OMRON

Surface-Mounting DPDT Relay

- ROHS compliant.
- 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.

Ordering Information -



- Ultra-miniature at 15 x 7.5 x 9.4 mm (L x W x H).
- Through-hole terminal is available
- EN60950/EN41003 Supplementary Insulationcertified type is available.

		Classification		Single-side Stable	Single-winding latching	Double-winding latching	Single-side stable EN60950/EN41003
DPDT I	Fully	Through-hole terminal		G6S-2	G6SU-2	G6SK-2	G6S-2-Y
	sealed	aled Surface mounting	Inside-L	G6S-2G	G6SU-2G	G6SK-2G	G6S-2G-Y
		terminal	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 <u>12 VDC</u>

Rated coil voltage

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

Tape packing

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

Model Number Legend



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	4.5 VDC	5 VDC	12 VDC	24 VDC	
Rated current	31.0 mA	28.1 mA	11.7 mA	8.3 mA	
Coil resistance 145 Ω 178 Ω 1,028 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 170% of rated voltage at 23°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		4.5 VDC	5 VDC	12 VDC	24 VDC	
Rated current		22.2 mA	20 mA	8.3 mA	6.3 mA	
Coil resistance		203 Ω	250 Ω	1,440 Ω	3,840 Ω	
Coil inductance	Armature OFF	0.27	0.36	2.12	5.80	
(H) (ref. value)	Armature ON	0.14	0.18	1.14	3.79	
Must set voltage		75% max. of rated voltage				
Must reset voltage		75% min. of rated voltage				
Max. voltage		180% of rated voltage at 23°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			4.5 VDC	5 VDC	12 VDC	24 VDC	
Rated current			44.4 mA	40 mA	16.7 mA	12.5 mA	
Coil resistance		e	101 Ω	125 Ω	720 Ω	1,920 Ω	
Coil ind-	Set	Armature OFF	0.12	0.14	0.60	1.98	
(H) (ref.		Armature ON	0.074	0.088	0.41	1.23	
value)	Reset	Armature OFF	0.082	0.098	0.46	1.34	
		Armature ON	0.14	0.16	0.54	2.23	
Must set voltage		ge	75% max. of rated voltage				
Must reset voltage		tage	75% min. of rated voltage				
Max. voltage			170% of rated voltage at 23°C			140% of rated voltage at 23°C	
Power consumption			Approx. 200 mW App			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	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	170% of rated voltage at 23°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 (cosø = 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 power	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 μ s) between coil and contacts 1,500 V (10 x 160 μ s) between coil and contacts (double-winding latching) 2,500 V (2 x 10 μ s) between contacts of different polarity 1,500 V (10 x 160 μ s) between contacts of same polarity (conforms to FCC Part 68)		
Vibration resistance	Destruction: 10 to 55 to 10 Hz, 2.5mm single amplitude (5mm double amplitude) Malfunction: 10 to 55 to 10 Hz, 1.65mm single amplitude (3.3mm double amplitude)		
Shock resistance	Destruction: 1,000 m/s² (approx. 100G) Malfunction: 750 m/s² (approx. 175G)		
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
G6SU2, G6SK-2, G6SU-2F G6SU2G, G6SK-2F, G6SK-2G		1.5 to 24 VDC	0.3 A, 110 VDC 0.5 A, 125 VAC

EN60950/EN41003

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

Engineering Data

Maximum Switching Power







Single-winding Latching

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

Ambient Temperature vs. Switching Current

Single-side Stable

Reference Data







Recommended Soldering Time vs. Surface PCB Temperature

(The temperature profile indicates the temperature on the surface of the PCB.) $\ensuremath{\text{IRS}}$



Dimensions

Note: All units are in millimeters unless otherwise indicated.

Single-side Stable

G6S-2, G6S-2-Y Tolerance: ±0.3







Terminal Arrangement/ Internal Connections (Bottom View)



G6S-2F, G6S-2F-Y Tolerance: ±0.3





7.3+02 Toleran

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

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Terminal Arrangement/ Internal Connections (Top View)





Surface-Mounting Signal Relay – G6S

Single-winding Latching

G6SU-2







G6SU-2F Tolerance: ±0.3







•73±02•

- 5.08

Footprint (Top View)

Tolerance: ±0.1

Footprint (Bottom View)

Tolerance: ±0.1

Eight, 1-dia. holes

\$.08±0.1

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(1.11)

2.54

2.54

(1.05)



2.2

-10.16±0.1

Terminal Arrangement/ Internal Connections (Bottom View)



Terminal Arrangement/ Internal Connections (Top View)



G6SU-2G Tolerance: ±0.3







Terminal Arrangement/ Internal Connections (Top View)



Double-winding Latching

G6SK-2







G6SK-2F Tolerance: ±0.3





G6SK-2G Tolerance: ±0.3







Footprint (Top View)





Terminal Arrangement/ Internal Connections (Bottom View)

Orientation mark

Terminal Arrangement/ Internal Connections (Top View)



Footprint (Top View)





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.