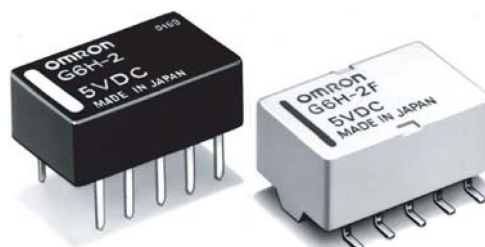


Low Signal Relay

G6H

Ultra-compact, Ultra-sensitive DPDT Relay

- Compact size and low 5 mm profile.
- Low thermoelectromotive force.
- Low magnetic interference enables high-density mounting.
- Utilizes Omron's moving-loop design.
- Highly stable magnetic circuit for latching endurance and excellent resistance to vibration and shock.
- High sensitivity with low nominal power consumption.
- Single or dual coil latching types available.
- RoHS Compliant



Ordering Information

To Order: Select the part number and add the desired coil voltage rating, (e.g., G6H-2-DC6).

■ Non-latching

Terminal Type	Contact form	Model
Through-hole	DPDT	G6H-2
Surface mount		G6H-2F

■ Latching

Terminal Type	Contact form	Model
Through-hole	DPDT	Single coil latching G6HU-2
		Dual coil latching G6HK-2

Specifications

■ Contact Data

Load	Resistive load (p.f. = 1)
Rated load	0.50 A at 125 VAC, 1 A at 30 VDC
Contact material	Ag (Au clad)
Carry current	1 A
Max. operating voltage	125 VAC, 110 VDC
Max. operating current	1 A
Max. switching capacity	62.50 VA, 33 W
Min. permissible load (See note)	10 μ A, 10 mVDC

Note: P level: $\lambda_{60} = 0.1 \times 10^{-6}$ /operation

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 operating environment. Always double-check relay suitability under actual operating conditions.

■ Coil Data

Non-latching Type (G6H-2, G6H-2F)

Rated voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON				
3	46.70	64.30	0.025	0.022	75% max.	10% min.	200% max. at 23°C	Approx. 140
5	28.10	178	0.065	0.058				
6	23.30	257	0.11	0.09				
9	15.50	579	0.24	0.20				
12	11.70	1,028	0.43	0.37				
24	8.30	2,880	1.20	1.0			170% max. at 23°C	Approx. 200
48	5.8	8,228	—	—			140% max. at 23°C	Approx. 300

Single Coil Latching Type (G6HU-2)

Rated voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Set pick-up voltage	Reset pick-up voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON				
3	33.30	90	0.034	0.029	75% max.	75% max.	180% max. at 23°C	Approx. 100
5	20	250	0.11	0.09				
6	16.70	360	0.14	0.12				
9	11.10	810	0.33	0.28				
12	8.30	1,440	0.60	0.50				
24	6.25	3,840	1.6	1.3				Approx. 150

Dual Coil Latching Type (G6HK-2)

Rated voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Set pick-up voltage	Reset pick-up voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON				
3	66.70	45	0.014	0.0075	75% max.	75% max.	160% max. at 23°C	Approx. 200
5	40	125	0.042	0.023				
6	33.30	180	0.065	0.035				
9	22.20	405	0.16	0.086				
12	16.70	720	0.3	0.16				
24	12.50	1,920	0.63	0.33			130% max. 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 with a tolerance of ±10%.

3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

4. The maximum voltage that can be applied when using the G6H-2F (at 85°C) is 115% (3 to 12 V) or 105% (24 V) of the rated voltage.

