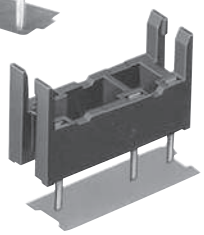
# G6D
PCB Power Relay

## Slim, Miniature Relay, Capable of Relaying Programmable Controller and Temperature Controller Outputs









- Reduced board space, ideal for high-density mounting (45%. (6.5 mm (W) × 17.5 mm (L) × 12.5 mm (H))
- Small, yet switches 5 A at 250 VAC/30 VDC.
- Allows 300,000 operations with a 2-A load at 250 VAC or 30 VDC.

**RoHS Compliant**

## ■Model Number Legend

G6D-□□-□-□
1 2 3 4

**1. Number of Poles**
1: 1-pole

**2. Contact Form**
A: SPST-NO (1a)

**3. Contact Material**
ASI: Silver alloy (cadmium-free)

**4. Contact surface**
AP: Au plated

## ■Ordering Information

| Enclosure rating | Contact form | Terminal shape | Model | Rated coil voltage | Minimun packing unit |
|---|---|---|---|---|---|
| Fully sealed | SPST-NO (1a) | PCB terminals | G6D-1A-ASI | 5 VDC | 25 pcs/tube |
| | | | | 12 VDC | |
| | | | | 24 VDC | |
| | | | G6D-1A-ASI-AP | 12 VDC | |
| | | | | 24 VDC | |

Note. When ordering, add the rated coil voltage to the model number.
Example: G6D-1A-ASI 5 VDC
Rated coil voltage

### ●Connecting Socket

| Applicable relay | Model | Minimun packing unit |
|---|---|---|
| G6D-1A-ASI | P6D-04P | 25 pcs |

## ■Ratings

### ●Coil

| Item / 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 | | | |
| 5 VDC | 40 | 125 | 70% max.* | 10% min. | 160% (at 23•C) | Approx. 200 |
| 12 VDC | 16.7 | 720 | | | | |
| 24 VDC | 8.3 | 2,880 | | | | |

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.
*2. The operating characteristics are measured at a coil temperature of 23°C.
*3. The “Max. voltage” is the maximum voltage that can be applied to the relay coil.
* The must operate voltage is 75% or less of the rated voltage if the relay is mounted upside down.

### ●Contacts

| Item / Load | Resistive load |
|---|---|
| Contact Type | Single |
| Contact material | Ag-Alloy (Cd free)<br>(Ag-alloy (Cd free) and Au plated) |
| Rated load | 5 A at 250 VAC<br>5 A at 30 VDC |
| Rated carry current | 5 A |
| Max. switching voltage | 250 VAC, 30 VDC |
| Max. switching current | 5 A |

* The content indicated in parentheses ( ) are for the G6D-1A-ASI-AP.

## ■Application Examples

- Ideal for output applications of control equipments.

