Low Signal Relay G6A

Fullly Sealed Relay with High Impulse Withstand

- High sensitivity can be driven by digital circuits.
- Low-profile design allows use in 12.70 mm PC board rack.
- Surge withstand voltage meets FCC Part 68 regulation.
- Units can be mounted side by side due to low magnetic leakage.
- Special models available for low thermoelectromotive force.
- Unique moving loop (permanent magnet) armature reduces relay size, magnetic interference, and contact bounce time.
- Single or dual coil winding types available.
- RoHS Compliant



Ordering Information

To Order: Select the part number and add the desired coil voltage rating, (e.g., G6A-274P-ST-US-DC12).

■ Non-latching

Туре	Contact form	Model		
		Ag (Au clad)		
Standard	DPDT	G6A-274P-ST-US		
	4PDT - DISCONTINUED	G6A-474P-ST-US		
Low-sensitivity	DPDT	G6A-274P-ST40-US		
	4PDT - DISCONTINUED	G6A-474P-ST40-US		

■ Latching

Single Coil

Туре	Contact form	Model	
		Ag (Au clad)	
Standard	DPDT	G6AU-274P-ST-US	
	4PDT - DISCONTINUED	G6AU-474P-ST-US	

Dual Coil

Туре	Contact form	Model		
		Ag (Au clad)		
Standard	DPDT	G6AK-274P-ST-US		
	4PDT - DISCONTINUED	G6AK-474P-ST-US		
Low-sensitivity	DPDT	G6AK-274P-ST40-US		
	4PDT - DISCONTINUED	G6AK-474P-ST40-US		

Specifications

■ Contact Data

Туре	G6AK-274P-ST(40	G6A-274P-ST(40)-US, G6A-474P-ST(40)-US G6AK-274P-ST(40)-US, G6AK-474P-ST(40)-US G6AU-274P-ST-US, G6AU-474P-ST-US					
Load	Resistive load (p.f. = 1)	Inductive load (p.f. = 0.4) (L/R = 7 ms)					
Rated load	0.50 A at 125 VAC, 2 A at 30 VDC	0.3 A* at 125 VAC, 1 A at 30 VDC					
Contact material	Ag (Au clad)	·					
Carry current	3 A						
Max. operating voltage	250 VAC, 220 VDC						
Max. operating current	2 A	1 A					
Max. switching capacity	125 VA, 60 W 62.50 VA, 30 W						
Min. permissible load (See note)	10 μA, 10 mVDC	·					

^{* 0.25}A at 125VAC for latching models

Note: 1. P level: $\lambda_{60} = 0.1 \text{ x } 10^{-6} / \text{operation}$

This value was measured at a switching frequency of 60 operations/min and the criterion of contact resistance is 50 Ω . This value may vary depending on the switching frequency and operating environment. Always double-check relay suitability under actual operating con-

2. G6A-4 pole versions are discontinued.

■ Coil Data

Standard Non-latching DPDT (G6A-274P-ST-US)

Rated voltage	Rated current	Coil resistance	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption (mW)
(VDC)	(mA)) (Ω) Armature Armature OFF ON		%	% of rated voltage			
3	66.70	45	0.07	0.065	70% max.	10% min.	200%	Approx. 200
4.5	44.6	101	0.16	0.14	1		at 23°C	
5	40	125	0.20	0.18				
6	33.30	180	0.29	0.26	1			
9	22.20	405	0.63	0.57	1			
12	16.70	720	1.10	1.06				
24	8.30	2,880	4.50	4.10				
48	4.90	9,750	13.70	12.50				Approx. 235

Low-sensitivity Non-latching DPDT (G6A-274P-ST40-US)

Rated voltage	Rated current	Coil resistance	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption
(VDC)	(mA)	(Ω)	Armature OFF	,, ,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			ge	(mW)
3	133.30	22.50	0.03	0.02	70% max.	10% min.	150%	Approx. 400
4.5	88.9	50.6	0.065	0.06			at 23°C	
5	80	62.50	0.08	0.07				
6	66.70	90	0.11	0.10				
9	44.30	203	0.27	0.23				
12	33.30	360	0.52	0.43				
24	16.70	1,440	2.10	1.80				
48	8.30	5,760	7.50	6.40				

