Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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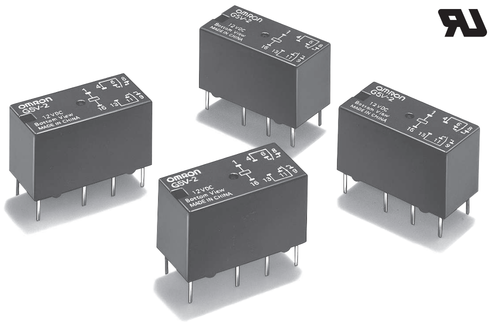
G5V-2

Low Signal Relay

General-purpose, Low-cost, Two-pole Relays for Signal Circuits



- General-purpose DIL terminal layout.
- Wide switching power of 10 µA to 2 A.
- Fully-sealed type Relays standardized with bifurcated crossbar contacts. Highly reliable in addition to its high environment resistance.
- Conforms to FCC Part 68 (impulse withstand voltage of 1,500 V for 10 x 160 µs between coil and contacts and between contacts of the same polarity).
- High dielectric strength at 1,000 VAC between coil and contacts, and 750 VAC between contacts of the same polarity.
- UL and CSA standard approved.

RoHS Compliant

■Model Number Legend

G5V-☐-☐
1 2

1. Number of Poles/ Contact form
2: 2-pole/DPDT (2c)

2. Classification
None: Standard
H1: High-sensitivity

■Application Examples

- Telecommunication equipment
- Security equipment

■Ordering Information

Classification	Enclosure rating	Contact form	Terminal shape	Model	Rated coil voltage	Minimum packing unit
Standard	Fully sealed	DPDT (2c)	PCB terminals	**G5V-2**	3 VDC	25 pcs/tube
					5 VDC	
					6 VDC	
					9 VDC	
					12 VDC	
					24 VDC	
					48 VDC	
High-sensitivity				**G5V-2-H1**	5 VDC	
					12 VDC	
					24 VDC	
					48 VDC	

Note: When ordering, add the rated coil voltage to the model number.
Example: G5V-2 DC3.
Rated coil voltage
However, the notation of the coil voltage on the product case as well as on the packing will be marked as ☐☐ VDC.

■Characteristics

Item / Classification		Standard	High-sensitivity
Contact resistance *1		50 mΩ max.	100 mΩ max.
Operate time		7 ms max.	
Release time		3 ms max.	
Insulation resistance *2		1,000 MΩ min. (at 500 VDC)	
Dielectric strength	Between coil and contacts	1,000 VAC, 50/60 Hz for 1 min	
	Between contacts of the same polarity	750 VAC, 50/60 Hz for 1 min	500 VAC, 50/60 Hz for 1 min
	Between contacts of different polarity	1,000 VAC, 50/60 Hz for 1 min	
Impulse withstand voltage	Between coil and contacts	1,500 V (10 x 160 µs)	
	Between contacts of the same polarity	1,500 V (10 x 160 µs)	
	Between contacts of different polarity	1,500 V (10 x 160 µs)	
Vibration resistance	Destruction	10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)	
	Malfunction	10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)	
Shock resistance	Destruction	1,000 m/s²	
	Malfunction	200 m/s²	100 m/s²
Durability	Mechanical	15,000,000 operations min. (at 36,000 operations/hr)	
	Electrical	100,000 operations min. (at 1,800 operations/hr)	AC: 100,000 operations min., DC: 300,000 operations min. (at 1,800 operations/hr)
Failure rate (P level) (reference value) *3		10 µA at 10 m VDC	
Ambient operating temperature		-25°C to 65°C (with no icing or condensation)	-25°C to 70°C (with no icing or condensation)
Ambient operating humidity		5% to 85%	
Weight		Approx. 5 g	

Note: The above values are initial values.
*1. The contact resistance was measured with 10 mA at 1 VDC with a voltage drop method.
*2. The insulation resistance was measured with a 500 VDC megohmmeter applied to the same parts as those used for checking the dielectric strength.
*3. This value was measured at a switching frequency of 120 operations/min and the criterion of contact resistance is 50 Ω. This value may vary depending on the switching frequency and operating environment. Always double-check relay suitability under actual operating conditions.

