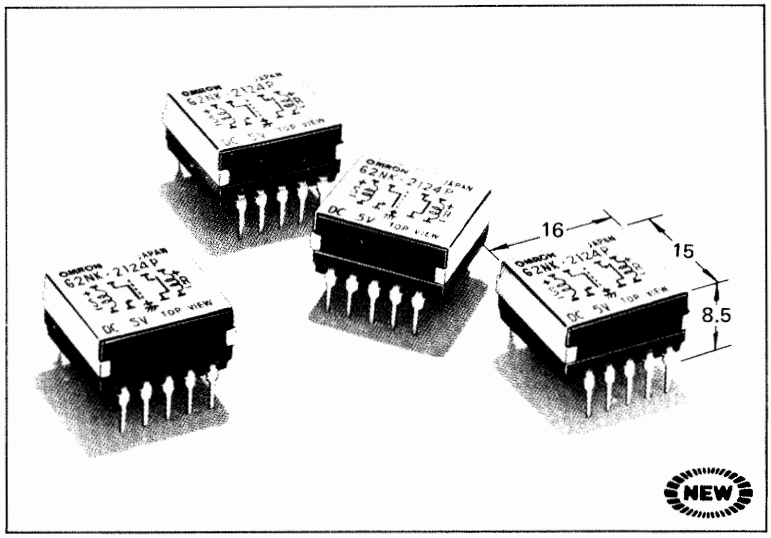
How to Solder Sealed Type PC Relays

• **Soldering**

Since the PC relay is of perfectly sealed construction, no problem should arise from automatic soldering or cleaning with the PC relay mounted on a PC board. However, please pay attention to the following points.

(1) Use an anti-corrosive rosin type flux.
(2) For flux solvent, use alcohol type which is less chemically reactive.
(3) When preheating the PC board after flux application, keep the temperature of the land side of the PC board to less than 80°C.
(4) Dip the bottom of the PC board into molten solder for the shortest possible period (approx. 3sec) at a solder temperature of 240°C. In this case, be sure that the PC board is not flooded with solder.
(5) Use a solder conforming with H60 (Sn 60, Pb 40) or H63 (Sn 63, Pb 37 eutectic solder) JIS Z 3282.
(6) Use freon type solvents which are less chemically reactive. Note that use of other solvents may damage the plastic material used for the relay base, etc.

DIP Type Latching Relay for Power-saving Driving



■ FEATURES

- Highly efficient permanent magnet incorporated in the dual coil type latching relay permits direct drive by IC or TTL circuit.
- Employs magnetic shielding case.
- Excellent resistance to vibration and shock.
- Hermetically sealed construction.
- Thermoelectromotive force of 5μV permits stable signal transmission.

■ AVAILABLE TYPES

Contact form \ Type	General purpose
SPST-NO+SPST-NC	G2NK-2124P

■ SPECIFICATIONS

• COIL RATINGS

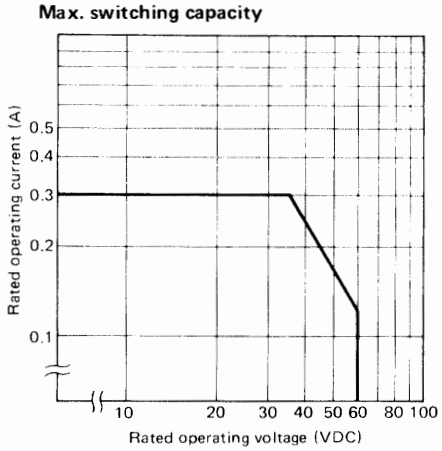
Rated voltage \ Item	Set coil			Reset coil			Must set voltage	Must reset voltage	Maximum voltage	Power consumption	
	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)	% of rated voltage			Set coil (mW)	Reset coil (mW)
3 VDC	66.7	45	0.018	66.7	45	0.019	80 max.	80 max.	110	200	200
5 VDC	40	125	0.05	40	125	0.047					
12 VDC	20.8	576	0.17	20.8	576	0.18				250	250
24 VDC	10.4	2,304	0.79	10.4	2,304	0.80					

• CONTACT RATINGS

Item \ Load	Resistive load (p.f.=1)
Rated load	24 VDC 0.3A
Carry current	0.3A
Max. operating voltage	60 VDC
Max. operating current	0.3A
Max. switching capacity	10W
Min. permissible load (ref. value)	0.1 VDC 100μA

• CHARACTERISTIC DATA

Max. switching capacity

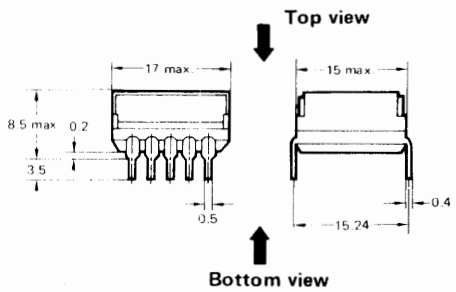


• CHARACTERISTICS

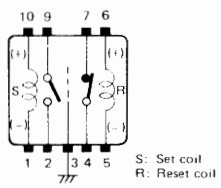
Contact resistance	100mΩ max.
Stray capacitance	2pF max. between contacts of same poles 5pF max. between coil or ground terminal and contact 5pF max. between ground terminal and coil terminal
Thermoelectromotive force	3μV max. (when the rated voltage is applied to the coil at an ambient temperature of 20°C.)
Operate time Release time	7msec max. (Pulse width: 10msec min.)
Max. operating frequency	Mechanically: 36,000 operations/hour; Electrically: 1,800 operations/hour (under rated load)
Insulation resistance	100MΩ min. (at 500 VDC)
Dielectric strength	500 VAC, 50/60Hz for 1 minute 250 VAC, 50/60Hz for 1 minute between contacts of same pole 100 VAC, 50/60Hz for 1 minute between set and reset coils
Vibration	Mechanical and malfunction durability: 10 to 55Hz; 1.5mm double amplitude
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 250m/sec² (approx. 25G's)
Ambient temperature	Operating: −25 to +70°C
Humidity	45 to 85% RH
Service life	Mechanically: 50,000,000 operations min. (at operating frequency of 36,000 operations/hour) Electrically: ——
Weight	Approx. 4.0g

NOTE: The data shown above are of initial value.

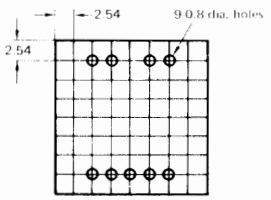
■ DIMENSIONS



Terminal arrangement/ Internal connection (Top view)

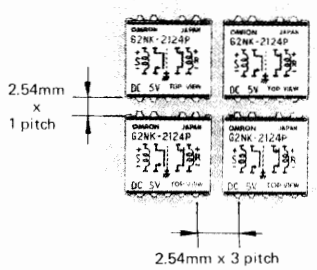


Mounting holes (Bottom view)



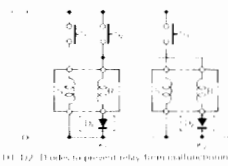
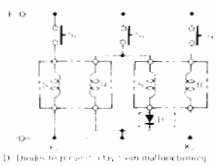
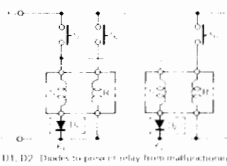
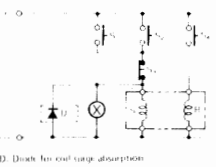
■ HINTS ON CORRECT USE

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



2. Both the set and reset coils may be energized continuously. However, do not apply voltage simultaneously to both coils.
3. If the relays are used in any of the circuits shown at the right, the relay contacts may be released from their locked (energized/deenergized) positions. To prevent this, either connect diodes D1 and D2 or change the circuit configuration.

