



## 产品特点 Feature

- 额定60A触点切换能力  
60 amps continuous carry
- 满足异常工况应对要求，能够切换10倍过电流  
600 amps interrupte under extreme condition
- 陶瓷钎焊密封技术,电弧无泄漏，产品不起火，不爆炸  
Hermetically sealed with hydrogen gas,the arc is not exposed. Be able to use in explosive & harsh environments without oxidation or contamination of contacts
- 采用陶瓷钎焊密封结构，产品满足IP42防护等级  
Contacts' part meet IP42 protection degree
- 负载接线与线圈驱动均无极性要求  
There is no polarity requirement for load wiring and no polarity requirement for coil drive
- 环保产品，完全符合RoHS要求  
RoHS compliant

触点参数表 Contact Data

项目 Item	说明 Information		
触点形式 Contact arrangement	1组常开触点 Power Contact:1 Form A		
额定负载电流 Current rating	60A		
接触电阻 Contact resistance	≤1mΩ (@6V 20A)		
最小适用负载 Min.Switching load	12VDC 1A		
最大切换电压 Max. Switching voltage	1000VDC		
最大分断电流 Max. Breaking current	600A, 450VDC, 1次以上 600A (450VDC, 1 cycle)		
最大切换功率 Max. Switching power	60KW		
电 耐 久 性 (1) Electrical life <sup>(1)</sup>	阻 性 负 载 Resistive load	500VDC 500V type	750VDC 750V type
		参照切换寿命折线图 Refer to the switchover life line chart	
		接通:7.5×10 <sup>4</sup> 次 (500VDC, 60A) Connecting 500VDC,60A 7.5×10 <sup>4</sup> cycles	接通:7.5×10 <sup>4</sup> 次 (750VDC, 60A) Connecting 750VDC,60A 7.5×10 <sup>4</sup> cycles
载 流 能 力 (2) Load current capacity <sup>(2)</sup>	参照耐受能力曲线图 Reference tolerance curve		

性能参数表 Parameters Table

项目 Item	说明 Information	
机械耐久性 Mechanical life	2×10 <sup>5</sup> 次 2×10 <sup>5</sup> cycles	
绝缘电阻 Insulation resistance	1000MΩ(1000VDC)	
介 质 耐 压 Dielectric strength	触点间 Between open contacts	3000VAC 1min 1mA
	触点与线圈 Between contact and coil	3000VAC 1min 1mA
动作时间 (额定电压下) (at rated coil voltage)	≤30ms	
释放时间 (额定电压下) Release time (at rated coil voltage)	≤10ms	
冲 击 Shock resistance	稳定性 Functional	196m/s <sup>2</sup> (20G)
	强度 Destructive	490m/s <sup>2</sup> (50G)
振动 Vibration resistance	10Hz~500Hz 49m/s <sup>2</sup> (5G)	
工作环境温度 Ambient temperature	-40℃~ +85℃	
工作环境湿度 Ambient humidity	5%~95% RH	
重量 Weight	156g	
长×宽×高 (mm) External dimension	64×33×52.8	

线圈规格表 CoilData<sup>(3)</sup>

额定电压 (VDC) Rated voltage (VDC)	工作电压 (VDC) Operation voltage (VDC)	最大电压 (VDC) Max. voltage (VDC)	动作电压 (VDC) Pick-up voltage (VDC)	释放电压 (VDC) Drop-out voltage (VDC)	线圈电阻 (Ω) ±10% Coil resistance (±10%)(Ω)	启动功率 (W) Operating power (inrush, W)	稳态功率 (W) Operating power (stable, W)
12	12	16	≤ 9	≥1.0	27.7	5.2	5.2
24	24	32	≤18	≥2.0	110.8	5.2	5.2

备注:

NOTES:

(1) 环境温度: 23°C, L/R < 1ms, 通断比(on:off) : 0.6s: 5.4s;

Ambient temperature: 23°C, L/R ≤ 1ms.

