

Power PCB Relay

G4A

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

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



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 DC12

Rated coil voltage

Model Number Legend

G4A - DC

1 2 3 4 5

1. Number of Poles

1: 1 Pole

3. Terminals

None: #250 tab/PCB coil terminals
P: Straight PCB/PCB coil terminals

5. Rated Coil Voltage

5, 12, 24 VDC

2. Contact Form

A: SPST-NO

4. Special Function

E: For long endurance

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Specifications

■ 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 capacity	5,000 VA
Min. Permissible Load (reference value - see note)	100 mA at 5 VDC

Note: P level: $\lambda_{60} = 0.1 \times 10^{-6}$ /operation

■ Coil Ratings

Rated voltage		5 VDC	12 VDC	24 VDC
Rated current		180 mA	75 mA	37.5 mA
Coil resistance		27.8 Ω	160 Ω	640 Ω
Coil inductance (ref. value)	Armature OFF	---	0.8 H	3.5 H
	Armature ON	---	1.1 H	4.8 H
Pick-up voltage (max.)		70% of rated voltage max.		
Dropout voltage (min.)		10% of rated voltage min.		
Maximum coil voltage		160% of rated voltage at (23°C)		
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 $\pm 10\%$.
 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.

■ Endurance

With Motor Load

Load conditions	Switching frequency	Electrical endurance
250 VAC: Inrush current: 80 A, 0.3 s ($\cos\phi = 0.7$) Break current: 20 A ($\cos\phi = 0.9$)	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 ($\cos\phi = 0.7$) Break current: 80 A ($\cos\phi = 0.7$)	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

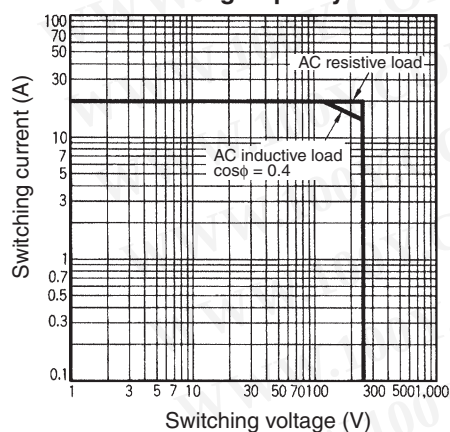
Contact resistance	100 m Ω max.
Operate time	20 ms max.
Release time	10 ms max.
Max. operating frequency	Mechanical: 18,000 operations/hr
Insulation resistance	1,000 M Ω min. (at 500 VDC)
Dielectric strength	4,500 VAC 50/60 Hz for 1 min between coil and contacts 1,000 VAC 50/60 Hz for 1 min between contacts of same polarity
Vibration resistance	Destruction: 10 to 55, 1.5-mm double amplitude Malfunction: 10 to 55, 1.5-mm double amplitude
Shock resistance	Destruction: 1,000 m/s ² Malfunction: 200 m/s ²
Service Life	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. 23 g

Note: The data shown above are initial values.

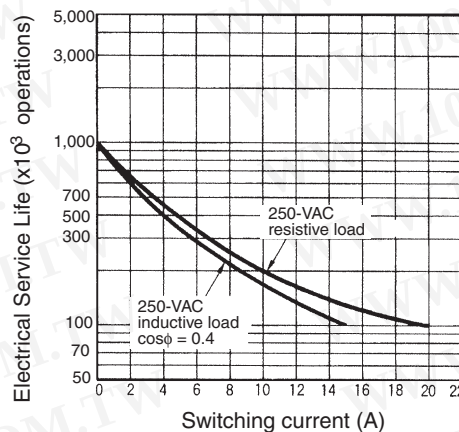
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Engineering Data

Maximum Switching Capacity



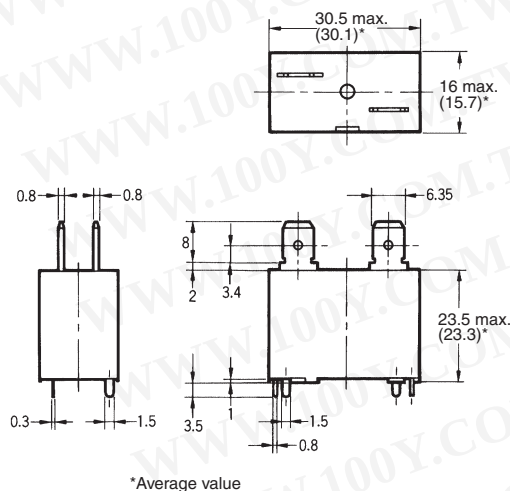
Electrical Service Life



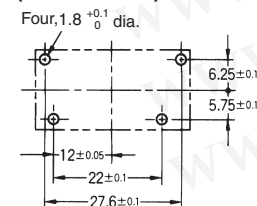
Dimensions

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

G4A-1A-E

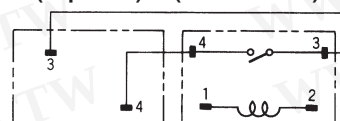


Mounting Holes (Bottom View)



