# G6K(U)-2F(P)-RF(-S,

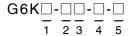
Surface-mounting High-frequency Relay

### Surface-mounting, 1-GHz-Band/ 3-GHz-Band, Miniature, DPDT, **High-frequency Relay**

- Superior high-frequency characteristics (at 1 GHz), such as an isolation of 20 dB min. between contacts of the same polarity or 30 dB min. between contacts of different polarity with an insertion loss of 0.2 dB max.
- Miniaturized to  $10.3 \times 6.9 \times 5.4$  mm (L  $\times$  W  $\times$  H).
- · Rated power consumption of 100 mW with high sensitivity
- Single-side stable and single-winding latching models available.
- Models with a smaller footprint (G6K(U)-2F-RF-S) are available to help save space.
- G6K(U)-2F-RF-T models for 3-GHz band join the lineup with a downsized footprint.
- New PCB terminals models available.

#### **RoHS Compliant**

#### **■**Model Number Legend



#### 1. Relay Function

None: Single-side stable U: Single-winding latching

2. Number of poles/ **Contact Form** 

2: 2-pole/ DPDT (2c)

#### 3. Terminal Shape

Outside-L surface mounting terminals

PCB terminals

#### ■Application Examples

- · Communications equipment
- · Broadcasting and audio-visual equipment
- · Test & measurement equipment

5. Terminal Shape None: Standard S: Small footprint T: Compatible with 3 GHz

RF: High-frequency compatible

4. Special Function

#### **■**Ordering Information

#### Standard Models with Surface-mounting Terminals Standard Specifications

Relay Function	Enclosure rating	Contact form	Model	Rated coil voltage	Minimum packing unit	
Single-side stable	Fully sealed	DPDT	G6K-2F-RF	3, 4.5, 5, 12, 24 VDC	300 pcs/tray	
Single-winding latching	I ully sealed	(2c)	G6KU-2F-RF	3, 4.5, 5, 12, 24 VDC	300 pcs/reel	

#### **Board space-saving model**

Relay Function	Enclosure rating	Contact form	Model	Rated coil voltage	Minimum packing unit
Single-side stable	Fully sealed	DPDT (2c)	G6K-2F-RF-S	3, 4.5, 5, 12, 24 VDC	300 pcs/tray
Single-winding latching	I ully sealed		G6KU-2F-RF-S	3, 4.5, 5, 12, 24 VDC	300 pcs/reel

#### Compatible with 3 GHz

Relay Function	Enclosure rating	Contact form	Model	Rated coil voltage	Minimum packing unit
Single-side stable	Fully sealed	DPDT	G6K-2F-RF-T	3, 4.5, 5, 12, 24 VDC	300 pcs/tray
Single-winding latching	i ully sealed	(2c)	G6KU-2F-RF-T	3, 4.5, 5, 12, 24 VDC	300 pcs/reel

#### **PCB** terminals

Relay Function	Enclosure rating	Contact form	Model	Rated coil voltage	Minimum packing unit
Single-side stable	Fully sealed	DPDT (2c)	G6K-2P-RF	3, 4.5, 5, 12, 24 VDC	30 pcs/tube

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

Rated coil voltage

However, the notation of the coil voltage on the product case as well as on the packing will be marked as  $\square\square$  VDC.

Note 2. When ordering Relays in tape packing, add "-TR03" to the end of the model number.

Example: G6K-2F-RF-TR03 DC3

Relays per reel: 300 pcs for -TR03

This specification, however, is not part of the relay model number, so it is not marked on the relay case. (If "-TR03" is not added to the end of the model number, the Relays will be provided in tray packing.)

When ordering tape packing, minimum order unit is 1 reel (300 pcs  $\times$  1 = 300 pcs).

