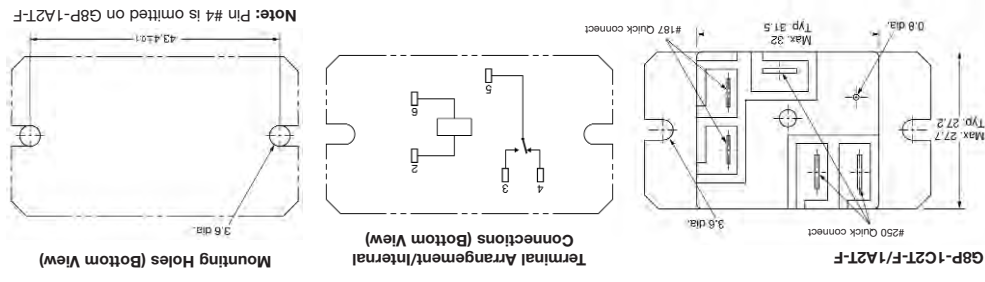
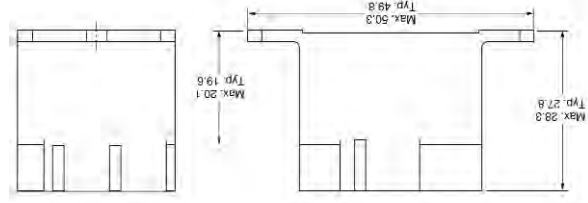


PCB Power Relay – G8P

Flange Mounting Types



Note: Pin #4 is omitted on G8P-1A2T-F



Note: Allow air circulation within the sealed type G8P by removing the knock off nib from the cover after soldering and cleaning is complete.

Precautions

Sealed Relays
Remove the vent hole tape seal from the cover after all soldering and cleaning have been completed to allow air circulation within sealed G8P Relays.

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CAT. No. K108-E2-03A-X

PCB Power Relay – G4A

Miniature Single-pole Relay with 80-A Surge Current and 20-A Switching Current

- ROHS compliant.
- Ideal for motor switching.
- Miniature, relay with high switching power and long endurance.
- Creepage distance conforms to UL, CSA and EN standards.
- Highly noise-resistant insulation materials employed.
- Standard model available with flux protection construction.



Power Relays

Ordering Information

Classification	Contact Form	Model
#250 tab terminals/PCB coil terminals	SPST-NO	G4A-1A-E
PCB terminals/PCB coil terminals		G4A-1A-PE

Note: When ordering, add the rated coil voltage to the model number.
Example: G4A-1A-E 12 VDC

Rated coil voltage

Model Number Legend
G4A-□□-□□□□ VDC

1. Number of Poles
T: 1 pole
2. Contact Form
A: SPST-NO
3. Terminals
None: #250 tab/PCB coil terminals
P: Straight PCB/PCB terminals
4. Special Function
E: For long endurance
5. Rated Coil Voltage
5, 12, 24 VDC

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PCB Power Relay – G4A

Specifications

■ Coil Rating

Rated voltage	5 VDC	12 VDC	24 VDC
Rated current	180 mA	75 mA	37.5 mA
Coil resistance	27.8Ω	160Ω	640Ω
Coil inductance	–	0.8 H	3.5 H
Armature OFF (ref. value)	–	1.1 H	4.8 H
Armature ON (ref. value)	–	–	–
Max. operate voltage	70% of rated voltage max.		
Must release voltage	10% of rated voltage min.		
Max. permissible voltage	160% of rated voltage at (23°)		
Power consumption	Approx. 0.9 W		

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. Max. permissible voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

■ Contact Ratings

Rated load	20 A at 250 VAC
Contact material	AgSnO ₂
Rated carry current	20 A
Max. switching voltage	250 VAC
Max. switching current	20 A
Max. switching power	5,000 VA
Failure rate (ref. value)	100 mA at 5 VDC

Note: P level: λ₆₀ = 0.1 × 10⁻⁶/operation (with an operating frequency of 120 operations/min).

■ Endurance

With Motor Load		
Load conditions	ON: 1.5 s OFF: 1.5 s	250 VAC: Inrush current: 80 A (cosφ = 0.7) Break current: 20 A (cosφ = 0.9)
Switching frequency	200,000 operations	Electrical endurance
With Overload		
Load conditions	ON: 1.5 s OFF: 99 s	250 VAC: Inrush current: 80 A (cosφ = 0.7) Break current: 80 A (cosφ = 0.7)
Switching frequency	1,500 operations	Electrical endurance
With Inverter Load		
Load conditions	ON: 3 s OFF: 5 s	100 VAC: Inrush current: 200 A (0-P) Break current: 20 A
Switching frequency	30,000 operations	Electrical endurance

