

# PCB Relay G6DS

## Slim, Miniature Relay with 1-pole 5-A Switching Capability

- Slim 5-mm width and miniature size.(20.3 x 5.08 x 12.5 mm max.)
- Ideal for high-density mounting.
- Delivers high switching performance (5 A at 250 VAC/30 VDC) and enables various loads all in a slim, miniature size.
- Highly sensitive coil type (120 mW) also available.
- Satisfies EN 61131-2 (PLC) and EN 61010 (measuring instrument/control equipment) reinforced insulation requirement.
- P6DS-04P Socket allows for easy installation and removal of Relays.
- RoHS compliant.



## Model Number Structure

### Model Number Legend

G6DS -   -  DC   
           1      2      3      4

**1. Number of Poles**

1: 1 pole

**2. Contact Form**

A: SPST-NO

**3. Classification**

None: Standard

H: High-sensitivity

**4. Rated Coil Voltage**

5, 12, 24

## Applications

Applications include: PLCs, I/O modules, I/O ports, Timers, Temperature Controllers, and Control Boards.

## Ordering Information

Classification	Contact form	Enclosure ratings	Model
Standard	SPST-NO	Fully sealed	G6DS-1A
High-sensitivity			G6DS-1A-H

**Note:** When ordering, add the rated coil voltage to the model number.

Example: G6DS-1A DC12

Rated coil voltage

### Accessories (Order Separately)

Connecting Socket	P6DS-04P
Relay Pullout Tool	R99-01 for G6DS

## ■ Coil Ratings

Item	Standard			High-sensitivity		
Rated voltage	5 VDC	12 VDC	24 VDC	5 VDC	12 VDC	24 VDC
Rated current	36 mA	15 mA	7.5 mA	24 mA	10 mA	5 mA
Coil resistance	139 Ω	800 Ω	3,200 Ω	208 Ω	1,200 Ω	4,800 Ω
Must operate voltage	70% max. of rated voltage					
Must release voltage	5% min. of rated voltage					
Max. voltage	160% of rated voltage (at 23°C)					
Power consumption	Approx. 180 mW			Approx. 120 mW		

- Note:** 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.  
 2. "Max. voltage" refers to voltage that can be applied to the relay coil momentarily. Do not apply "Max. voltage" continuously.

## ■ Contact Ratings

Item	Resistive load (cos φ=1)	Inductive load (cos φ=0.4, L/R=7 ms)
Rated load	5 A at 250 VAC, 5 A at 30 VDC	2 A at 250 VAC, 2 A at 30 VDC
Rated carry current	5 A	
Max. switching voltage	250 VAC, 30 VDC	
Max. switching current	5 A	
Max. switching power	1,250 VA, 150 W	
Failure rate (reference value) (See note.)	5 mA at 24 VDC	

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

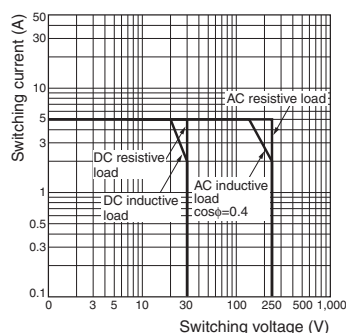
## ■ Characteristics

Contact resistance (See note 1.)	100 mΩ max.	
Operate time	10 ms max.	
Release time	5 ms max.	
Insulation resistance (See note 2.)	1,000 MΩ min. (at 500 VDC)	
Dielectric strength	3,000 VAC, 50/60 Hz for 1 min. between coil and contacts 750 VAC, 50/60 Hz for 1 min. between contacts of same polarity	
Impulse withstand voltage	6,000 V (1.2 × 50 μs) between coil and contacts	
Vibration resistance	Destruction	10 to 55 to 10 Hz, 1.5-mm double amplitude
	Malfunction	10 to 55 to 10 Hz, 1.5-mm double amplitude
Shock resistance	Destruction	1,000 m/s <sup>2</sup>
	Malfunction	150 m/s <sup>2</sup> (standard type); 130 m/s <sup>2</sup> (high-sensitivity type)
Endurance	Mechanical	20,000,000 operations min. (at 18,000 operations/hr)
	Electrical	100,000 operations min. for standard type; 80,000 operations min. for high sensitivity type (1,800 operations/hr @ 23°C)
Ambient temperature	Operating: -40°C to 85°C (with no icing or condensation)	
Ambient humidity	Operating: 5% to 85%	
Weight	Approx. 2.3 g	

