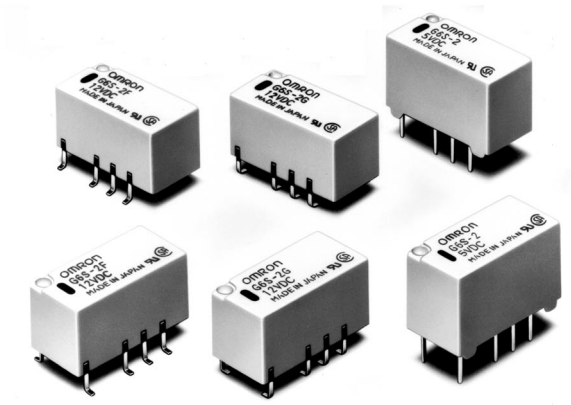
OMRON

PCB Relay

G6S

Surface Mounting DPDT Relay



- Long terminals ideal for soldering and mounting reliability.
- Space-saving inside-L terminal.
- High dielectric strength between coil and contacts (2,000 VAC), and between contacts of different polarity (1,500 VAC).
- High impulse withstand voltages between coil and contacts, and between contacts of different polarity (2,500 V, 2 × 10 μs: Bellcore requirements).
- Low power consumption (140 mW).
- Bifurcated crossbar contact (Au-clad) and fully sealed construction for high reliability.
- Applicable to IRS.
- High sealability after IRS.
- Ultra-miniature at 15 × 7.5 × 9.4 mm (L × W × H).
- Through-hole terminal is available.
- EN60950/EN41003 Supplementary Insulation-certified type is available.

Ordering Information

Classification				Single-side stable	Single-winding latching	Double-winding latching	Single-side stable EN60950/EN41003
DPDT	Fully sealed	Through-hole terminal		G6S-2	G6SU-2	G6SK-2	G6S-2-Y
		Surface mounting terminal	Inside-L	G6S-2G	G6SU-2G	G6SK-2G	G6S-2G-Y
			Outside-L	G6S-2F	G6SU-2F	G6SK-2F	G6S-2F-Y

Note: 1. When ordering, add the rated coil voltage to the model number.
Example: G6S-2F 12 VDC
Rated coil voltage

2. When ordering tape packing, add "-TR" to the model number.
Example: G6S-2F-TR 12 VDC
Tape packing

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

Model Number Legend:

G6S□-□□-□□ VDC
1 2 3 4 5

1. Relay Function
None: Single-side stable
U: Single-winding latching
K: Double-winding latching

2. Contact Form
2: DPDT

3. Terminal Shape
None: Through-hole terminal
G: Inside-L surface mounting terminal
F: Outside-L surface mounting terminal

4. Approved Standards
None: UL/CSA
Y: EN60950/EN41003

5. Rated Coil Voltage
4.5, 5, 12, 24 VDC

Specifications

■ Coil Ratings

Single-side Stable Type (G6S-2, G6S-2F, G6S-2G)

Rated voltage		3 VDC	4.5 VDC	5 VDC	12 VDC	24 VDC
Rated current		46.7 mA	31.0 mA	28.1 mA	11.7 mA	8.3 mA
Coil resistance		64.3 Ω	145 Ω	178 Ω	1,028 Ω	2,880 Ω
Must operate voltage		75% max. of rated voltage				
Must release voltage		10% min. of rated voltage				
Max. voltage		200% of rated voltage at 23°C, 130% at 85°C				170% of rated voltage at 23°C, 130% at 85°C
Power consumption		Approx. 140 mW				Approx. 200 mW

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.

Single-winding Latching Type (G6SU-2, G6SU-2F, G6SU-2G)

Rated voltage		3 VDC	4.5 VDC	5 VDC	12 VDC	24 VDC
Rated current		33.3 mA	22.2 mA	20 mA	8.3 mA	6.3 mA
Coil resistance		90 Ω	203 Ω	250 Ω	1,440 Ω	3,840 Ω
Coil inductance (H) (ref. value)	**Armature OFF**	0.08	0.27	0.36	2.12	5.80
	Armature ON	0.04	0.14	0.18	1.14	3.79
Must set voltage		75% max. of rated voltage				
Must reset voltage		75% max. of rated voltage				
Max. voltage		180% of rated voltage at 23°C, 140% at 85°C				
Power consumption		Approx. 100 mW				Approx. 150 mW

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.

