

### Features:

- Small size, 15.7mm high.
- IP/OP 5kV, withstand surge voltage of 10kV.
- Creepage and clearance distance between coil and contacts  $\geq 10\text{mm}$ .
- IEC60335-1 compliant product is available.
- IEC60079-15 compliant product is available.

### Typical applications:

- Home appliances, washing machine, air-conditioning, etc.
- Microwave oven, sound, monitor, etc.
- Industrial control instrument, etc.

### Approvals

UL, c-UL (File No.): E190598  
CQC(File No.): CQC10002049463  
VDE (File No.): 40031353

### Contact Data

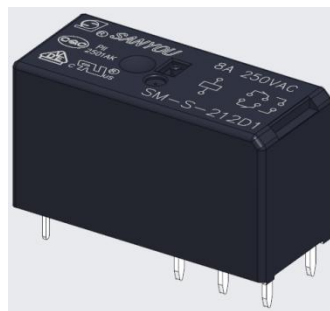
|                               |                                |
|-------------------------------|--------------------------------|
| Contact arrangement           | 2 form C(CO) or 2 form A(NO)   |
| Rated voltage                 | 250VAC                         |
| Max.switching voltage         | 277VAC                         |
| Rated current                 | 8A                             |
| Min. recommended contact load | 1A, 6VDC                       |
| Breaking capacity max.        | 2216VA                         |
| Contact material              | AgNi, AgSn02, AgNi+AgSn02      |
| Frequency of operation        | 360 ops./h                     |
| Operate/release time max.     | 15ms/10ms                      |
| Electrical endurance          | See electrical endurance graph |

### Contact ratings

| Type                        | Contact | Load                             | Cycles               |
|-----------------------------|---------|----------------------------------|----------------------|
| <b>IEC 61810 EN 60730-1</b> |         |                                  |                      |
| SM-D3/D4                    | C(NO)   | 8A, 250VAC, $\cos \phi=1$ , 85°C | 1X10 <sup>5</sup>    |
| SM-D(M)2                    | A/C(NO) | 8A, 250VAC, $\cos \phi=1$ , 85°C | 1X10 <sup>5</sup>    |
| SM-D(M)1                    | A/C(NO) | 8A, 250VAC, $\cos \phi=1$ , 85°C | 8X10 <sup>4</sup>    |
| SM-D(M)                     | A/C(NO) | 8A, 250VAC, $\cos \phi=1$ , 85°C | 6X10 <sup>4</sup>    |
| <b>UL 60947-4-1</b>         |         |                                  |                      |
| SM                          | A/C(NO) | 8A, 250VAC, $\cos \phi=1$ , 85°C | 1X10 <sup>5</sup>    |
| <b>GB/T 21711.1-2023</b>    |         |                                  |                      |
| SM                          | A/C(NO) | 8A, 250VAC, 85°C                 | 2X10 <sup>4</sup>    |
| Mechanical endurance        |         |                                  | $\geq 1 \times 10^7$ |

### Coil Data

|                                     |              |
|-------------------------------------|--------------|
| Coil voltage range:                 | 5 to 110 VDC |
| Operative range, IEC 61810          | 2            |
| Coil insulation system according UL | Class F      |



### Coil Data(continued)

| Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance $\Omega$ (1 $\pm$ 10%) | Rated coil powers mW |
|-------------------|---------------------|---------------------|----------------------------------------|----------------------|
| 5                 | $\leq 3.75$         | $\geq 0.5$          | 62.5                                   | 400                  |
| 6                 | $\leq 4.5$          | $\geq 0.6$          | 90                                     | 400                  |
| 9                 | $\leq 6.75$         | $\geq 0.9$          | 202.5                                  | 400                  |
| 12                | $\leq 9$            | $\geq 1.2$          | 360                                    | 400                  |
| 18                | $\leq 13.5$         | $\geq 1.8$          | 810                                    | 400                  |
| 24                | $\leq 18$           | $\geq 2.4$          | 1440                                   | 400                  |
| 48                | $\leq 36$           | $\geq 4.8$          | 5760                                   | 400                  |
| 60                | $\leq 45$           | $\geq 6$            | 8570                                   | 400                  |
| 110               | $\leq 82.5$         | $\geq 11$           | 28800                                  | 400                  |