• Hints on circuit connection

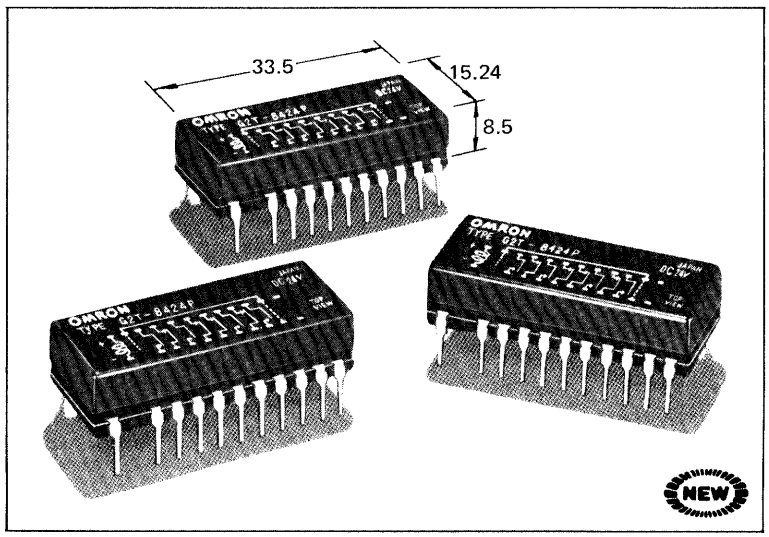
Circuit with two reset coils parallelly connected to one another	**Circuit with two set coils parallelly connected to one another**
	
Circuit with two set coils and two reset coils connected	**Circuit with set coil parallelly connected to other relay**
	

- When connecting diodes to the circuit, use diodes which have repetitive peak-inverse voltage and DC reverse voltage sufficient to absorbe external noise or surges, and whose average rectifying current is greater than the coil current.

Since voltage drop by the diodes will occur, use diodes of which the forward voltage is as low as possible or increase the supply voltage to compensate for the voltage drop.

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.

High-sensitivity (230mW max.) DIP Type Relay for Signal Control



■ FEATURES

- Perfectly sealed package construction.
- Bifurcated contact construction employing gold alloy assures high reliability at low signal levels, and is ideal for input in IC or transistor circuits.
- Short contact bounce time (approx. 20μsec).
- Shield plate prevents contacts from being affected adversely by noise generated by coil.
- High shock and vibration resistance is assured by the balanced armature system.
- Thermoelectromotive force as low as 3μV max., ideal for analog signals.
- Conforms to UL, CSA and VDE.

■ AVAILABLE TYPES

Contact form \ Type	General purpose
4PST-NO + 4PST-NC	G2T-8424P

■ SPECIFICATIONS

• COIL RATINGS

Rated voltage \ Item	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Must operate voltage	Must dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
3 VDC	120	25	0.053	0.079	80 max.	10 min.	110	Approx. 360
5 VDC	72	69	0.139	0.209				
12 VDC	30	400	0.788	1.183				
24 VDC	15	1,600	3.250	4.870				

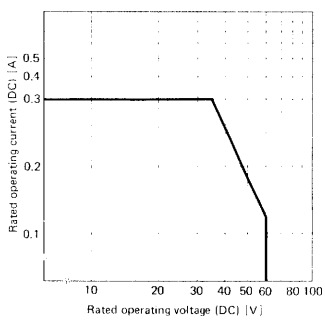
NOTE: The rated current and coil resistance are measured at a coil temperature of 20°C with tolerances of ±10%.

• CONTACT RATINGS

Item \ Load	Resistive load (p.f.=1)
Rated load	24 VDC 0.3A
Carry current	0.3A
Max. operating voltage	60 VDC
Max. operating current	0.3A
Max. switching capacity	10W
Min. permissible load (ref. value)	0.1 VDC 100μA

• CHARACTERISTIC DATA

Max. switching capacity

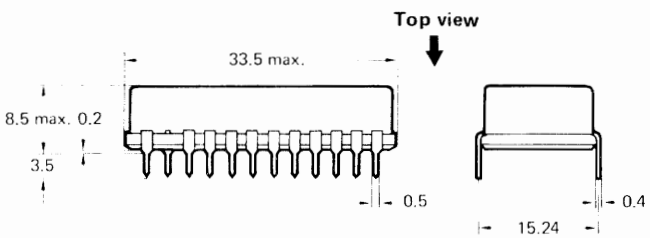


• CHARACTERISTICS

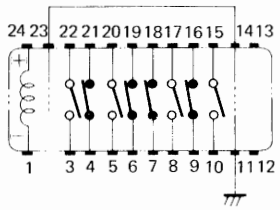
Contact resistance	100mΩ
Stray capacitance*	1(2)pF max. between contacts of same pole. 1(2)pF max. between other terminals. 1(3)pF max. between coil and contact.
Thermoelectromotive force	3μV (with rated voltage applied at ambient temperature of 20°C)
Operate time	10msec max.
Release time	5msec max.
Operating frequency	Mechanically: 36,000 operations/hour Electrically: 1,800 operations/hour (under rated load)
Insulation resistance	100MΩ min. (at 250 VDC)
Dielectric strength	1,000 VAC, 50/60Hz for 1 minute (250 VAC between contacts of same pole)
Vibration	Mechanical durability: 10 to 55Hz; 1.5mm double amplitude Malfunction durability: 10 to 55Hz; 1.5mm double amplitude
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 200m/sec² (approx. 20G's)
Ambient temperature	Operating: −25 to +70°C
Humidity	45 to 85% RH
Service life	Mechanically: 50,000,000 operations min. (at operating frequency of 36,000 operations/hour) Electrically: —
Weight	Approx. 8.7g

NOTES: 1. The data shown above are of initial value.
2. * Values in parentheses are those when the ground terminal is not connected.

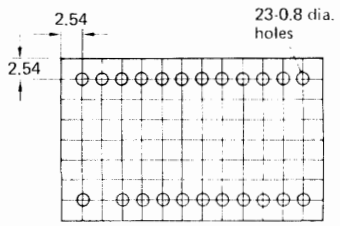
■ DIMENSIONS



Terminal arrangement/ Internal connections (Top view)



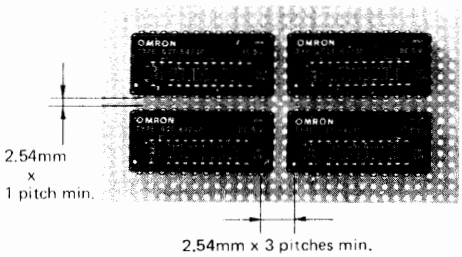
Mounting holes (Top view)



NOTE: Ordinary 24-pin IC socket can be used.

■ 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.



How to Solder Sealed Type PC Relays

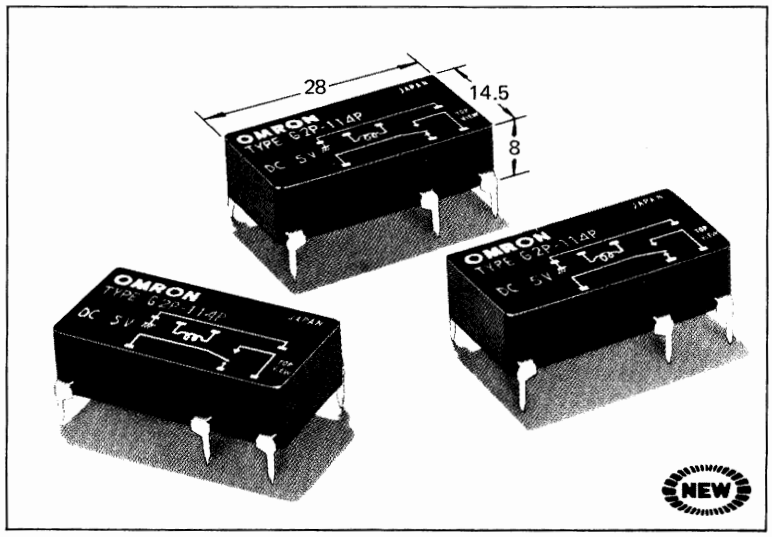
• **Soldering**

Since the PC relay is of perfectly sealed construction, no problem should arise from automatic soldering or cleaning with the PC relay mounted on a PC board. However, please pay attention to the following points.

(1) Use an anti-corrosive rosin type flux.
(2) For flux solvent, use alcohol type which is less chemically reactive.
(3) When preheating the PC board after flux application, keep the temperature of the land side of the PC board to less than 80°C.
(4) Dip the bottom of the PC board into molten solder for the shortest possible period (approx. 3sec) at a solder temperature of 240°C. In this case, be sure that the PC board is not flooded with solder.
(5) Use a solder conforming with H60 (Sn 60, Pb 40) or H63 (Sn 63, Pb 37 eutectic solder) JIS Z 3282.
(6) Use freon type solvents which are less chemically reactive. Note that use of other solvents may damage the plastic material used for the relay base, etc.