■ Characteristics

Contact resistance (See note 1)		50 mΩ max. (through-hole); 60 mΩ max. (surface mount)
Operate (set) time (See note 2)		Non-latching: 3 ms max. (approx. 2.0 ms) Latching: 3ms max. (approx. 1.5 ms)
Release (reset) time (See note 2)		Non-latching: 2 ms max. (approx. 1.0 ms) Latching: 3ms max. (approx. 1.5 ms)
Min. set/reset signal width		5ms min. (at 23°C)
Operating frequency (max.)	Mechanical	36,000 operations/hour
	Electrical	1,800 operations/hour (under rated load)
Insulation resistance (See note 3)		1,000 MΩ max. (at 500 VDC)
Dielectric strength		1,000 VAC, 50/60 Hz for 1 minute between coil and contacts 1,000 VAC, 50/60 Hz for 1 minute between contacts of different poles 750 VAC, 50/60 Hz for 1 minute between contacts of same pole 125 VAC, 50/60 Hz for 1 minute between set and reset coils (G6HK-2)
Surge withstand voltage		1,500 V (10 x 160 μs) between contacts of same polarity (conforms to FCC Part 68)
Vibration	Mechanical durability	10 to 55 Hz; 5 mm double amplitude
	Malfunction durability	10 to 55 Hz; 3 mm double amplitude
Shock	Mechanical durability	1,000 m/s ² (approx. 100 G)
	Malfunction durability	500 m/s ² (approx. 50 G)
Ambient temperature		-40° to 70°C with no icing
Humidity		5% to 85% RH
Service life	Mechanical	100 million operations min. (at 36,000 operations/hr)
	Electrical	200,000 operations min. (at 1,800 operations/hr) See "Characteristic Data"
Weight		Approx. 1.5 g

- Note:** 1. The contact resistance was measured with 10 mA at 1 VDC with a fall-of-potential method.
 2. Values in parentheses are typical values unless otherwise stated.
 3. The insulation resistance was measured with a 500-VDC megohmmeter applied to the same parts as those for checking the dielectric strength. (The insulation resistance between the set and reset coil (G6HK-2), however, is 100MΩ min. when measured with a 125-VDC megohmmeter).
 4. The above values are initial values.

■ Approvals

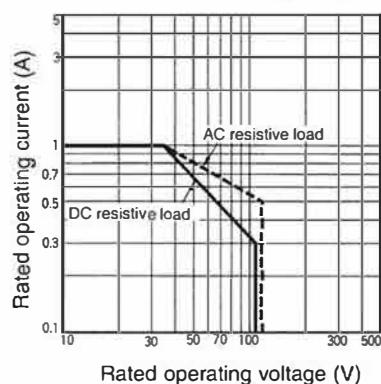
UL Recognized (File No. E41515) / CSA Certified (File No. LR31928) - - Ambient Temp. = 40°C

Type	Contact form	Coil rating	Contact ratings
G6H-2(F) G6HU-2 G6HK-2	DPDT	1.50 to 48 VDC	2 A, 30 VDC 0.30 A, 110 VDC 0.50 A, 125 VAC

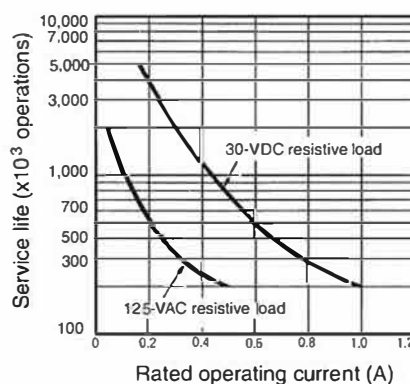
- Note:** 1. The rated values approved by each of the safety standards (e.g., UL, CSA, TUV) may be different from the performance characteristics individually defined in this catalog.
 2. In the interest of product improvement, specifications are subject to change.

