



小型功率继电器

Miniature Power Relay

SM-P

特点 Features

- 体积小, 仅 15.7mm 高度。
Small size, 15.7mm high
- 耐压可达 5000 伏 (线圈触点间), 耐 10KV 浪涌电流。
IP/OP 5kV, withstand surge voltage of 10kV
- 线圈和触点之间的爬电距离和空气间隙 $\geq 10\text{mm}$
Creepage and clearance distance between coil and contacts $\geq 10\text{mm}$
- 可提供满足 IEC 60335-1 的产品
IEC60335-1 compliant product is available.
- 可提供满足 IEC 60079-15 的产品
IEC60079-15 compliant product is available

安规认证 Safety certificate

UL、C-UL 认证号 (File No.) : E190598

VDE 认证号 (File No.) : 40031353

触点参数 Contact Data

型号 Type	SM-P
额定负载 (阻性) Rated load (Resistive load)	16A 250VAC
最大切换电流 Max. switching current	16A
最大切换电压 Max. switching voltage	277VAC
最大切换功率 Max. switching power	4432VA
最小切换负载 Min. switching load	6V 1A

性能参数 Characteristic

触点材料 Contact material	银合金 Silver alloy
接触电阻 Contact resistance	100m Ω Max. (at 1A 6VDC)
吸合时间 (额定电压) Operate time (at rated coil voltage)	15ms Max. (不加二极管 No diode)
释放时间 Release time	10ms Max. (不加二极管 No diode)

绝缘电阻 Insulation resistance	Min. 1,000M Ω (at 500VDC)	
介质耐压 Dielectric strength	触点与触点间 Between open contacts: 1,000VAC, 50/60Hz for 1min.	
	触点与线圈间 Between coil and contact: 5,000VAC, 50/60Hz for 1min.	
抗振动 Vibration resistance	耐久 Destructive	10~55Hz, 双振幅 1.5 mm 10~55Hz, at double amplitude of 1.5 mm
	误动作 Functional	10~55Hz, 双振幅 1.5 mm 10~55Hz, at double amplitude of 1.5 mm
抗冲击 Shock resistance	耐久 Destructive	100G Min.
	误动作 Functional	10G Min.
寿命 Endurance	机械寿命 (每小时 10,800 次, 室温) Mechanical endurance (10,800 ops./h)	10,000,000 次 10,000,000 (at room temperature)
	电气寿命 (每小时 360 次, 室温) Electrical endurance (360 ops./h)	100,000 次 100,000 (at room temperature)
环境温度 Ambient temperature	-40°C ~ +105°C (不冷凝 No condensation)	
重量 Weight	约 13.5g Approx.13.5g	

线圈参数 Coil Data (at 20°C)

额定电压 (VDC) Nominal voltage (VDC)	额定电流 $\pm 10\%$ (mA) Nominal operating current $\pm 10\%$ (mA)	线圈电阻 $\pm 10\%$ (Ω) Coil resistance $\pm 10\%$ (Ω)	最大连续 外加电压 Max. allowable voltage	吸合电压 (Max.) Operate voltage (Max.)	释放电压(Min.) Release voltage (Min.)	额定功率 Nominal operating power
5	80.00	62.5	额定电压的 130% 130% of nominal voltage	额定电压的 75% 75% of nominal voltage	额定电压的 10% 10% of nominal voltage	约 0.4W Approx.0.4W
6	66.67	90				
9	44.44	202.5				
12	33.33	360				
18	22.22	810				
24	16.67	1440				
48	8.33	5760				
60	7.00	8570				
110	3.82	28800				

上述值为初始值，请勿在产品上连续施加最大电压 > 10min，以免线圈过度发热。

The data shown above are initial values. Do not apply maximum allowable voltage on coil for more than 10 minutes to avoid overheating of the coil.

安规认证负载（注：更多详细的认证负载，参考安规证书）

Safety Certificate Ratings (Note: More details of approved ratings, please refer to the safety certificates)

认证类型 Certificates	VDE	UL/cUL
认证号码 File No.	40031353	E190598
认证负载 Approved ratings	16A 277/250/125VAC	16A 277/250/125VAC

- (1) 上述未注明温度的负载，均指环境温度为室温。
All values unspecified are at room temperature.
- (2) 以上仅列出了该产品认证的部分负载，每个负载的详细测试条件不同，因此电寿命次数不一样。如需了解详细情况，请联系三友。
Only typical ratings are listed above and the endurance differ in each load. Other specific load information are available upon request.
- (3) 对于塑封式、防水式产品试验时，应打开外壳的透气孔。
For sealed type testing, please open the ventilation hole in the case before test.

