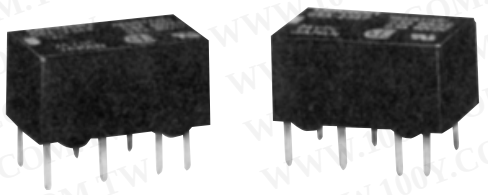
OMRON

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 (Moving Loop System) 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	**Part number**
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	**Part number**	
			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 μA, 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	% of rated voltage			
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	% of rated voltage			
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	% of rated voltage			
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				

■ COIL DATA (continued)

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	% of rated voltage			
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	% of rated voltage			
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).

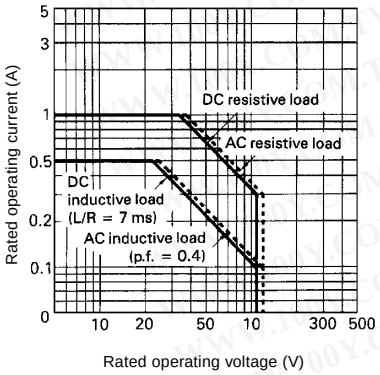
■ CHARACTERISTICS

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)	100 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	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)	

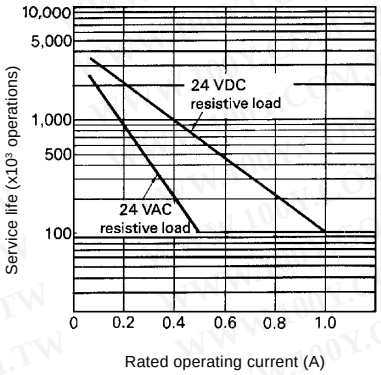
Note: Data shown are of initial value.

■ CHARACTERISTIC DATA

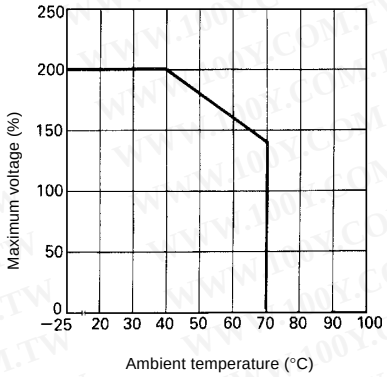
Maximum switching capacity



Electrical service life



Ambient temperature vs. maximum voltage (reference only)

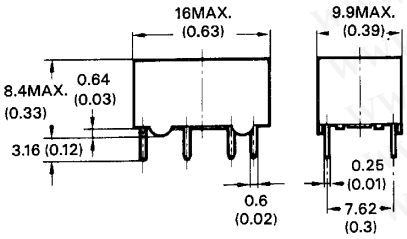


Dimensions

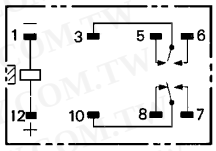
Unit: mm (inch)

■ NON-LATCHING

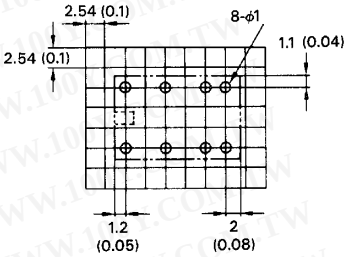
G5A-237P, G5A-237PH, G5A-237P-FC



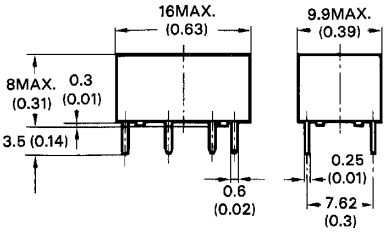
Internal connections
(Bottom view)



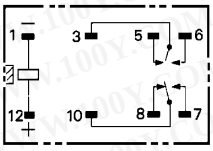
Footprint
(Bottom view)



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



Internal connections
(Bottom view)



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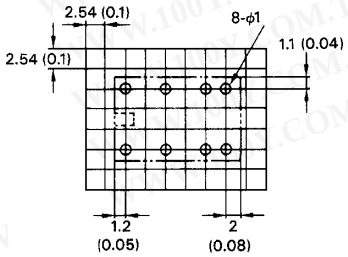
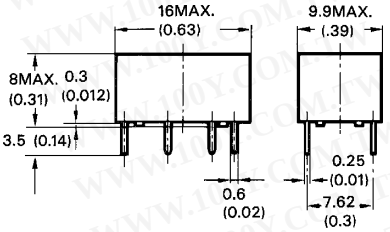
(Bottom view)



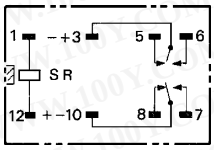
Note: ▨ and ⬚ indicate mounting orientation marks.