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.

DIP Type Relay for Power Drive With 3A, 250VAC Switching Capacity



- Sealed and 8mm thick.
- High dielectric strength (2,000 VAC).
- Gold-clad silver contacts with high contact reliability assure stable switching of a wide range of loads from micro current/voltage to 3A loads.
- Conforms to UL, CSA, VDE and SEV.

■ AVAILABLE TYPES

Contact form \ Type	General purpose
SPDT	G2P-114P

OMRON

■ SPECIFICATIONS

• COIL RATINGS

Item / Rated voltage	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Must operate voltage	Must dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
5 VDC	48	104	0.27	0.30	80 max.	10 min.	120	Approx. 240
6 VDC	40	150	0.44	0.49				
12 VDC	20	600	1.6	1.9				
24 VDC	10	2,400	6.0	7.2				

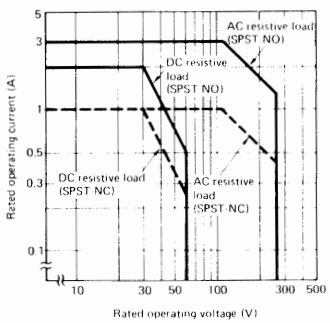
NOTE: The rated current and coil resistance are measured at a coil temperature of 20° C with tolerances of ±10%.

• CONTACT RATINGS

Load / Item	Resistive load (p.f.=1)	
	SPST-NO	SPST-NC
Rated load	110 VAC 3A 220VAC1.5A 24 VDC 2A	110 VAC 1A 220VAC 0.5A 24 VDC 1A
Carry current	3A	
Max. operating voltage	250 VAC, 60 VDC	
Max. operating current	3A	1A
Max. switching capacity	330VA, 60W	110VA, 30W
Min. permissible load (reference value)	5 VDC 10mA	

• CHARACTERISTIC DATA

Max. switching capacity

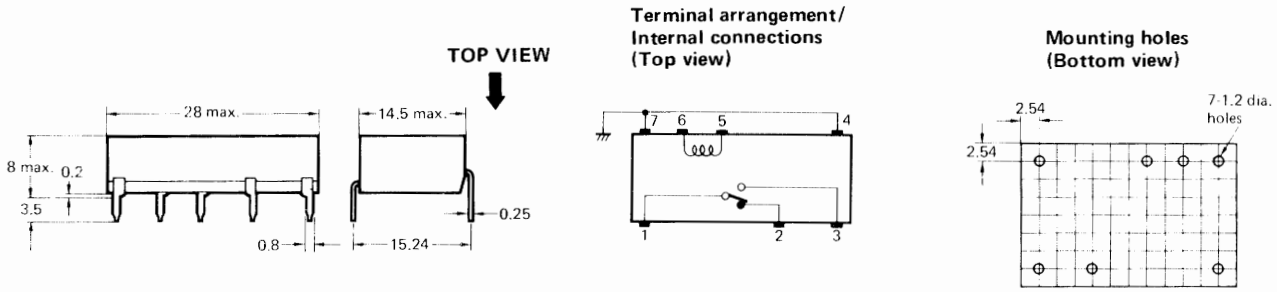


• CHARACTERISTICS

Contact resistance	100mΩ max.
Stray capacitance	20pF max. between coil and ground terminal. 2pF max. between other terminals.
Operate time	10msec max.
Release time	
Operating frequency	Mechanically: 18,000 operations/hour Electrically: 1,800 operations/hour (under rated load)
Insulation resistance	100MΩ min. (at 500 VDC)
Dielectric strength	2,000 VAC, 50/60Hz for 1 minute (1,000 VAC between coil and ground terminal, 750 VAC between contacts of same pole)
Vibration	Mechanical durability: 10 to 55Hz; 1.5mm double amplitude Malfunction durability: 10 to 55Hz; 1.0mm double amplitude
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 100m/sec² (approx. 10G's)
Ambient temperature	Operating: –25 to +55°C
Humidity	45 to 85% RH
Service life	Mechanically: 10,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: ——
Weight	Approx. 6g

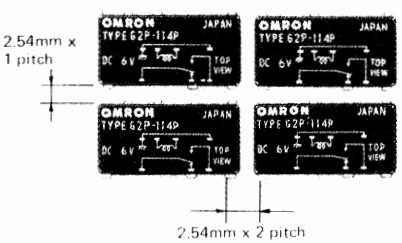
NOTE: The data shown above are of initial value.

■ DIMENSIONS



■ 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.



How to Solder Sealed Type PC Relays

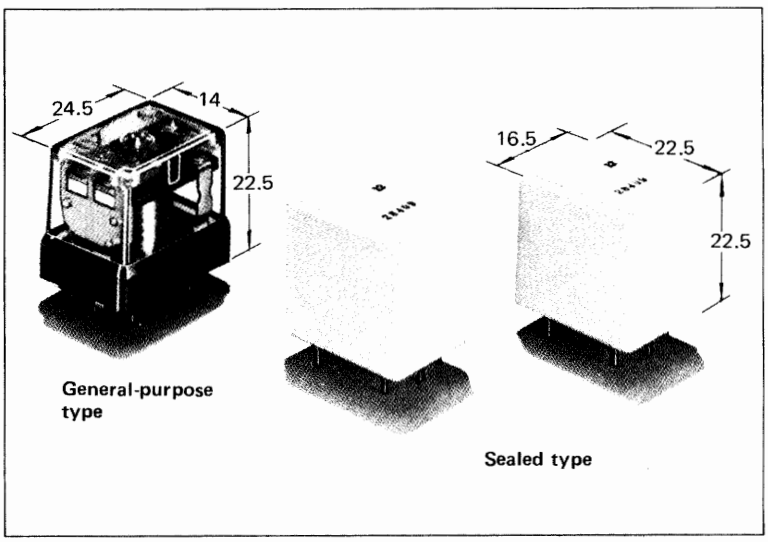
• **Soldering**

Since the PC relay is of perfectly sealed construction, no problem should arise from automatic soldering or cleaning with the PC relay mounted on a PC board. However, please pay attention to the following points.

(1) Use an anti-corrosive rosin type flux.
(2) For flux solvent, use alcohol type which is less chemically reactive.
(3) When preheating the PC board after flux application, keep the temperature of the land side of the PC board to less than 80°C.
(4) Dip the bottom of the PC board into molten solder for the shortest possible period (approx. 3sec) at a solder temperature of 240°C. In this case, be sure that the PC board is not flooded with solder.
(5) Use a solder conforming with H60 (Sn 60, Pb 40) or H63 (Sn 63, Pb 37 eutectic solder) JIS Z 3282.
(6) Use freon type solvents which are less chemically reactive. Note that use of other solvents may damage the plastic material used for the relay base, etc.

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.

Sugar Cube-Sized PCB Relay Capable of Switching 5A Loads



■ FEATURES

- Ideal for application in household electrical appliances.
- Construction resistant to flux wicking.
- Sealed type available.

■ AVAILABLE TYPES

Classification \ Type / Contact form		General purpose	Sealed
Standard type	SPDT	G2U-112P	G2U-114P
	SPST-NO	G2U-112P-100	–
Standard approved type	SPDT	G2U-112P-US	–
	SPST-NO	G2U-112P-100-US	–

STANDARD TYPE

■ SPECIFICATIONS

• COIL RATINGS

Item / Rated voltage	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Must operate voltage	Must dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
6 VDC	60	100	0.34	0.51	75 max.	10 min.	130 max.	Approx. 360
12 VDC	30	400	1.2	2.3				
24 VDC	15	1,600	4.8	8.0				

NOTE: The rated current and coil resistance are measured at a coil temperature of 20°C with tolerances of ±10%.

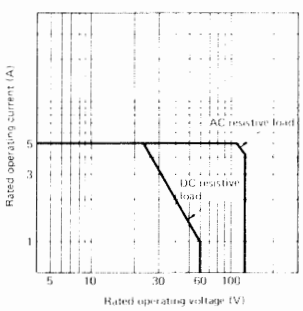
• CONTACT RATINGS

(Value in parentheses applies to sealed type.)