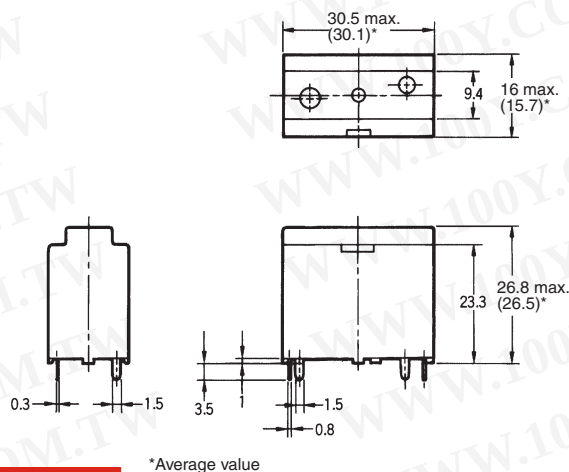
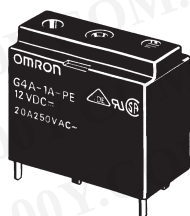
Terminal Arrangement / Internal Connections

(Top View) (Bottom View)

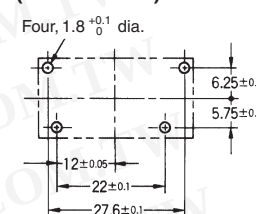


Tab Terminal PCB Terminal

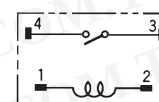
G4A-1A-PE



Mounting Holes (Bottom View)



Terminal Arrangement / Internal Connections (Bottom View)



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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.

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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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Specifications subject to change without notice

Printed in USA

G4A

功率继电器

实现通电80A、通电、切断20A的 1极小型功率继电器

- 实现通电80A、通电、切断20A的电机负载开闭。
- 小型却可以实现高容量开闭、高耐久性。
- 符合UL、CSA空调规格，确保绝缘距离。
- 采用抗干扰性高的高绝缘构造。
- 标准品采用耐焊剂构造。

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■型号标准

G4A-□□-□□
① ② ③ ④

①接点极数 ②接点构成
1: 1极 A: 1a接点

③端子形状
无标记: 接线片端子(#250) 印刷基板端子两用型
P: 印刷基板用端子

■种类

●接线片端子、印刷基板端子两用型

接点构成	负载接点端子	线圈端子	额定电压	型号
1a	#250	印刷基板用端子	DC12V DC24V	G4A-1A-E

●印刷基板端子用端子型

接点构成	负载接点端子	线圈端子	额定电压	型号
1a	印刷基板用端子	印刷基板用端子	DC12V DC24V	G4A-1A-PE

■额定值

●操作线圈

项目	额定电压 (V)	额定电流 (mA)	线圈电阻 (Ω)	电感 (H)		动作电压 (V)	复位电压 (V)	最大容许电压 (V)	消耗功率 (mW)
				铁片 开放时	铁片 动作时				
DC	12	75	160	0.8	1.1	70%以下	10%以上	160% (at23℃)	0.9
	24	37.5	640	3.5	4.8				

- 注 1. 额定电流、线圈电阻的值指的是线圈温度为+23℃时的值，公差±10%。
2. 电感各参考值
3. 动作特性指的是线圈温度为+23℃时的值。
4. 最大容许电压指的是继电器线圈电压容许变动范围的最大值。

●开关部(接点部)

接触机构	单
接点材质	Ag合金(无Cd材料)
额定通断电流	20A
接点电压的最大值	AC250V
接点电流的最大值	20A
开关容量的最大值(参考值)	5,000VA

●马达额定值

负载条件	开关频率	电气寿命
AC250V 实现80A、0.3s $\cos\phi=0.7$ 切断20A $\cos\phi=0.9$	ON:1.5s OFF:1.5s	20万次