(2) 环境温度: 23°C, 导线截面积 ≥ 15mm<sup>2</sup>;

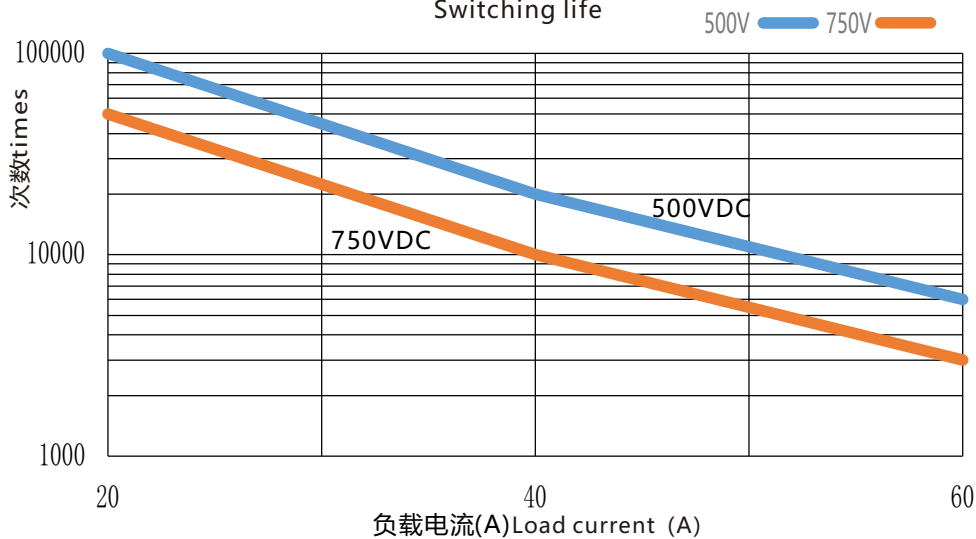
Ambient temperature: 85°C, 15mm<sup>2</sup> conductor.

(3) 如需其他额定电压, 可特殊订货。

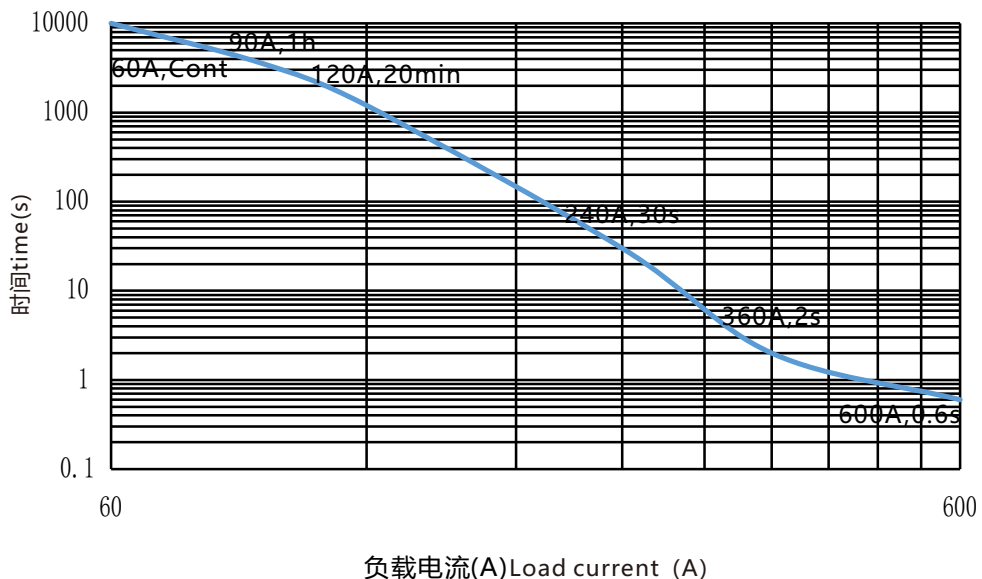
Other types of rated voltage, please contact us.