■Ratings

●Coil

Classification	Rated voltage	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
				% of rated voltage			
Standard	3 VDC	166.7	18	75% max.	5% min.	120% (at 23°C)	Approx. 500
	5 VDC	100	50				
	6 VDC	83.3	72				
	9 VDC	55.6	162				
	12 VDC	41.7	288				
	24 VDC	20.8	1,152				
	48 VDC	12	4,000				Approx. 580
High-sensitivity	5 VDC	30	166.7	75% max.	5% min.	180% (at 23°C)	Approx. 150
	12 VDC	12.5	960				
	24 VDC	8.33	2,880				Approx. 200
	48 VDC	6.25	7,680			150% (at 23°C)	Approx. 300

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.
2. Operating characteristics are measured at a coil temperature of 23°C.
3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

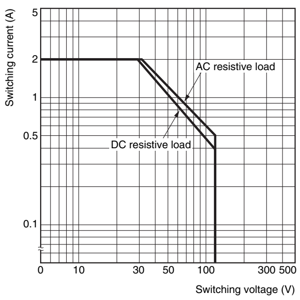
●Contacts

Classification	Standard	High-sensitivity
Load	Resistive load	
Contact type	Bifurcated crossbar	
Contact material	Ag + Au-alloy	
Rated load	0.5 A at 125 VAC; 2 A at 30 VDC	0.5 A at 125 VAC; 1 A at 24 VDC
Rated carry current	2 A	
Max. switching voltage	125 VAC, 125 VDC	
Max. switching current	2 A	1 A

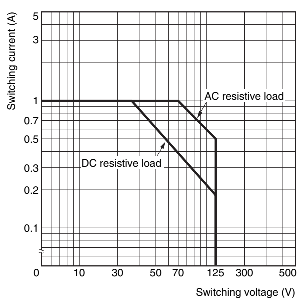
■Engineering Data

●Maximum Switching Capacity

Standard/G5V-2

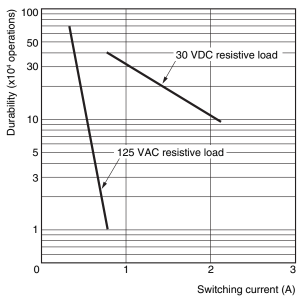


High-sensitivity/G5V-2-H1

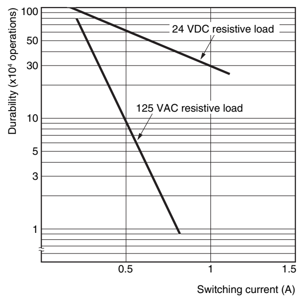


●Durability

Standard/G5V-2

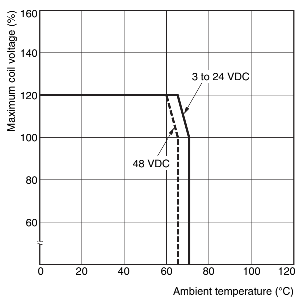


High-sensitivity/G5V-2-H1

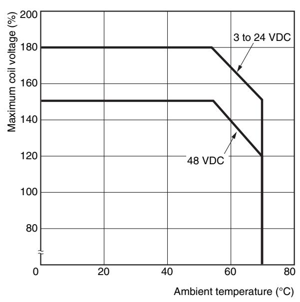


●Ambient Temperature vs. Maximum Coil Voltage

Standard/G5V-2



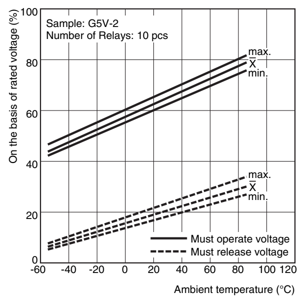
High-sensitivity/G5V-2-H1



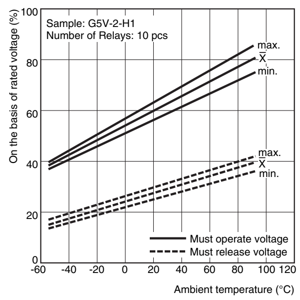
Note: The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

