

High Frequency Relay

G6K-RF

Compact High Frequency Relays with 2 Form C (DPDT) Contacts

- Handles 1 A, 30 VDC discrete load and 1 W at 1 GHz high frequency load.
- Single-coil latching models available.
- Gullwing surface mount terminals.
- Ambient temperature range: -40° to 70°C.
- Low coil power consumption: 100 mW.
- Ideal for instrumentation and high-speed LAN network equipment.



Ordering Information

Contact form	Max. load	Coil voltage	Non-latching part number	Single-coil latching part number
DPDT (2 Form C)	1 A at 30 VDC, 0.3 A at 125 VAC	3 VDC	G6K-2F-RF DC3	G6KU-2F-RF DC3
		4.5 VDC	G6K-2F-RF DC4.5	G6KU-2F-RF DC4.5
		5 VDC	G6K-2F-RF DC5	G6KU-2F-RF DC5
		6 VDC	G6K-2F-RF DC6	G6KU-2F-RF DC6
		9 VDC	G6K-2F-RF DC9	G6KU-2F-RF DC9
		12 VDC	G6K-2F-RF DC12	G6KU-2F-RF DC12
		24 VDC	G6K-2F-RF DC24	G6KU-2F-RF DC24

Specifications

CONTACT DATA

Contact form	DPDT (2 Form C)	
Contact material	Au alloy on Ag base	
Contact resistance	100 mΩ max.	
Contact rating	High frequency	1 GHz, 1 W (See note)
	Resistive load	0.3 A, 125 VAC; 1 A, 30 VDC
Operate (set) time	3 ms max.	
Release (reset) time	3 ms max.	
Max. switching voltage	60 VDC, 125 VAC	
Max. switching current	1 A	
Max. switching capacity	37.5 VA (AC); 30 W (DC)	

Note: This value is for a load with V.S.W.R. ≤1.2

■ COIL DATA

Rated voltage	Rated current	Coil resistance	Must operate voltage	Must release voltage	Rated power consumption	Maximum voltage
3 VDC	33.0 mA	91 Ω	80% max. of rated voltage	10% min. of rated voltage	Approx. 100 mW	150% of rated voltage
4.5 VDC	23.2 mA	194 Ω				
5 VDC	21.1 mA	237 Ω				
6 VDC	17.6 mA	341 Ω				
9 VDC	11.3 mA	795 Ω				
12 VDC	9.1 mA	1315 Ω				
24 VDC	4.6 mA	5220 Ω				

- Note:**
1. The value of the above list is measured at ambient temperature 23°C with the tolerance of rated current and coil resistance ±10%.
 2. The maximum voltage is the highest voltage that can be applied on the relay coil and it is on the ambient temperature under the operating conditions.
 3. Other items are measured at 23°C.

■ HIGH FREQUENCY CHARACTERISTICS

Isolation	20 dB min. at 1 GHz between continuous contact 30 dB min. at 1 GHz between non-continuous contact
Insertion loss	0.2 dB max. at 1 GHz
V.S.W.R. return loss	1.2 max. at 1 GHz
Maximum transmission capacity	3 W
Maximum switching capacity	1 W

Note: Measured with 50 Ω and V.S.W.R. ≤1.2

■ CHARACTERISTICS

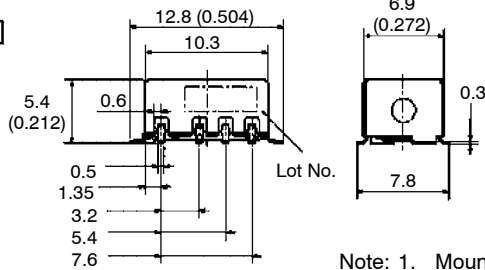
Dielectric strength	Between open contacts	750 VAC, 50/60 Hz for 1 minute
	Between contact sets	750 VAC, 50/60 Hz for 1 minute
	Between contacts and coil	750 VAC, 50/60 Hz for 1 minute
	Contacts and ground	500 VAC, 50/60 Hz for 1 minute
Insulation resistance		1000 MΩ min. at 500 VDC
Operation (set) time	At 20°C	3 ms max.
Release (reset) time	At 20°C	3 ms max.
Shock resistance	Malfunction	750 m/s ² (approx. 75G)
	Destruction	1000 m/s ² (approx. 100G)
Vibration resistance	Malfunction	0.01 ms min., 10 Hz to 55 Hz (3.3 mm double amplitude)
	Destruction	2 hours, 55 Hz to 500 Hz (5 mm double amplitude)
Mechanical life expectancy		50 million operations min.
Electrical life expectancy	Resistive load	100,000 operations min. (0.3 A, 125 VAC or 1 A, 30 VDC)
Ambient temperature		-40° to 70°C with no icing
Ambient humidity		5% to 85% RH
Weight		Approx. 0.95 g

Dimensions

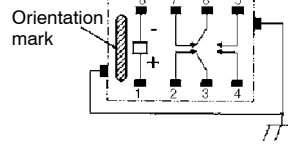
Unit: mm (inch)

RELAYS

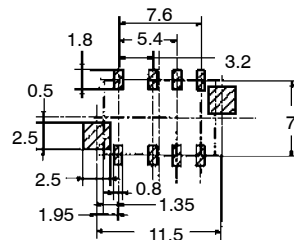
G6K-2F-RF



Terminal arrangement/
Internal connections
(top view)

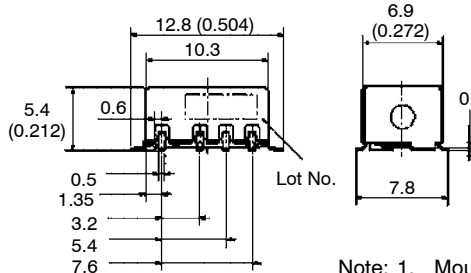


Mounting pads
(top view)

