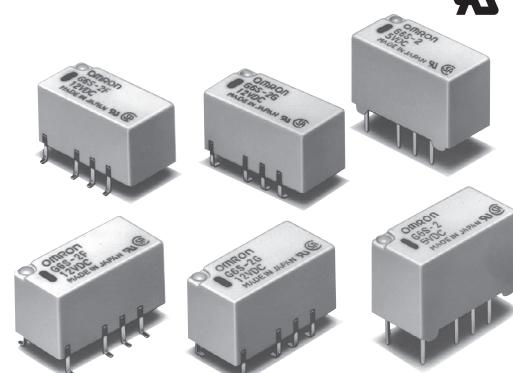


### Surface-mounting, double-pole signal switching Relay, with terminals jutting out from both sides of the case



- Long terminals for ideal for soldering and mounting reliability. (Surface mounting terminal models)
- Space-saving inside-L terminal. (Surface mounting terminal models)
- Unique terminal construction allowing the terminal temperature to rise easily, ideal for soldering reliability. (Surface mounting terminal models)
- High dielectric strength (2,000 VAC) and impulse withstand voltage between coil and contacts (2,500 V, 2 × 10 µs: Telcordia requirements).
- High sensitivity with 140 mW rated power consumption.
- Ultra-miniature at 9.4 mm (H) × 7.5 mm (W) × 15 mm (L).
- Applicable to IRS using heat-resistant material.
- Standard model conforms to UL/CSA standards.
- Model with PCB terminals (G6S□-2) is added to this series.
- EN60950 certified type is available. (-Y type)



**RoHS Compliant**

G  
6  
S

### ■Model Number Legend

G6S□-□□-□  
1 2 3 4

#### 1. Relay Function

None : Single-side stable

U : Single-winding latching

K : Double-winding latching

#### 2. Number of poles/ Contact form

2: 2-pole/DPDT (2c)

#### 3. Terminal Shape

None : PCB terminals

F : Outside-L surface mounting terminals

G : Inside-L surface mounting terminals

#### 4. Approved Standards

None : UL/CSA

Y : EN60950 certified

### ■Application Examples

- Telecommunication equipment
- Measurement devices
- Office automation machines
- Audio-visual products.

### ■Ordering Information

#### ●Surface mounting terminal standard models (UL, CSA certified)

Enclosure rating	Relay Function	Single-side stable		Single-winding latching		Double-winding latching		Minimum packing unit	Minimum ordering unit (tape packing)
		Contact form	Model	Rated coil voltage	Model	Rated coil voltage	Model		
Fully sealed	DPDT (2c)	G6S-2F G6S-2G	3 VDC	G6SU-2F G6SU-2G	3 VDC	G6SK-2F G6SK-2G	3 VDC	50 pcs/tube (400 pcs/reel)	800 pcs/ 2 reels
			4.5 VDC		4.5 VDC		4.5 VDC		
			5 VDC		5 VDC		5 VDC		
			12 VDC		12 VDC		12 VDC		
			24 VDC		24 VDC		24 VDC		

#### ●Surface mounting terminal standard models (EN60950 certified)

Enclosure rating	Relay Function	Single-side stable		Minimum packing unit	Minimum ordering unit (tape packing)
		Contact form	Model	Rated coil voltage	
Fully sealed	DPDT (2c)	G6S-2F-Y G6S-2G-Y	5 VDC	50 pcs/tube (400 pcs/reel)	800 pcs/ 2 reels
			12 VDC		
			24 VDC		

Note 1. When ordering, add the rated coil voltage to the model number.

Example: G6S-2F 3 VDC

— Rated coil voltage

Note 2. When ordering tape packing, add -TR" to the model number.

Be sure since -TR" is not part of the relay model number, it is not marked on the relay case.