■ LATCHING

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



Internal connections
(Bottom view)



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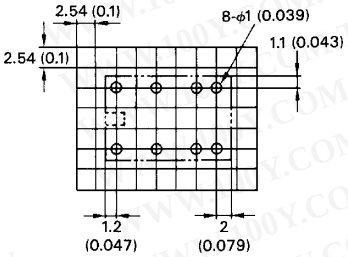
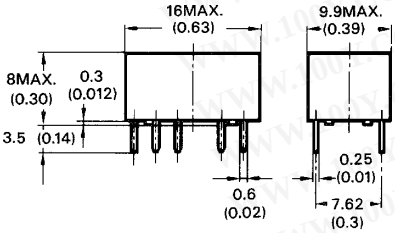
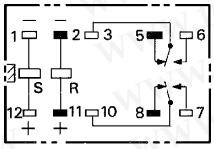
(Bottom view)



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



Internal connections
(Bottom view)



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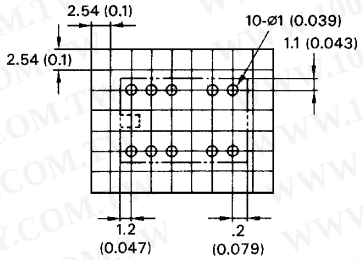
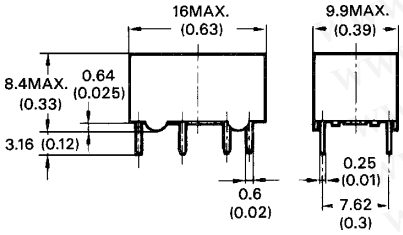
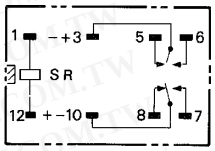
(Bottom view)



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



Internal connections
(Bottom view)



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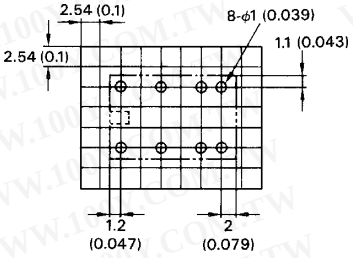
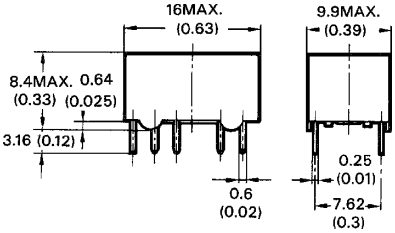
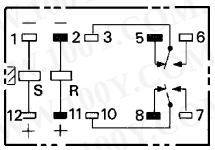


G5AK-234P, G5AK-234PH, G5AK-234P-FC



Internal connections
(Bottom view)



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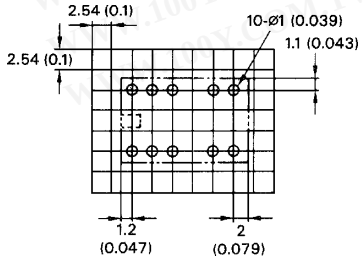
(Bottom view)



Note: ▨ and [ ] indicate mounting orientation marks.

■ APPROVALS

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

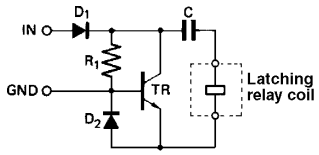
Type	Contact form	Coil ratings	Contact ratings
G5A-234P G5A-234PH G5A-234P-FC G5A-237P G5A-237PH G5A-237P-FC	DPDT	1.5 to 48 VDC	0.5 A, 60 VAC 1 A, 30 VDC
G5AU-237P G5AU-237PH G5AU-237P-FC G5AK-237P G5AK-237P-FC G5AU-234P G5AU-234PH G5AU-234P-FC G5AK-234P G5AK-234P-FC			0.5 A, 60 VAC 0.5 A, 60 VDC 1 A,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

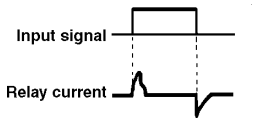
Hints on Correct Use

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.



Notes:

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.