参考数据 Reference data

带载切换寿命曲线图  
Switching life



耐受能力曲线图  
Tolerance curve



订货标记 Ordering Information

型号命名规则 Nomenclature

**SES 60B** - □ **M** □ □ **2** □

**客户特性号**  
Customer special code  
**无:** 无客户特殊要求  
Nil: No customer special requirement  
**数字或字母:** 客户特殊要求, 与结构无关  
Numbers or Letters: Customer special requirement

**负载连接方式**  
Load connection type  
**2:** 内螺纹  
2: internal thread

**线圈端连接方式**  
Coil connection type  
**无:** 引出线  
Nil: outgoing line  
**C:** 引出线+连接器  
c: outgoing line+connector

**线圈电压:**  
Coil voltage  
**12:** 12VDC  
**24:** 24VDC

**触点组数**  
Contact arrangement  
**M:** 1组常开触点  
M: 1 Form A

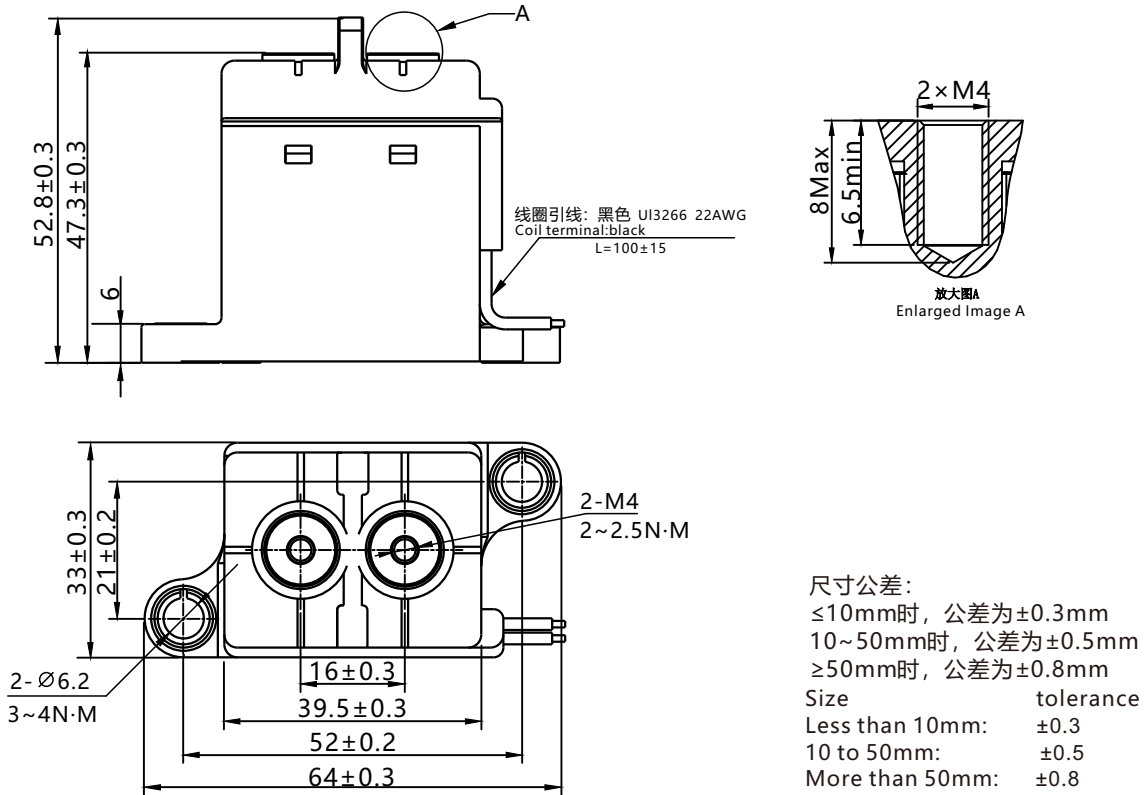
**负载电压**  
Voltage rating  
**750:** 12~750VDC