## ●PCB Terminal Standard Models (UL, CSA certified)

Enclosure rating	Relay Function	Single-side stable		Single-winding latching		Double-winding latching		Minimum packing unit
		Contact form	Model	Rated coil voltage	Model	Rated coil voltage	Model	Rated coil voltage
Fully sealed	DPDT (2c)	G6S-2	G6SU-2	3 VDC	G6SU-2	3 VDC	G6SK-2	3 VDC
				4.5 VDC		4.5 VDC		4.5 VDC
				5 VDC		5 VDC		5 VDC
				12 VDC		12 VDC		12 VDC
				24 VDC		24 VDC		24 VDC

## ●PCB Terminal Standard Models (EN60950 certified)

Enclosure rating	Relay Function	Single-side stable		Minimum packing unit	
		Contact form	Model	Rated coil voltage	
Fully sealed	DPDT (2c)	G6S-2-Y	5 VDC	50 pcs/tube	Note: When ordering, add the rated coil voltage to the model number. Example: G6S-2 3 VDC
			12 VDC		
			24 VDC		

Note: When ordering, add the rated coil voltage to the model number.  
Example: G6S-2 3 VDC

Rated coil voltage

## ■ Ratings

## ● Single-side Stable Model (G6S-2, G6S-2F, G6S-2G)

Item	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
			% of rated voltage			
3 VDC	46.7	64.3	75% max.	10% min.	200% (at 23°C)	Approx. 140
	31.0	145				
	28.1	178				
	11.7	1,028				
	8.3	2,880			170% (at 23°C)	Approx. 200

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

Item	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	
Rated carry current	2 A	
Max. switching voltage	250 VAC, 220 VDC	
Max. switching current	2 A	

## ● Single-winding Latching Model (G6SU-2, G6SU-2F, G6SU-2G)

Item	Rated current (mA)	Coil resistance (Ω)	Must set voltage (V)	Must reset voltage (V)	Max. voltage (V)	Power consumption (mW)
			% of rated voltage			
3 VDC	33.3	90	75% max.	75% max.	180% (at 23°C)	Approx. 100
	22.2	203				
	20	250				
	8.3	1,440				
	6.3	1,152			140% (at 23°C)	Approx. 150

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.

## ● Double-winding Latching Model (G6SK-2, G6SK-2F, G6SK-2G)

Item	Rated current (mA)	Coil resistance (Ω)	Must set voltage (V)	Must reset voltage (V)	Max. voltage (V)	Power consumption (mW)
			% of rated voltage			
3 VDC	66.6	45	75% max.	75% max.	170% (at 23°C)	Approx. 200
	44.4	101				
	40	125				
	16.7	720				
	12.5	1,920			140% (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.

## ● EN60950 certified Model (G6S-2F-Y, G6S-2G-Y, G6S-2-Y)

Item	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	75% max.	10% min.	170% (at 23°C)	Approx. 200
	16.7	720				
	9.6	2,504			140% (at 23°C)	Approx. 230

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.

## ■ Characteristics

Item	Relay Function	Single-side Stable G6S-2, G6S-2F, G6S-2G	Single-winding Latching G6SU-2, G6SU-2F, G6SU-2G	Double-winding Latching G6SK-2, G6SK-2F, G6SK-2G	EN60950 certified G6S-2F-Y, G6S-2G-Y, G6S-2-Y	
Contact resistance *1	75 mΩ max.					
Operate (set) time	4 ms max.					
Release (reset) time	4 ms max.					
Min. set/reset pulse width	—		10 ms		—	
Insulation resistance *2	1,000 MΩ min. (at 500 VDC)					
Dielectric strength	Between coil and contacts	2,000 VAC, 50/60 Hz for 1 min		1,000 VAC, 50/60 Hz for 1 min	2,000 VAC, 50/60 Hz for 1 min	
	Between contacts of different polarity	1,500 VAC, 50/60 Hz for 1 min				
	Between contacts of the same polarity	1,500 VAC, 50/60 Hz for 1 min				
Impulse withstand voltage	Between coil and contacts	2,500 V (2 × 10 µs); 1,500 V (10 × 160 µs)		1,500 V (10 × 160 µs)	2,500 V (2 × 10 µs); 1,500 V (10 × 160 µs)	
	Between contacts of different polarity	2,500 V (2 × 10 µs); 1,500 V (10 × 160 µs)				
	Between contacts of the same polarity	1,500 V (10 × 160 µs)				
Vibration resistance	Destruction	10 to 55 to 10 Hz, 2.5 mm single amplitude (5 mm double amplitude)				
	Malfunction	10 to 55 to 10 Hz, 1.65 mm single amplitude (3.3 mm double amplitude)				
Shock resistance	Destruction	1,000 m/s <sup>2</sup>				
	Malfunction	750 m/s <sup>2</sup>				
Durability	Mechanical	100,000,000 operations min. (at 36,000 operations/hr)				
	Electrical	100,000 operations min. for AC (at 1,800 operations/h with rated load) 100,000 operations min. for DC (at 1,200 operations/h with rated load)				
Failure rate (P level) (reference value) *3	10 µA at 10 m VDC					
Ambient operating temperature	-40°C to 85°C (with no icing or condensation), and -40°C to 70°C (with no icing or condensation) only for double-winding latching 24 VDC type and EN60950 standard approved 24 VDC type					
Ambient operating humidity	5% to 85%					
Weight	Approx. 2 g					

