

Low Signal Relay G5A

- Subminiature 8.40 H x 9.90 W x 16 L mm
- Unique moving-loop armature reduces relay size, magnetic interference, and contact bounce time.
- Low nominal power consumption.
- Bifurcated crossbar contact assures reliable switching of loads as low as 10 mVDC, 0.1 mA (reference value).
- Available in standard and ultrasonic cleaning versions.
- Highly stable magnetic circuit for latching endurance and excellent resistance to vibration and shock.
- Single or double coil winding types available.
- RoHS Compliant.



Ordering Information

To Order: Select the part number and add the desired coil voltage rating (e.g., G5AU-234P-DC12).

■ Non-Latching

Type	Contact form	Construction	Model
Standard	DPDT	Sealed	G5A-234P

■ Latching

Type	Contact form	Construction	Model	
			Single-winding latching	Double-winding latching
Standard	DPDT	Sealed	G5AU-234P	G5AK-234P

Model Number Legend

G5A - - DC
 1 2 3 4 5 6 7

1. Relay Function

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

2. Contact Form

- 2: DPDT

3. Contact Type

- 3: Bifurcated crossbar Ag (Au-Alloy)

4. Enclosure Ratings

- 4: Fully sealed

5. Terminals

- P: Straight PCB
- C: Self-clinching PCB

6. Special Function

- None: General-purpose
- FC: FCC part 68 compliance
- U: For ultrasonically cleanable

7. Rated Coil Voltage

- 3, 5, 6, 9, 12, 24, 48 VDC

Specifications

■ Contact Data

Load	Resistive load (p.f. = 1)	Inductive load (p.f. = 0.4) (L/R = 7 ms)
Rated load	0.50 A at 30 VAC, 1 A at 30 VDC	0.10 A at 30 VAC, 0.20 A at 30 VDC
Contact material	Ag (Au clad)	
Carry current	1 A	
Max. operating voltage	125 VAC, 125 VDC	
Max. operating current	1 A (AC) 1 A (DC)	0.50 A (AC) 0.50 A (DC)
Max. switching capacity	37.50 VA, 33 W	12.50 VA 11 W
Min. permissible load (See note)	10 μA, 10 mVDC	

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

This value was measured at a switching frequency of 120 operations/min and the criterion of contact resistance is 100 Ω. This value may vary depending on the switching frequency and operating environment. Always double-check relay suitability under actual operating conditions.

■ Coil Data

Standard Non-latching (G5A-234P)

Rated voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON				
3	66.7	45	0.048	0.043	70% max	10% min.	200%	Approx. 200
5	40	125	0.13	0.12				
6	33.30	180	0.17	0.16				
9	22.20	405	0.43	0.40				
12	16.70	720	0.71	0.68				
24	8.30	2,880	2.76	2.70				
48	5.80	8,230	7.44	7.25	170%	Approx. 280		

Latching (G5AU-234P, G5AK-234P)

Rated voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)		Set pick-up voltage	Reset dropout voltage	Maximum voltage	Power consumption (mW)
			Armature OFF	Armature ON				
3	66.70	45	0.02	0.02	80% max.	80% min.	200%	Approx. 200
5	40	125	0.06	0.05				
6	33.30	180	0.08	0.07				
9	22.20	405	0.17	0.14				
12	16.70	720	0.29	0.24				
24	8.30	2,880	1.10	0.85				

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C (73°F) with a tolerance of ±10%.

