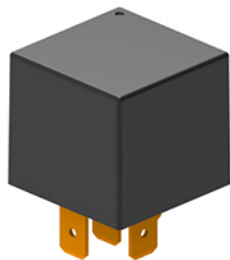


# MAH

## 汽车及新能源类

Automotive and New Energy

- 40A, 60A 触点切换能力
- 具有四种触点形式
- 多种安装方式
- 防尘罩和塑封型可供选择
- 外形尺寸 L × W × H: 27.8 × 27.8 × 25.1mm
- 40A, 60A switching capability
- 4 Kinds of contact arrangement available
- Various mounting terminations available
- Dust protected type and sealed type available
- Outline dimensions L × W × H: 27.8 × 27.8 × 25.1mm



MAH

S

1

12

C

1

R

产品型号 Model	产品结构 Structure	触点组数 Contact Group	线圈电压 Coil Voltage	触点形式 Contact Form	结构形式 Version	线圈并联元件 Parallel Coil Components
	S: 塑封型 无: 防尘罩型 S: Sealed Nil: Dust Protected	1: 1组 1: 1Group	12: 12VDC 24: 24VDC	A: 常开 B: 常闭 C: 转换 2A: 双常开 A: NO B: NC C: NO/NC 2A: 2NO	1: 光背快速接引出端 1: Cover Without Bracket 3: 铁背快速接引出端 3: Cover With Metal Bracket 4: 塑背快速接引出端 4: Cover With Plastic Bracket	R: 并联电阻 无: 无并联元件 D1: 并联二极管 (阳极接 86# 脚) D2: 并联二极管 (阳极接 85# 脚) Nil: No Components D1: With Parallel Diode (anode connection pin # 86) D2: With Parallel Diode (anode connection pin # 85) R: With Resistor

### 触点参数 Contact Parameters

触点形式 Contact Arrangement	1A, 1B, 1C	2A
触点材料 Contact Material	银合金 Silver Alloy	
接触压降 Voltage Drop( 初始 Initial)	NO: 典型值 Type.40mV, 最大值 Max.300 mV NC: 典型值 Type.40mV, 最大值 Max.300 mV	
最大连续电流 Max.Continuous Current	NO/NC:40A/30A	NO/NC: 60A/45A NO:2 × 20A
最大切换电压 Max.Switching Voltage	80VDC	
电气寿命 Electrical Life	见附表 1 See schedule 1	
机械寿命 Mechanical Life	1 × 10 <sup>6</sup> 次 OPS	

### 性能参数 Characteristics

绝缘电阻 Insulation Resistance	100MΩ(500VDC)	
介质耐压 Dielectric Strength	触点与线圈间 Between Coil, Contacts: 500VAC 1min 断开触点间 Between Open Contacts: 500VAC 1min	
动作时间 Operate Time	≤10ms	
释放时间 Release Time	≤10ms	
环境温度 Ambient Temperature	-40℃ ~+125℃	
振动 Vibration	10Hz~500Hz, 49m/s <sup>2</sup> (5G)	
冲击 Shock	稳定性 Functional	98m/s <sup>2</sup> (10G)
	强度 Destructive	196m/s <sup>2</sup> (20G)
引出端方式 Terminal Form	快连接式引出端 QC	
封装形式 Construction	防尘罩型 Dust Protected, 塑封型 Sealed	
重量 Unit Weight	约 Approx.: 35g	
机械性能 Mechanical Data	外壳保持力:(拉和压)200N Cover Retention:(Pull, Push)200N	
	引出脚保持力:(拉和压)100N Terminal Retention:(Pull, Push)100N	
	引出脚抗弯曲力:(各方向)10N Terminal Resistance To Bending(Front, Side)10N	

线圈规格表 Coil Data(23℃)