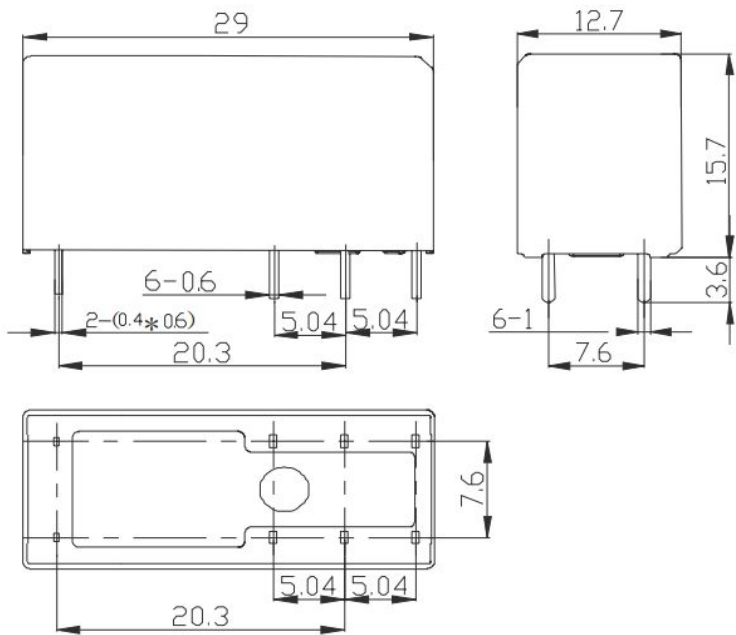
订货标记 Ordering Information

型号命名规则 Nomenclature

SM	-S	-1	12	D	M	P	1	-F	-XX	
										特殊参数 Special Parameter: 无-标准型，字母或数字-特殊要求， Nil-Standard type; Letters or Numbers-Special requirements
										绝缘等级 Insulation System: 无-普通型 (Nil-Standard), B-Class B, F-Class F
										触点材质 Contact Material: 无 Nil-AgNi, 1-AgSnO ₂ , 2-AgNi & AgSnO ₂
										负载能力 Load capacity: P-16A, 105°C 5.0mm 脚位 pin
										触点形式 Arrangement: 无 Nil-Form C M-Form A
										线圈功耗 Coil Power: D-0.4W
										线圈电压 Rated Coil Voltage (VDC) : 05, 06, 09, 12, 18, 24, 48, 60, 110
										触点组数 Number of Poles: 1-1 组(Pole)
										封装形式 Protective Construction: S-塑封式 Flux-proofed SH-防水式 Sealed type washable
										基本型号 Type: SM

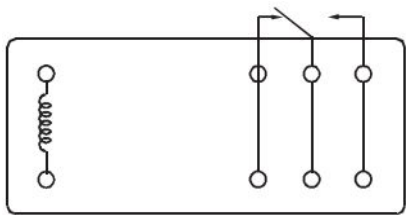
- (1) 塑封式不能在污染环境（含有 H₂S、SO₂、NO₂、粉尘等污染物）中使用。
Plastic sealing type can not be used in polluted environment (containing H₂S, SO₂, NO₂, dust and other pollutants).
- (2) 塑封式装入 PCB 焊接后，不能进行整体清洗或表面处理。
After the plastic seal product is loaded into PCB welding, the whole cleaning or surface treatment can not be carried out.
- (3) 客户特殊要求 (XX)，由我司评估后，按特性符号标识。
Special requirements of customers (XX) shall be evaluated by our company and marked by characteristic symbols.

外形尺寸图、接线图、安装孔位图 (单位: mm)
Outline dimension, wiring diagram, PCB layout (Unit: mm)

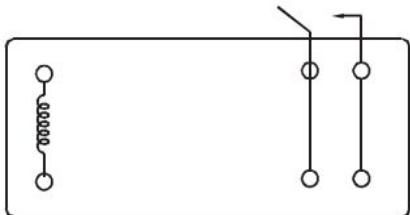


未标注尺寸公差
In case of no tolerance shown on outline dimension
If dimension < 1 mm, tolerance: $\pm 0.2\text{mm}$
If dimension 1~5mm, tolerance: $\pm 0.3\text{mm}$
If dimension > 5mm, tolerance: $\pm 0.4\text{mm}$
注 Note:
1. 引出脚尺寸为预焊前尺寸
The dimension of pin is the size before tinning
2. 安装孔尺寸公差: $\pm 0.1\text{mm}$
Tolerance of PCB layout: $\pm 0.1\text{mm}$

