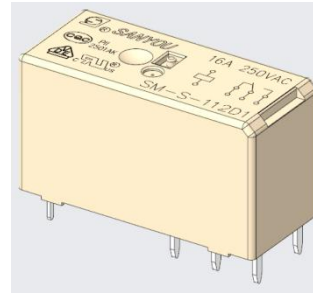


Features:

- Small size, 15.7mm high.
- IP/OP 5kV, withstand surge voltage of 10kV.
- Creepage and clearance distance between coil and contacts $\geq 10\text{mm}$.
- Compliant with IEC60335-1(GWT) & CT1250V
- 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	1 form C(CO) or 1 form A(NO)
Rated voltage	250VAC
Max.switching voltage	400VAC
Rated current	16A/12A
Min. recommended contact load	1A, 6VDC
Breaking capacity max.	4432VA
Contact material	AgNi, AgSnO ₂ , AgNi+AgSnO ₂
Frequency of operation	360 ops./h
Operate/release time max.	15ms/10ms
Electrical endurance	See electrical endurance graph

Contact ratings

Type	Contact	Load	Cycles
IEC 61810 EN 60730-1			
SM-D3/D4	C(NO)	16A, 250VAC, $\cos \phi=1$, 85°C/105°C	9X10 ⁴
SM-D(M)1/D(M)2	A/C(NO)	16A, 250VAC, $\cos \phi=1$, 85°C/105°C	1X10 ⁵
SM-DM	A/(NO)	16A, 250VAC, $\cos \phi=1$, 85°C/105°C	4X10 ⁴
SM-D(M)T/D(M)H	A/C(NO)	12A, 250VAC, $\cos \phi=1$, 85°C	3X10 ⁴
SM-D(M)T1/D(M)H1	A/C(NO)	12A, 250VAC, $\cos \phi=1$, 85°C	5X10 ⁴
SM-D(M)T2/D(M)H2	A/C(NO)	12A, 250VAC, $\cos \phi=1$, 85°C	8X10 ⁴
SM-D(M)/D(M)1	A/C(NO)	10A, 400VAC, $\cos \phi=1$, 105°C	1X10 ⁵

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SM-D3/D4	C(NO)	16A, 250VAC, $\cos \phi=1$, 85°C/105°C	1X10 ⁵
SM-D(M)/D(M)2	A/C(NO)	16A, 250VAC, $\cos \phi=1$, 85°C/105°C	1X10 ⁵
SM-D(M)1	A/C(NO)	16A, 250VAC, $\cos \phi=1$, 105°C	3X10 ⁴
SM-D(M)1	A/C(NO)	16A, 250VAC, $\cos \phi=1$, 85°C	1X10 ⁵
SM-D(M)T(2)/D(M)H(2)	A/C(NO)	12A, 250VAC, $\cos \phi=1$, 85°C	1X10 ⁵
SM-D(M)T1/D(M)H1	A/C(NO)	12A, 250VAC, $\cos \phi=1$, 85°C	3X10 ⁴

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SM-D	A/C(NO)	16A, 250VAC, $\cos \phi=1$, 85°C/105°C	2X10 ⁴
SM-D(M)T/D(M)H	A/C(NO)	12A, 250VAC, $\cos \phi=1$, 85°C	2X10 ⁴
Mechanical endurance			$\geq 1 \times 10^7$

Coil Data

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

Coil Data(continued)

Coil versions, DC coil

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

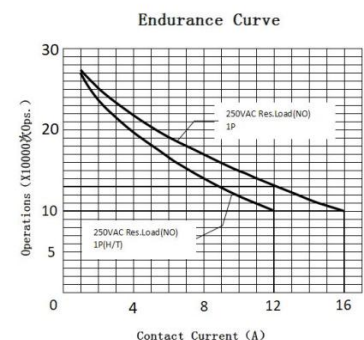
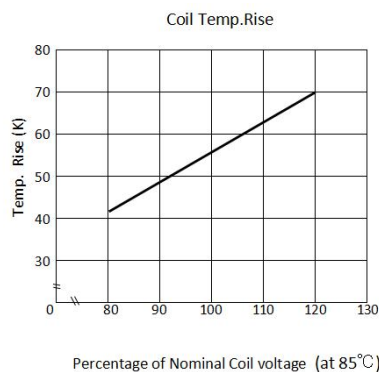
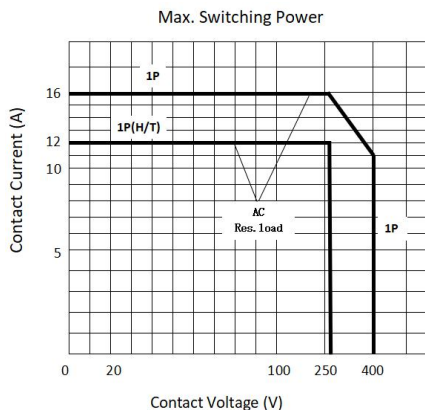
All figures are given for coil without pre-energization, at ambient temperature 20°C