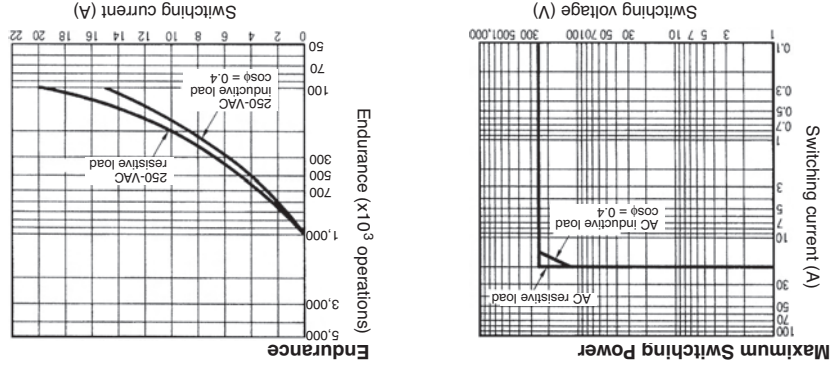
PCB Power Relay – G4A

■ Characteristics

Contact resistance	100 mΩ max.
Operate time	20 ms max.
Release time	10 ms max.
Max. Operating Frequency	Mechanical: 18,000 operations/hr
Insulation resistance	1,000 MΩ max. (at 500 VDC)
Dielectric strength	4,500 VAC 50/60 Hz for 1 min between coil and contacts 1,000 VAC 50/60 Hz for 1 min between contacts of same polarity
Impulse withstand voltage	8,500V (1.2/50μs) between coil and contacts
Insulation Distance	6.4 mm
Creepage (Typ)	3.2 mm
Tracking Resistance (CTI)	250 V
Shock resistance	Destruction: 1,000 m/s ² Malfunction: 200 m/s ²
Vibration resistance	Destruction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude) Malfunction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)
Endurance	Mechanical: 2,000,000 operations min. (at 18,000 operations/hr) Motor load: 100,000 operations min. (ON/OFF: 1.5 s) Inverter load: 30,000 operations min. (ON: 3 s, OFF: 5 s)
Ambient temperature	Operating: -20°C to 60°C (with no icing)
Ambient humidity	Operating: 5% to 85%
Weight	Approx. 2.3 g

Note: The data shown above are initial values.

Engineering Data



PCB Power Relay – G4A

Specifications

■ Coil Rating

Rated voltage	5 VDC	12 VDC	24 VDC
Rated current	180 mA	75 mA	37.5 mA
Coil resistance	27.8Ω	160Ω	640Ω
Coil inductance	–	0.8 H	3.5 H
Armature OFF (ref. value)	–	1.1 H	4.8 H
Armature ON (ref. value)	–	–	–
Max. operate voltage	70% of rated voltage max.		
Must release voltage	10% of rated voltage min.		
Max. permissible voltage	160% of rated voltage at (23°)		
Power consumption	Approx. 0.9 W		

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. Max. permissible voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

■ Contact Ratings

Rated load	20 A at 250 VAC
Contact material	AgSnO ₂
Rated carry current	20 A
Max. switching voltage	250 VAC
Max. switching current	20 A
Max. switching power	5,000 VA
Failure rate (ref. value)	100 mA at 5 VDC

Note: P level: λ₆₀ = 0.1 × 10⁻⁶/operation (with an operating frequency of 120 operations/min).

■ Endurance

Load conditions	250 VAC: Inrush current: 80 A (cosφ = 0.7) Break current: 20 A (cosφ = 0.9)	ON: 1.5 s OFF: 1.5 s	200,000 operations
Switching frequency	Electrical endurance		

With Motor Load

Load conditions	250 VAC: Inrush current: 80 A (cosφ = 0.7) Break current: 80 A (cosφ = 0.7)	ON: 1.5 s OFF: 99 s	1,500 operations
Switching frequency	Electrical endurance		

With Overload

Load conditions	100 VAC: Inrush current: 200 A (0-P) Break current: 20 A	ON: 3 s OFF: 5 s	30,000 operations
Switching frequency	Electrical endurance		