Double-winding Latching Type (G6SK-2, G6SK-2F, G6SK-2G)

Rated voltage			3 VDC	4.5 VDC	5 VDC	12 VDC	24 VDC
Rated current			66.6 mA	44.4 mA	40 mA	16.7 mA	12.5 mA
Coil resistance			45 Ω	101 Ω	125 Ω	720 Ω	1,920 Ω
Coil inductance (H) (ref. value)	**Set**	**Armature OFF**	0.05	0.12	0.14	0.60	1.98
		Armature ON	0.03	0.074	0.088	0.41	1.23
	Reset	**Armature OFF**	0.03	0.082	0.098	0.46	1.34
		Armature ON	0.06	0.14	0.16	0.54	2.23
Must set voltage			75% max. of rated voltage				
Must reset voltage			75% max. of rated voltage				
Max. voltage			170% of rated voltage at 23°C, 130% at 85°C				140% of rated voltage at 23°C, 110% at 70°C
Power consumption			Approx. 200 mW				Approx. 300 mW

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.

Single-side Stable EN60950/EN41003 Approved Type (G6S-2-Y, G6S-2F-Y, G6S-2G-Y)

Rated voltage	5 VDC	12 VDC	24 VDC
Rated current	40 mA	16.7 mA	9.6 mA
Coil resistance	125 Ω	720 Ω	2,504 Ω
Must operate voltage	75% max. of rated voltage		
Must release voltage	10% min. of rated voltage		
Max. voltage	170% of rated voltage at 23°C, 130% at 85°C		170% of rated voltage at 23°C, 110% at 70°C
Power consumption	Approx. 200 mW		Approx. 230 mW

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.

■ Contact Ratings

Load	Resistive load (cosϕ = 1)
Rated load	0.5 A at 125 VAC; 2 A at 30 VDC
Contact material	Ag (Au-clad)
Rated carry current	2 A
Max. switching voltage	250 VAC, 220 VDC
Max. switching current	2 A
Max. switching capacity	62.5 VA, 60 W
Failure rate (reference value)	10 μA at 10 mVDC

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

■ Characteristics

Contact resistance	75 mΩ max.
Operate (set) time	4 ms max. (mean value: approx. 2.5 ms; latching type: approx. 2 ms)
Release (reset) time	4 ms max. (mean value: approx. 1.5 ms; latching type: approx. 2 ms)
Bounce time	Operate: Approx. 0.5 ms Release: Approx. 0.5 ms Set/Reset: Approx. 0.5 ms
Max. operating frequency	Mechanical: 36,000 operations/hr Electrical: 1,800 operations/hr (under rated load)
Insulation resistance	1,000 MΩ min. (at 500 VDC)
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min between coil and contacts 1,000 VAC, 50/60 Hz for 1 min between coil and contacts (double-winding latching) 1,500 VAC, 50/60 Hz for 1 min between contacts of different polarity 1,000 VAC, 50/60 Hz for 1 min between contacts of same polarity 500 VAC, 50/60 Hz for 1 min between set and reset coil (double-winding latching)
Impulse withstand voltage	2,500 V (2 x 10 μs) between coil and contacts 1,500 V (10 x 160 μs) between coil and contacts (double-winding latching) 2,500 V (2 x 10 μs) between contacts of different polarity 1,500 V (10 x 160 μs) between contacts of same polarity (conforms to FCC Part 68)
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^2 (approx. 100G) Malfunction: 750 m/s^2 (approx. 75G)
Endurance	Mechanical: 100,000,000 operations min. (at 36,000 operations/hr) Electrical: 100,000 operations min. (2 A at 30 VDC, resistive load: 1,200 operations/hr) 100,000 operations min. (0.5 A at 125 VAC, resistive load)
Ambient temperature	Operating: –40°C to 85°C (with no icing), –40°C to 70°C (double-winding latching, 24 VDC)
Ambient humidity	Operating: 5% to 85%
Weight	Approx. 2 g

■ Approved Standards

UL1950 (File No. E41515)/CSA C22.2 No.950 (File No. LR24825)