■ Characteristic Data

Maximum Switching Capacity

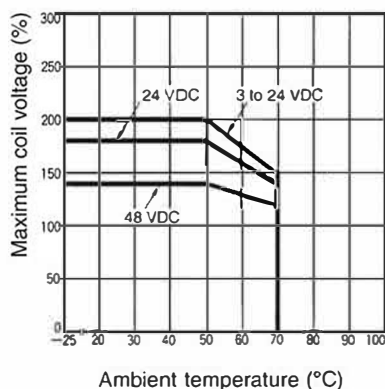


Electrical Service Life

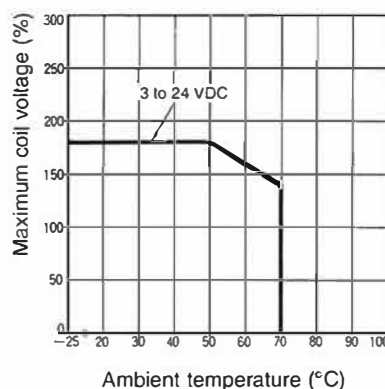


Ambient Temperature vs. Maximum Coil Voltage

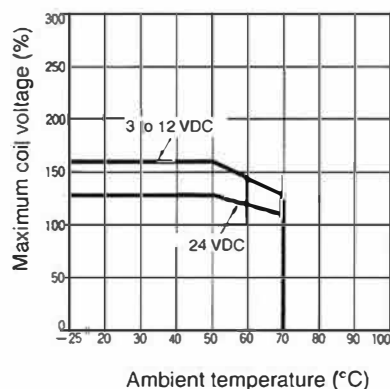
Non-latching
(G6H-2)



Single Coil Latching
(G6HU-2)



Dual Coil Latching
(G6HK-2)

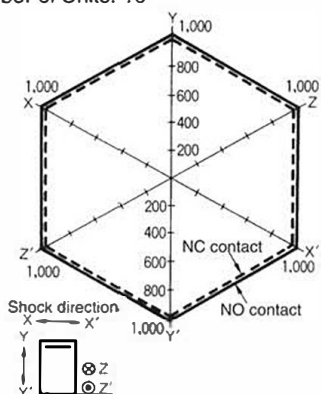


Note: The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

Malfunctioning Shock Resistance
(G6H-2)

5 VDC

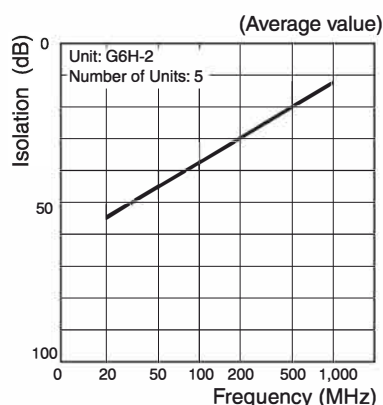
Number of Units: 10



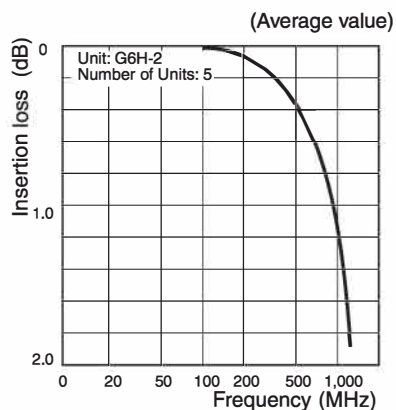
Condition: The Units were shocked at the rate of 500 m/s^2 three times each in the $\pm X$, $\pm Y$, and $\pm Z$ directions with and without voltage imposed on the Units until the Units malfunctioned.

High-frequency Characteristics (See notes 1 and 2.)

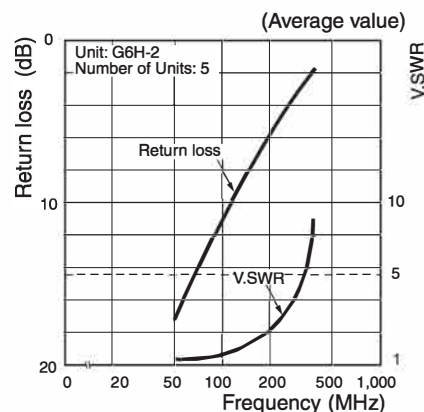
Frequency vs. Isolation



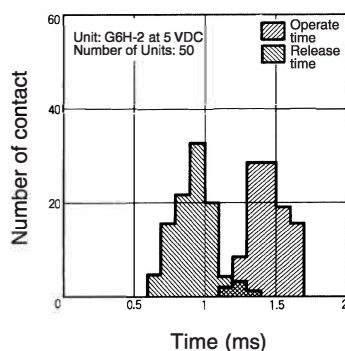
Frequency vs. Insertion Loss



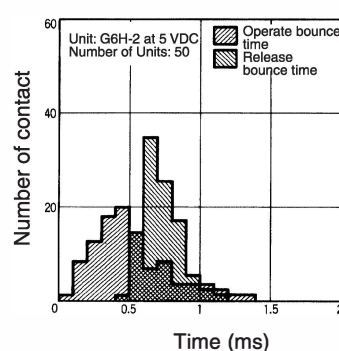
Frequency vs. Return Loss, V.SWR



Distribution of Operate and Release Time (See note 1.)