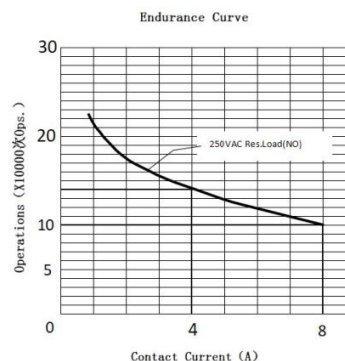
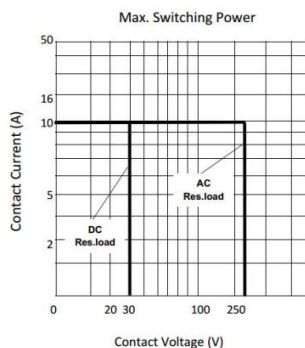
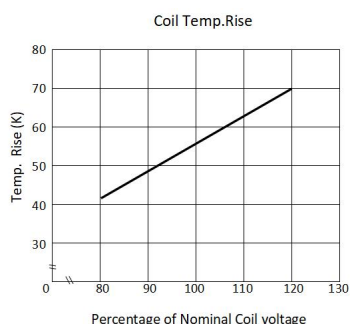
All figures are given for coil without pre-energization, at ambient temperature 20°C

### Insulation Data

|                                      |                             |
|--------------------------------------|-----------------------------|
| Initial dielectric strength          |                             |
| between open contacts                | 1000VAC                     |
| between contacts                     | 2500VAC                     |
| between contact and coil             | 5000VAC                     |
| Clearance/Creepage                   |                             |
| between contact and coil (Clearance) | $\geq 10\text{mm}$ (actual) |
| between contact and coil (Creepage)  | $\geq 10\text{mm}$ (actual) |
| Material group of insulation parts   | IIIa                        |
| Tracking index of relay              | PTI 175V/PTI 250V           |

### Other Data

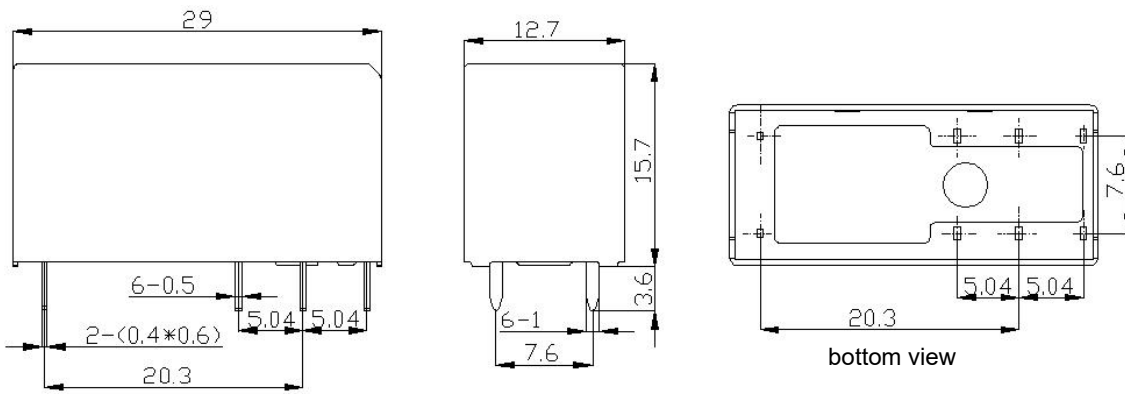
|                                                   |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| Material compliance:                              | EU RoHS/ELV, China RoHS, REACH                    |
| Ambient temperature:                              | -40°C to +85°C                                    |
| Category of environmental protection              |                                                   |
| IEC 61810                                         | RTII - flux proof<br>RTIII - Sealed type washable |
| Weight                                            | Approx. 13.5g                                     |
| Resistance to soldering heat THT (IEC 60068-2-20) | 260°C/5s                                          |
| Packaging/unit                                    | tube, tray                                        |



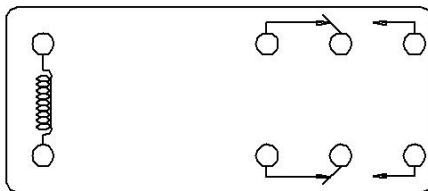
Note:

- (1) Test conditions: room temperature, flux-proof product, resistive load, 1s on, 9s off.
- (2) The above curves are for reference only, and the final result is subject to the experiment.

