

Low Signal Relay

G5A

- Subminiature 8.40 H x 9.90 W x 16 L mm (0.33 H x 0.38 W x 0.63 L in).
- Unique moving magnet armature reduces relay size, magnetic interference, and contact bounce time.
- Low nominal power consumption (200 mW).
- Bifurcated crossbar contact assures highly reliable switching of loads as low as 10 mVDC, 0.1 mA (reference value).
- Automatic flow or dip soldering possible.
- Available in standard, high-sensitivity, high-dielectric (FCC part 68), low thermoelectromotive force, 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.



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 | Semi-sealed | G5A-237P |
| | | Sealed | G5A-234P |
| High-sensitivity | | Semi-sealed | G5A-237PH |
| | | Sealed | G5A-234PH |
| FCC part 68 | | Semi-sealed | G5A-237P-FC |
| | | Sealed | G5A-234P-FC |

Note: High-sensitivity versions of the FC type are also available.

■ Latching

| Type | Contact form | Construction | Model | |
|------------------|--------------|--------------|-------------------------|-------------------------|
| | | | Single-winding latching | Double-winding latching |
| Standard | DPDT | Semi-sealed | G5AU-237P | G5AK-237P |
| | | Sealed | G5AU-234P | G5AK-234P |
| High-sensitivity | | Semi-sealed | G5AU-237PH | -- |
| | | Sealed | G5AU-234PH | -- |
| FCC part 68 | | Semi-sealed | G5AU-237P-FC | G5AK-237P-FC |
| | | Sealed | G5AU-234P-FC | G5AK-234P-FC |

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 | 10 μ A, 10 mVDC | |

■ Coil Data

Standard Non-latching and FCC Part 68 Type (G5A-237P, G5A-234P, G5A-237P-FC, G5A-234P-FC)

| 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 | | | | |
| 5 | 40 | 125 | 0.13 | 0.12 | 70% max | 10% min. | 150% | Approx. 200 |
| 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 | | | | |
| | | | | | | | | Approx. 280 |

High-sensitivity Non-latching Type (G5A-237PH, G5A-234PH)

| 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 | | | | |
| 5 | 30 | 167 | 0.17 | 0.16 | 80% max. | 10% min. | 180% | Approx. 150 |
| 6 | 25 | 240 | 0.22 | 0.21 | | | | |
| 9 | 16.70 | 540 | 0.58 | 0.54 | | | | |
| 12 | 12.50 | 960 | 1 | 0.96 | | | | |
| 24 | 6.50 | 3,700 | 3.90 | 3.80 | | | | |
| | | | | | | | | |

Single-winding Latching Type. Standard and FCC Part 68 Version (G5AU-237P, G5AU-234P, G5AU-237P-FC, G5AU-234P-FC)

| 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 | | | | |

Double-winding Latching Type. Standard and FCC Part 68 Version (G5AK-237P, G5AK-234P, G5AK-237P-FC, G5AK-234P-FC)

| 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% max. | 200% max. | 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 | | | | |

Single-winding Latching Type. High-sensitivity Version (G5AU-237PH, G5AU-234PH)

| 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 | | | | |
| 5 | 20 | 250 | -- | -- | 80% max. | 80% max. | 200% max. | Approx. 200 |
| 6 | 16.70 | 360 | -- | -- | | | | |
| 9 | 11.10 | 810 | -- | -- | | | | |
| 12 | 8.40 | 1,440 | -- | -- | | | | |
| 24 | 4.20 | 5,760 | -- | -- | | | | |

- 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).