With Inverter Load

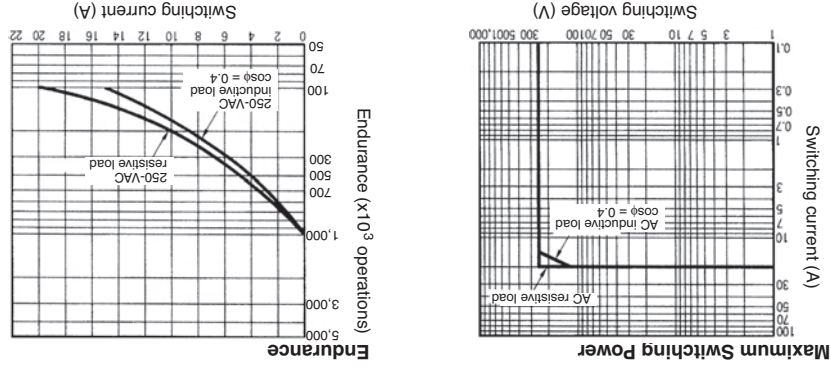
■ Characteristics

PCB Power Relay – G4A

Contact resistance	100 mΩ max.
Operate time	20 ms max.
Release time	10 ms max.
Max. Operating Frequency	Mechanical: 18,000 operations/hr
Insulation resistance	1,000 MΩ max. (at 500 VDC)
Dielectric strength	4,500 VAC 50/60 Hz for 1 min between coil and contacts 1,000 VAC 50/60 Hz for 1 min between contacts of same polarity
Impulse withstand voltage	8,500V (1.2/50μs) between coil and contacts
Insulation Distance	6.4 mm
Creepage (Typ)	3.2 mm
Tracking Resistance (CTI)	250 V
Shock resistance	Destruction: 1,000 m/s ² Malfunction: 200 m/s ²
Vibration resistance	Destruction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude) Malfunction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)
Endurance	Mechanical: 2,000,000 operations min. (at 18,000 operations/hr) Motor load: 100,000 operations min. (ON/OFF: 1.5 s) Inverter load: 30,000 operations min. (ON: 3 s, OFF: 5 s)
Ambient temperature	Operating: -20°C to 60°C (with no icing)
Ambient humidity	Operating: 5% to 85%
Weight	Approx. 2.3 g

Note: The data shown above are initial values.

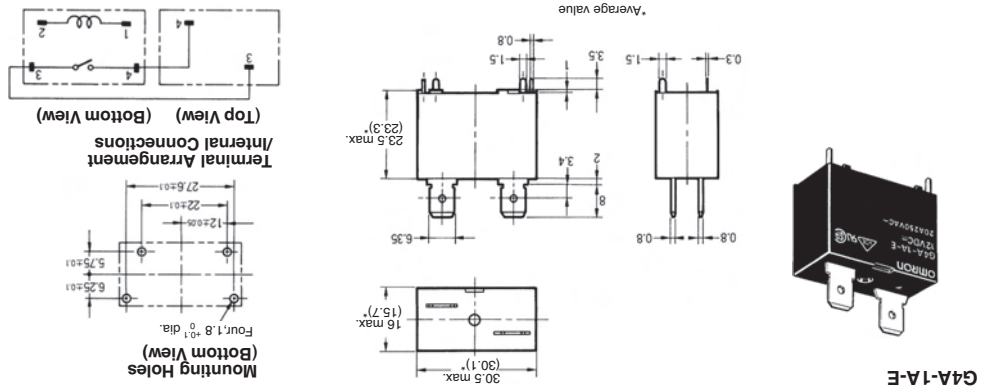
Engineering Data



PCB Power Relay – G4A

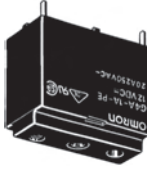
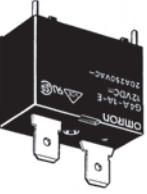
Dimensions

Note: All units are in millimetres unless otherwise indicated; dimensions shown in parentheses are in inches.



G4A-1A-E

G4A-1A-PE



Precautions

Mounting
When mounting two or more relays side by side, provide a minimum space of 3 mm between relays.

Terminal Connection
The terminals fit FASTON receptacle 250 and are suitable for positive-lock mounting. Do not apply excessive force on the terminals when mounting or dismounting the relay. The following positive-lock connectors made by AMP are recommended.

Type	Receptacle terminals	Positive housing
#250 terminals (width: 6.35 mm)	AMP 170333-1 (170327-1) AMP 170334-1 (170328-1) AMP 170335-1 (170329-1)	AMP 172076-1 natural color AMP 172076-4 yellow AMP 172076-5 green AMP 172076-6 blue

Note: The numbers shown in parentheses are for air-feeding.

DC Power Relay – G9EA-1

DC Power Relays Capable of Interrupting High-voltage, High-current Loads

- A compact relay (73 x 36 x 67.2 mm (L x W x H)) capable of switching 400-V 60-A/100-A DC loads. (Capable of interrupting 600 A at 300 VDC max.)

- The switching section and driving section are gas-injected and hermetically sealed, allowing these compact relays to interrupt high-capacity loads. The sealed construction also requires no arc space, saves space, and helps ensure safe applications.
- Downsizing and optimum design allow no restrictions on the mounting direction.

- Terminal Cover and DIN Track Adapters are also available for industrial applications.

- UL/CSA approval pending.

Model Number Structure

G9EA-□-□-□-□
1 2 3 4

1. Number of Poles
1: 1 pole
Blank: SPST-NO
2. Contact Form
Blank: SPST-NO
3. Coil Terminals
B: M3.5 screw terminals
Blank: Lead Wire Output
4. Special Functions
CA: High-current conduction (100 A)

Note: Power-saving Models (with auxiliary contacts function) are scheduled to be added to the lineup as special function models.

Specifications

■ List of Models

Models	Terminals		Contact form	Rated coil voltage	Model
	Coil terminals	Contact terminals			
Switching / current conduction models	Screw terminals	Screw terminals	SPST-NO	12 VDC	G9EA-1-B
	Lead wires	Lead wires			G9EA-1
High-current conduction models	Screw terminals	Screw terminals		60 VDC	G9EA-1-B-CA
	Lead wires	Lead wires			G9EA-1-CA

Note: 1. Relays come with two M5 screws for the main terminals (contacts).
2. Relays with coil terminals and screw terminals come with two M3.5 screws.



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