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

- 2. Operating characteristics are measured at a coil temperature of 23°C.
- 3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

Standard Non-latching 4PDT (G6A-474P-ST-US - DISCONTINUED)

Rated voltage	Rated current	Coil resistance	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption (mW)
(VDC) (mA)		(Ω)	Armature OFF	Armature ON	9	% of rated voltage		
3	120	25	0.05	0.045	70% max.	10% min.	150%	Approx. 360
4.5	79.9	56.3	0.11	0.095			at 23°C	
5	72.50	69	0.14	0.12	1			
6	60	100	0.20	0.17	1			
9	40	225	0.45	0.38	1			
12	30	400	0.80	0.68				
24	15	1,600	3.20	2.70	1			
48	7.50	6,400	12.80	10.90]			

Low-sensitivity Non-latching 4PDT (G6A-474P-ST40-US - DISCONTINUED)

Rated voltage	Rated current	Coil resistance	Coil inductance (ref. value) (H)		Pick-up voltage	Dropout voltage	Maximum voltage	Power consumption
(VDC)	(VDC) (mA)		(Ω) Armature OFF		%	(mW)		
3	133.30	22.50	0.035	0.02	70% max.	10% min.	150%	Approx. 400
4.5	88.9	50.6	0.1	0.07			at 23°C	
5	80	62.50	0.12	0.09				
6	66.70	90	0.17	0.13				
9	44.30	203	0.42	0.30				
12	33.30	360	0.70	0.52				
24	16.70	1,440	2.80	2.20]			
48	8.30	5,760	10.20	8.60				

Standard Single Coil Latching DPDT (G6AU-274P-ST-US)

Rated voltage	Rated current	Coil resistance	Coil inductance (ref. value) (H)		Set pick-up voltage	Reset pick- up voltage	Maximum voltage	Power consumption (mW)	
(VDC) (mA)		(Ω)	Armature OFF	Armature ON	%	of rated voltage	of rated voltage		
3	33.70	89	0.15	0.11	70% max. 70% min.	70% min.	200% at 23°C	Approx. 100	
4.5	22.2	202	0.34	0.25					
5	20	250	0.44	0.35	1				
6	16.70	360	0.64	0.48	1				
9	11.10	810	1.38	1.07	1				
12	8.30	1,440	2.50	2					
24	4.20	5,760	9.20	7.20	1				
48	2.50	19,000	28.50	22				Approx. 120	

Standard Dual Coil Latching DPDT (G6AK-274P-ST-US)

Rated voltage	Itage current resistance				uctance lue) (H)		Set pick-up	Reset pick-up	Maximum voltage	Power consumption
(VDC)	(mA)	(Ω)	Set	coil	Rese	t coil	voltage	voltage		(mW)
			Armature OFF	Armature ON	Armature OFF	Armature ON	%	of rated voltage	je	
3	66.70	45	0.037	0.027	0.027	0.037	70% max.	70% min.	200%	Approx. 200
4.5	40.2	112	0.09	0.065	0.065	0.09			at 23°C	Approx. 180
5	36	139	0.11	0.08	0.08	0.11				
6	30	200	0.16	0.12	0.12	0.16				
9	20	450	0.38	0.28	0.28	0.38]			
12	15	800	0.60	0.45	0.45	0.60]			
24	7.50	3,200	2.10	1.50	1.50	2.10	1			
48	4.20	11,520	8.50	6.30	6.30	8.50				Approx. 200

- Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of $\pm 10\%$.
 - 2. Operating characteristics are measured at a coil temperature of 23°C.
 - 3. The maximum voltage is the highest voltage that can be imposed on the relay coil.