**负载电流**  
Load current  
**60B:** 60A

**基本型号**  
Type designation  
**SES**

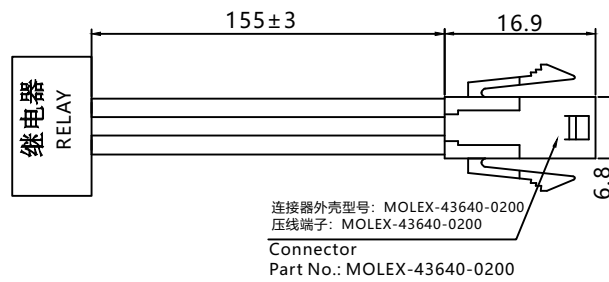
包装数量: 54PCS/箱  
Packing quantity: 54pcs carton

内螺纹外形尺寸 Outline Dimensions (Internal thread)

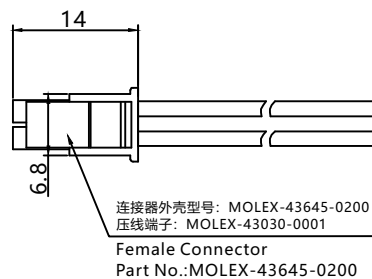


线圈端连接方式 Coil Connection Type

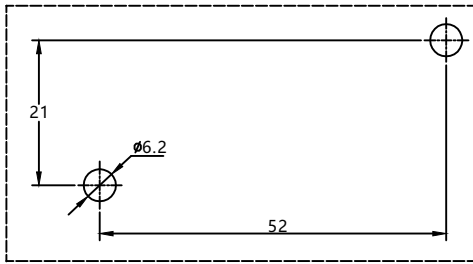
C: 引出线+连接器 C: Outgoing Line+Connector



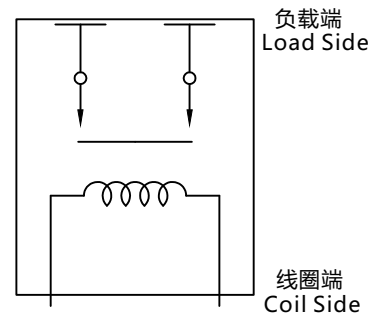
连接器 (不在包装盒中附带) Connector (No accessories)



安装尺寸  
Installation Size Chart



原理图  
Schematic Diagram



备注:负载端,线圈端子均无极性  
NOTE: No polarity on load side  
and coil side

**说明:****NOTES:****●继电器安装注意事项****●Mounting Attention**

- 1.在继电器坠落的情况下，原则上请不要再使用；  
In principle, please do not use it when the relay has fallen down.
- 2.本继电器的内部触点使用了气体保护，伴随着触点温度变化（环境温度+通电致使温度上升）而存在内部气体穿透，严禁将继电器长时间置于超过产品温度使用范围（-40℃~85℃）环境中；  
The relay contacts are sealed and filled with gas. When the contact temperature changes, there is internal gas penetrating characteristic. SANYOU relays are forbidden to be used at the temperature beyond our suggestion -40℃~85℃ for long time.
- 3.在安装继电器时，一定要使用垫圈以防止螺丝松动；  
When installing the relay, always use washers to prevent the screws from loosening.
- 4.在安装继电器时，锁紧继电器负载端扭力矩与安装孔扭力矩请控制在建议范围内，在超过范围的情况下，可能会造成端子滑牙或外壳破损，使用螺钉时，确保垫圈强度足够，否则会变形撑坏外壳；  
Tighten each screw within the rated range given in the outline dimensions. Exceeding the maximum torque may result in breakage.
- 5.在安装继电器时，请不要靠近强磁场和发热源。  
Avoid mounting the relay in strong magnetic fields (near a transformer or magnet) or close to an object that radiates heat.