#### ■Ratings

#### ●Coil: Single-side Stable (G6K-2F(P)-RF(-S, -T))

Ite	m Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V) % of rated voltage	Maximum voltage (V)	Power consumption (mW)
3 VDC	33.0	91				
4.5 VDC	23.2	194				
5 VDC	21.1	237	80% max.	10% min.	150%	Approx. 100
12 VDC	9.1	1,315				
24 VDC	4.6	5,220				

#### ●Coil: Single-winding Latching Models (G6KU-2F-RF(-S, -T))

Item	Rated current (mA)	Coil resistance (Ω)	Must set voltage (V)	Must reset voltage (V) % of rated voltage	Maximum voltage (V)	Power consumption (mW)
3 VDC	33.0	91				
4.5 VDC	23.2	194				
5 VDC	21.1	237	75% max.	75% max.	150%	Approx. 100
12 VDC	9.1	1,315				
24 VDC	4.6	5,220				

- Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.
- Note 2. The operating characteristics are measured at a coil temperature of 23°C.
- Note 3. The maximum voltage is the highest voltage that can be imposed on the Relay coil instantaneously.

#### **●**Contacts

Item	Load	Resistive load
Rated load		125 VAC, 0.3 A 30 VDC, 1 A 1 GHz, 1 W *
Rated carry current		1 A
Max. switching voltage		125 VAC or 60 VDC
Max. switching current		1A

<sup>\*</sup> This value is for a V.SWR of 1.2 max. at the load.

#### ●High-frequency Characteristics \*1

	Model	G6K(U)-2F(P)-RF(-S)	G6K(U)-2F-RF-T		
Item	Frequency	1GHz	1GHz	3GHz	
Isolation	Between contacts of the same polarity	20 dB min.	20 dB min.	18 dB min.	
ISOIALIOTI	Between contacts of different polarity	30 dB min.	30 dB min.	25 dB min.	
Insertion loss		0.2 dB max.	0.2 dB max.	0.6 dB max.	
V.SWR		1.2 max.	1.2 max.	1.4 max.	
Maximum cari	ry power	3W *2			
Maximum swit	tching power	1W *2			

Note 1. The impedance of the measurement system is 50  $\Omega$ .

Note 2. The above values are initial values.

- \*1. Contact your OMRON representative if the Relay will be used in an application that requires high repeatability in high-frequency characteristics for the microload region. (Such applications include testing and measurement equipment and ATE applications.)
- \*2. These values are for a V.SWR of 1.2 max. at the load.

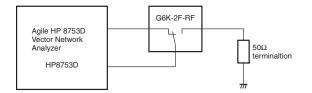
#### **■**Characteristics

	Relay Function	Single-side stable models	Single-winding latching models			
Item	Model	G6K-2F(P)-RF(-S, -T)	G6KU-2F-RF(-S, -T)			
Contact resis	stance *1	100 mΩ max.				
Operating (s	et) time *2	3 ms max. (approx. 1.4 ms)	3 ms max. (approx. 1.2 ms)			
Release (res	et) time *2	3 ms max. (approx. 1.3 ms)	3 ms max. (approx. 1.2 ms)			
Minimum set	/reset pulse time		10 ms			
Insulation re	sistance *3	1,000 MΩ min. (at 500 VDC)				
	Between coil and contacts	750 VAC, 50/60 Hz for 1 min				
Dielectric	Between contacts of different polarity	750 VAC, 50/60 Hz for 1 min				
strength Between contacts of the same polarity		750 VAC, 50/60 Hz for 1 min				
	Between ground and coil/contacts	500 VAC, 50/60 Hz for 1 min				
Vibration	Destruction	10 to 55 to 10 Hz, 2.5 mm single amplitude (5 mm double a	mplitude) and 55 to 500 Hz, 300 m/s <sup>2</sup>			
resistance	Malfunction	10 to 55 to 10 Hz, 1.65 mm single amplitude (3.3 mm doubl	e amplitude) and 55 to 500 Hz, 200 m/s <sup>2</sup>			
Shock	Destruction	1,000 m/s <sup>2</sup>				
resistance	Malfunction	750 m/s <sup>2</sup>				
Durability	Mechanical	000 operations/hour)				
Durability	Electrical	100,000 operations min. (at a switching frequency of 1,800	operations/hour)			
Ambient ope	rating temperature	-40°C to 70°C (with no icing or condensation)				
Ambient ope	rating humidity	5% to 85%				
Weight		Approx. 0.95 g				

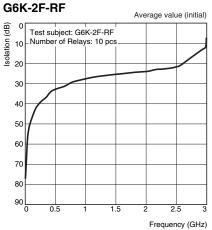
Note. The above values are initial values.