Low-sensitivity Dual Coil Latching DPDT (G6AK-274P-ST40-US)

Rated	Rated	Coil	Coil	inductance	e (ref. value) (H)	Set	Reset	Maximum	Power
voltage (VDC)	current (mA)	resistance (Ω)	Set	coil	Reset coil		pick-up voltage	pick-up voltage	voltage	consumption (mW)
			Armature OFF	Armature ON	Armature OFF	Armature ON	9	of rated voltage	je	
3	120	25	0.015	0.01	0.01	0.015	70% max.	70% min.	150%	Approx. 360
4.5	79.9	56.3	0.04	0.025	0.025	0.04			at 23°C	
5	72.50	69	0.05	0.035	0.035	0.05				
6	60	100	0.07	0.05	0.05	0.07				
9	40	225	0.16	0.12	0.12	0.16				
12	30	400	0.28	0.20	0.20	0.28				
24	15	1,600	1.10	0.75	0.75	1.10]			
48	7.50	6,400	4	2.90	2.9	4				

Standard Single Coil Latching 4PDT (G6AU-474P-ST-US - DISCONTINUED)

Rated voltage	Rated current	Coil resistance	Coil inductance	e (ref. value) (H)	Set pick-up voltage	Reset pick-up voltage	Maximum voltage	Power consumption
(VDC) (mA)		(Ω)	Armature OFF	Armature ON	9	(mW)		
3	106.80	28.10	0.03	0.02	70% max. 70% min.	70% min.	150%	Approx. 320
4.5	71.2	63.2	0.06	0.04			at 23°C	
5	64	78.10	0.08	0.06				
6	53.30	112.50	0.11	0.08				
9	35.60	253	0.25	0.18				
12	26.70	450	0.45	0.32				
24	13.30	1,800	1.80	1.30	1			
48	6.70	7,200	7.00	5.20	1			

Standard Dual Coil Latching 4PDT (G6AK-474P-ST-US - DISCONTINUED)

Rated	Rated current (mA)	Coil resistance (Ω)	Coil inductance (ref. value) (H)				Set	Reset	Maximum	Power
voltage (VDC)			Set coil		Reset coil		pick-up voltage	pick-up voltage	voltage	consumption (mW)
			Armature OFF	Armature ON	Armature OFF	Armature ON	9	of rated voltage	je	
3	106.80	28.10	0.03	0.02	0.02	0.03	70% max.	70% min.	n. 150% at 23°C	Approx. 320
4.5	71.2	63.2	0.06	0.04	0.04	0.06]			
5	64	78.10	0.08	0.06	0.06	0.08]			
6	53.30	112.50	0.11	0.08	0.08	0.11				
9	35.60	253	0.25	0.18	0.18	0.25				
12	26.70	450	0.45	0.32	0.32	0.45				
24	13.30	1,800	1.80	1.30	1.30	1.80	1			
48	6.70	7,200	7.00	5.20	5.20	7.00	1			

Dual Coil Latching Low-sensitivity 4PDT (G6AK-474P-ST40-US - DISCONTINUED)

Rated	Rated	Coil	Coil inductance (ref. value) (H)				Set	Reset	Maximum	Power
voltage (VDC)	current (mA)	resistance (Ω)	Set	coil	Reset co		pick-up pick-up voltage voltage		voltage	consumption (mW)
			Armature OFF	Armature ON	Armature OFF	Armature ON	%	of rated voltag	je	
3	120	25	0.02	0.02	0.02	0.02	70% max.	70% min.	150%	Approx. 360
4.5	79.9	56.3	0.045	0.035	0.035	0.045			at 23°C	
5	72.50	69	0.065	0.05	0.05	0.065				
6	60	100	0.09	0.075	0.075	0.09				
9	40	225	0.18	0.14	0.14	0.18]			
12	30	400	0.30	0.23	0.23	0.30]			
24	15	1,600	1.20	0.82	0.82	1.20]			
48	7.50	6,400	4.40	3.20	3.20	4.40	1			