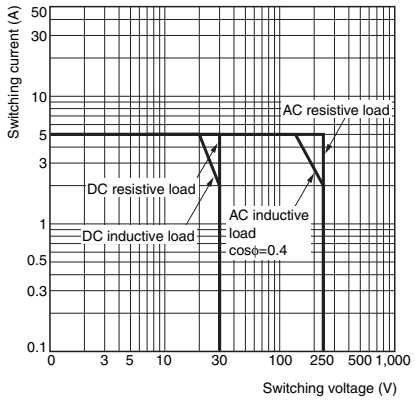
## ■Characteristics

| | | |
|---|---|---|
| Contact resistance *1 | | 100 mΩ max. |
| Operate time | | 10 ms max. |
| Release time | | 5 ms max. |
| Insulation resistance *2 | | 1,000 MΩ min. |
| Dielectric strength | Between coil and contacts | 3,000 VAC, 50/60 Hz for 1 min |
| | Between contacts of the same polarity | 750 VAC, 50/60 Hz for 1 min |
| Impulse withstand voltage (between coil and contacts) | | 6 kV (1.2 x 50 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 | 100 m/s² |
| Durability | Mechanical | 20,000,000 operations min. (at 18,000 operations/hr) |
| | Electrical | 70,000 operations min. (5 A at 250 VAC, resistive load)<br>70,000 operations min. (5 A at 30 VDC, resistive load)<br>300,000 operations min. (2 A at 250 VAC, resistive load)<br>30,000 operations min. (2 A at 30 VDC, resistive load)<br>(at 18,000 operations/hr) |
| Failure rate (P level) (reference value *3) | | 10 mA at 5 VDC (1 mA at 5 VDC) *4 |
| Ambient operating temperature | | -25•C to 70•C (with no icing or condensation) |
| Ambient operating humidity | | 5% to 85% |
| Weight | | Approx. 3 g |

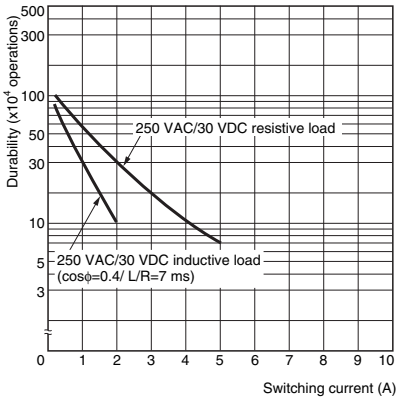
Note. The data given above are initial values.
*1. Measurement conditions: 5 VDC, 1 A, voltage drop method.
*2. Measurement conditions: The insulation resistance was measured with a 500 VDC megohmmeter at the same locations as the dielectric strength was measured.
*3. This value was measured at a switching frequency of 120 operations/min.
*4. The values indicated in parentheses ( ) are for the G6D-1A-ASI-AP.

# ■Engineering Data

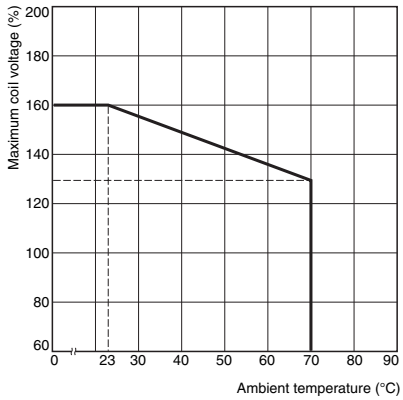
## ●Maximum Switching Capacity




## ●Durability



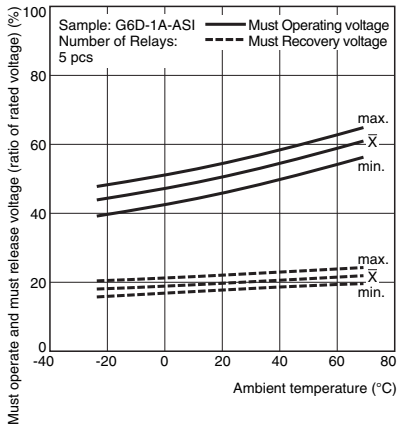

## ●Ambient Temperature vs. Maximum Coil Voltage



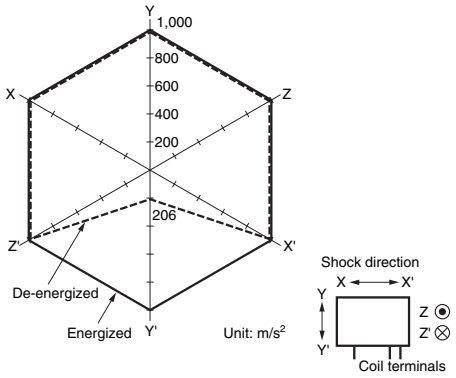

Note. The maximum coil voltage is the maximum voltage that can be applied to the relay coil.

## ●Ambient Temperature vs. Must Operate and Must Release Voltages

### G6D-1A-ASI (-AP)



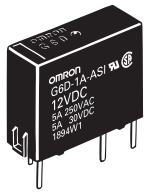

## ●Shock Malfunction G6D-1A-ASI (-AP)

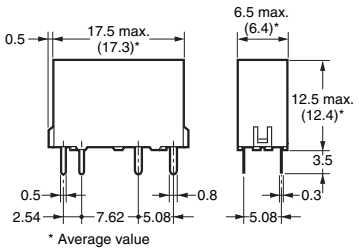



Sample: G6D-1A-ASI 24 VDC
Number of Relays: 5 pcs
Test conditions: Impose a shock in the ±X, ±Y, and ±Z directions three times each with the Relay energized to check the shock values that cause the Relay to malfunction.