2. The operating characteristics are measured at a coil temperature of 23°C (73°F).

3. The maximum voltage is the highest voltage that can be imposed on the relay coil

■ Characteristics

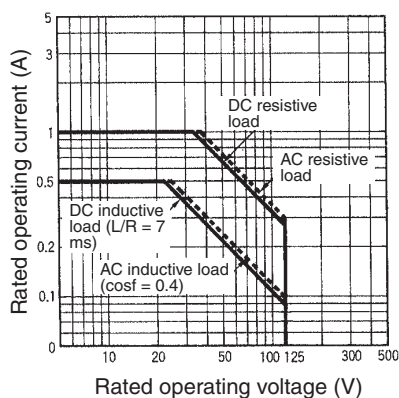
Type		Non-latching	Latching
Contact resistance (See note 2)		50 mΩ max.	
Operate (set) time		5 ms. max. (mean value approx 2.4 ms)	5 ms. max. (mean value approx. 2.0 ms)
Release (reset) time		5 ms. max. (mean value approx. 1.1 ms)	5 ms. max. (mean value approx. 1.8 ms)
Operating frequency (max.)	Mechanical	36,000 operations/hour	
	Electrical	18,000 operations/hour (under rated load)	
Insulation resistance (See note 3)		1,000 mΩ min. (at 250 VDC)	
Dielectric strength	Standard	1,000 VAC, 50/60 Hz for 1 minute between coil and contacts (See note 4)	
		1,000 VAC, 50/60 Hz for 1 minute between contacts of different poles (See note 4)	
		500 VAC, 50/60 Hz for 1 minute between contacts of same pole (See note 5)	
Set and reset coils		--	100 VAC, 50/60 Hz for 1 minute
Impulse Withstand Voltage (See notes 4 & 5)		1,500 V (10 x 160 μs) between contacts of the same polarity (conforms to FCC Part 68)	
Vibration	Mechanical durability	10 to 55 Hz; 1.50 mm (0.06 in) double amplitude	
	Malfunction durability	10 to 55 Hz; 1.50 mm (0.06 in) double amplitude	
Shock	Mechanical durability	1,000 m/s ² (approx. 100 G)	
	Malfunction durability	300 m/s ² (approx. 30 G)	
Ambient temperature		-40 to 70°C (-40 to 158°F) with no icing	
Humidity		5% to 85% RH	
Service life	Mechanical	50 million operations min. at 36,000 operations/hour	50 million operations min. at 36,000 operations/hour
	Electrical	100,000 operations min. (at 1,800 operations/hr) See "Characteristic Data"	
Weight		Approx. 3 g (0.11 oz)	

Note: 1. Data shown are of initial value.

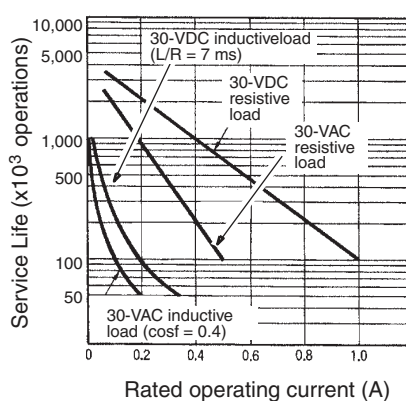
- The contact resistance was measured with 10 mA at 1 VDC with a voltage drop method
- The insulation resistance was measured with a 250-VDC megohmmeter applied to the same parts as those used for checking the dielectric strength (except between the set and reset coil).
- Models with FC suffix: 1,200 VAC, 50/60 Hz for 1 min, impulse withstand voltage of 1,500 V (10 x 160 μs)
- Models with FC suffix: 750 VAC, 50/60 Hz for 1 min, impulse withstand voltage of 1,500 V (10 x 160 μs)

■ Characteristic Data

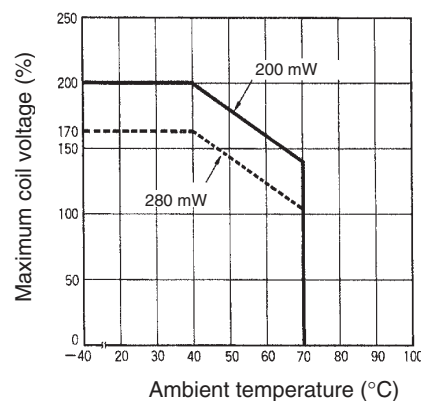
Maximum Switching Capacity



Electrical Service Life



Ambient Temperature vs. Maximum Coil Voltage

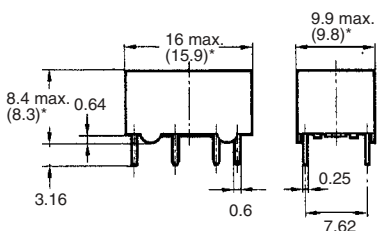
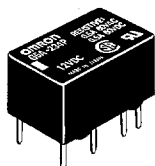