●变频器额定值

负载条件	开关频率	电气寿命
AC100V 实现200A (峰值) 切断20A	ON:3s OFF:5s	3万次

●负载寿命(参考值)

负载条件	开关频率	电气寿命
AC250V 实现80A 切断80A $\cos\phi=0.7$	ON:1.5s OFF:99s	1,500次



用途举例

空调

④特殊机能

E: 高寿命产品(高容量)

■性能

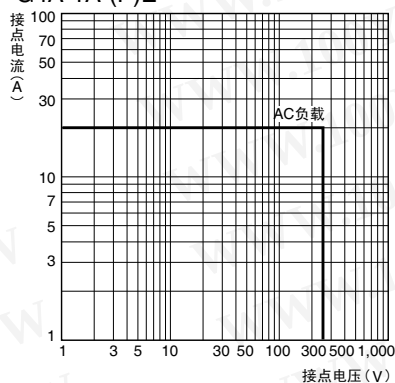
接触电阻 * 1	100mΩ以下
动作时间	20ms以下
复位时间	10ms以下
最大开关频率	机械 18,000次/h
绝缘电阻 * 2	1,000MΩ以上 (DC500V兆欧表)
耐压	线圈与接点间 AC4,500V 50/60Hz 1min
	同极接点间 AC1,000V 50/60Hz 1min
耐冲击电压	线圈与接点间 8.5kV 1.2×50
振动	耐久 10~55~10Hz 单振幅0.75mm(双振幅1.5mm)
	误动作 10~55~10Hz 单振幅0.75mm(双振幅1.5mm)
冲击	耐久 1,000m/s ²
	误动作 200m/s ²
寿命	机械 200万次以上 (开关频率18,000次/h)
	马达负载 20万次以上 (开关频率1.5sON、1.5sOFF)
	变频器负载 3万次以上 (开关频率3sON、5sOFF)
故障率 P水准 (参考值 * 3)	DC5V 100mA
使用环境温度	-20~+60℃ (无结冰、无凝露)
使用环境湿度	5~85%RH
质量	约23g

- 注: 上述值为初始值。
* 1. 测量条件: 根据DC5V 1A电压下降法
* 2. 测量条件: 用DC500V兆欧表测量与耐压相同的项目。
* 3. 此值为开关频率在120次/min时的值。