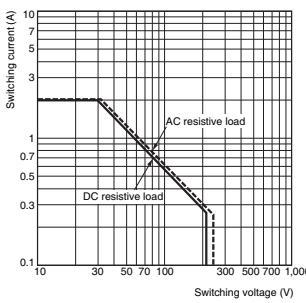
Note: The above values are initial values.

- \*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 (except between the set and reset coil).
- \*3. This value was measured at a switching frequency of 120 operations/min. This value may vary, depending on switching frequency, operating conditions, expected reliability level of the relay, etc. It is always recommended to double-check relay suitability under actual load conditions.

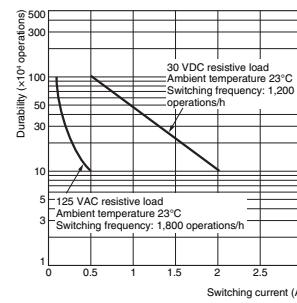
G  
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## ■ Engineering Data

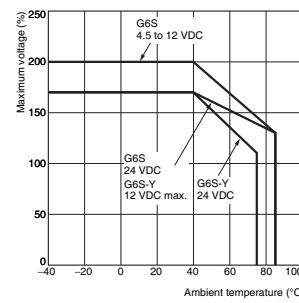
### ● Maximum Switching Capacity



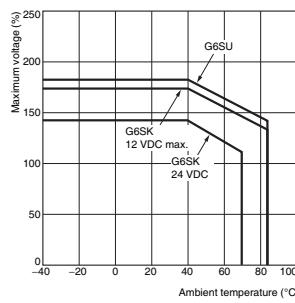
### ● Durability G6S-2F(G)



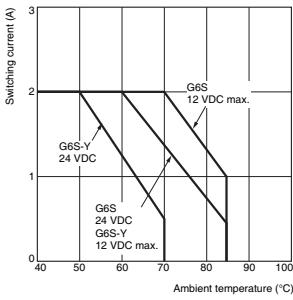
### ● Ambient Temperature vs. Maximum Voltage (Single-side Stable)



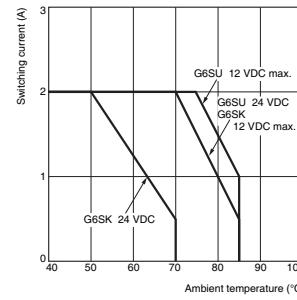
### ● Ambient Temperature vs. Maximum Voltage (Latching)



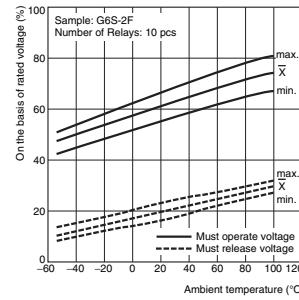
### ● Ambient Temperature vs. Switching Current (Single-side Stable)



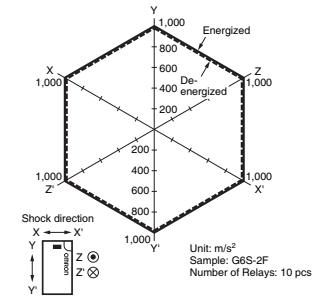
### ● Ambient Temperature vs. Switching Current (Latching)



### ● Ambient Temperature vs. Must Operate or Must Release Voltage G6S-2F(G)

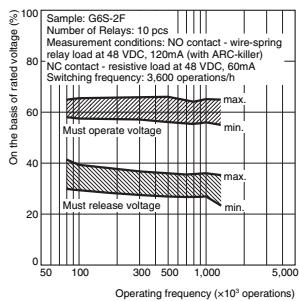


### ● Shock Malfunction G6S-2F(G)

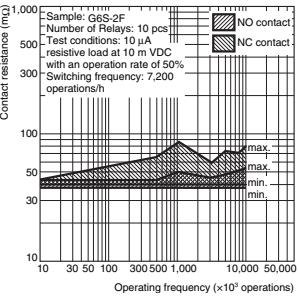


Conditions: Shock is applied in  $\pm X$ ,  $\pm Y$ , and  $\pm Z$  directions three times each with and without energizing the Relays to check the number of contact malfunctions.