●Ambient Temperature vs. Must Operate or Must Release Voltage

Standard/G5V-2

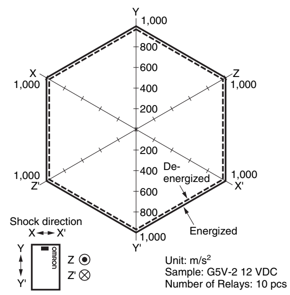


High-sensitivity/G5V-2-H1

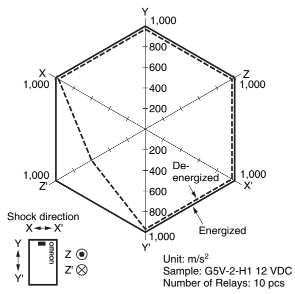


●Shock Malfunction

Standard/G5V-2

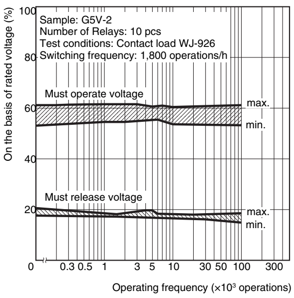


High-sensitivity/G5V-2-H1

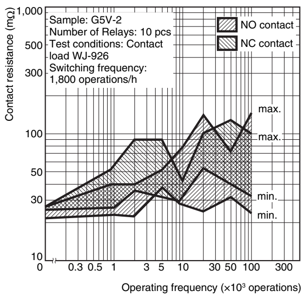


Conditions: Shock is applied in ±X, ±Y, and ±Z directions three times each with and without energizing the Relays to check the number of contact malfunctions.

●Dial Pulse Test (with Must Operate and Must Release Voltage) *1 Standard/G5V-2

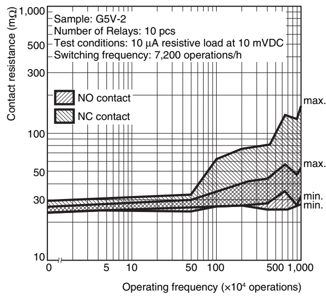


●Dial Pulse Test (Contact Resistance) *1

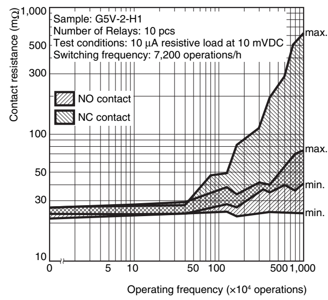


●Contact Reliability Test *1, *2

Standard/G5V-2



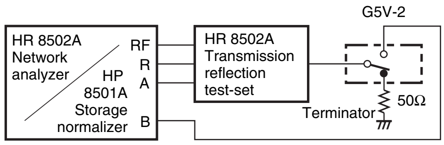
High-sensitivity/G5V-2-H1



*1. The tests were conducted at an ambient temperature of 23°C.
*2. The contact resistance data are periodically measured reference values and are not values from each monitoring operation. Contact resistance values will vary according to the switching frequency and operating environment, so be sure to check operation under the actual operating conditions before use.

●High-frequency Characteristics

• Measurement Conditions

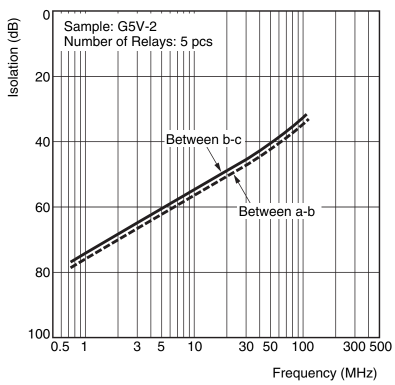


Terminals which were not being measured were terminated with 50 Ω.
Measuring impedance: 50 Ω

Note: The high-frequency characteristics data were measured using a dedicated circuit board and actual values will vary depending on the usage conditions. Check the characteristics of the actual equipment being used.

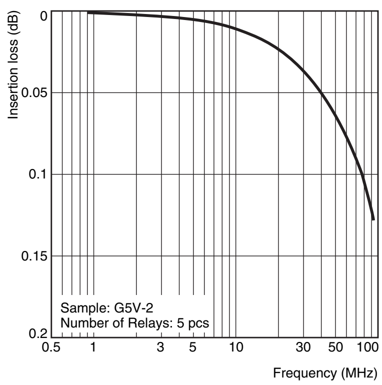
●High-frequency Characteristics (Isolation) *1, *2

(Average value (initial))



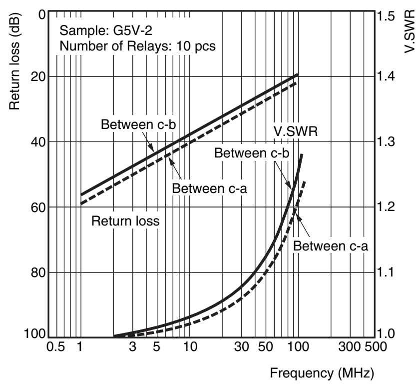
●High-frequency Characteristics (Insertion Loss) *1, *2