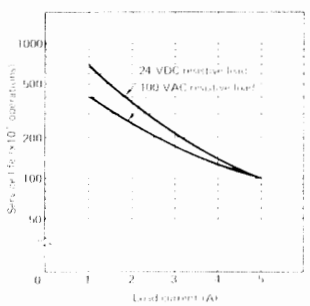
Load / Item	Resistive load (p.f.=1)	Inductive load (p.f.=0.4; L/R=7msec)
Rated load	110 VAC/24 VDC 5A (3A)	110 VAC/24 VDC 2.5A (1.5A)
Carry current	5A (3A)	
Max. operating voltage	125 VAC, 60 VDC	
Max. operating current	5A (3A)	3A (1.5A)
Max. switching capacity	600VA/150W (350VA/90W)	300VA/70W (180VA/40W)
Min. permissible load (reference value)	5 VDC 100mA	

• CHARACTERISTIC DATA

Max. switching capacity



Electrical service life



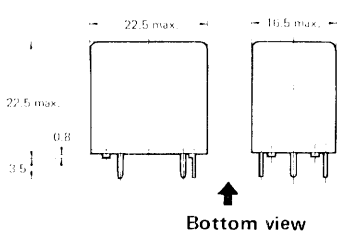
• CHARACTERISTICS

Contact resistance	100mΩ max.
Operate time	15msec max.
Release time	5msec 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	1,500 VAC, 50/60Hz for 1 minute (750 VAC between non-continuous contacts)
Vibration	Mechanical durability: 10 to 55Hz; 1.5mm double amplitude Malfunction durability: 10 to 55Hz; 1.5mm double amplitude
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 100m/sec² (approx. 10G's)
Ambient temperature	Operating: −20 to 60°C
Humidity	45 to 85% RH
Service life	Mechanically: 10,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: See "CHARACTERISTIC DATA."
Weight	Approx. 13g

NOTE: The data shown are of initial value.

■ DIMENSIONS

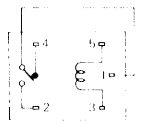
• G2U-112P(-US), G2U-112P-100(-US)



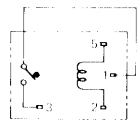
Bottom view

Terminal layout/ Internal connections (Bottom view)

G2U-112P(-US)

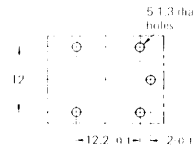


G2U-112P-100(-US)

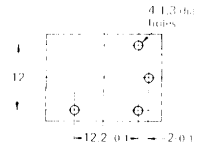


Mounting holes (Bottom view)

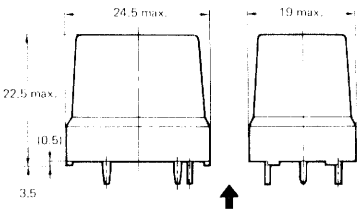
G2U-112P(-US)



G2U-112P-100(-US)

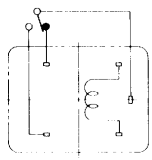


• G2U-114P

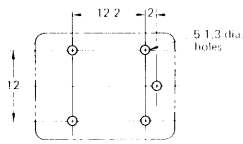


Bottom view

G2U-114P

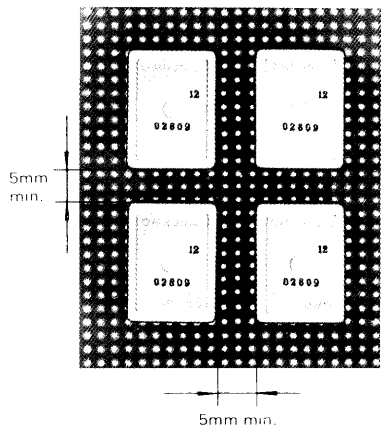


G2U-114P



■ 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)

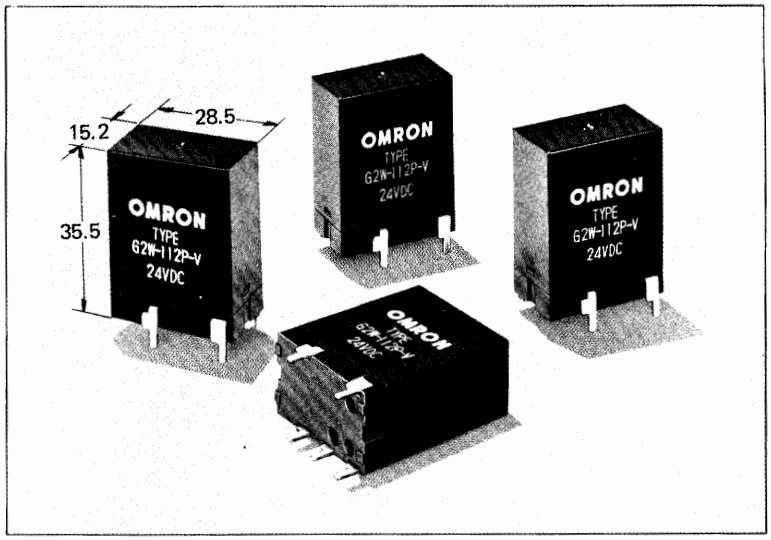
Type		Contact form	Coil ratings	Contact ratings
General purpose	G2U-112P-US	SPDT	5 to 24 VDC	5A 120 VAC or 5A 28 VDC (resistive load) 3A 120 VAC (inductive load)
	G2U-112P-100-US	SPST-NO		

CSA certified type (File No. LR34815)

Type		Contact form	Coil ratings	Contact ratings
General purpose	G2U-112P-US	SPDT	5 to 24 VDC	3A 120 VAC (resistive load) 3A 28 VDC (resistive load) 1.5A 120 VAC (inductive load)
	G2U-112P-100-US	SPST-NO		

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.

Power Output Relay for Power Switching in Printed Circuits



■ FEATURES

- Creepage distance of 8mm min. between coil and contact fully meets VDE C/250 and dielectric strength of 4,000 VAC min. conforms to UL, CSA and IEC Class II.
- TV rated (TV-5).
- Special terminal board construction preventing the ingress of solder flux inside the relay.
- International 2.54mm terminal pitch.
  In addition, N.O. contact type has a terminal pitch of 15.24mm, while SPDT contact type has a pitch of 7.62mm.
- High impulse voltage resistance (10,000V min. between coil and contact).

■ AVAILABLE TYPES

Classification \ Contact form \ Type		Vertical mounting
Standard type	SPDT	G2W-112P-V
	SPST—NO	G2W-1112P-V
Standard approved type	SPDT	G2W-112P-V-US ⑤
	SPST—NO	G2W-1112P-V-US ⑤

OMRON

STANDARD TYPE

■ SPECIFICATIONS

• COIL RATINGS

Rated voltage (V)		Rated current (mA) 50Hz	Rated current (mA) 60Hz	Coil resistance (Ω)	Coil inductance (ref. value) (H) Armature OFF	Coil inductance (ref. value) (H) Armature ON	Must operate voltage (% of rated voltage)	Must dropout voltage (% of rated voltage)	Maximum voltage (% of rated voltage)	Power consumption (VA, W)
AC	6	252	216	–	0.03	0.06	80 max.	30 min.	110	Approx. 1.3
	12	126	108		0.14	0.28				
	24	63	54		0.5	1.1				
	50	30.4	26		2.3	4.5				
	100	15.2	13		9	19				
	110	–	11.8		10.2	21.4				
	120	–	10.8		12.3	27.4				
	200	7.6	6.5		27.3	72.4				
	220	–	5.9		27.8	88.9				
	240	–	5.4		44.3	103.5				
DC	6	166.7		36	0.04	0.042		10 min.		Approx. 1
	12	83.3		144	0.2	0.21				
	24	41.7		576	0.84	0.85				
	48	20.9		2,300	3.5	3.6				
	100	10		10,000	20.8	21.8				

NOTE: The rated current, coil resistance and inductance are measured at a coil temperature of 20°C with tolerances of +15%, −20% for AC rated current and ±15% for DC rated current, and ±15% for rated coil resistance.