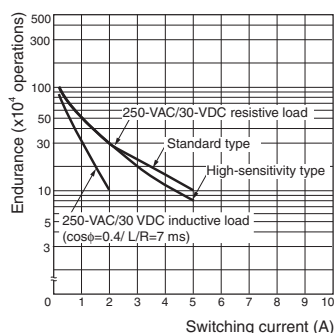
- Note:** 1. The data shown above are initial values.  
 2. The contact resistance is derived using voltage drop method with 1 A applied at 5 VDC.  
 3. The insulation resistance is possible between coil and contacts and between contacts of the same polarity at 500 VDC.

# Engineering Data

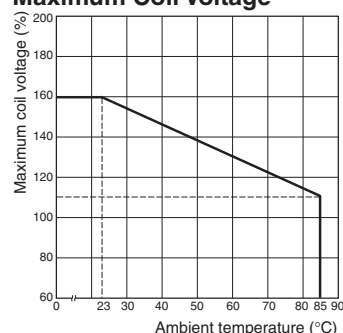
## Maximum Switching Power



## Endurance

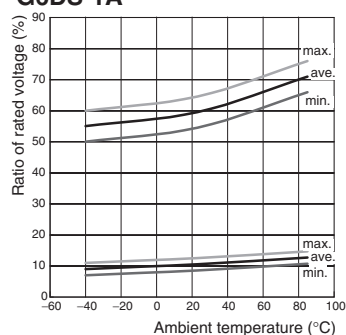


## Ambient Temperature vs. Maximum Coil Voltage

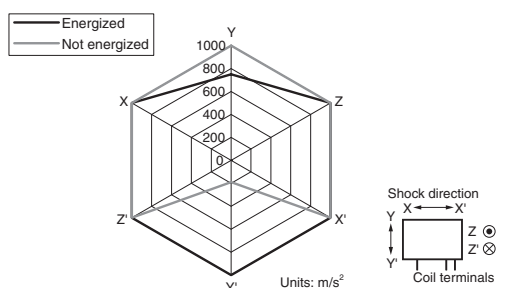


**Note:** The maximum coil voltage is the maximum voltage that can be applied to the relay coil.

## Ambient Temperature vs. Operating/Recovery Voltage G6DS-1A



## Malfunctioning Shock G6DS-1A



Measurement conditions: Impose a shock in the  $\pm X$ ,  $\pm Y$ , and  $\pm Z$  directions three times each with the Relay energized to check the shock values that cause the Relay to malfunction.

## Approved Standards

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

**UL Recognized (File No. E41515) / CSA Certified (File No. LR31928) - - Ambient Temp. = 95 $^{\circ}\text{C}$**

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
G6DS-1A	SPST-NO	5 to 24 VDC	5 A at 250 VAC (Resistive)	100,000
			5 A at 30 VDC (Resistive)	
G6DS-1A-H			5 A at 250 VAC (Resistive)	80,000
			5 A at 30 VDC (Resistive)	

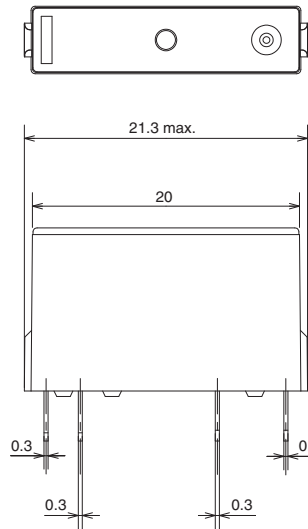
**VDE (EN61810-1) (License No. B161)**

Model	Contact form	Coil ratings	Contact ratings
G6DS-1A	SPST-NO	5, 12, 24 VDC	5 A, 250 VAC ( $\cos\phi=1.0$ ) 5 A, 30 VDC (0 ms)
G6DS-1A-H			5 A, 250 VAC ( $\cos\phi=1.0$ ) 5 A, 30 VDC (0 ms)

# Dimensions

Note: All units are in millimeters unless otherwise indicated.