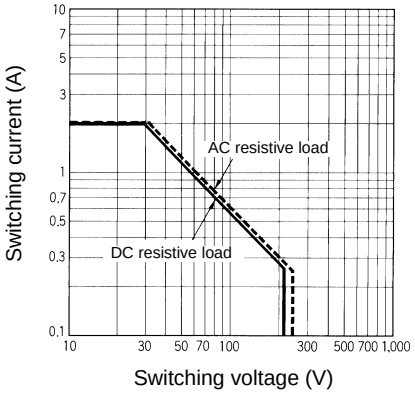
Model	Contact form	Coil ratings	Contact ratings
G6S-2, G6S-2F, G6S-2G	DPDT	1.5 to 48 VDC	2 A, 30 VDC 0.3 A, 110 VDC 0.5 A, 125 VAC
G6SU-2, G6SK-2, G6SU-2F, G6SU-2G, G6SK-2F, G6SK-2G		1.5 to 24 VDC	

EN60950/EN41003

Model	Contact form	Isolation category	Voltage
G6S-2-Y, G6S-2G-Y, G6S-2F-Y	DPDT	Supplementary Isolation	250 VAC

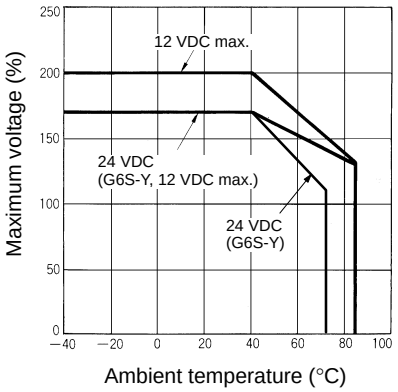
Engineering Data

Max. Switching Capacity

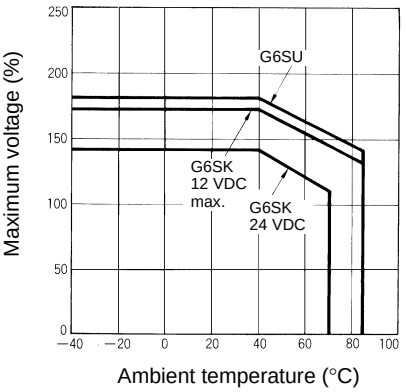


Ambient Temperature vs. Maximum Voltage

Single-side Stable



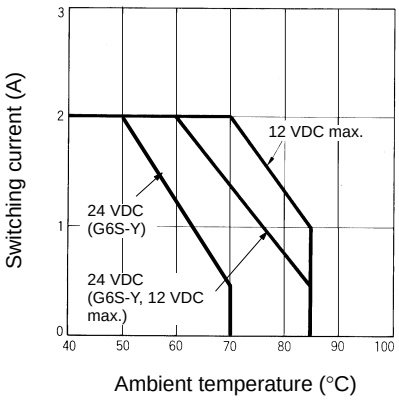
Single-winding Latching
Double-winding Latching



