

## 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-resistive insulation materials employed.
- Standard model available with flux protection construction.



### 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 2 3 4 5

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

### Specifications

#### ■ Coil Rating

<b>Rated voltage</b>	5 VDC	12 VDC	24 VDC
<b>Rated current</b>	180 mA	75 mA	37.5 mA
<b>Coil resistance</b>	27.8Ω	160Ω	640Ω
<b>Coil inductance (ref. value)</b>	<b>Armature OFF</b>	0.8 H	3.5 H
	<b>Armature ON</b>	1.1 H	4.8 H
<b>Must operate voltage</b>	70% of rated voltage max.		
<b>Must release voltage</b>	10% of rated voltage min.		
<b>Max. permissible voltage</b>	160% of rated voltage at (23°)		
<b>Power consumption</b>	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
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:  $\lambda_{60} = 0.1 \times 10^{-6}$ /operation (with an operating frequency of 120 operations/min).

## ■ Endurance

### with Motor Load

Load conditions	Switching frequency	Electrical endurance
250 VAC: Inrush current: 80 A, 0.3 s ( $\cos\theta = 0.7$ ) Break current: 20 A ( $\cos\theta = 0.9$ )	ON: 1.5 s OFF: 1.5 s	200,000 operations

### With Overload

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

### With Inverter Load

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

## ■ 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	1000 MΩ max. (at 500 VDC)
Insulation resistance	100 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
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> Malfunction: 200 m/s <sup>2</sup>
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. 25 g

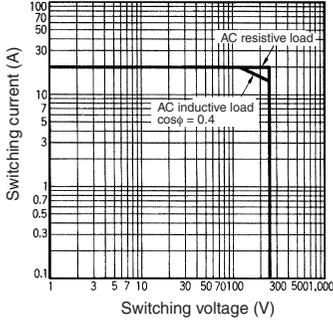
Note: The data shown above are initial values.

DIN EN 61810-1/EN 60255-23 (VDE Reg. No. 6673)

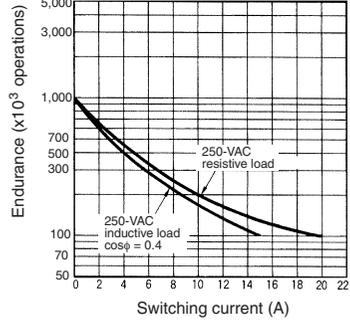
Model	Coil ratings	Contact ratings
G4A-1A	5 to 48 VDC	20A, 250VAC

Engineering Data

Maximum Switching Power



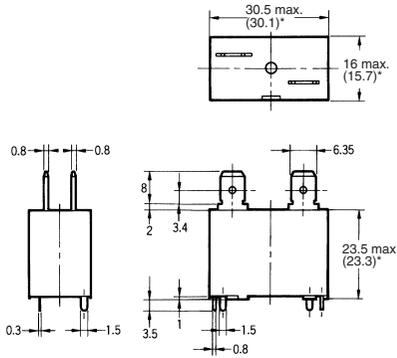
Endurance



# Dimensions

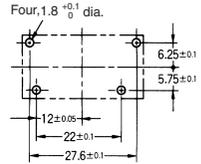
Note: All units are in millimeters unless otherwise indicated; dimensions shown in parentheses are in inches.

## G4A-1A-E

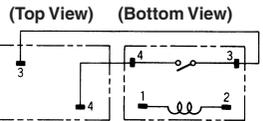


\*Average value

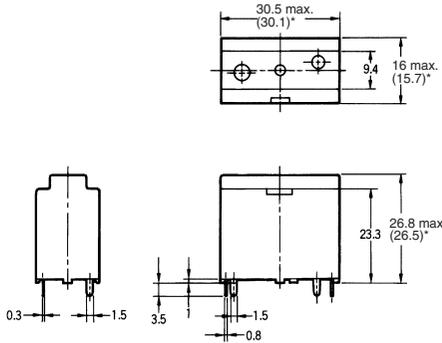
### Mounting Holes (Bottom View)



### Terminal Arrangement / Internal Connections (Top View)

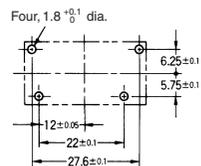


## G4A-1A-PE

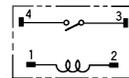


\*Average value

### Mounting Holes (Bottom View)



### Terminal Arrangement / Internal Connections (Bottom View)



# 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.