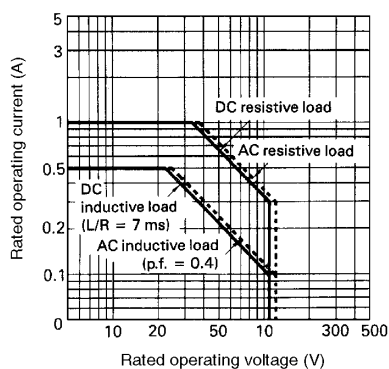
■ Characteristics

| Type | Non-latching | | Latching | |
|------------------------------|--|--|--|---|
| Contact resistance | 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) | |
| Bounce time | Operate | Approx. 0.5 ms | | |
| | Release | Approx. 0.5 ms | | |
| Operating frequency | Mechanical | 36,000 operations/hour | | |
| | Electrical | 18,000 operations/hour (under rated load) | | |
| Insulation resistance | 1,000 mΩ min. (at 500 VDC) | | 1,000 mΩ min. (at 250 VDC) | |
| Dielectric strength | -- | 1,000 VAC, 50/60 Hz for 1 minute between coil and contacts | | |
| | | 1,000 VAC, 50/60 Hz for 1 minute between contacts of different poles | | |
| | Standard | 500 VAC, 50/60 Hz for 1 minute between contacts of same pole | | |
| | FC | 750 VAC, 50/60 Hz for 1 minute between contacts of same pole | | |
| | Set and reset coils | -- | 250 VAC, 50/60 Hz for 1 minute | |
| Vibration | Mechanical durability | 10 to 55 Hz; 1.50 mm (0.06 in) double amplitude | | |
| | Malfunction durability | Malfunction durability 10 to 55 Hz; 1.50 mm (0.06 in) double amplitude | | |
| Shock | Mechanical durability | Approx. 100 G | | |
| | Malfunction durability | Approx. 30 G | | |
| Ambient temperature | -40 to 70°C (-40 to 158°F) | | | |
| Humidity | 45% to 85% RH | | | |
| Service life | Mechanical | 50 million operations min. (at 18,000 operations/hour) | | 1 million operations min. (at 18,000 operations/hour) |
| | Electrical | See "Characteristic Data" | | |
| Weight | Approx. 3 g (0.11 oz) | | | |

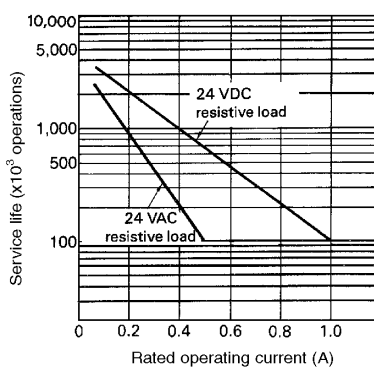
Note: Data shown are of initial value.

■ Characteristic Data

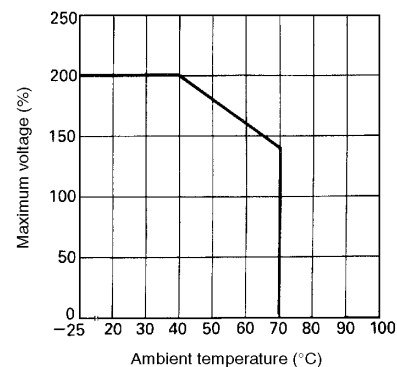
Maximum Switching Capacity



Electrical Service Life



Ambient Temperature vs. Maximum Voltage (reference only)

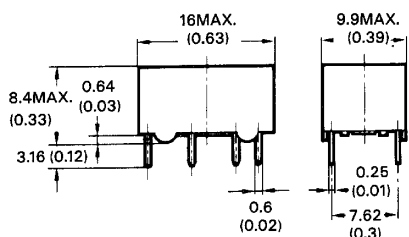


Dimensions

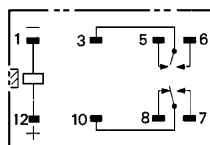
Unit: mm (inch)

■ Non-latching

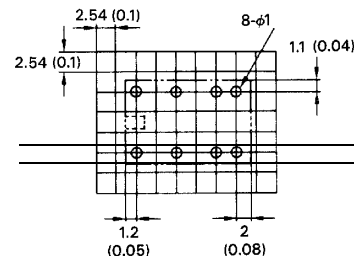
G5A-237P, G5A-237PH, G5A-237P-FC



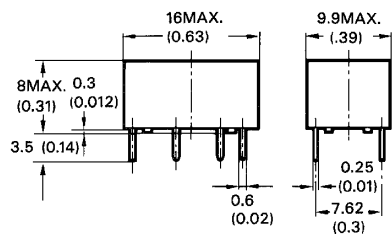
Internal connections (Bottom view)



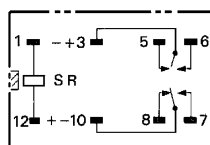
Footprint (Bottom view)



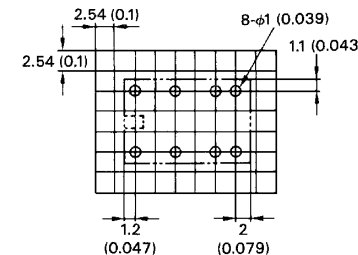
G5A-234P, G5A-234PH, G5A-234P-FC



Internal connections (Bottom view)



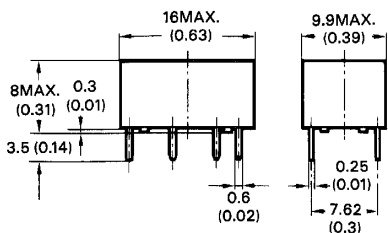
Footprint (Bottom view)



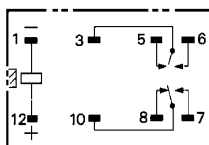
Note: 1. and indicate mounting orientation marks.