额定电压 Rated Voltage VDC	动作电压 Operate Voltage VDC	释放电压 Release Voltage VDC	线圈电阻 Coil Resistance $\Omega \pm 10\%$	线圈功率 Coil Power W	并联电阻 Parallel Resistance $\Omega \pm 10\%$	等效电阻 Equivalent Resistance $\Omega \pm 10\%$	允许最大线圈电压 (1) Max.Allowable Overdrive Voltage VDC	
							20℃	85℃
12	≤8.4	≥1.2	85	约 Approx.1.7	-	-	20.2	15.7
12	≤8.4	≥1.2	85	约 Approx.1.9	680	75.5		
24	≤16.8	≥2.4	340	约 Approx.1.7	-	-	39.5	31.5
24	≤16.8	≥2.4	340	约 Approx.1.9	2700	302		
24	≤16.8	≥2.4	255	约 Approx.2.3	-	-		

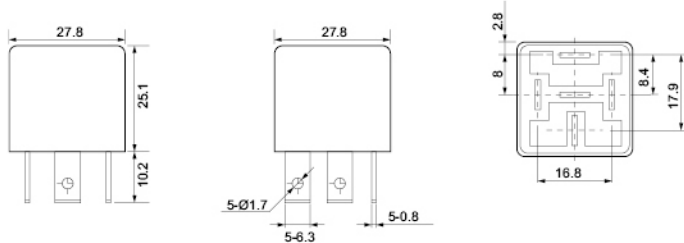
注意：(1) 触点无负载电流，线圈电阻为最小值情况下，继电器线圈允许施加的最大连续工作电压。

Be careful:(1)Max.Allowable overdrive voltage is stated with no load applied minimum coil resistance.

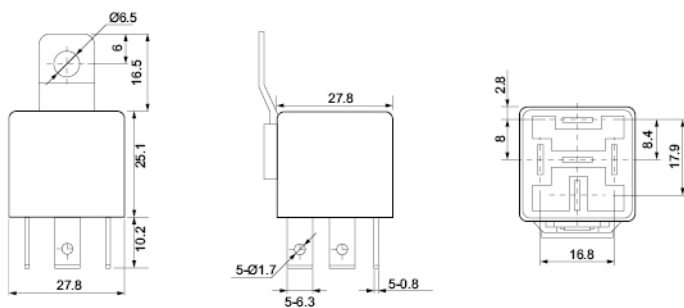
附表 1 Schedule 1

负载电压 Load Voltage	负载类型 Load Type		负载电流 A Load Current			通断比 s On/Off Ratio		电耐久性 (次 OPS) Electrical Endurance	试验环境 温度 Ambient Temp.
			1C		1A	接通 On	断开 Off		
			常开 NO	常闭 NC	常开 NO				
14VDC	阻性 Resistive	接通 Make	40	30	40	2	2	$1 \times 10^5$	详见电耐久性 试验环境 温度曲线 See Ambient Temp. Curve
		断开 Break	40	30	40	2	2		
	感性 Flasher	接通 Make	150	-	150	2	2		
		断开 Break	30	-	30	2	2		
	灯 Lamp	接通 Make	80	-	80	2	2		
		断开 Break	33	-	33	2	2		
28VDC	阻性 Resistive	接通 Make	30	20	30	2	2	At 23℃	
		断开 Break	30	20	30	2	2		