- \*1. The contact resistance was measured with 10 mA at 1 VDC with a voltage drop method.
- Values in parentheses are actual values.
- 3. The insulation resistance was measured with a 500 VDC megohmmeter applied to the same parts as those used for checking the dielectric strength.

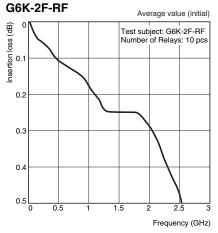
#### **■**Engineering Data



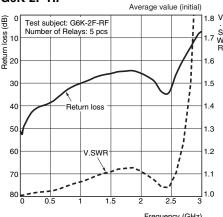
#### High-frequency Characteristics (Isolation) \*1, \*2



#### High-frequency Characteristics (Insertion Loss) \*1, \*2

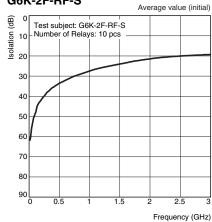


#### High-frequency Characteristics (Return Loss, V.SWR) \*1, \*2 G6K-2F-RF

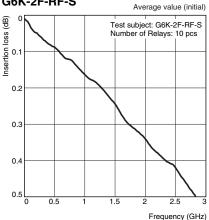


Frequency (GHz)

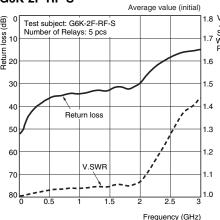




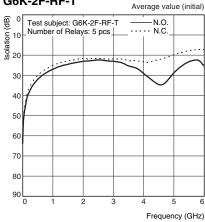




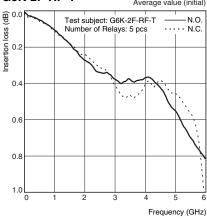
G6K-2F-RF-S



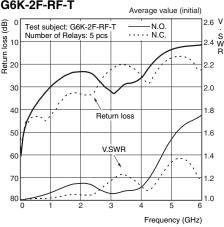


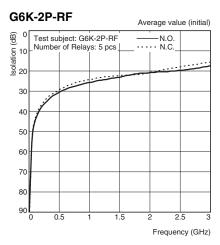


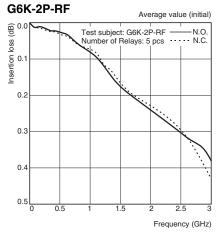
G6K-2F-RF-T

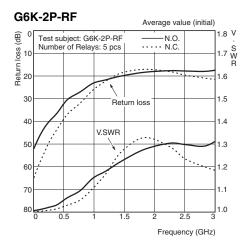


G6K-2F-RF-T







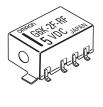


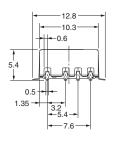
Note. Refer to the G6K specifications for basic specifications not shown above.

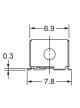
- Ambient temperature condition: 23°C
- The high-frequency characteristics depend on the mounting board. Be sure to check operation including durability in actual equipment before use.

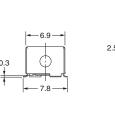
**■**Dimensions (Unit: mm)

**Standard Specifications** G6K-2F-RF G6KU-2F-RF

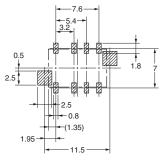




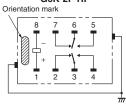


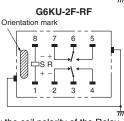


Mounting Dimensions (Top View) Tolerance: ±0.1 mm



Terminal Arrangement/ **Internal Connections** (Top View) G6K-2F-RF





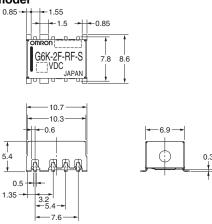
Terminal Arrangement/

Note: Check carefully the coil polarity of the Relay.