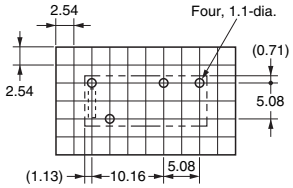
# ■Dimensions

### G6D-1A-ASI (-AP)

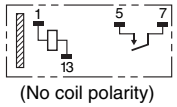



**PCB Mounting Holes**
(Bottom View)



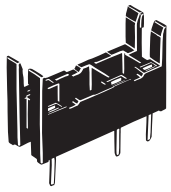

**Terminal Arrangement/ Internal Connections**
(Bottom View)

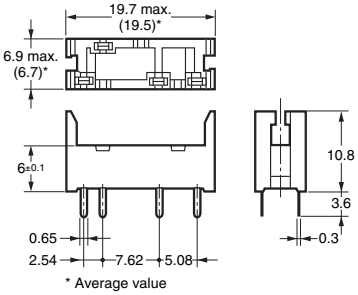



(No coil polarity)

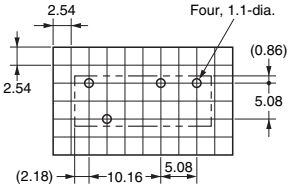
Note: Orientation marks are indicated as follows: ⬚ ▨

### Socket P6D-04P






**PCB Mounting Holes**
(Bottom View)



## ■Approved Standards

●The rated values approved by each of the safety standards may be different from the performance characteristics individually defined in this datasheet.

**UL Recognized** (File No. E41515)

| Model | Number of poles | Coil ratings | Contact ratings | Number of test operations |
|---|---|---|---|---|
| G6D-1A-ASI (-AP) | 1 | 5 to 24 VDC | 5 A, 250 VAC 40°C<br>5 A, 30 VDC 40°C | 6,000 |

**CSA Certified** (File No. LR31928)

| Model | Number of poles | Coil ratings | Contact ratings | Number of test operations |
|---|---|---|---|---|
| G6D-1A-ASI (-AP) | 1 | 5 to 24 VDC | 5 A, 250 VAC (Resistive) 40°C<br>5 A, 30 VDC (Resistive) 40°C | 6,000 |

**EN/TÜV Certified** (Registration No. R50167084)

| Model | Number of poles | Coil ratings | Contact ratings | Number of test operations |
|---|---|---|---|---|
| G6D-1A-ASI (-AP) | 1 | 5, 12, 24 VDC | 5 A, 250 VAC (cosϕ=1.0) 70°C<br>5 A, 30 VDC (0 ms) 40°C | 70,000 |

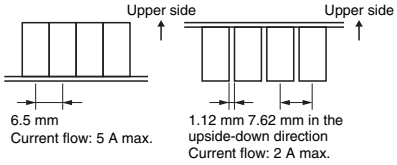
## ■Precautions

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

### Correct Use

**●Mounting**

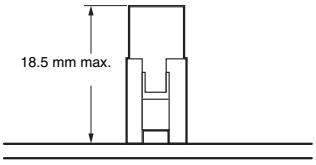
- More than two relays can be closely mounted right side up as shown in the following illustration.




Note. The space between each relay required for heat radiation may vary with operating conditions. Contact your OMRON representative for details.

- Use Surge Killer Diode when switching a DC inductive load in micro load (about 10 to 100 mA). (Carbon deposition may decrease the contact reliability.)

**●Socket Mounting Height**




**●Mounting to a P6D**

- The P6D is flux-resistive. Do not wash the P6D with water.
- Dismount the relay from the socket before soldering the socket to a PCB.

• Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
• Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

**Note: Do not use this document to operate the Unit.**

**OMRON Corporation**
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