• CONTACT RATINGS

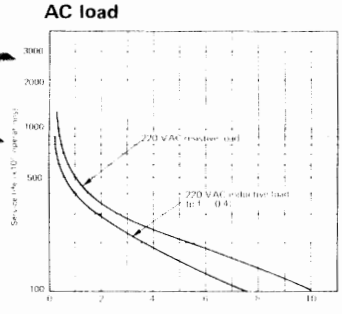
Load \ Item	Resistive load (p.f.=1)	Inductive load (p.f.=0.4, L/R =7msec)
Rated load	220 VAC 10A 24 VDC 10A	220 VAC 7.5A 24 VDC 5A
Carry current	10A	
Max. operating voltage	250 VAC 125 VDC	
Max. operating current	10A	AC: 7.5A DC: 5A
Max. switching capacity	2,200VA 240W	1,650VA 120W
Minimum permissible load (ref. value)	5V 100mA	

• CHARACTERISTIC DATA

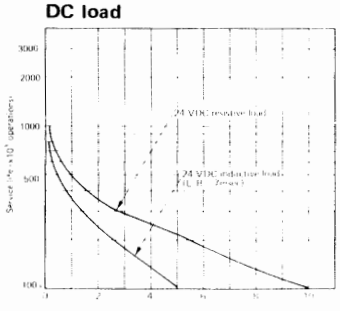
Electrical service life

G2W-112P-V (AC/DC coil), G2W-1112P-V (AC coil)

AC load

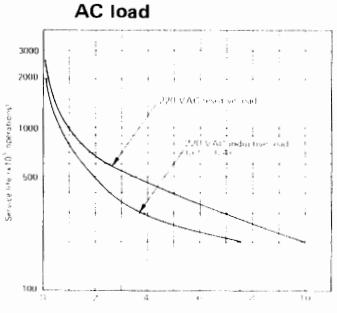


DC load

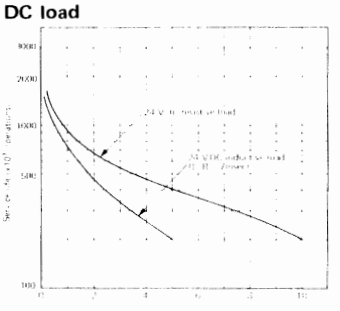


G2W-1112P-V (DC coil)

AC load



DC load



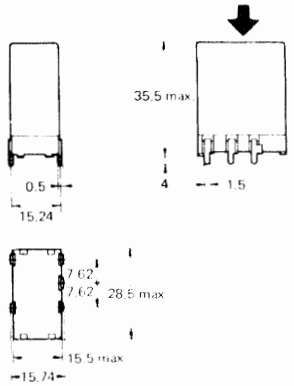
• CHARACTERISTICS

Contact resistance	30mΩ max.
Operate time	20msec max.
Release time	20msec 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	SPST--NO type: 4,000 VAC, 50/60Hz for 1 min. (1,000 VAC between non-continuous contacts) SPDT type: 2,000 VAC, 50/60Hz for 1 min.
Vibration	Mechanical durability: 10 to 55Hz; 1.5mm double amplitude Malfunction durability: 10 to 55Hz; 1.5mm double amplitude (10 to 55Hz; 0.5mm double amplitude for N.C. contact type)
Shock	Mechanical durability: 1,000m/s² (approx. 100G's) Malfunction durability: 200m/s² (approx. 20G's) [50m/s² (approx. 5G's) for N.C. contact type]
Ambient temperature	Operating: −25 to 55°C
Humidity	45 to 85% RH
Service life	Mechanically: 5,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: See "CHARACTERISTIC DATA."
Weight	Approx. 20g

NOTE: The data shown are of initial value.

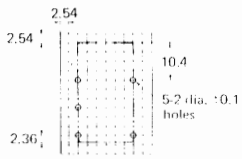
■ DIMENSIONS

• **G2W-112P-V** **Top view**

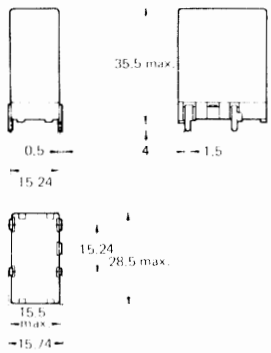


Terminal arrangement/ internal connections (Top view)

Mounting holes (Bottom view)



• **G2W-1112P-V**

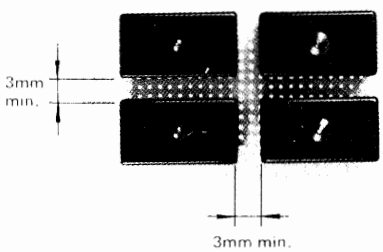


Terminal arrangement/ internal connections (Top view)

Mounting holes (Bottom view)

■ 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.

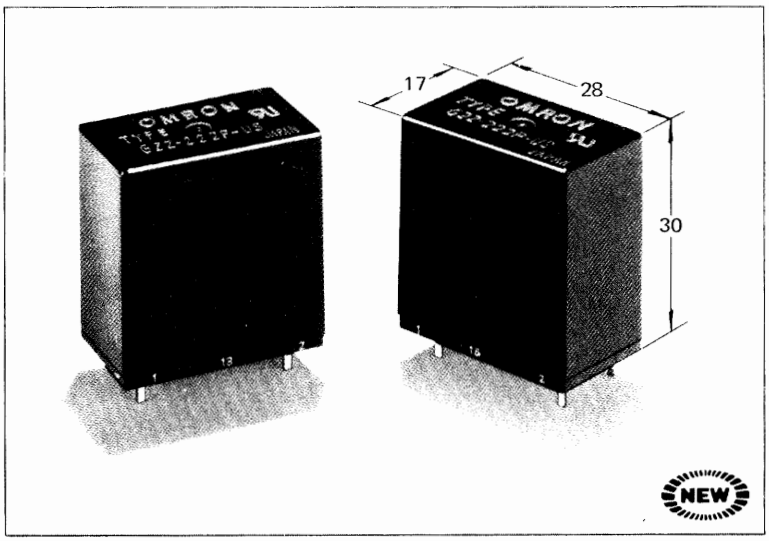
• **RATINGS**

UL recognized type (File No. E41515)/CSA certified type (File No. LR31928-21)

Type	Contact form	Coil ratings	Contact ratings
G2W-112P-V-US ⑤	SPDT	6 to 200 VAC 6 to 100 VDC	10A 250 VAC (inductive load) 10A 24 VDC (resistive load) TV-5
G2W-1112P-V-US ⑤	SPST-NO		

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.

Audio Equipment Protective Relay Ideal for Protection of Amplifiers, Speakers, Muting Circuits



■ FEATURES

- Creepage distance of 3.2mm min. conforms to CEE Pub. 1 (IEC Pub. 65), CEE Pub. 24 and UL 1270.
- High dielectric strength (2,000 VAC min.).
- International 2.54mm terminal pitch. In addition, a minimum pitch of 5.08mm is provided between terminals.

■ AVAILABLE TYPES

Contact form \ Type	General purpose
DPST–NO	G2Z-222P-US

■ SPECIFICATIONS

• COIL RATINGS

Item / Rated voltage	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H) Armature OFF	Coil inductance (ref. value) (H) Armature ON	Must operate voltage (% of rated voltage)	Must dropout voltage (% of rated voltage)	Maximum voltage (% of rated voltage)	Power consumption (mW)
6 VDC	105	57	0.18	0.3	80 max.	10 min.	110 max.	Approx. 630
12 VDC	52	233	0.89	1.28				
24 VDC	26	914	3.24	4.71				
48 VDC	13	3,660	12.1	17.6				

NOTE: The rated current and coil resistance are measured at a coil temperature of 20°C with tolerances of ±10%.