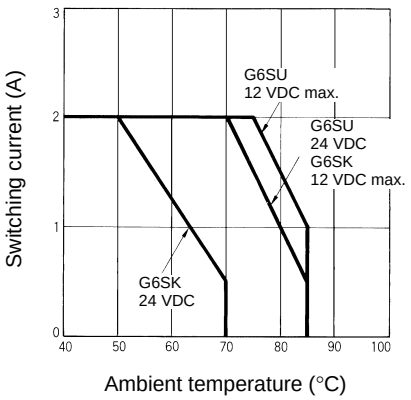
Reference Data

Ambient Temperature vs. Switching Current

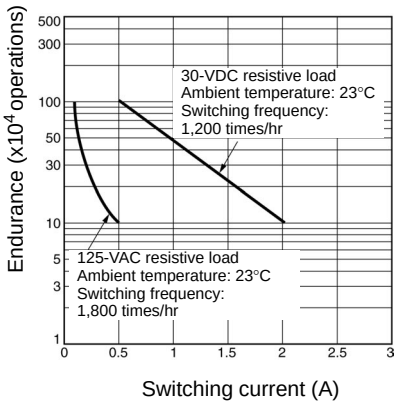
Single-side Stable



Single-winding Latching
Double-winding Latching



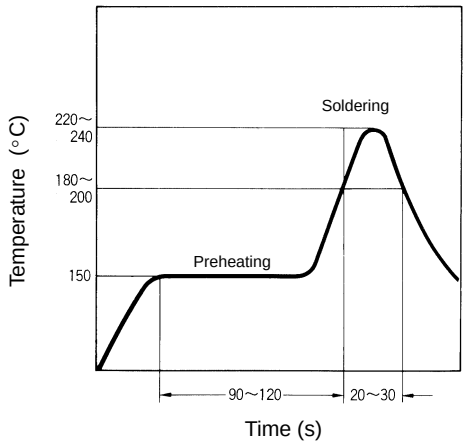
Endurance



Recommended Soldering Time vs. Surface PCB Temperature

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

IRS



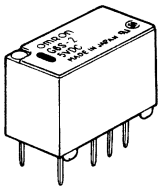
Dimensions

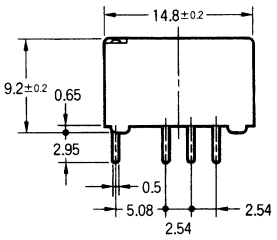
Note: All units are in millimeters unless otherwise indicated.

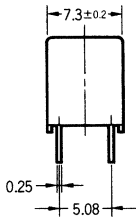
Single-side Stable

G6S-2, G6S-2-Y

Tolerance: ±0.3

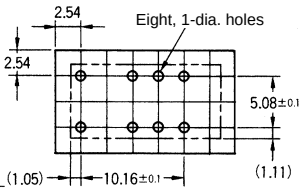




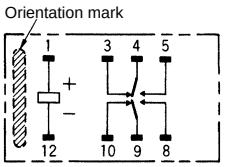


Footprint (Bottom View)

Tolerance: ±0.1

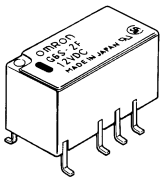


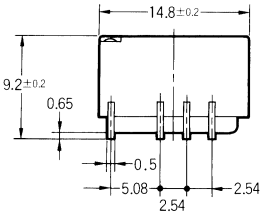
Terminal Arrangement/ Internal Connections (Bottom View)

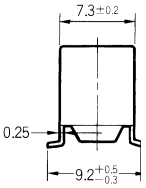


G6S-2F, G6S-2F-Y

Tolerance: ±0.3

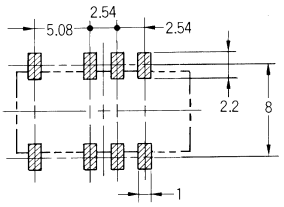




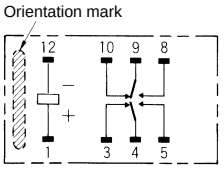


Footprint (Top View)

Tolerance: ±0.1

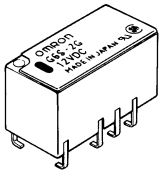


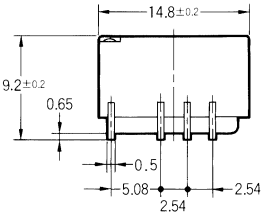
Terminal Arrangement/ Internal Connections (Top View)

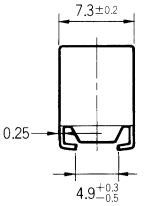


G6S-2G, G6S-2G-Y

Tolerance: ±0.3

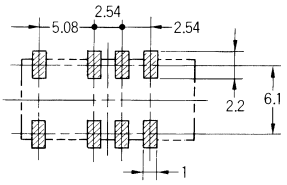




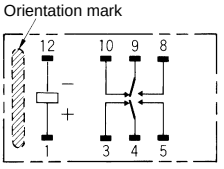


Footprint (Top View)

Tolerance: ±0.1



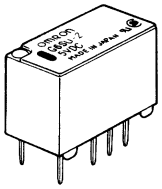
Terminal Arrangement/ Internal Connections (Top View)

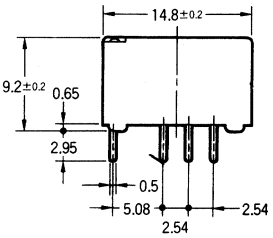


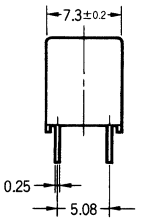
Single-winding Latching

G6SU-2

Tolerance: ±0.3

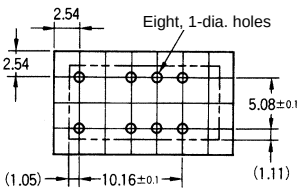




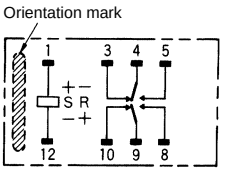


Footprint (Bottom View)