Insulation Data

Initial dielectric strength	
between open contacts	1000VAC
between contact and coil	5000VAC
Clearance/Creepage	
between contact and coil (Clearance)	$\geq 10\text{mm}(\text{actual})$
between contact and coil (Creepage)	$\geq 10\text{mm}(\text{actual})$
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 (No condensation)
	For ambient temperature is 105°C, please contact Sanyou.
Category of environmental protection	
IEC 61810	RTII - flux proof RTIII - Sealed type washable
Weight	Approx. 13.5g
Resistance to soldering heat THT (IEC 60068-2-20)	260°C/5s
Packaging/unit	tube, tray

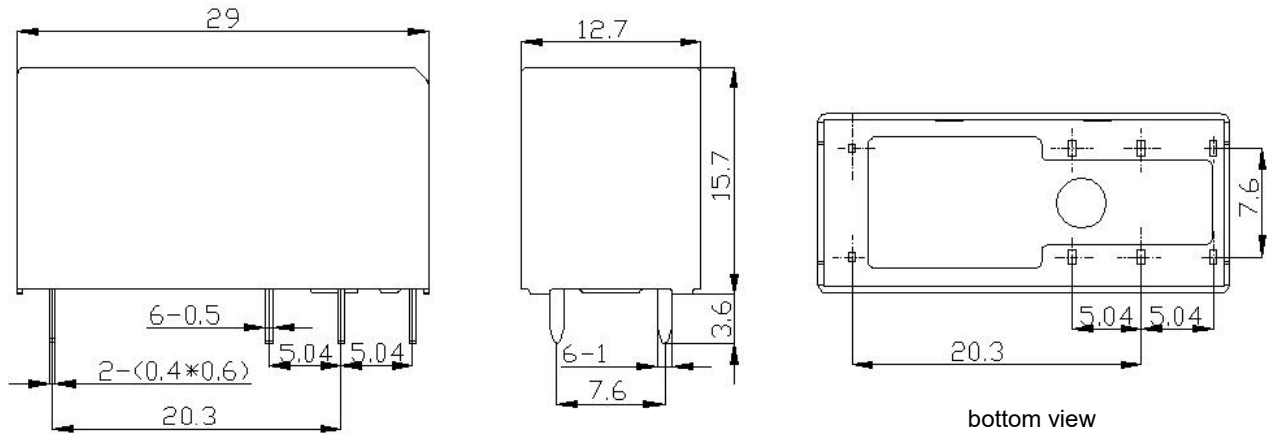


Note:

- (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.

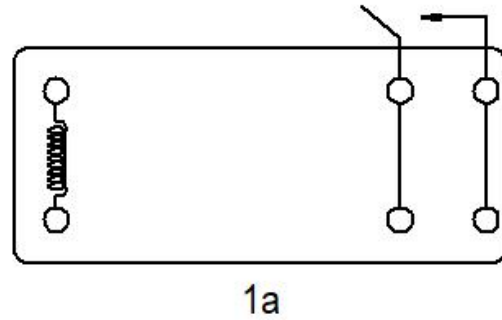
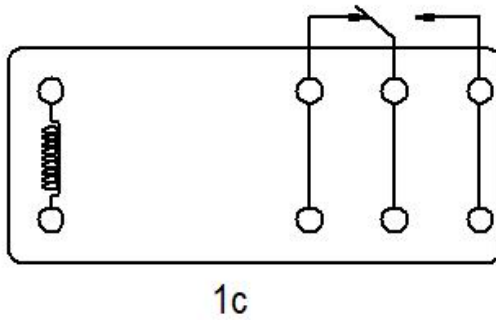
Dimensions