**●继电器负载端连接注意事项****●Electrical Life Attention**

- 1.请避免过度负载应用到产品上，如果超出额定范围，产品的性能无法保证；  
This relay is a DC high-voltage switch. In its final breakdown mode, it may lose the ability to provide the proper cut-off. Therefore, do not exceed the indicated switching capacity and life.
- 2.请将继电器看做是有截止寿命的产品，不要超过开关的容量和使用寿命，为确保安全，应及时替换；  
Please treat the relay as a product with limited life and replace it when necessary.
- 3.继电器的负载端子是有极性的，请按产品外表标示极性要求连接负载，否则产品性能无法保证；  
The contacts of the relay are polarized. Please follow instructions in the connection schematic when connecting the contacts.
- 4.小心异物或油粘着在负载端子部分，这样可能导致负载端子散热异常，同时请按下表公称面积的连接导线或铜排。  
Be careful that foreign matter and oils and fats kind, don't stick to the main terminal parts because it is likely to cause terminal parts to give off unusual heat. Also, please use the following specifications of conductor.

10A	公称截面积	≥2mm <sup>2</sup>	Min. 2mm <sup>2</sup> nominal cross-sectional area
20A	公称截面积	≥3mm <sup>2</sup>	Min. 3mm <sup>2</sup> nominal cross-sectional area
40A	公称截面积	≥10mm <sup>2</sup>	Min. 10mm <sup>2</sup> nominal cross-sectional area
60A	公称截面积	≥15mm <sup>2</sup>	Min. 15mm <sup>2</sup> nominal cross-sectional area
100A	公称截面积	≥35mm <sup>2</sup>	Min. 35mm <sup>2</sup> nominal cross-sectional area
150A	公称截面积	≥45mm <sup>2</sup>	Min. 45mm <sup>2</sup> nominal cross-sectional area
200A	公称截面积	≥60mm <sup>2</sup>	Min. 60mm <sup>2</sup> nominal cross-sectional area
250A	公称截面积	≥80mm <sup>2</sup>	Min. 80mm <sup>2</sup> nominal cross-sectional area
300A	公称截面积	≥100mm <sup>2</sup>	Min. 100mm <sup>2</sup> nominal cross-sectional area

**●继电器线圈端连接注意事项****●Coil Attention**

1. 使用二极管吸收线圈反向电压时，会导致继电器释放时间延长，继电器负载切换性能下降，推荐使用可变电阻方式；  
Please note that when using a diode, the switching speed may decrease and cause a reduction in cut-off performance, we recommend installing a surge protector varistor.
2. 在继电器使用时，考虑到使用环境温度和条件，继电器动作及释放电压将会变化，推荐使用额定电压给线圈供电以保证继电器正常工作；  
The pick-up voltage and drop-out voltage will change with ambient temperature, please use rated voltage to make sure the relay operate reliable. Don't exceed maximum coil voltage.
3. 请勿持续在线圈上加最大电压；  
Please do not continuously load the maximum voltage on the coil.
4. 带节能板的产品（200A及200A以上产品），推荐使用快速上升（阶跃供电方式）进行线圈驱动；  
The 250A and 300A types have built-in dedicated drive circuit, please drive the coil with a quick startup (Built-in one-shot pulse generator circuit).
5. 带节能板的产品（200A及200A以上产品），在0.1s后产品进行线圈电流的自动切换，请不要在 < 0.1s 内重复切换线圈电压，否则产品性能不能保证。  
After the ON signal enters the 250A and 300A types, automatic coil current switching occurs after approximately 0.1 seconds. Do not repeatedly turn it OFF within that 0.1seconds interval, as doing so may damage the relay.

**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，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。

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This datasheet is the customers' reference. All the specification are subject to change without notice.

We could not evaluate all the performance and parameters for every possible application. Thus the users should be in a right position to choose the suitable product for their own application. If there is any query, please contact Sanyou for technical service. However it is the users' responsibility to determine which product should be used only.

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