### Dimensions



### Wiring Diagrams (bottom view)

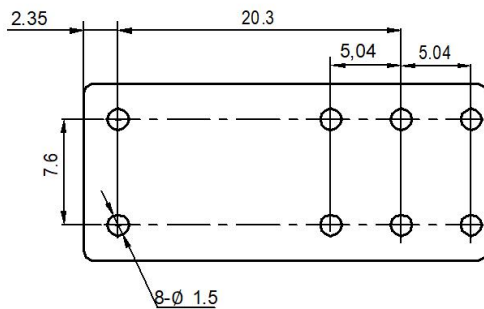


2c

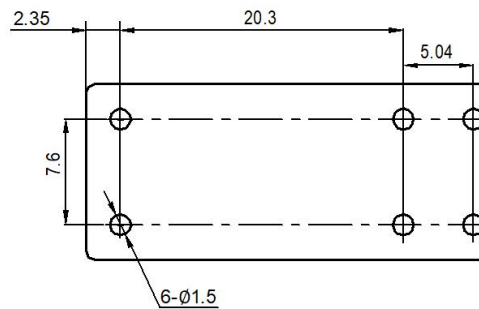


2a

### PCB Layouts (bottom view)



2c



2a

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:  $\pm 0.4\text{mm}$

Notes:

- 1.The dimension of pin is the size before tinning
- 2.Tolerance of PCB layout:  $\pm 0.1\text{ mm}$ .

**Product Code Structure**

|           |           |           |           |          |          |          |           |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------|-----------|-----------|-----------|----------|----------|----------|-----------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SM</b> | <b>-S</b> | <b>-2</b> | <b>12</b> | <b>D</b> | <b>M</b> | <b>1</b> | <b>-F</b> | <b>-XX</b> | Special Parameter:<br>Nil-Standard type;<br>Letters or Numbers-Special requirements<br>Insulation System:<br>Nil-Standard<br>B-Class B<br>F-Class F<br>Contact Material <sup>(6)</sup> :<br>Nil & 3-AgNi<br>1 & 4-AgSnO <sub>2</sub><br>2-AgNi & AgSnO <sub>2</sub><br>Contact Arrangement:<br>Nil-Form C<br>M-Form A<br>Coil Power: D-0.4W<br>Rated Coil Voltage (VDC) :<br>05, 06, 09, 12, 18, 24, 48, 60, 110<br>Number of Poles:<br>2-2 Poles<br>Protective Construction:<br>S- Flux-proofed<br>SH- Sealed type washable<br>Type: SM |
|-----------|-----------|-----------|-----------|----------|----------|----------|-----------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- (1) Flux-proof relays can not be used in polluted environment (containing H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, dust and other pollutants).
- (2) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.
- (3) Special requirements of customers (XX) shall be evaluated by our company and marked by characteristic symbols.
- (4) C1 suffix stands for product in accordance with IEC60335-1(GWT) & CTI250V.
- (5) Ex suffix stands for product compliant with "IEC60079-15, Clause 22.5 sealed device", which is only available for "SH-Sealed type washable" products.
- (6) Suggest using "Nil" or "1" when choosing contact material.

**Examples of Ordering Codes**

|             |                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------|
| SM-S-212DM1 | relay SM, Flux-proof, rated DC voltage 12V, coil power 0.4W, 2NO, and contact material AgSnO <sub>2</sub> . |
| SM-S-212D1  | relay SM, Flux-proof, rated DC voltage 12V, coil power 0.4W, 2CO, and contact material AgSnO <sub>2</sub> . |

**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.