Eg: SM-S-112D1



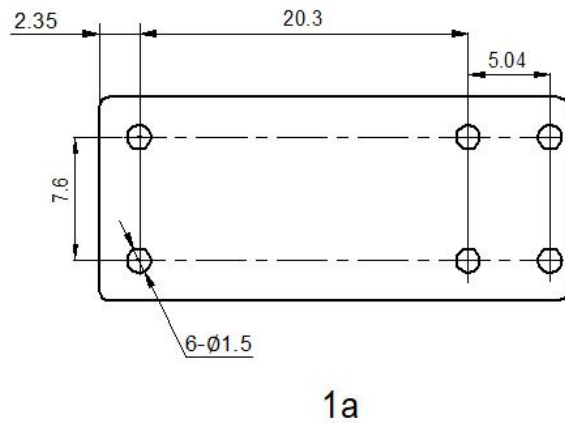
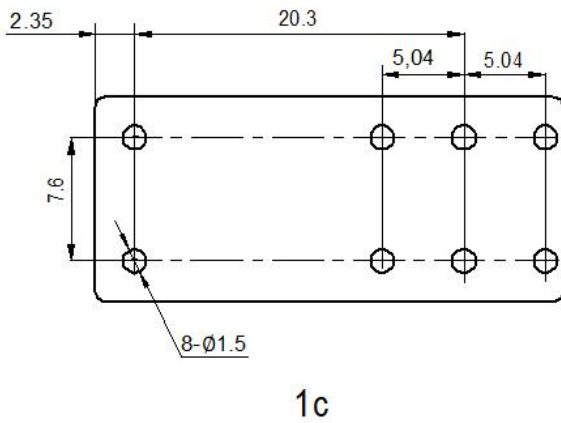
Wiring Diagrams (bottom view)

Eg: SM-S-112D1



PCB Layouts (bottom view)

Eg: SM-S-112D1



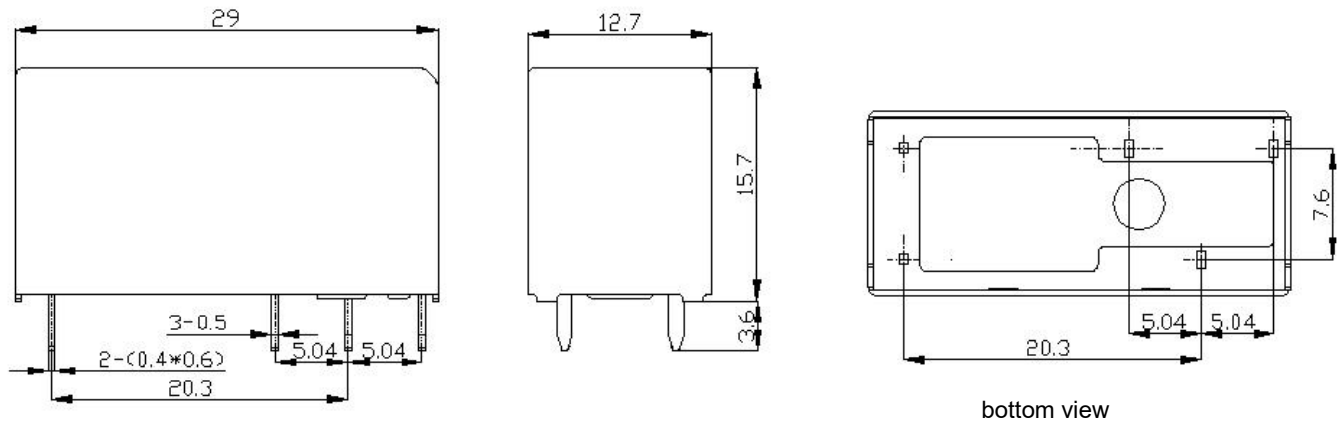
In case of no tolerance shown on outline dimension
 If dimension < 1 mm, tolerance: $\pm 0.2\text{mm}$
 If dimension 1~5mm, tolerance: $\pm 0.3\text{mm}$
 If dimension > 5mm, tolerance: $\pm 0.4\text{mm}$

Notes:

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

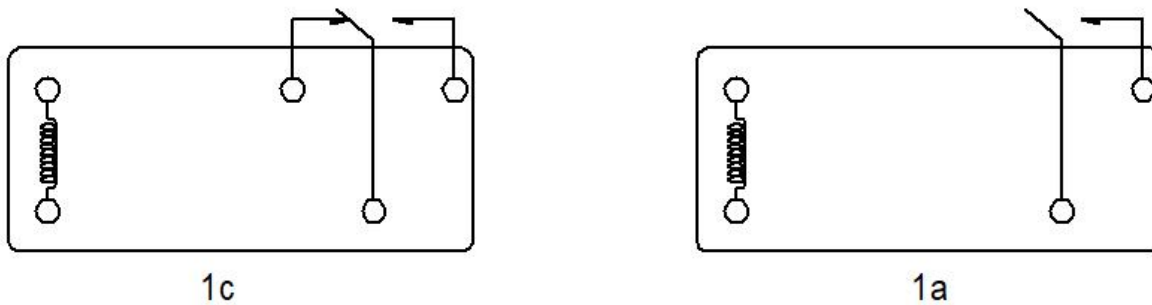
Dimensions

Eg: SM-S-112DH1



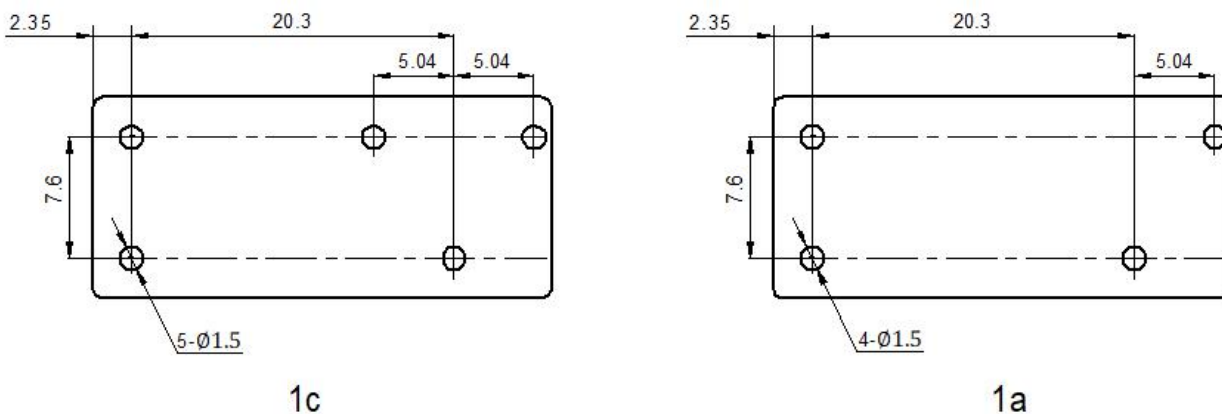
Wiring Diagrams (bottom view)

Eg: SM-S-112DH1



PCB Layouts (bottom view)

Eg: SM-S-112DH1



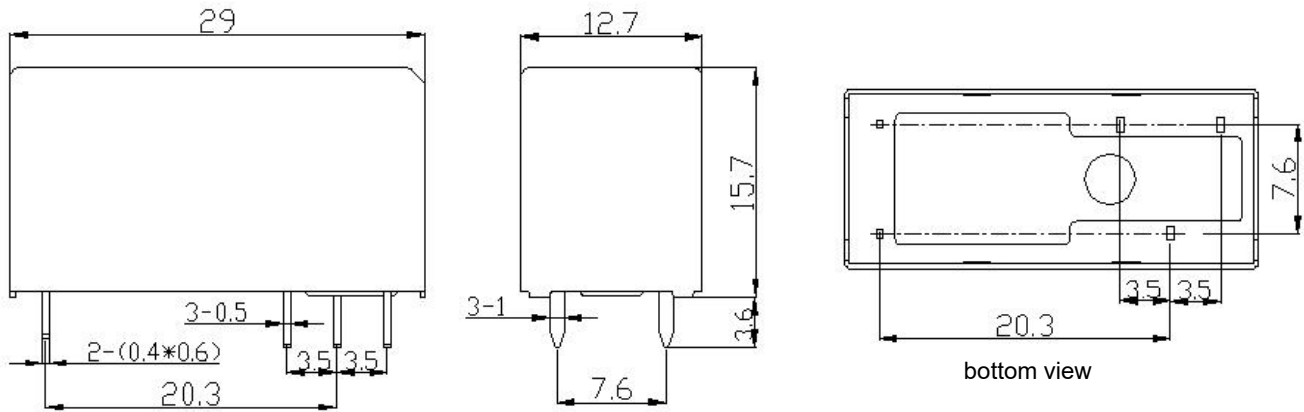
In case of no tolerance shown on outline dimension
 If dimension < 1 mm, tolerance: $\pm 0.2\text{mm}$
 If dimension 1~5mm, tolerance: $\pm 0.3\text{mm}$
 If dimension > 5mm, tolerance: $\pm 0.4\text{mm}$

Notes:

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

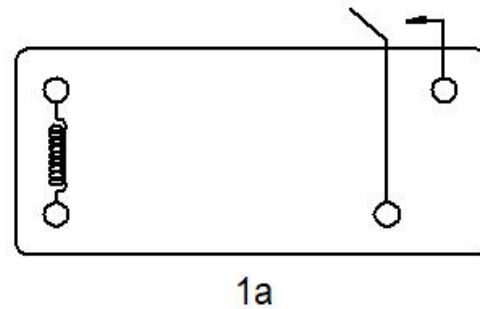
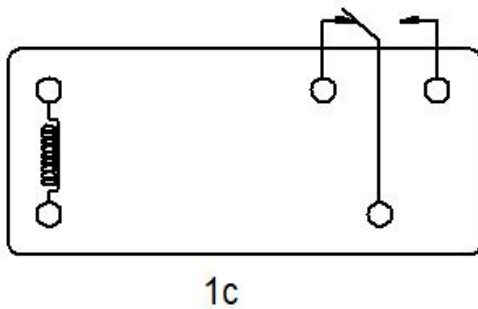
Dimensions

Eg: SM-S-112DT1



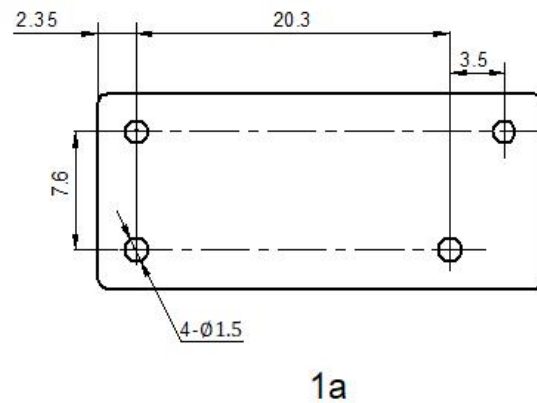
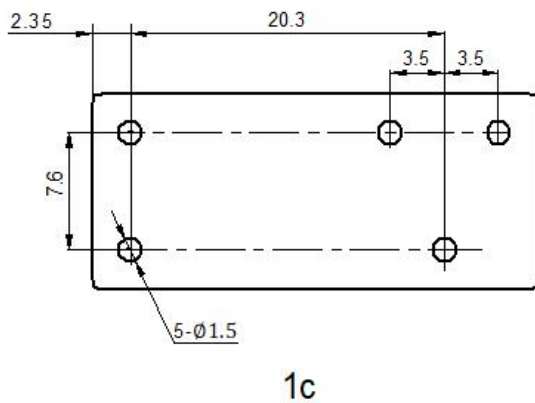
Wiring Diagrams (bottom view)

Eg: SM-S-112DT1



PCB Layouts (bottom view)

Eg: SM-S-112DT1



In case of no tolerance shown on outline dimension
 If dimension < 1 mm, tolerance: ± 0.2 mm
 If dimension 1~5 mm, tolerance: ± 0.3 mm
 If dimension > 5 mm, tolerance: ± 0.4 mm

Notes:

1. The dimension of pin is the size before tinning
2. Tolerance of PCB layout: ± 0.1 mm.

Product Code Structure

SM	-S	-1	12	D	M	H	1	-F	-XX	Special Parameter: Nil-Standard type, Letters or Numbers-Special requirements Insulation System: Nil-Standard B-Class B F-Class F Contact Material ⁽⁵⁾⁽⁶⁾ : Nil & 3-AgNi 1 & 4-AgSnO ₂ 2-AgNi & AgSnO ₂ Load capacity: Nil-16A, 5mm pin H-12A, 5mm pin T-12A, 3.5mm pin Contact Arrangement: Nil-Form C M-Form A Coil Power: D-0.4W Rated Coil Voltage (VDC): 05, 06, 09, 12, 18, 24, 48, 60, 110 Number of Poles: 1-1 Pole Protective Construction: S-Flux-proofed SH-Sealed type washable Type: SM
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(1) Flux-proof relays can not be used in polluted environment (containing H₂S, SO₂, NO₂, 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) Ex suffix stands for product compliant with "IEC60079-15, Clause 22.5 sealed device", which is only available for "SH-Sealed type washable" products.

(5) Contact material 3 and 4 can not apply in products with load capacity H and T.

(6) Suggest using "Nil" or "1" when choosing contact material.

Examples of Ordering Codes

SM-S-112DM1 relay SM, Flux-proof, rated DC voltage 12V, coil power 0.4W, 1NO, and contact material AgSnO₂.

SM-S-112D1 relay SM, Flux-proof, rated DC voltage 12V, coil power 0.4W, 1CO, and contact material AgSnO₂.

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.