• CONTACT RATINGS

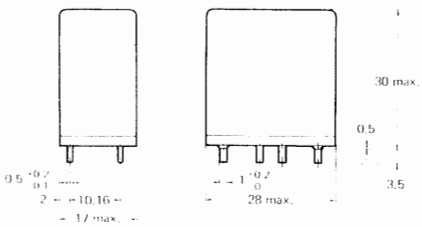
Item \ Load	Resistive load (p.f.=1)
Rated load	40VA 5A
Carry current	5A
Max. operating voltage	120 VAC
Max. operating current	5A
Max. switching capacity	200VA, 120W
Min. permissible load	1 VDC 100μA (ref. value)

• CHARACTERISTICS

Contact resistance	50mΩ max.
Operate time	20msec max.
Release time	20msec max.
Operating frequency	Mechanically: 18,000 operations/hour Under rated load: 1,800 operations/hour
Insulation resistance	100MΩ min. (at 500 VDC)
Dielectric strength	2,000 VAC, 50/60Hz for 1 minute (1,500 VAC, 50/60Hz for 1 minute between contacts)
Vibration	Mechanical durability: 10 to 55Hz; 1.5mm double amplitude Malfunction durability: 10 to 55Hz; 1.0mm double amplitude
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 100m/sec² (approx. 10G's)
Ambient temperature	Operating: –10 to +40°C (without frost formation)
Humidity	45 to 85% RH
Service life	Mechanically: 100,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: ——
Weight	Approx. 20g

NOTE: The data shown above are of initial value.

■ DIMENSIONS

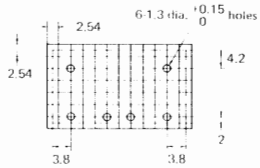


Bottom view

Terminal arrangement/ Internal connections (Bottom view)

NOTE: Pay attention to the polarity of the coil.

Mounting holes (Bottom view)



• RATINGS

UL recognized type (File No. E41515)

Type	Contact form	Coil ratings	Contact ratings
G2Z-222P-US	SPDT	6 to 48 VDC	3A 120 VAC or 5A 40 VAC (inductive load) TV-1

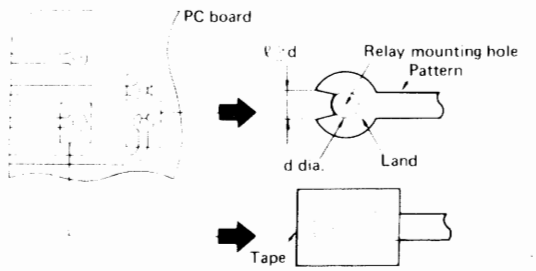
CSA certified type (File No. LR31928)

Type	Contact form	Coil ratings	Contact ratings
G2Z-222P-US	SPDT	6 to 48 VDC	5A 24 VDC (resistive load) 3A 120 VAC or 5A 40 VAC (inductive load)

How to Solder Unsealed Type PC Relays

• Manual Soldering

It is recommended that the PC relay be manually soldered after automatic soldering of other components to protect the relay contacts from excessive flux. When soldering, apply a soldering iron rated at 30 to 60W (tip temperature: 280 to 300°C) quickly (within 3sec) and firmly. Then, be sure to confirm that the relay operates normally. Process the PC board beforehand as shown below to prevent the relay mounting holes from being filled with solder and to facilitate subsequent manual soldering.

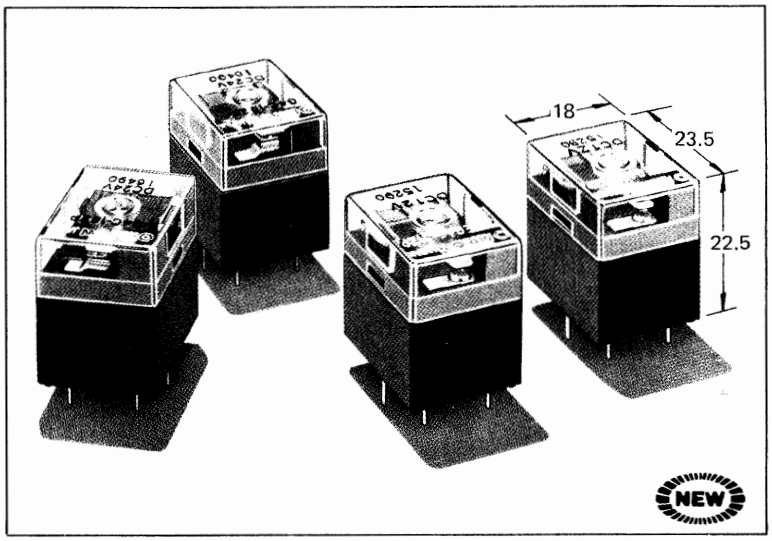


• Automatic flow soldering

1) Flux application
   a. Apply flux sparingly and evenly to prevent penetration of solder flux into the relay. In this case, adjust the position of flux level so that the upper surface of the PC board is not flooded with flux.
   b. Use an anti-corrosive rosin type flux.
   c. For flux solvent, use alcohol type which is less chemically reactive.
   d. Preheating process subsequent to flux application is effective to dry the applied flux, facilitate metal melting and prevent penetration of flux into the relay. However, when preheating the PC board, keep the temperature of the land side of the PC board to less than 80°C.
2) Soldering
   a. Move the bottom of the PC board over a flowing wave of molten solder for the shortest possible period (approx. 3sec) at a solder temperature of 240°C. In this case, be sure that the PC board is not flooded with solder.
   b. Use a solder conforming with H60 (Sn 60, Pb 40) or H63 (Sn 63, Pb 37) JIS Z 3282.
3) Cooling
   Cool forcedly the PC board with fan, etc.
4) Cleaning
   As much as possible, avoid cleaning the terminals. When cleaning for some reason or other, care should be taken to the following:
   a. Use alcohol or freon type solvents which are less chemically reactive. Note that use of other solvents may damage the plastic material used for the relay base, etc.
   b. Clean the soldered PC board pattern side only to prevent the flux-contaminated solvent from entering the relay.

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.

High Impulse Withstand Voltage (7KV)—Ideal for Applications Requiring Resistance to Voltage Surges



■ FEATURES

- Distance of 7.5mm min. between coil and contact terminals permits flexible pattern design.
- Contact section located opposite the terminal section provides a greater creepage distance and prevents solder flux wicking, thus facilitating automatic flow soldering.
- Micro voltage/current load type employs highly reliable gold-silver alloy with crossbar construction to switch wide-ranging loads from dry circuits of several mA to 1A.

■ AVAILABLE TYPES

Classification \ Type		Contact form	Micro voltage/current load	High capacity
Standard type		SPDT	G4C-182P	G4C-112P-E
Standard approved type	UL, CSA	SPDT	G4C-182P-US	G4C-112P-E-US (TV-2)
Standard approved type	VDE, SEV	SPDT	—	G4C-112P-E-VD

OMRON

STANDARD TYPE

■ SPECIFICATIONS

• COIL RATINGS

Item / Rated voltage	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Must operate voltage	Must dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
6 VDC	60	100	0.31	0.49	80 max.	10 min.	130	Approx. 360
12 VDC	30	400	1.27	1.83				
24 VDC	15	1,600	5.97	8.16				

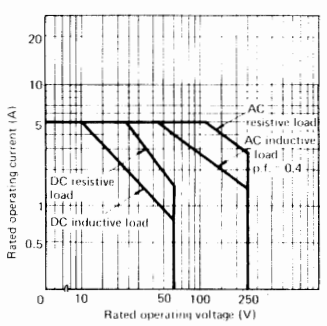
NOTES: 1. The rated current and coil resistance are measured at a coil temperature of 20° C with tolerances of ±10%.
2. The performance characteristics are measured at a coil temperature of 20° C.