Distribution of Bounce Time (See note 1.)



Note: 1. The ambient temperature is 23°C.

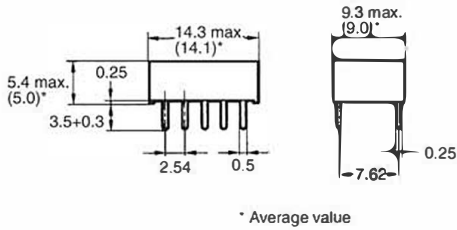
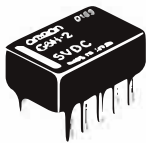
2. High-frequency characteristics depend on the PCB to which the Relay is mounted. Always check these characteristics, including endurance, in the actual machine before use.

Dimensions

- Note: 1. All units are in millimeters unless otherwise indicated.
2. Orientation marks are indicated as follows:  

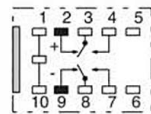
■ Non-latching

G6H-2



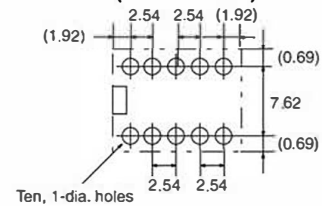
Terminal Arrangement/
Internal Connections

(Bottom View)

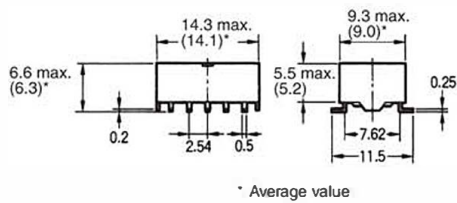
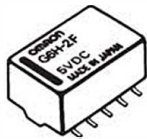


Mounting Holes
Tolerance: ± 0.1

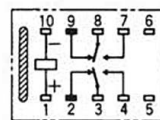
(Bottom View)



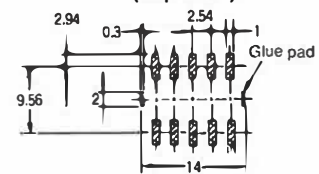
G6H-2F



(Top View)

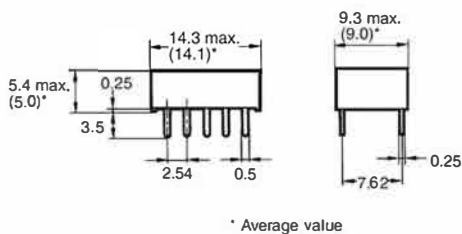
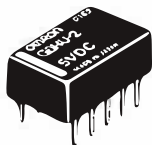


(Top View)

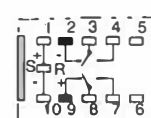


■ Latching

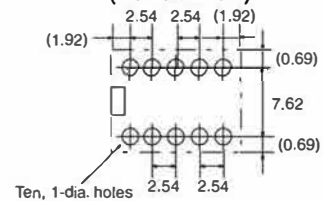
G6HU-2



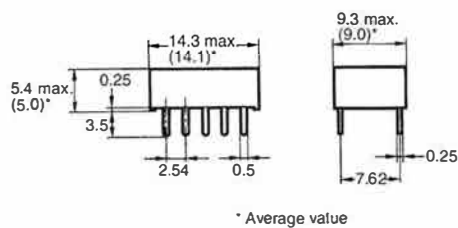
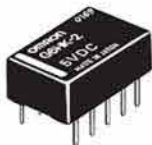
(Bottom View)



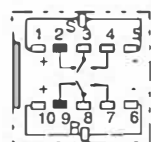
(Bottom View)



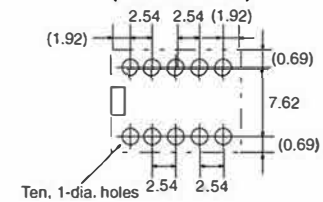
G6HK-2



(Bottom View)