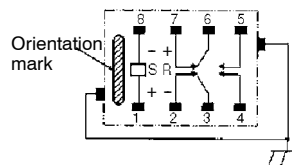


- Note: 1. Mounting pads tolerance: ± 0.1 mm
 2. Tolerance for other parts: ± 0.3 mm
 3. Coplanarity: Max. 0.15

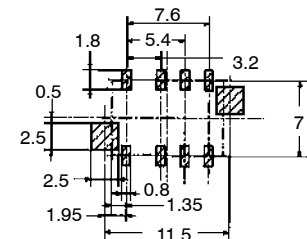
G6KU-2F-RF



Terminal arrangement/
Internal connections
(top view)



Mounting pads
(top view)



- Note: 1. Mounting pads tolerance: ± 0.1 mm
 2. Tolerance for other parts: ± 0.3 mm
 3. Coplanarity: Max. 0.15

Precautions

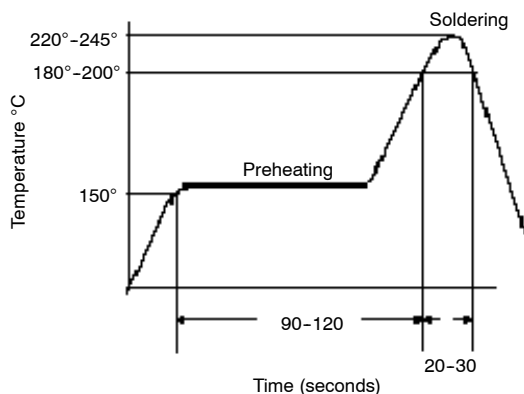
SOLDERING CONDITIONS

Do not unpack the relay until ready to mount it.

Solder type: JIS Z3282, H63A or equivalent

The temperature profile for infrared reflow soldering (IRS) was measured on the surface of the PCB.

The recommended thickness of solder paste is from 150 μ m to 200 μ m.



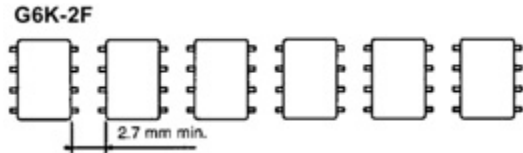
Coating

The relay mounted on the PCB may be coated or washed, but do not apply silicone coating or detergent containing silicone, otherwise, the silicone coating or detergent may remain on the surface of the relay.

■ MOUNTING

PCB Mounting

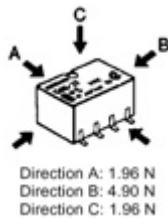
If two or more relays are closely mounted with the long sides of the relays facing each other and the soldering is performed with infrared radiation, the solder may not be properly exposed to the infrared rays. Be sure to keep the proper distance between adjacent relays as shown below to insure formation of good solder joints.



Two or more relays may be mounted as closely as desired with the short sides of the relays facing each other.

Claw Securing Force During Automatic Mounting

During automatic insertion of relays, make sure to set the securing force of each claw to the following so that the relay's characteristics will be maintained.



Latching Relay Mounting

Make sure that the vibration or shock that is generated from other devices, such as relays in operation, on the same panel and imposed on the latching relay does not exceed the rated value, otherwise the latching relay that has been set may be reset or vice versa. The latching relay is reset before shipping. If excessive vibration or shock is imposed, however, the latching relay may be set accidentally. Be sure to apply a reset signal before use.

■ OPERATING, STORAGE ENVIRONMENT

1. Use in locations where the relay is not exposed to corrosive gas such as hydrogen sulfide gas or salty air.
2. Use in locations where no visible dust exists.
3. Use in locations where the product is not exposed to direct sunlight, rain or snow.
4. Do not apply force to the product which may result in deformation or change in quality of the product.
5. The relay is sealed to withstand 90°C for 1 minute in fluorocarbon liquid.

If the relay is stored for a long time in an adverse environment with high temperature, high humidity, organic or sulfide gases, sulfide or oxide films will form on the contact surfaces. These films may result in unstable contact, contact problems, or function problems. Therefore, operate, store or transport the product under specified environmental conditions.

■ MAXIMUM ALLOWABLE VOLTAGE

The maximum allowable voltage of the coil can be obtained from the coil temperature increase and the heat-resisting temperature of coil insulating sheath material. (Exceeding the heat-resisting temperature may result in burning or short-circuiting.) The maximum allowable voltage also involves important restrictions which include the following:

- Must not cause thermal changes in or deterioration of the insulating material.
- Must not cause damage to other control devices.
- Must not cause any harmful effect on people.
- Must not cause fire.

Therefore, be sure to use the maximum allowable voltage as specified in the catalog.

As a rule, the rated voltage must be applied to the coil. A voltage exceeding the rated value, however can be applied to the coil provided that the voltage is less than or equal to the maximum allowable voltage. It must be noted that continuous voltage application to the coil will cause a coil temperature increase which may affect characteristics such as electrical life and coil insulation.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters into inches, divide by 25.4



OMRON ELECTRONICS LLC
 One Commerce Drive
 Schaumburg, IL 60173
847-882-2288

OMRON CANADA, INC.
 885 Milner Avenue
 Toronto, Ontario M1B 5V8
416-286-6465

OMRON ON-LINE
 Global - <http://www.omron.com>
 USA - <http://www.omron.com/oei>
 Canada - <http://www.omron.ca>