**Board space-saving model** 

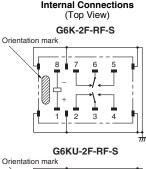
G6K-2F-RF-S G6KU-2F-RF-S

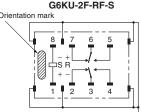




Note 1. Each value has a tolerance of ±0.3 mm. Note 2. The coplanarity of the terminals is 0.15 mm max.

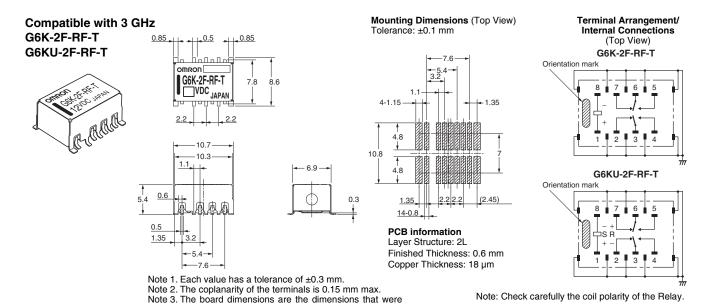
> Mounting Dimensions (Top View) Tolerance: ±0.1 mm -7.6





Note: Check carefully the coil polarity of the Relay.

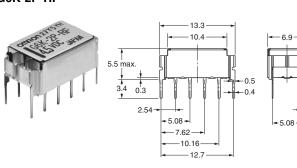
Note 2. The coplanarity of the terminals is 0.15 mm max.



used to measure the high-frequency characteristics given in the engineering data.

The high-frequency characteristics and soldering conditions will depend on the type of board that is actually used. Always confirm applicability with the actual equipment before you use the Relay.

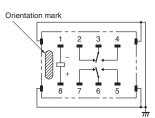




PCB Mounting Holes (Bottom View) Tolerance: ±0.1 mm

Twelve, 0.85-dia. holes 5.08 (0.89) (0.3)

Terminal Arrangement/ Internal Connections (Bottom View)



Note: Check carefully the coil polarity of the Relay.

Note: Check carefully the coil polarity of the Relay.

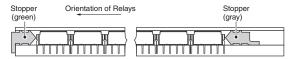
Note. Each value has a tolerance of ±0.3 mm.

#### ■Tube Packing and Tape Packing Specifications

#### (1) Tube Packing

 G2K-2P-RF in tube packing are arranged so that the orientation mark of each Relay in on the left side. Fifty Relays are packed on one tube.

Be sure not to make mistakes in Relay orientation when mounting the Relay to the PCB.



Tube length: 520 mm (stopper not included)

No. of Relays per tube: 30 pcs

#### (2) Tape Packing (Surface Mounting Terminal Models)

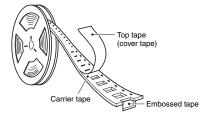
 Add "TR03" to the end of the model number to order Relays in tape packing.

If "-TR03" is not added, the Relays will be provided in tray packing.

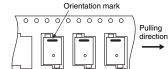
Relays per reel: 300 pcs

Minimun ordering unit: 1 reel (300 relays)

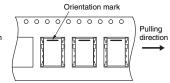
#### 1. Direction of Relay Insertion



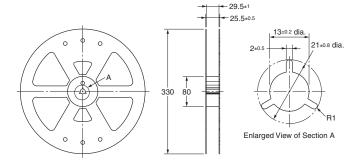
#### Pulling Direction G6K(U)-2F-RF



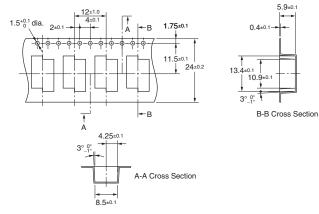
#### G6K(U)-2F-RF-S(-T)