(Average value (initial))

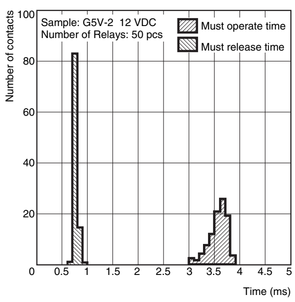


●High-frequency Characteristics (Return Loss, V.SWR) *1, *2

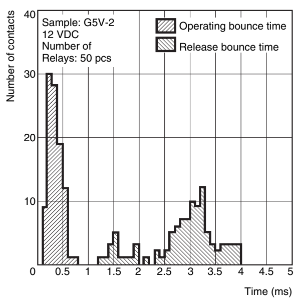
(Average value (initial))



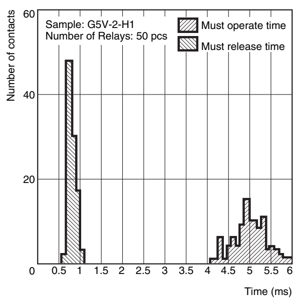
●Must Operate and Must Release Time Distribution *1 Standard/G5V-2



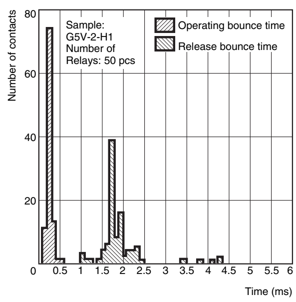
●Distribution of Bounce Time *1



●Must Operate and Must Release Time Distribution *1 High-sensitivity/G5V-2-H1



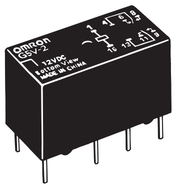
●Distribution of Bounce Time *1

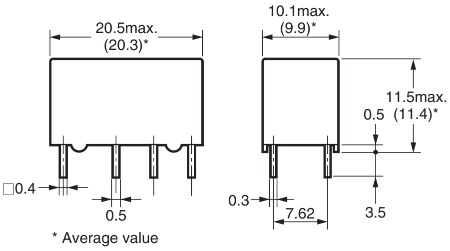


*1. The tests were conducted at an ambient temperature of 23°C.
*2. High-frequency characteristics depend on the PCB to which the Relay is mounted. Always check these characteristics, including endurance, in the actual machine before use.

■Dimensions

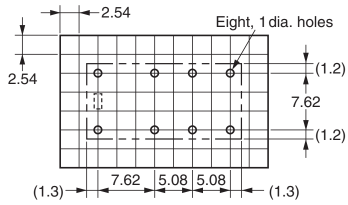
G5V-2



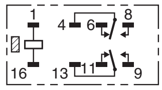


Note: Each value has a tolerance of ±0.3 mm.

PCB Mounting Holes (Bottom View)
Tolerance: ±0.1 mm



Terminal Arrangement/ Internal Connections
(Bottom View)



(No coil polarity)

Orientation marks are indicated as follows:

■Approved Standards

UL recognized: (File No. E41515)
CSA certified: (File No. LR31928)

Model	Contact form	Coil ratings	Contact ratings		Number of test operations
			G5V-2	G5V-2-H1	
G5V-2	DPDT (2c)	3 to 48 VDC	2 A, 30 VDC at 40°C 0.6 A, 110 VDC at 40°C 0.6 A, 125 VAC at 40°C	2 A, 24 VDC at 40°C 0.2 A, 110 VDC at 40°C 0.5 A, 125 VAC at 40°C	6,000

G5V-2

■Precautions

- Please refer to "PCB Relays Common Precautions" for correct use.

Correct Use

- **Long-term Continuously ON Contacts**

Using the Relay in a circuit where the Relay will be ON continuously for long periods (without switching) can lead to unstable contacts because the heat generated by the coil itself will affect the insulation, causing a film to develop on the contact surfaces. Be sure to use a fail-safe circuit design that provides protection against contact failure or coil burnout.

- **Relay Handling**

When washing the product after soldering the Relay to a PCB, use a water-based solvent or alcohol-based solvent, and keep the solvent temperature to less than 40°C. Do not put the Relay in a cold cleaning bath immediately after soldering.

OMRON Corporation
Electronic and Mechanical Components Company

Contact: www.omron.com/ecb

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