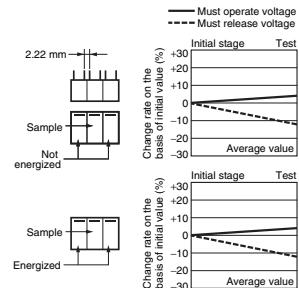
● **Electrical Endurance (with Must Operate and Must Release Voltage) \*1**  
G6S-2F(G)



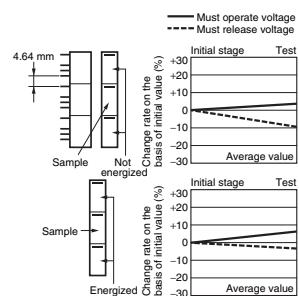
● **Contact Reliability Test (Contact Resistance) \*1, \*2**  
G6S-2F(G)



● **Mutual Magnetic Interference**  
G6S-2F(G)

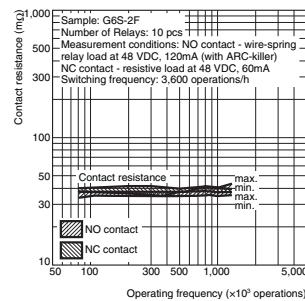


● **Mutual Magnetic Interference**  
G6S-2F(G)

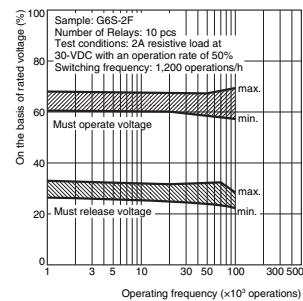


- The tests were conducted at an ambient temperature of 23°C.
- The contact resistance data are periodically measured reference values and are not values from each monitoring operation. Contact resistance values will vary according to the switching frequency and operating environment, so be sure to check operation under the actual operating conditions before use.
- High-frequency characteristics depend on the PCB to which the Relay is mounted. Always check these characteristics, including durability, in the actual machine before use.

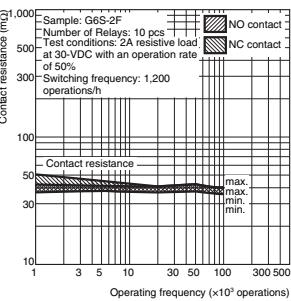
● **Electrical Endurance (Contact Resistance) \*1**  
G6S-2F(G)



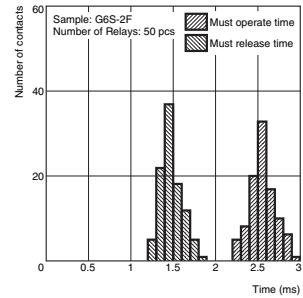
● **Electrical Endurance (with Must Operate and Must Release Voltage) \*1**  
G6S-2F(G)



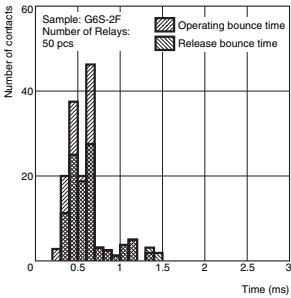
● **Electrical Endurance (Contact Resistance) \*1**  
G6S-2F(G)



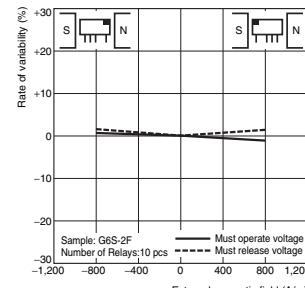
● **Must Operate and Must Release Time Distribution \*1**  
G6S-2F(G)



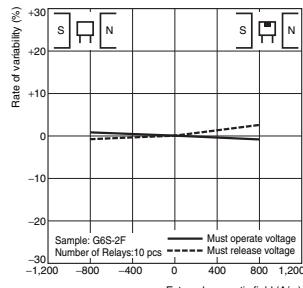
● **Distribution of Bounce Time \*1**  
G6S-2F(G)