Latching

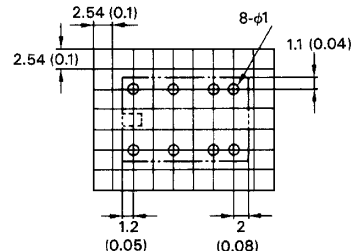
G5AU-237P, G5AU-237PH, G5AU-237P-FC



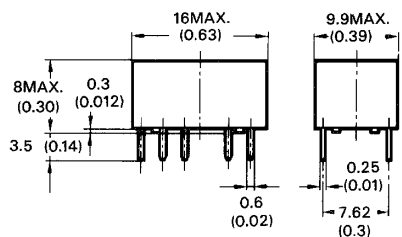
Internal connections
(Bottom view)



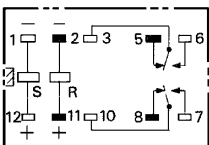
Footprint
(Bottom view)



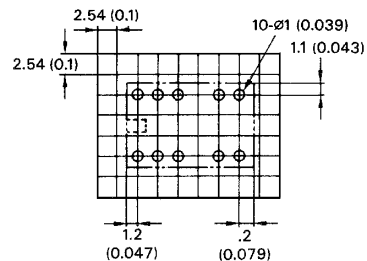
G5AK-237P, G5AK-237PH, G5AK-237P-FC



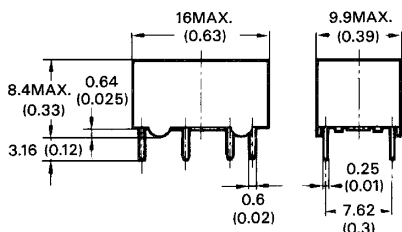
Internal connections
(Bottom view)



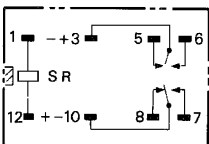
Footprint
(Bottom view)



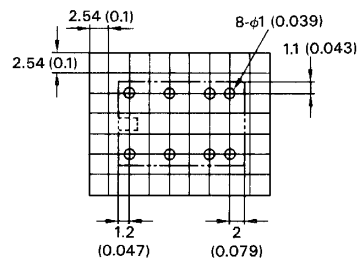
G5AU-234P, G5AU-234PH, G5AU-234P-FC



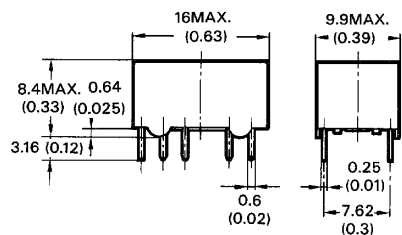
Internal connections
(Bottom view)



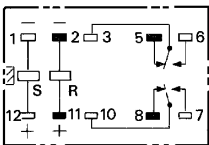
Footprint
(Bottom view)



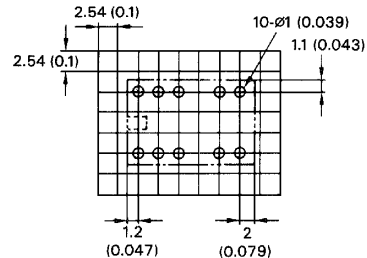
G5AK-234P, G5AK-234PH, G5AK-234P-FC



Internal connections
(Bottom view)



Footprint
(Bottom view)



Note: 1. and indicate mounting orientation marks.

■ Approvals

UL (File No. E41515)/CSA (File No. LR24825)

| Type | Contact form | Coil ratings | Contact ratings |
|--------------|--------------|---------------|---|
| G5A-234P | DPDT | 1.5 to 48 VDC | 0.5 A, 60 VAC 1 A, 30 VDC |
| G5A-234PH | | | |
| G5A-234P-FC | | | |
| G5A-237P | | | |
| G5A-237PH | | | 0.5 A, 60 VAC 0.5 A, 60 VDC 1 A, 30 VDC |
| G5A-237P-FC | | | |
| G5AU-237P | | | |
| G5AU-237PH | | | |
| G5AU-237P-FC | | | |
| G5AK-237P | | | |
| G5AK-237P-FC | | | |
| G5AU-234P | | | |
| G5AU-234PH | | | |
| G5AU-234P-FC | | | |
| G5AK-234P | | | |
| G5AK-234P-FC | | | |

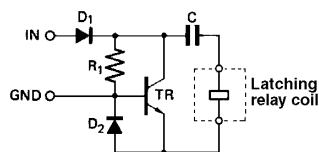
- Note:** 1. The rated values approved by each of the safety standards (e.g., UL and CSA) may be different from the performance characteristics individually defined in this catalog.
 2. In the interest of product improvement, specifications are subject to change.

Hints on Correct Use

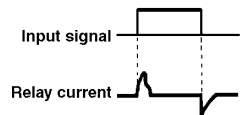
Single-winding type (G5AU)

Example of low-power drive circuit

- 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.
- 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.



- 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.

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

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