• CONTACT RATINGS

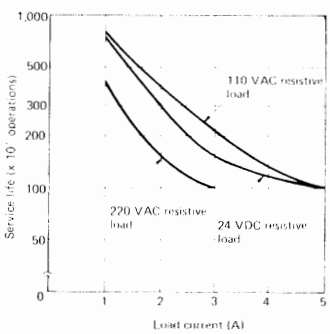
Type / Load / Item	Micro voltage/current load		High capacity	
	Resistive load (p.f.=1)	Inductive load (p.f.=0.4, L/R=7msec)	Resistive load (p.f.=1)	Inductive load (p.f.=0.4, L/R=7msec)
Rated load	110 VAC 1A 24 VDC 1A	110 VAC 0.5A 24 VDC 0.5A	110 VAC 5A 24 VDC 5A 220 VAC 3A	110 VAC 2A 24 VDC 2A
Carry current	2A		5A	
Max. operating voltage	250 VAC, 60 VDC		250 VAC, 60 VDC	
Max. operating current	1A		5A	3A
Max. switching capacity	120VA, 30W	60VA, 15W	750VA, 150W	220VA, 48W
Min. permissible load (reference value)	5 VDC 1mA		5 VDC 100mA	

• CHARACTERISTIC DATA

Maximum switching capacity G4C-112P-E



Electrical service life G4C-112P-E

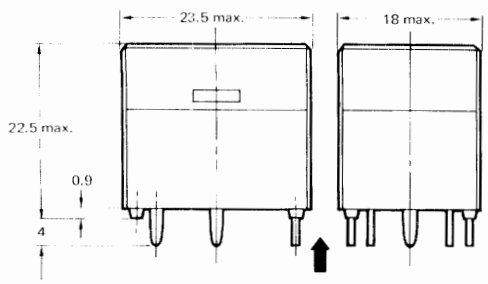


• CHARACTERISTICS

Item \ Type	G4C-182P (-US)	G4C-112P-E (-US, -VD)
Contact resistance	50mΩ max.	100mΩ max.
Operate time	15msec max.	
Release time	5msec 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	2,000 VAC, 50/60Hz for 1 minute (750 VAC between contacts of same pole)	
Vibration	Mechanical durability: 10 to 55Hz; 1.5mm double amplitude Malfunction durability: 10 to 55Hz; 1.5mm double amplitude	
Shock	Mechanical durability: 1,000m/sec² (approx. 100G's) Malfunction durability: 100m/sec² (approx. 10G's)	
Ambient temperature	Operating: -25 to +60°C	
Humidity	45 to 85% RH	
Service life	Mechanically: 10,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: See "CHARACTERISTIC DATA."	
Weight	Approx. 15g	

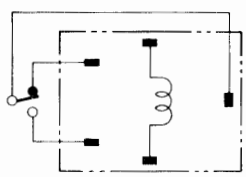
NOTE: The data shown above are of initial value.

■ DIMENSIONS

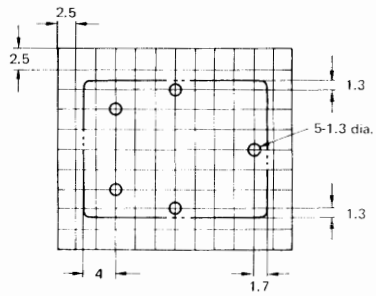


Bottom view

Terminal arrangement/ Internal commections (Bottom view)

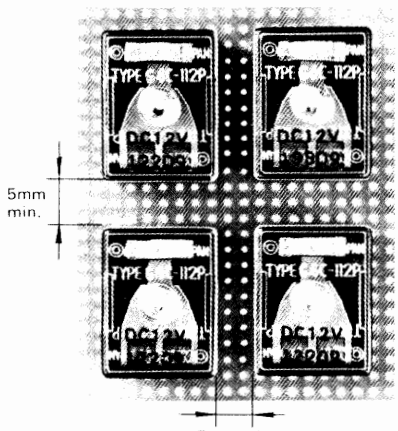


Mounting holes (Bottom view)



■ 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

Same as the Standard Type with the following exceptions.

• RATINGS

UL recognized type (File No. E41515)/CSA certified type (File No. LR-34815)

Type	Contact form	Coil ratings	Contact ratings
G4C-182P-US	SPDT	6 to 24 VDC	0.5A 120 VAC (resistive load) 1A 120 VAC (resistive load) 1A 28 VDC (resistive load)
G4C-112P-E-US-TV2			3A 120 VAC (resistive load) 5A 120 VAC (resistive load) 5A 28 VDC (resistive load) TV-2 (TV ratings)

VDE approved type (File No. 58613913)

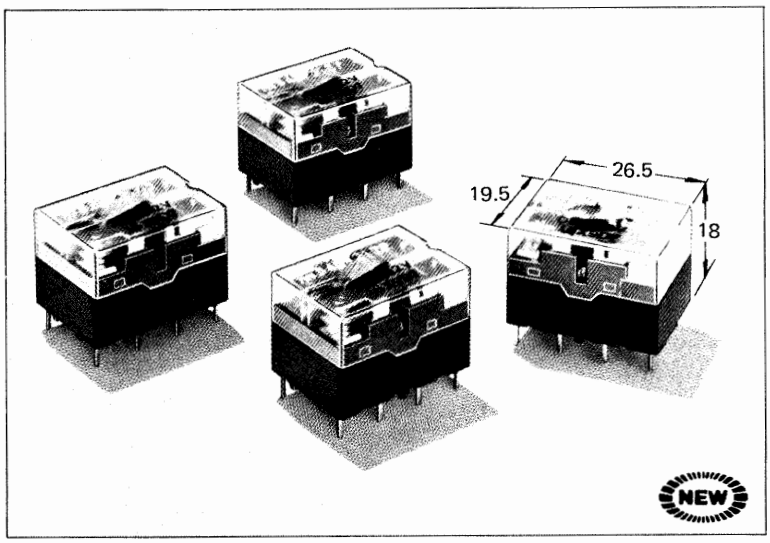
Type	Contact form	Coil ratings	Contact ratings
G4C-112P-E-VD	SPDT	6 to 24 VDC	3A 250 VAC (resistive load) 1.5A 250 VAC (inductive load)

SEV listed type (File No. D7.91/371)

Type	Contact form	Coil ratings	Contact ratings
G4C-112P-E-VD	SPDT	6 to 24 VDC	3A 250 VAC (resistive load) 5A 28 VDC (resistive load)

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.

Double-pole Relay That Breaks 5A Loads



■ FEATURES

- Creepage distance of more than 3mm.
- International 2.54mm terminal pitch arrangement.
- Contact section arranged at the upper part of the relay housing with unique terminal construction to seat the relay enclosure base 1mm above the PC board surface, facilitates automatic flow soldering.

■ AVAILABLE TYPES

Contact form \ Type	High capacity, AgCdO single contact	Standard approved
DPDT	G4D-212P	G4D-212P-US-TV2

STANDARD TYPE

■ SPECIFICATIONS

• COIL RATINGS

Rated voltage \ Item	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Must operate voltage	Must dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON	% of rated voltage			
5 VDC	160.3	31.2	0.114	0.215	80 max.	15 min.	110	800
6 VDC	133.3	45	0.185	0.284				
12 VDC	66.7	180	0.713	1.200				
24 VDC	33.3	720	2.140	3.570				

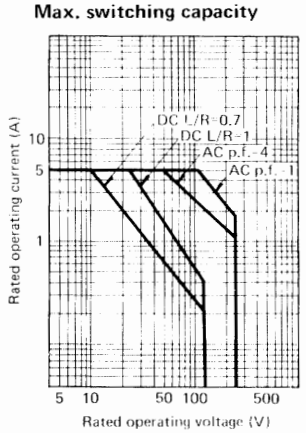
NOTES: 1. The rated current and coil resistance are measured at a coil temperature of 20°C with tolerances of ±10%.
2. The performance characteristics are measured at a coil temperature of 20°C±5.