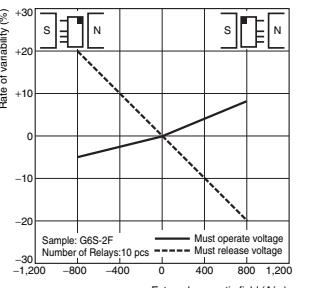
● **External Magnetic Interference**  
G6S-2F(G) (Average value)



(Average value)

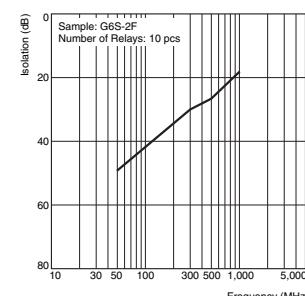


(Average value)

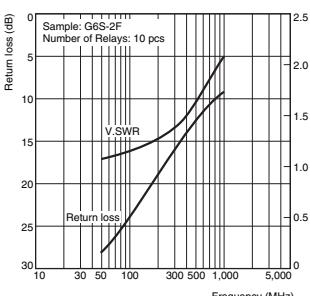
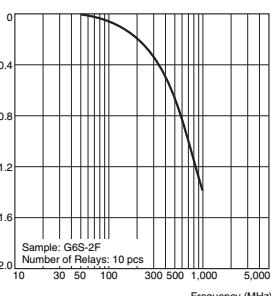


(Average value)

● **High-frequency Characteristics (Isolation) \*1, \*2**  
G6S-2F(G) (Average value (initial))



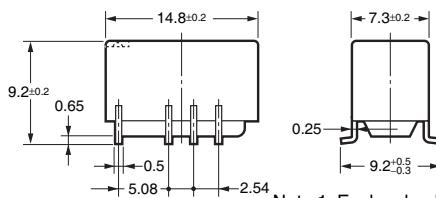
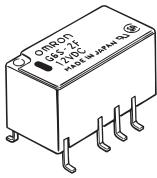
● **High-frequency Characteristics (Insertion Loss) \*1, \*3**  
G6S-2F(G) (Average value (initial))



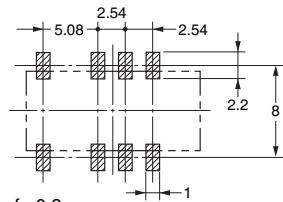
● **High-frequency Characteristics (Return Loss, V.SWR) \*1, \*3**  
G6S-2F(G) (Average value (initial))

## Dimensions

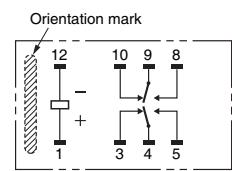
**Single-side Stable**  
**G6S-2F**  
**G6S-2F-Y**



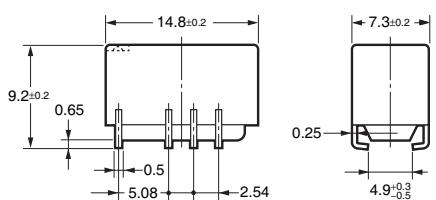
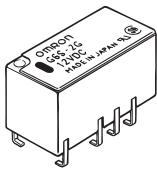
**Mounting Dimensions (Top View)**  
Tolerance:  $\pm 0.1$  mm



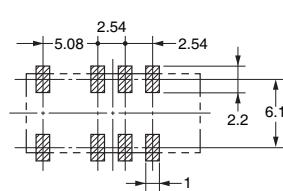
**Terminal Arrangement/**  
**Internal Connections**  
**(Top View)**



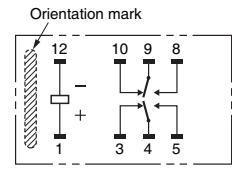
**G6S-2G**  
**G6S-2G-Y**



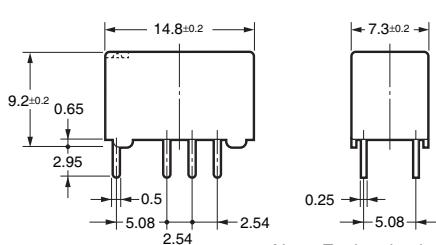
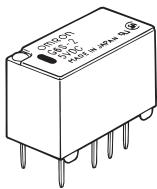
**Mounting Dimensions (Top View)**  
Tolerance:  $\pm 0.1$  mm