Tolerance: ±0.1

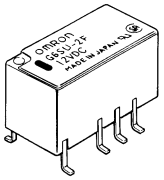


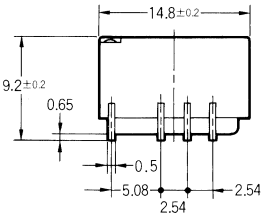
Terminal Arrangement/ Internal Connections (Bottom View)

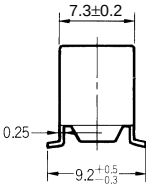


G6SU-2F

Tolerance: ±0.3

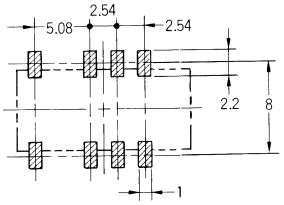




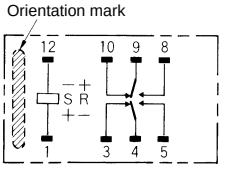


Footprint (Top View)

Tolerance: ±0.1

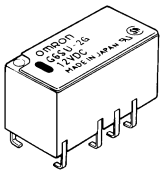


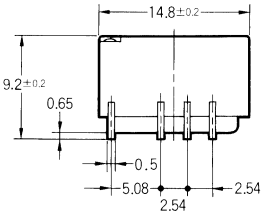
Terminal Arrangement/ Internal Connections (Top View)

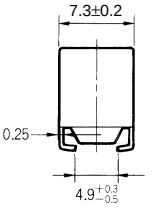


G6SU-2G

Tolerance: ±0.3

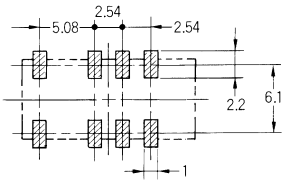




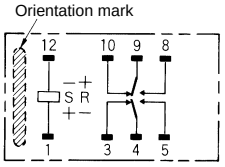


Footprint (Top View)

Tolerance: ±0.1



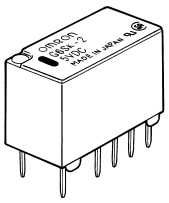
Terminal Arrangement/ Internal Connections (Top View)

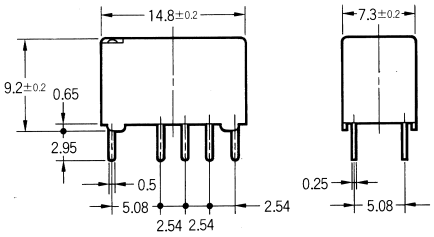


Double-winding Latching

G6SK-2

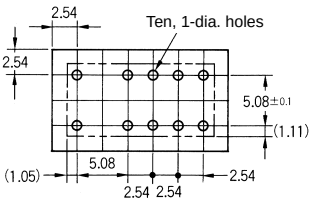
Tolerance: ±0.3



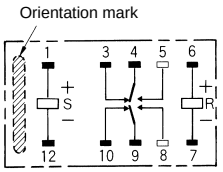


Footprint (Bottom View)

Tolerance: ±0.1

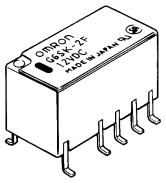


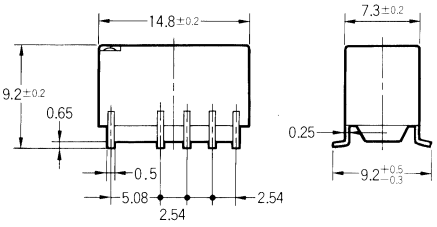
Terminal Arrangement/ Internal Connections (Bottom View)



G6SK-2F

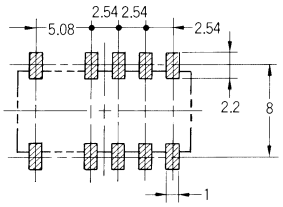
Tolerance: ±0.3



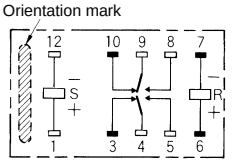


Footprint (Top View)