Note: The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

Dimensions

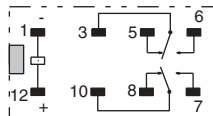
Note: 1. All units are in millimeters unless otherwise inciated. To convert millimeters into inches, multiply by 0.03937.
 2. Orientation marks are indicated as follows:

G5A-234P



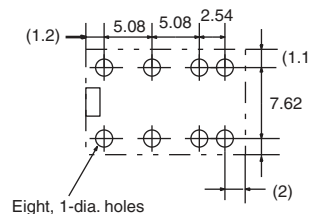
*Average value

Terminal Arrangement/ Internal Connections (Bottom View)



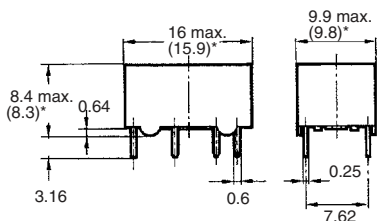
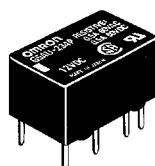
Mounting Holes (Bottom View)

Tolerance: ± 0.1

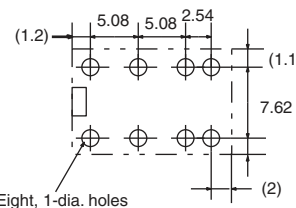
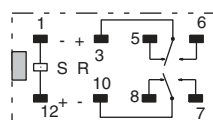


Eight, 1-dia. holes

G5AU-234P

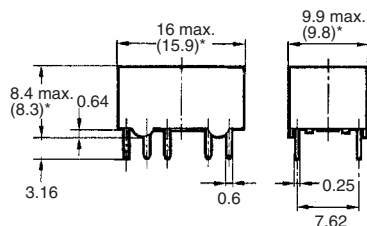
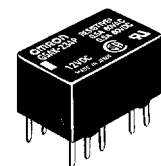


*Average value

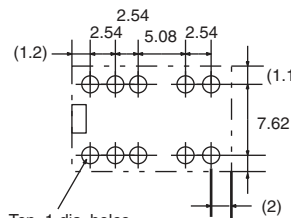
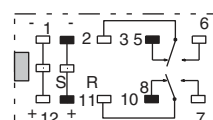


Eight, 1-dia. holes

G5AK-234P



*Average value



S: Set coil
R: Reset coil

Ten, 1-dia. holes

■ Approvals

UL Recognized (File No. E41515)/CSA Certified (File No. LR24825) - - Ambient Temp. = 40°C

Type	Contact form	Coil ratings	Contact ratings
G5A-234P	DPDT	3 to 48 VDC	0.5 A, 60 VAC
G5AU-234P		3 to 24 VDC	0.5 A, 60 VDC
G5AK-234P			1 A, 30 VDC

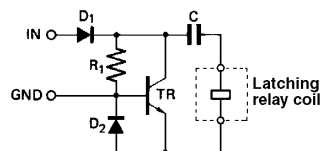
Note: 1. The rated values approved by each of the safety standards (e.g., UL and CSA) may be different from the performance characteristics individually defined in this catalog.
 2. In the interest of product improvement, specifications are subject to change.

Hints on Correct Use

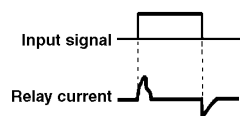
Single-winding type (G5AU)

Example of low-power drive circuit

1. The figure below shows a drive circuit (JAPAN PAT. NO. 1239293) in which the latching relay can function like a general-purpose relay from a normal input pulse for switching.
2. Use a charging current of capacitor C to operate the latching relay, which flows suddenly through diode D1, capacitor C, latching relay, and diode D2, and the relay contacts will be put in the locked state.



3. Use a discharging current of capacitor C to release the latching relay, which flows through transistor TR, capacitor C, and the latching relay.



- Note:**
1. When applying the relay for practical use, make sure of the set or reset state of the relay; then determine the circuit constraints.
 2. Because OMRON possesses the patent of this drive circuit, contact OMRON when adopting it.

Precautions

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

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.

MEMO

A large grid of dashed lines for taking notes, consisting of 20 columns and 30 rows of small squares.

Omron Electronic Components, LLC

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To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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