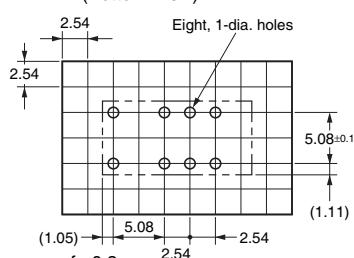
**Terminal Arrangement/**  
**Internal Connections**  
**(Top View)**



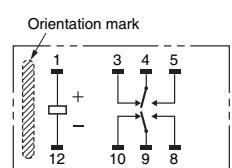
**G6S-2**  
**G6S-2-Y**



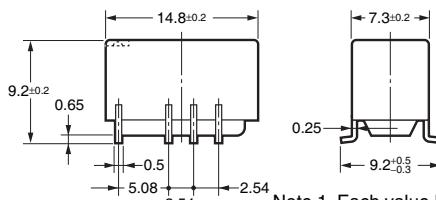
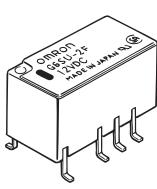
**PCB Mounting Holes**  
**(Bottom View)**



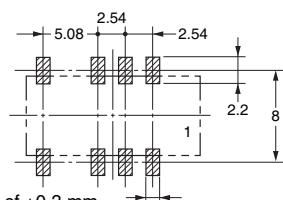
**Terminal Arrangement/**  
**Internal Connections**  
**(Bottom View)**



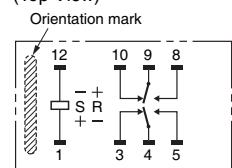
**Single-winding Latching**  
**G6SU-2F**



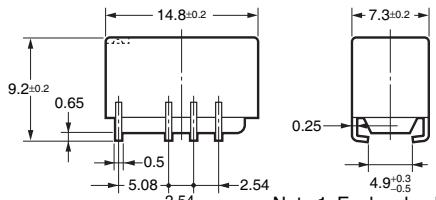
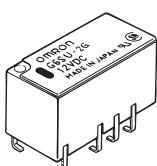
**Mounting Dimensions (Top View)**  
Tolerance:  $\pm 0.1$  mm



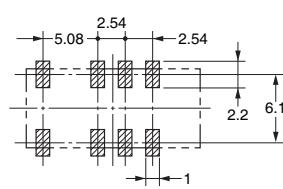
**Terminal Arrangement/**  
**Internal Connections**  
**(Top View)**



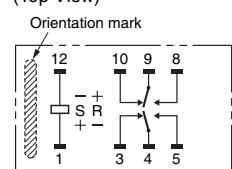
**G6SU-2G**



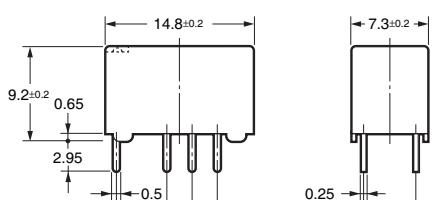
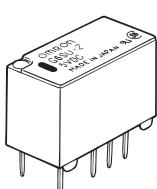
**Mounting Dimensions (Top View)**  
Tolerance:  $\pm 0.1$  mm



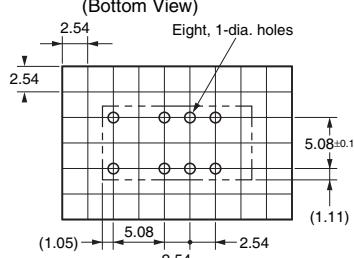
**Terminal Arrangement/**  
**Internal Connections**  
**(Top View)**