• CONTACT RATINGS

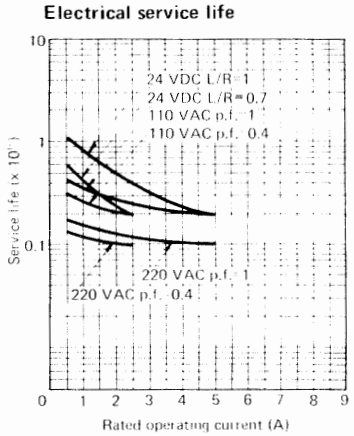
Item \ Load		Resistive load (p.f.=1)	Inductive load (p.f.=0.4, L/R=7msec)
Rated load		110 VAC 5A 24 VDC 5A	110 VAC 2.5A 24 VDC 2.5A
Carry current		5A	
Max. operating voltage		250 VAC, 125 VDC	
Max. operating current		5A	
Max. switching capacity	AC	1,100VA	550VA
	DC	120W	60W
Min. permissible load (reference value)		5 VDC 100mA	

• CHARACTERISTIC DATA

Max. switching capacity



Electrical service life

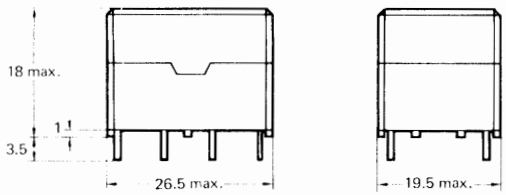


- **CHARACTERISTICS**

Contact resistance	50mΩ max.
Operate time	20msec 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	2,000 VAC 50/60Hz for 1 minute (1,000 VAC between contacts)
Vibration	Mechanical and malfunction durability: 10 to 55Hz; 1.5mm double amplitude
Shock	Mechanical durability: 1,000m/sec^2 (approx. 100G's) Malfunction durability: 100m/sec^2 (approx. 10G's)
Ambient temperature	Operating: -20 to +60°C
Humidity	45 to 85% RH
Service life	Mechanically: 10,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrically: See "CHARACTERISTIC DATA."
Weight	Approx. 21g

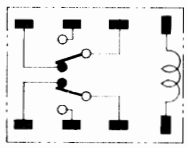
NOTE: The data shown above are of initial value.

■ DIMENSIONS

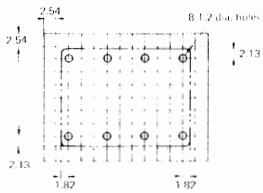


Bottom view

Terminal arrangement/ Internal connections (Bottom view)

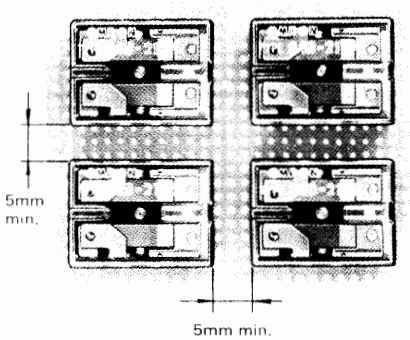


Mounting holes



■ 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

Same as the Standard Type with the following exceptions.

- **RATINGS**

UL recognized type (File No. E41515)/CSA certified type (File No. LR34815)

Type	Contact form	Coil ratings	Contact ratings
G4D-212P-US-TV2	DPDT	5 to 24 VDC	5A 250 VAC, 5A 28 VDC (resistive load) TV-2

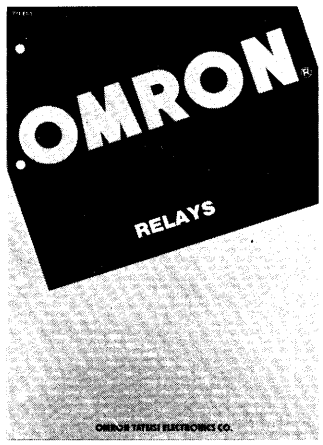
NOTE: ALL DIMENSIONS SHOWN IN THIS CATALOG ARE IN UNITS OF MILLIMETERS.
To convert millimeters into inches multiply by 0.03937. To convert grams into ounces multiply by 0.03527.

In addition to the products featured in this catalog, OMRON offers a broad line of other quality control components and devices. Below are general listings of other OMRON product lines. Let OMRON satisfy your design and production requirements.

SWITCHES

(Cat. No. X10-E1)

RELAYS

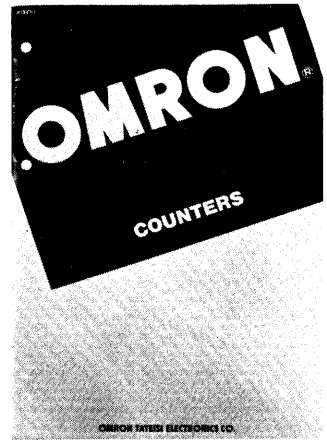


(Cat. No. X11-E1)

TIMERS

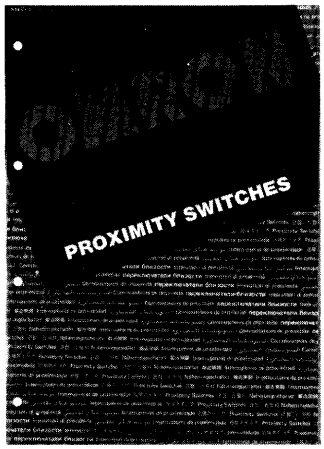
(Cat. No. X12-E1)

COUNTERS



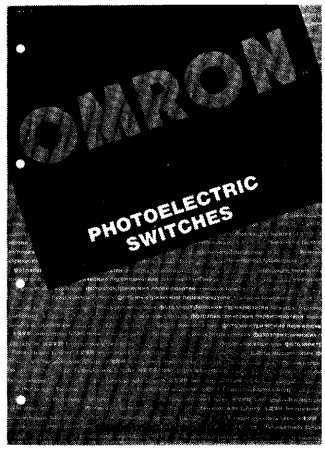
(Cat. No. X13-E1)

PROXIMITY SWITCHES



(Cat. No. X14-E1)

PHOTOELECTRIC SWITCHES

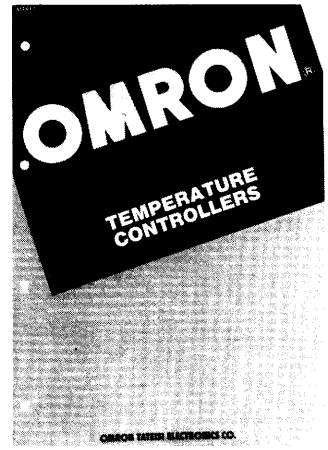


(Cat. No. X15-E1)

LEVEL SWITCHES

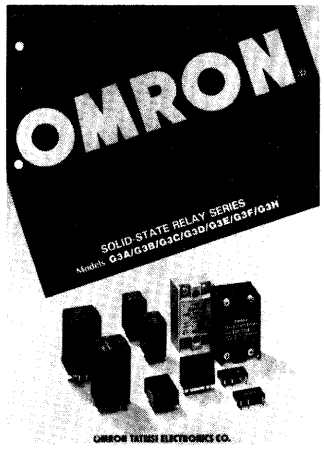
(Cat. No. X16-E1)

TEMPERATURE CONTROLLERS



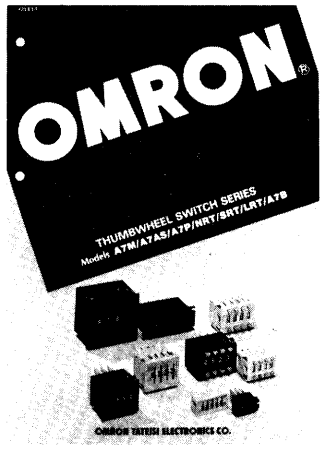
(Cat. No. X17-E1)

SOLID-STATE RELAYS



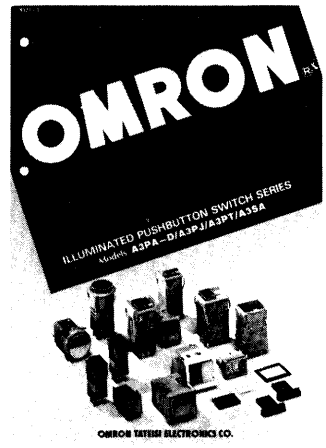
(Cat. No. X30-E1)

THUMBWHEEL SWITCH SERIES



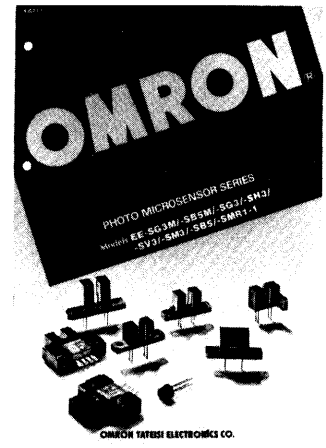
(Cat. No. X31-E1)

ILLUMINATED PUSHBUTTON SWITCH SERIES



(Cat. No. X32-E1)

PHOTO MICROSENSOR SERIES



(Cat. No. X36-E1)

All the catalogs shown above may not be readily obtainable in some areas.

NOTE: Specifications subject to change without

This catalog supersedes catalog X33-E1-2, dated Oct., '80.

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