Tolerance: ±0.1

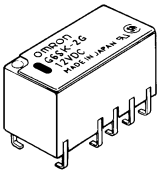


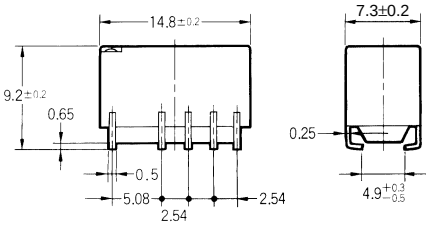
Terminal Arrangement/ Internal Connections (Top View)



G6SK-2G

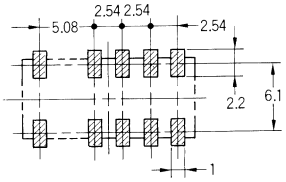
Tolerance: ±0.3



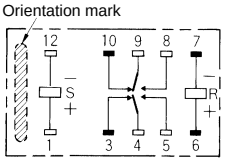


Footprint (Top View)

Tolerance: ±0.1



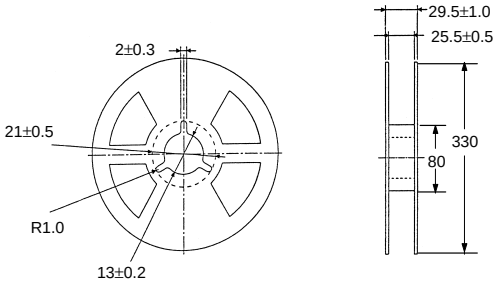
Terminal Arrangement/ Internal Connections (Top View)

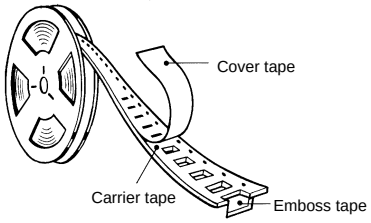


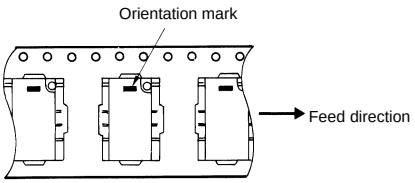
■ Tape Packing

When ordering, add “-TR” before the rated coil voltage for tape packing.

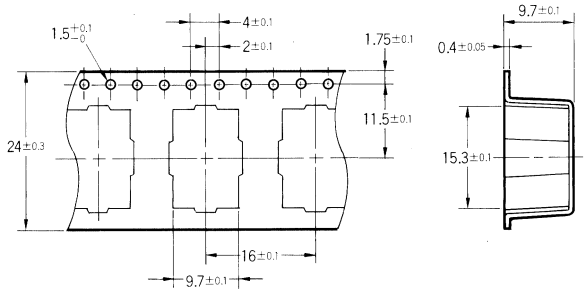
Tape type: TE2416R (Refer to EIAJ)
Reel type: R24E (Refer to EIAJ)
Relays per reel: 400



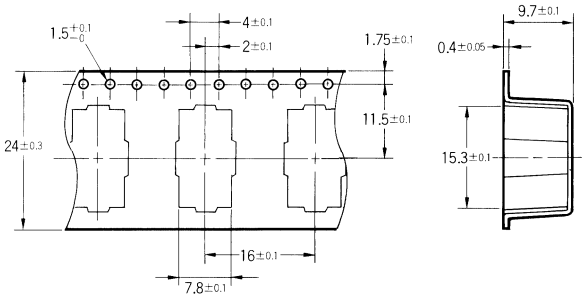




G6S-2F, G6SU-2F, G6SK-2F, G6S-2F-Y



G6S-2G, G6SU-2G, G6SK-2G, G6S-2G-Y



Precautions

Use a DC power supply with 5% or less ripple factor to operate the coil.

Do not use the G6S where subject to strong external magnetic fields.

Do not use the G6S where subject to magnetic particles or excessive amounts of dust.

Do not reverse the polarity of the coil (+, –).

Latching types are delivered in the reset position. We recommend that a reset voltage be applied in advance to start operation.

Do not drop the G6S or otherwise subject it to excessive shock.

Remove the relay from the packing immediately prior to usage.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. K093-E1-04 **In the interest of product improvement, specifications are subject to change without notice.**

OMRON Corporation
Electronics Components Company

Electronic & Mechanical Components Division H.Q.
Low Signal Relay Division
2-1, 2-Chome, Nishikusatsu, Kusatsu-City,
Shiga, 525-0035 Japan
Tel: (81)77-565-5481/Fax: (81)77-565-5581

Printed in Japan
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