1P 16A
5mm 脚位 Pin



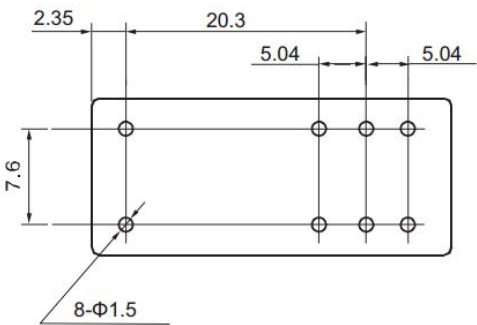
1 c



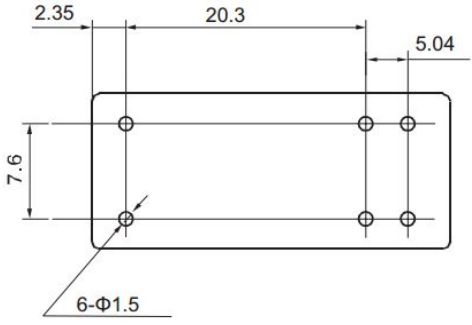
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接线图 (底视图)
Wiring Diagram (bottom view)

1P 16A
5mm 脚位 Pin



1 c



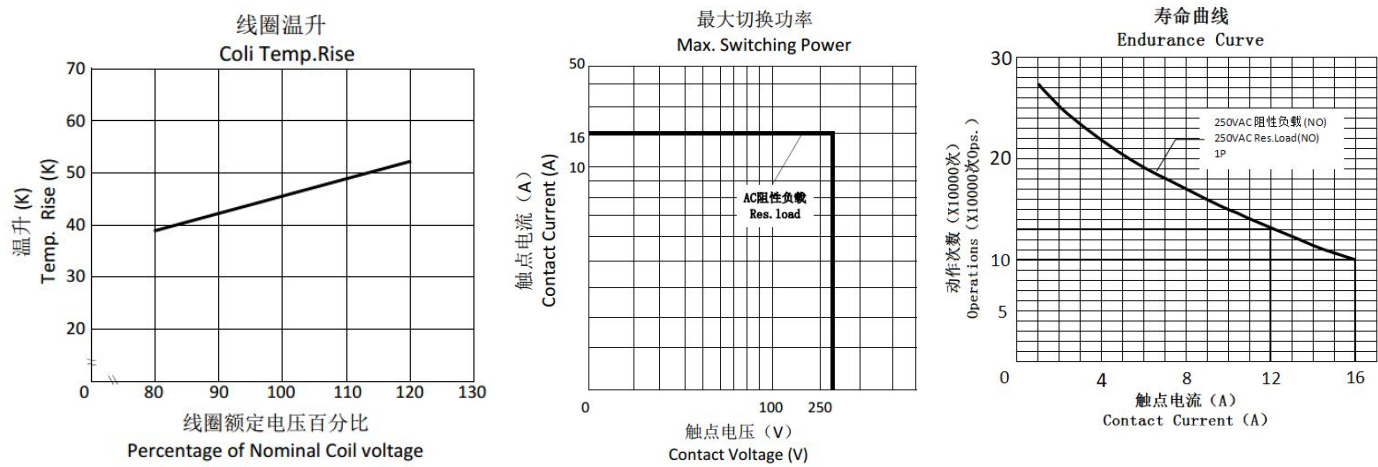
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安装孔位图 (底视图)
P.C.B. Layout (bottom view)

典型用途 Typical Applications

- 家用电器、洗衣机、空调、微波炉、音响、显示器、工业控制仪等
- Home appliances, washing machine, air-conditioning, microwave oven, sound, monitor, industrial control instrument, etc.

性能曲线图 Characteristic Curves



备注 Note:

(1)测试条件: 常温环境, 开孔品, 阻性负载, 1s 通 9s 断
Test conditions: room temperature, flux-proof product, resistive load, 1s on, 9s off.

(2)以上曲线图仅供参考, 最终结果以实验测试为
The above curves are for reference only, and the final result is subject to the experiment

声明: 本产品规格书仅供客户使用时参考, 若有更改, 恕不另行通知。

对三友而言, 不可能评定继电器在每个具体应用领域的所有性能参数要求, 因而客户应该根据具体的使用条件选择与之相匹配的产品。对于密封继电器在安装清洗后, 使用前请打开外壳上的透气孔。若有疑问, 请与三友联系获取更多的技术支持。 但产品选型责任仅由客户负责。

Disclaimer: The specification is for reference only. Specifications are subject to change without prior notice.

We could not evaluate all the performance and all the parameters for every possible applications. Thus the users should in a right position to choose suitable product for their own application. For sealed relays, after installation and cleaning, please open the ventilation hole in the case before use. If there is any query, please contact Sanyou for technical services. However it is the user's responsibility to determine which product should be used.