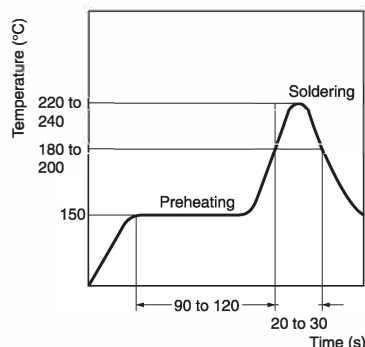
(Bottom View)



Hints on correct use

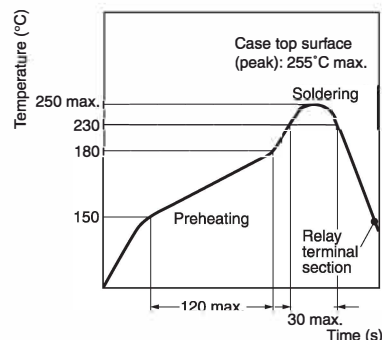
Example of Recommended Soldering Conditions for the G6H-2F (Surface Mount Relays)

(1) IRS Method (Mounting Solder: Lead)



Note: The temperature profile indicates the temperature on the PCB.

(2) IRS Method (Mounting Solder: Lead-free)



Note: The temperature profile indicates the temperature on the relay terminal.

Approved Standards

The approved rated values for international standards differ from the performance characteristics of the individual models. Be sure to confirm that required standards are satisfied before actual use.

UL Recognized (File No. E41515) - -Ambient Temp. = 40°C

Model	No. of poles	Coil rating	Contact rating	No. of operations
G6H-2(F)	2	1.5 to 48 VDC	2 A, 30 VDC	6,000
			0.3 A, 110 VDC	
			0.5 A, 125 VAC	

CSA Certified (File NO. LR31928)

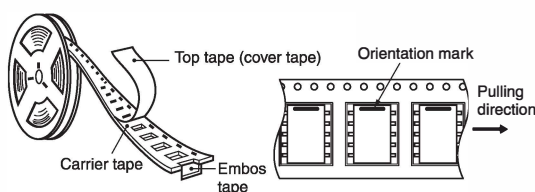
Model	No. of poles	Coil rating	Contact rating	No. of operations
G6H-2(F)	2	1.5 to 48 VDC	2 A, 30 VDC	6,000
			0.3 A, 110 VDC	
			0.5 A, 125 VAC	

Tape Packing (Surface Mounting Terminal Models)

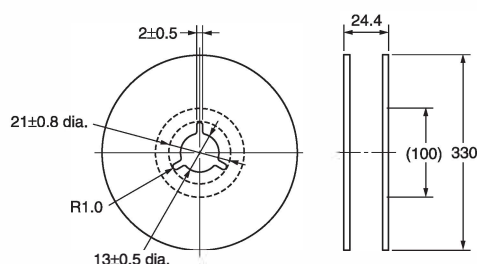
When ordering Relays in tape packing, add the prefix "-TR" to the model number otherwise the Relays in stick packing will be provided.

Relays per Reel: 500

Direction of Relay Insertion

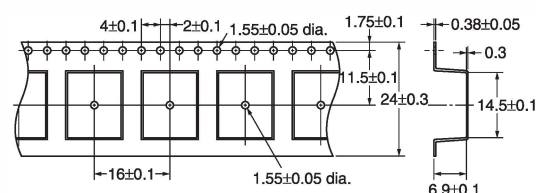


Reel Dimensions



Carrier Tape Dimensions

G6H-2F



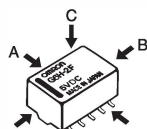
Precautions

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. We recommend using a latching relay (magnetic-holding relay) in this kind of circuit. If a single-side stable model must be used in this kind of circuit, we recommend using a fail-safe circuit design that provides protection against contact failure or coil burnout.

Claw Securing Force During Automatic Mounting

During automatic insertion of Relays, be sure to set the securing force of each claw to the following so that the Relay's characteristics will be maintained.



Direction A: 1.96 N max.
 Direction B: 4.90 N max.
 Direction C: 1.96 N max.

Relay Handling

Use the Relay as soon as possible after opening the moisture-proof package. If the Relay is left for a long time after opening the moisture-proof package, the appearance may deteriorate and seal failure may occur after the solder mounting process. To store the Relay after opening the moisture-proof package, place it into the original package and seal the package with adhesive tape.

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.