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

■ Characteristics

Туре		Non-latching Latching					
Contact resistance (See not	te 1)	50 mΩ max.					
Operate (set) time	DPDT	5 ms max. (mean value approx. 3 ms)	ns max. (mean value approx. 2.50 ms)				
(See note 2)	4PDT - DISCONTINUED	7 ms max. (mean value approx 3.80 ms)	7 ms max. (mean value approx. 3.30 ms)				
Release (reset) time	DPDT	3 ms max. (mean value approx. 1.20 ms)	5 ms max. (mean value approx. 2.50 ms)				
(See note 2)	4PDT - DISCONTINUED	5 ms max. (mean value approx. 1.30 ms)	7 ms max. (mean value approx. 2.70 ms)				
Min. set/reset signal width	DPDT	7 ms min.					
	4PDT - DISCONTINUED	15 ms min.					
Operating frequency	Mechanical	36,000 operations/hour					
	Electrical	1,800 operations/hour (under rated load)					
Insulation resistance (See r	note 3)	1,000 MΩ min. (at 500 VDC); except for set-reset					
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					
		1,000 VAC, 50/60 Hz for 1 minute between contacts of same pole					
		250 VAC, 50/60 Hz for 1 minute between set and reset coils					
Surge withstand voltage		1,500 V (10 x 160 μs) (conforms to FCC Part 68)					
Vibration Mechanical durability Malfunction durability		10 to 55 Hz; 5 mm double amplitude					
		y 10 to 55 Hz; 3.3 mm double amplitude					
Shock Mechanical durab		/ 1,000 m/s ² (Approx. 100G					
	Malfunction durability	DPDT: 500 m/s ² (Approx. 50 G); 4PDT: 300 m/s ² (Approx. 30 G)					
Ambient temperature	•	-40° to 70°C with no icing					
Humidity		5% to 85% RH					
Service life Mechanical		100 million operations min. (at 36,000 operations/hour)					
	Electrical	500,000 operations min. (at 1,800 operations/hr) See "Characteristic Data"					
Weight	DPDT	Approx. 3.5 g					
	4PDT - DISCONTINUED	Approx. 6.0 g					

- Note: 1. The contact resistance was measured with 10 mA at 1 VDC with a fall-of-potential method.
 - 2. Values in parentheses are typical values unless otherwise stated.
 - 3. The insulation resistance was measured with a 500-VDC megohmmeter applied to the same parts as those for checking the dielectric strength (except between the set and reset coil).
 - 4. The above values are initial values.

■ Approvals

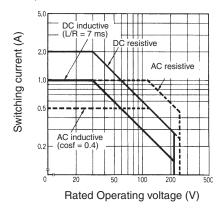
UL Recognized (File No. E41515) / CSA Certified (File No. LR31928) - - Ambient Temp. = 40°C

Туре	Contact form	Coil rating	Contact ratings	Number of test operations
G6A()-274P-ST()-US	DPDT	1.5 to 48 VDC	1 A at 125 VAC (General Purpose)	6,000
			2 A at 30 VDC (General Purpose)	
			0.6 A at 110 VDC (General Purpose)	

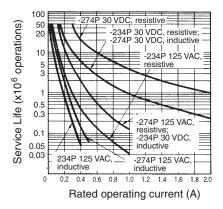
- Note: 1. The rated values approved by each of the safety standards (e.g., UL and CSA) may be different from the performance characteristics individually defined in this catalog.
 - 2. In the general interest of product improvement, specifications are subject to change.

■ Characteristic Data

Maximum Switching Capacity DPDT, 4PDT

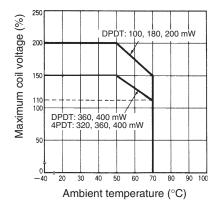


Electrical Service Life DPDT



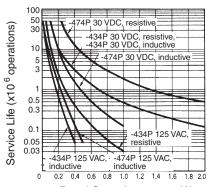
Note: G6A-4 pole versions are discontinued.

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.

4PDT



Rated Operating current (A)

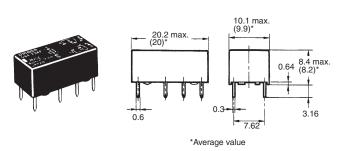
Dimensions

Note: 1. All units are in millimeters unless otherwise indicated.

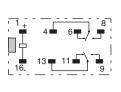
2. Orientation marks are indicated as follows:

■ Non-latching

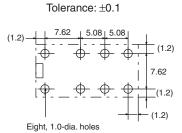
G6A-274P-ST(40)-US



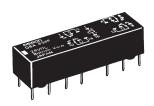
Terminal Arrangement/ Internal Connections (Bottom View)

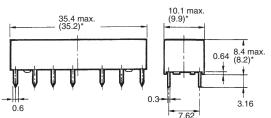


Mounting Holes (Bottom View)