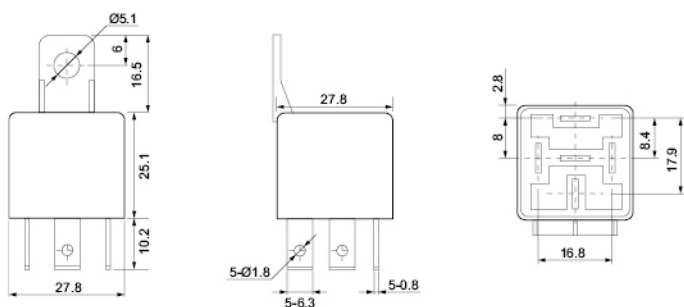
MAH-1 □□ - □ -1



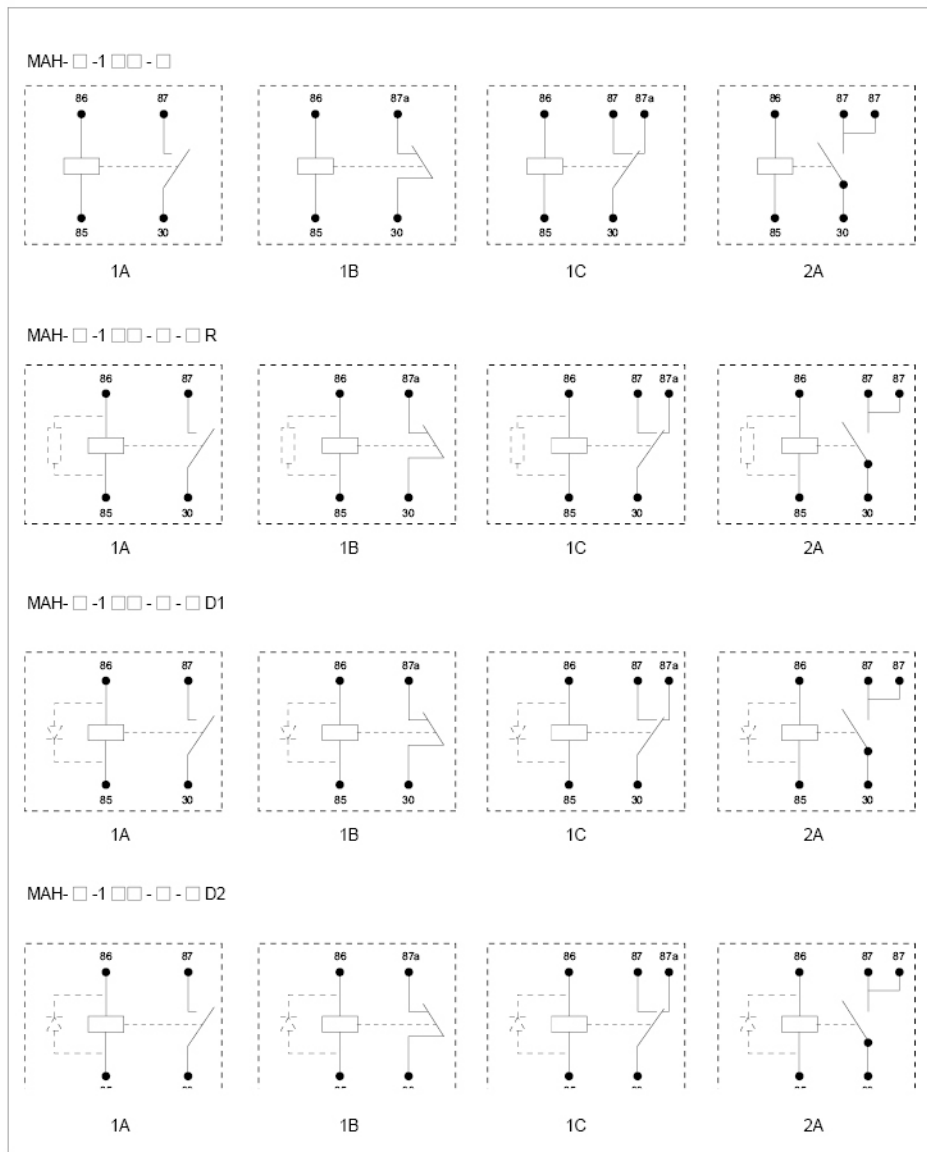
MAH-1 □□ - □ -3



MAH-1 □□ - □ -4



## 接线图 (底视图) Wiring Diagram (Bottom View)

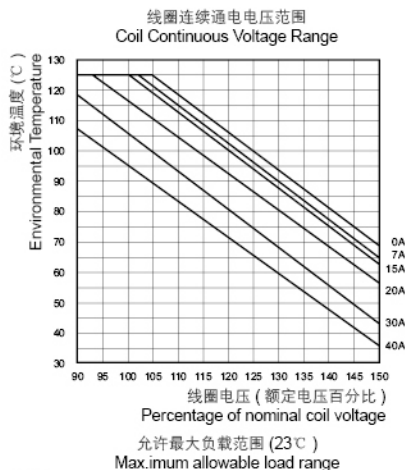


备注: (1) 产品部分外形尺寸未注尺寸公差, 当外形尺寸  $\leq 1\text{mm}$ , 公差为  $\pm 0.2\text{mm}$ ;  
 当外形尺寸在  $1\text{--}5\text{mm}$  之间时, 公差为  $\pm 0.3\text{mm}$ ; 当外形尺寸  $> 5\text{mm}$  时, 公差为  $\pm 0.4\text{mm}$ ;  
 (2) 安装孔尺寸中未注尺寸公差的均为  $\pm 0.1\text{mm}$ 。

### REMARK:

(1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ ;  
 (2) The tolerance without indicating for PCB layout is always  $\pm 0.1\text{mm}$ .

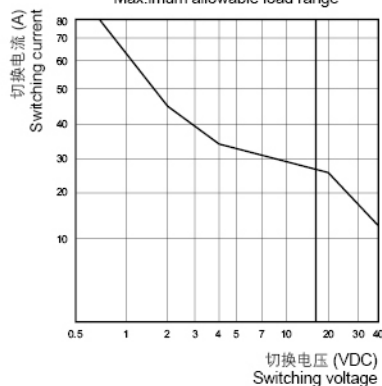
## 性能曲线图 Performance Curve



说明:

- (1) 继电器线圈施加最大连续工作电压时, 触点应没有负载。
- (2) 动作电压与线圈预通电电压有关, 预通电后检查动作电压, 其值会变大。
- (3) 线圈最大允许温度为 180°C, 考虑到电阻法所测量的线圈温升是平均值, 推荐在不同使用环境, 不同线圈电压, 不同负载条件下测量时, 线圈温度应小于 170°C。
- (4) 当线圈实际工作电压超出曲线规定范围时, 请联系美硕并提供相应详细使用条件。

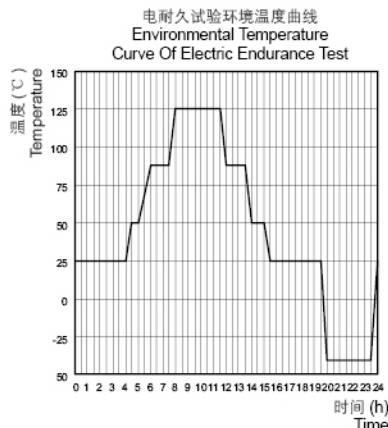
- (1) When the relay applies the Maximum continuous voltage, the contact shall be not Load
- (2) Actuation voltage and coil pre energizing time, pre energizing voltage Relating to the detection of voltage after pre energizing, and its value will become larger
- (3) The Maximum allowable temperature of the coil is 180 degrees. Considering the temperature rise of the coil measured by the resistance method, it is recommended that the coil temperature should be less than 170 degrees under different environmental conditions, different coil voltages and different load conditions
- (4) When the actual working voltage of the coil exceeds the specified range of the curve, please contact the master and provide the appropriate conditions for use



说明:

- (1) 本图以常开触点为例, 本图电流为阻性。
- (2) 产品按触点参数表进行负载与耐久性试验, 当实际使用的负载电压, 电流, 动作频率任一项与触点参数表不同时, 请重新进行确认试验。

- (1) Take the normally open contact as an example, the current is resistive
- (2) Load and durability test shall be carried out according to the contact parameter list. When the actual load voltage, current and action frequency are not the same as the contact parameters, please confirm the test again.



说明:

- (1) 最低温度为 -40°C
  - (2) 最高温度为 125°C
- (1) The minimum temperature is -40°C
  - (2) The Maximum temperature is 125°C