■参考数据

开关容量的最大值

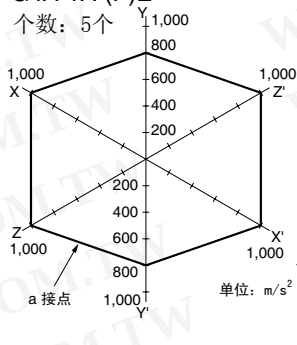
G4A-1A-(P)E



误动作冲击

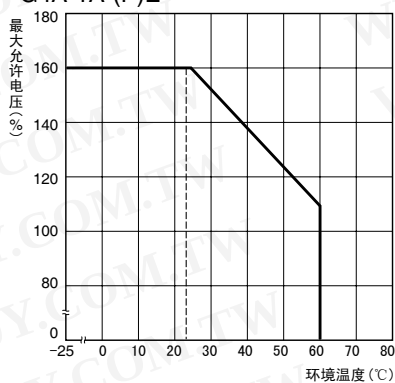
G4A-1A-(P)E

个数: 5个



环境温度和最大容许电压

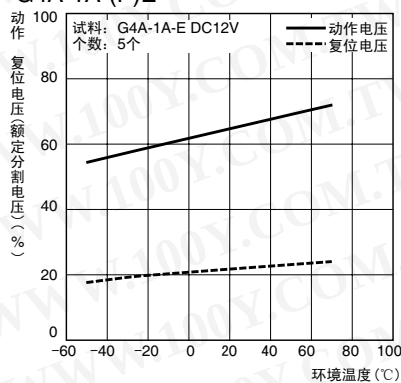
G4A-1A-(P)E



注: 最大容许电压指的是继电器线圈电压容许变动范围的最大值。

环境温度和动作 复位电压

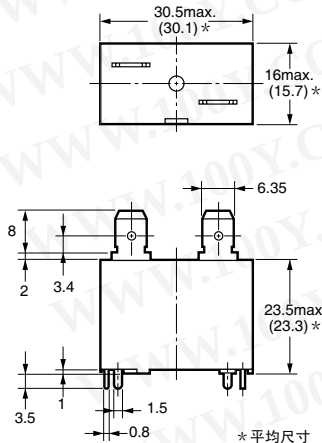
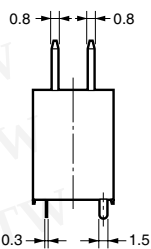
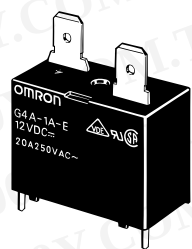
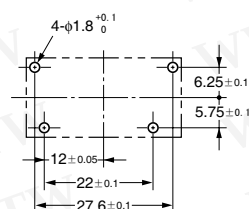
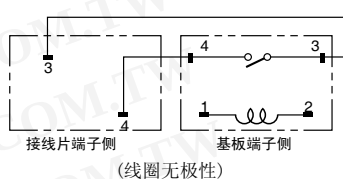
G4A-1A-(P)E



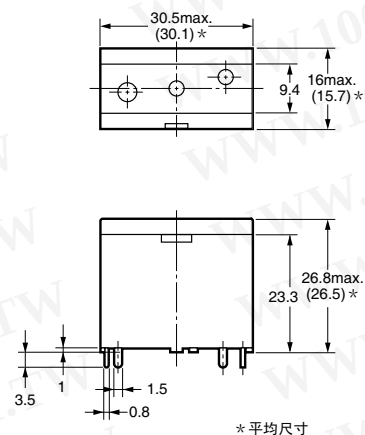
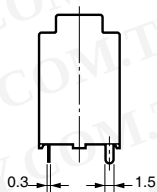
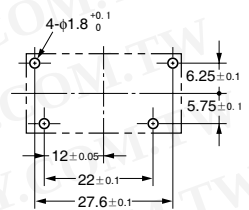
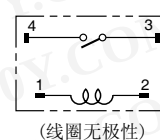
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■外形尺寸

G4A-1A-E

安装孔加工尺寸
(BOTTOM VIEW)端子配置/内部连接图
(TOP VIEW) (BOTTOM VIEW)

G4A-1A-PE

安装孔加工尺寸
(BOTTOM VIEW)端子配置/内部连接图
(BOTTOM VIEW)

■ 国际规格认定额定值

● 个别国际标准的认证额定值与个别确定的推定值不同，使用前请务必确认其规格。

UL规格认证型  (No.E41643) UL508

型号	极数	操作线圈额定值	接点额定值	试验次数
G4A-1A-E G4A-1A-PE	1	5~100V DC	20A 250V AC (Resistive)	100,000次
			15A 30V DC (Resistive)	
			23A 277V AC (General Use)	30,000次

CSA规格认证型  (No.LR31928) C22.2 No.14

型号	极数	操作线圈额定值	接点额定值	试验次数
G4A-1A-E G4A-1A-PE	1	5~100V DC	20A 250V AC (Resistive)	100,000次
			15A 30V DC (Resistive)	
			23A 277V AC (General Use)	30,000次

IEC/VDE规格认证型  (批准No.6673) IEC255/VDE0435

型号	极数	操作线圈额定值	接点额定值	试验次数
G4A-1A-E G4A-1A-PE	1	5、12、18 24V DC	20A 250V AC (cosφ=1.0)	100,000次

■ 请正确使用

● [共通的注意事项] 请参阅相关页面

正确的使用方法

● 关于安装

2个以上并排安装时，继电器之间的相互距离应保持纵向3mm、横向3mm以上，以保持良好的散热状态。继电器不能顺利地散热的话容易引起误动作。

● 关于端子

端子适用紧固插座#250尺寸，可使用位置锁定。紧固端子请勿使用指定型号以外的产品。

连接紧固插座端子的导线的直径，应选用相对负载电流的大小在允许范围内的导线。

插拔紧固插座时，应该用力适当。还应注意不要斜向插入、或同时插入若干个，避免拉拔，应一个一个地进行处理。作为参考，如下表所示，我们给出了AMP公司生产的位置锁定连接器。关于连接器的详细情况、以及是否可定做等请直接与生产商联系。

种类	插座端子	定位外壳
#250端子 (宽6.35mm)	AMP170330-1 (170327-1)	AMP172076-1(自然色)
	AMP170334-1 (170328-1)	AMP172076-4(黄色)
	AMP170335-1 (170329-1)	AMP172076-5(绿色)
		AMP172076-6(蓝色)

* () 为供气用。

● 其他

本继电器为空调的压缩机电机、电源等功率负载开闭用途的功率继电器。请勿用于信号等不到100mA的微小负载的开闭上。

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