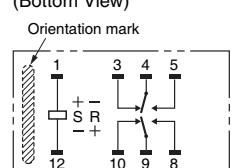
**G6SU-2**

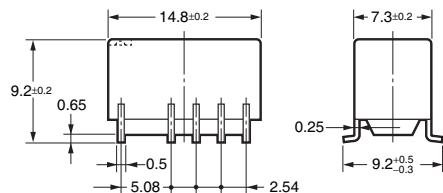
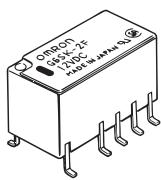
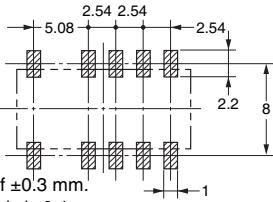
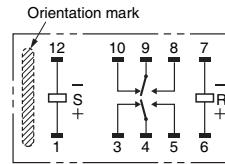
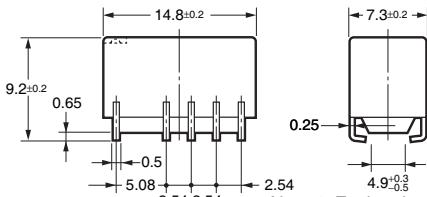
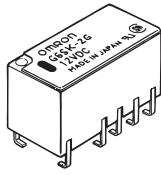
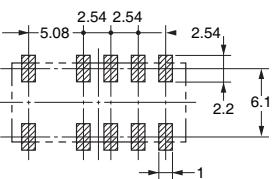
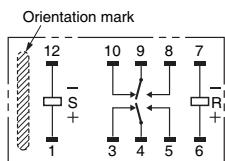
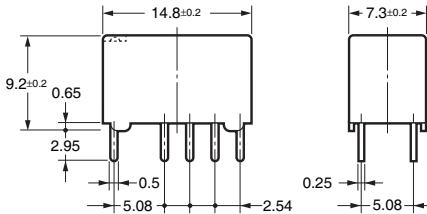
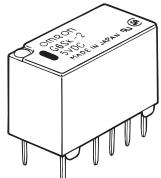
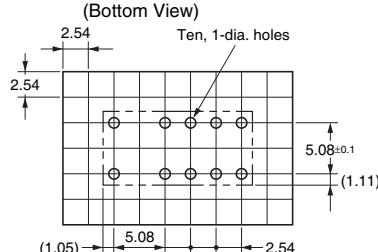
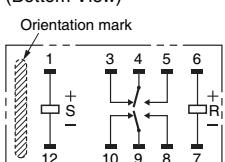


**PCB Mounting Holes**  
**(Bottom View)**



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

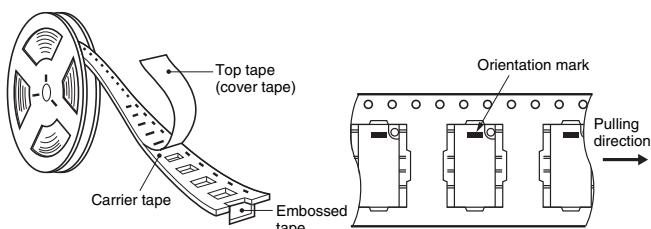
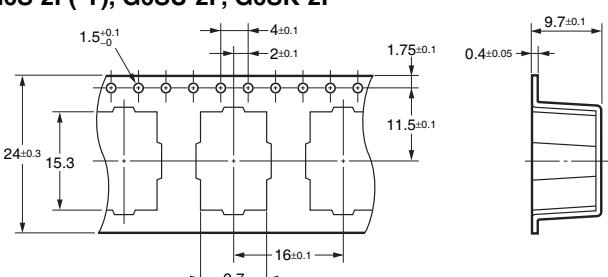
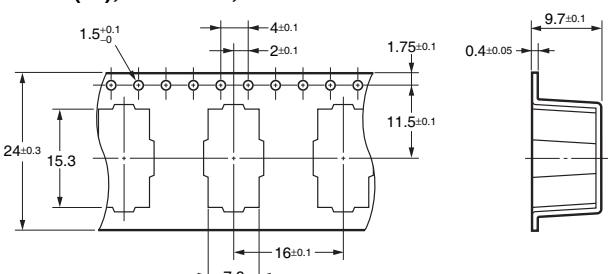
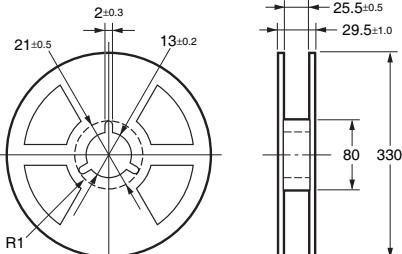