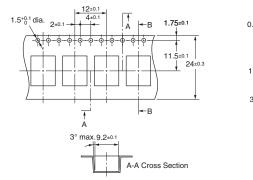
#### 2. Reel Dimensions

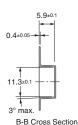


## 3. Carrier Tape Dimensions G6K(U)-2F-RF



#### G6K(U)-2F-RF-S(-T)



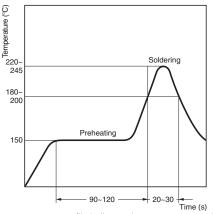


# G6K(U)-2F(P)-RF(-S,-T)

#### ■G6K(U)-2F-RF(-S, -T) Recommended Soldering Method

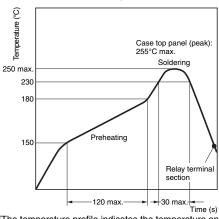
#### ● Recommended Conditions for IRS Method (Surface-mounting Terminals)

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



(The temperature profile indicates the temperature on the circuit board sur-

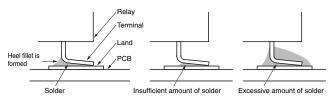
#### (2) IRS Method (Mounting Solder: Lead-free)



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

- The thickness of cream solder to be applied should be between 200 and 250 μm and the land pattern should be based on OMRON's recommended PCB pattern.
- To maintain the correct soldering joint shown in the following diagram, we recommend applying solder with the soldering conditions shown on the left.

#### Correct Soldering Incorrect Soldering



Check the soldering in the actual mounting conditions before use.

#### **■**Safety Precautions

#### For general precautions on PCB Relays, refer to the precautions provided in General Information of the Relay Product Data Book.

#### Correct Use

#### Relay Handling

- Use the Relay as soon as possible after opening the moistureproof package. (As a guideline, use the Relay within one week at 30°C or less and 60% RH or less.) 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 seal 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.

#### Environmental Conditions for Usage, Storage, and Transport

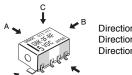
 Avoid direct sunlight when using, storing, or transporting the Relay and maintain normal temperature, humidity, and pressure conditions.

#### ●Long-term, Continuous ON Contacts

 Using the Relay in a circuit where the Relay will be ON continuously for long periods (rather than switching) can lead to unstable contacts because the heat generated by the coil itself will affect the insulation and can cause 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 adding fail-safe circuits in case the contact fails or the coil burns out.

#### ●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.



Direction A: 1.96 N max. Direction B: 4.90 N max. Direction C: 1.96 N max.

Secure the claws to the shaded area. Do not attach them to the center of the Relay or just one part of the Relay.

#### ●Coating

 Do not use silicone coating to coat the Relay when it is mounted to the PCB. Do not wash the PCB after the Relay is mounted using detergent containing silicone. Otherwise, the detergent may remain on the surface of the Relay.

#### Repeatability

 Contact your OMRON representative if the Relay will be used in an application that requires high repeatability in high-frequency characteristics for the microload region. (Such applications include testing and measurement equipment and ATE applications.)

#### About use of an IC socket.

#### For: G6K-2P-RF

 When using IC sockets, select IC sockets by confirming that the sockets Rated/Spec./Characteristics are within the range of using condition.

Also, confirm whether there is any problem of electric capability or plug insertion or not with actual using condition.

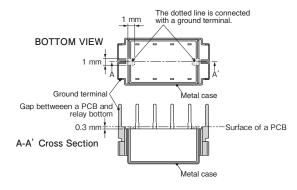
#### ■Others

#### For: G6K-2P-RF

The dotted line below on the surface of relay is connected with a metal case (ground).

So applies the potential influence of insulation and signal.

So confirm the actual influence of insulation and signal characteristics when designing.



- 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
- Consult your OMHON 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.

Contact: www.omron.com/ecb

Note: Do not use this document to operate the Unit.

#### **OMRON Corporation**

**Electronic and Mechanical Components Company** 

Cat. No. K242-E1-05 0316(0207)(O)



OOO «ЛайфЭлектроникс" "LifeElectronics" LLC

ИНН 7805602321 КПП 780501001 P/C 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 3010181090000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

#### Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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