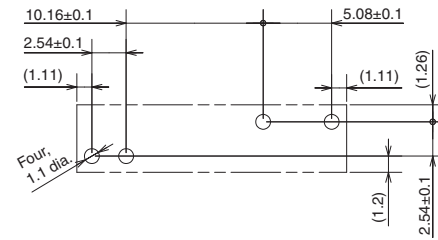
## G6DS-1A/1A-H



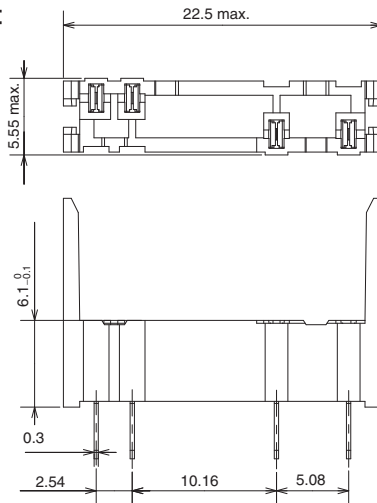
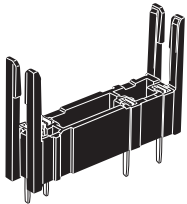
Terminal Arrangement/  
Internal Connections  
(Bottom View)



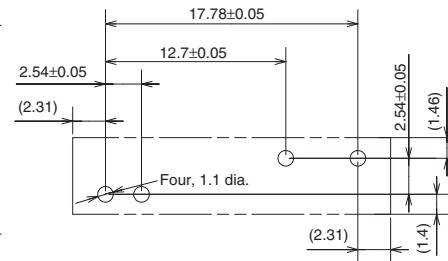
Mounting Holes  
(Bottom View)



## Connecting Socket P6DS-04P



Mounting Holes  
(Bottom View)



## Relay Pullout Tool

### R99-01 for G6DS

The R99-01 for G6DS is a convenient tool to remove a G6DS Relay from a P6DS-04 Socket when sockets are mounted very closely together.

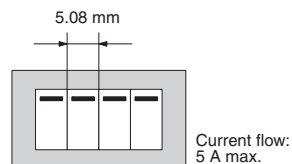
## Packing

### Stick packing

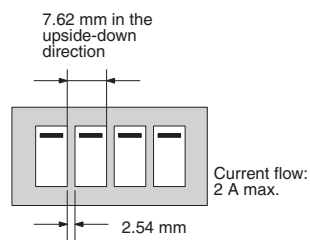
- 1 stick = 25 Relays
- 1 packing case = 20 sticks (500 Relays)
- 1 carton box = 6 packing cases (3,000 Relays)

## Precautions

More than two relays can be closely mounted right side up as shown in the following illustration. (This applies to the P6DS as well.)

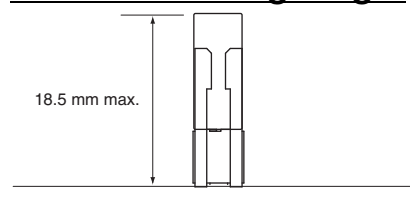


More than two relays can be closely mounted upside down as shown in the following illustration.



**Note:** The space between relays required for heat radiation may vary with operating conditions. Contact your OMRON representative for details.

## Socket Mounting Height



When mounting the relay, insert it into the socket as vertically as possible so that the relay terminals contact securely with the contact pins on the socket.

The P6DS is flux-resistive. Do not wash the P6DS with water. Remove the relay from the socket before soldering the socket to a PCB.

## Disclaimer:

All technical performance data applies to the product as such; specific conditions of individual applications are not considered. Always check the suitability of the product for your intended purpose. OMRON does not assume any responsibility or liability for noncompliance herein, and we recommend prior technical clarification for applications where requirements, loading, or ambient conditions differ from those applying to general electric applications. Any responsibility for the application of the product remains with the customer alone. THIS COMPONENT CAN NOT BE USED FOR AUTOMOTIVE APPLICATIONS.

MEMO

A large grid of dashed lines for writing notes, consisting of 20 columns and 30 rows of small squares.

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To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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