**Double-winding Latching**  
**G6SK-2F**

**Mounting Dimensions (Top View)**  
Tolerance:  $\pm 0.1$  mm

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

**G6SK-2G**

**Mounting Dimensions (Top View)**  
Tolerance:  $\pm 0.1$  mm

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

**G6SK-2**

**PCB Mounting Holes**  
**(Bottom View)**

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

**Tape Packing (Surface Mounting Terminal Models)**

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

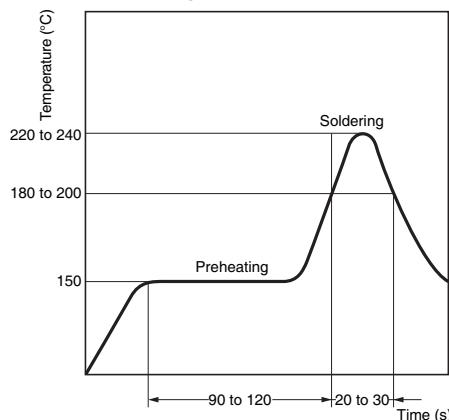
Relays per Reel: 400 pcs

Minimum ordering unit: 2 reels (800 pcs)

**(1) Direction of Relay Insertion**

**(3) Carrie Tape Dimensions**
**G6S-2F-(Y), G6SU-2F, G6SK-2F**

**G6S-2G-(Y), G6SU-2G, G6SK-2G**

**(2) Reel Dimensions**


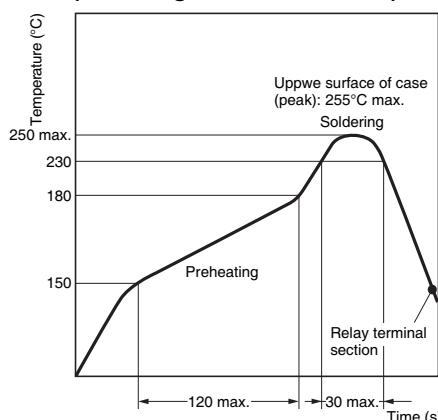
## ■Recommended Soldering Method

### (1) IRS Method (Mounting Solder: Lead)



(The temperature profile indicates the temperature on the circuit board surface.)

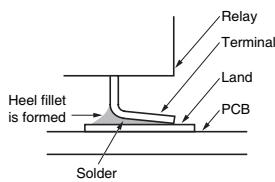
### (2) IRS Method (Mounting Solder: Lead-free)



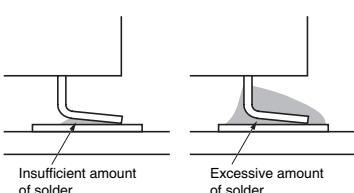
(The temperature profile indicates the temperature on the PCB.)

- The thickness of cream solder to be applied should be within a range between 150 and 200  $\mu\text{m}$  on OMRON's recommended PCB pattern.
- In order to perform correct soldering, it is recommended that the correct soldering conditions be maintained as shown below on the left side.

#### Correct Soldering



#### Incorrect Soldering



Visually check that the Relay is properly soldered.

## ■Approved Standards

UL recognized:  (File No. E41515)

CSA certified:  (File No. LR31928)

Contact form	Coil ratings	Contact ratings	Number of test operations
DPDT (2c)	2 to 48 VDC	3 A, 30 VDC at 40°C 0.3 A, 110 VDC at 40°C 0.5 A, 125 VAC at 40°C	6,000

### EN/IEC (File No. 8064)

Contact form	Isolation category	Voltage
DPDT (2c)	Supplementary Isolation	250 VAC

## ■Precautions

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

#### Correct Use

##### • Long-term Continuously ON Contacts

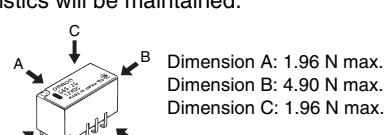
- Using the Relay in a circuit where the Relay will be ON continuously for long periods (without switching) can lead to unstable contacts because the heat generated by the coil itself will affect the insulation, causing a film to develop on the contact surfaces. We recommend using a latching relay (magnetic-holding 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.

##### • Relay Handling

- Use the Relay as soon as possible after opening the moistureproof package. If the Relay is left for a long time after opening the moisture-proof package, the appearance may suffer 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 sealed 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.

##### • 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.



- 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**

Electronic and Mechanical Components Company

**Contact: [www.omron.com/ecb](http://www.omron.com/ecb)**

**Cat. No. K093-E1-05  
0812(0207)(O)**



# OCEAN CHIPS

## Океан Электроники

### Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибутором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибутором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А