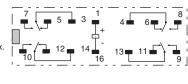


G6A-474P-ST-US - DISCONTINUED

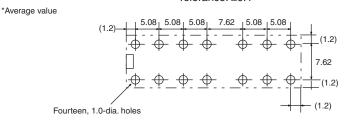








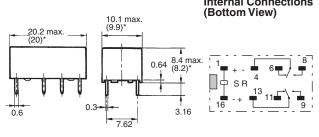
Mounting Holes (Bottom View) Tolerance: ±0.1



■ Latching

G6AU-274P-ST-US



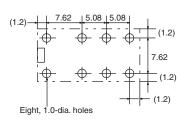


*Average value

Terminal Arrangement/ Internal Connections (Bottom View)

Mounting Holes (Bottom View)

Tolerance: ±0.1

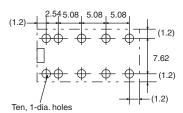


G6AK-274P-ST(40)-US

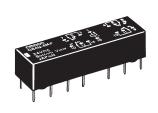
Internal Connections 10.1 max. (9.9)* (Bottom View) 20.2 max. (20)* 0.64 3.16 *Average value

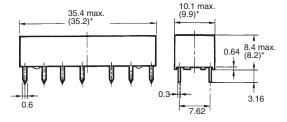
Mounting Holes (Bottom View)

Tolerance: ±0.1

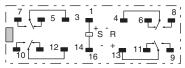


G6AU-474P-ST-US - DISCONTINUED





Terminal Arrangement/ Internal Connections (Bottom View)

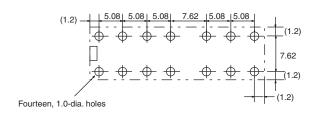


*Average value

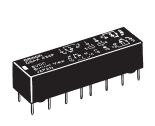
Terminal Arrangement/

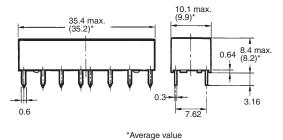
Mounting Holes (Bottom View)

Tolerance: ±0.1

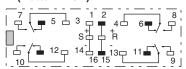


G6AK-474P-ST(40)-US - DISCONTINUED



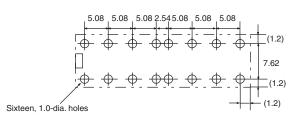


Terminal Arrangement/ Internal Connections (Bottom View)



Mounting Holes (Bottom View)

Tolerance: ±0.1



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. Be sure to use a fail-safe circuit design that provides protection against contact failure or coil burnout. Otherwise, use a latching relay.

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.

Omron Electronic Components, LLC

Terms and Conditions of Sales

I. GENERAL

Definitions: The words used herein are defined as follows.

Terms: These terms and conditions

Seller: Omron Electronic Components LLC and its subsidiaries (b)

The buyer of Products, including any end user in section III through VI Buyer: (c)

Products: Products and/or services of Seller Including: Including without limitation

- Offer: Acceptance: These Terms are deemed part of all quotations, acknowledgments, invoices, purchase orders and other documents, whether electronic or in writing, relating to the sale of Products by Seller. Seller hereby objects to any Terms proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these
- Distributor: Any distributor shall inform its customer of the contents after and including section III of these Terms.

- Prices: Payment: All prices stated are current, subject to change without notice by Seller. Buyer agrees to pay the price in effect at the time the purchase order is accepted by Seller. Payments for Products received are due net 30 days unless otherwise stated in the invoice. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice.
- Discounts: Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (a) the invoice is paid according to Seller's payment terms and (b) Buyer has no past due amounts owing to Seller.
- Interest: Seller, at its option, may charge Buyer 1.5% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms. Orders: Seller will accept no order less than 200 U.S. dollars net billing.

- Currencies: If the prices quoted herein are in a currency other than U.S. dollars, Buyer shall make remittance to Seller at the then current exchange rate most favorable to Seller; provided that if remittance is not made when due, Buyer will convert the amount to U.S. dollars at the then current exchange rate most favorable to Seller available during the period between the due date and the date remittance is actually made.
- Governmental Approvals: Buyer shall be responsible for all costs involved in obtaining any government approvals regarding the importation or sale of the Products.
- Taxes: All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Seller or required to be collected directly or indirectly by Seller for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Seller.
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 - Use in consumer products or any use in significant quantities. Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this

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