SANYOU RELAYS

General Power Relay

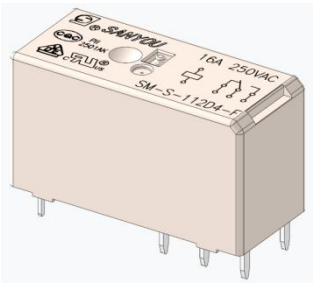
SM1P V5.0

Features:

- Small size, 15.7mm high.
- IP/OP 5kV, withstand surge voltage of 10kV.
- Creepage and clearance distance between coil and contacts ≥10mm.
- 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	1form C(CO)or 1form 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，AgSn0_2，AgNi+AgSn0_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 ϕ=1,85℃/105℃	9X10^4
SM-D(M)1/D(M)2	C/(NO)	16A,250VAC,cos ϕ=1, 85℃/105℃	1X10^5
SM-DM	A/(NO)	16A,250VAC,cos ϕ=1, 85℃/105℃	4X10^4
SM-D(M)T/D(M)H	A/C/(NO)	12A,250VAC,cos ϕ=1, 85℃	3X10^4
SM-D(M)T1/D(M)H1	A/C/(NO)	12A,250VAC,cos ϕ=1, 85℃	5X10^4
SM-D(M)T2/D(M)H2	A/C/(NO)	12A,250VAC,cos ϕ=1, 85℃	8X10^4
UL 60947-4-1			
SM-D3/D4	C(NO)	16A,250VAC,cos ϕ=1, 85℃/105℃	1X10^5
SM-D(M)/D(M)2	A/C(NO)	16A,250VAC,cos ϕ=1, 85℃/105℃	1X10^5
SM-D(M)1	A/C(NO)	16A,250VAC,cos ϕ=1, 105℃	3X10^4
SM-D(M)1	A/C(NO)	16A,250VAC,cos ϕ=1, 85℃	1X10^5
SM-D(M)T(2)/D(M)H(2)	A/C(NO)	12A,250VAC,cos ϕ=1, 85℃	1X10^5
SM-D(M)T1/D(M)H1	A/C(NO)	12A,250VAC,cos ϕ=1, 85℃	3X10^4
GB/T 21711.1-2023			
SM-D	A/C(NO)	16A,250VAC,cos ϕ=1, 85℃/105℃	2X10^4
SM-D(M)T/D(M)H	A/C/(NO)	12A,250VAC,cos ϕ=1, 85℃	2X10^4
IEC 61810			
SM-D(M)T/D(M)H	A/C/(NO)	12A,250VAC,cos ϕ=1, 85℃	3X10^4
Mechanical endurance			≥1x10^7

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（1±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

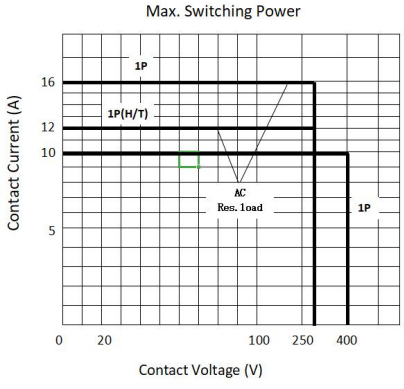
All figures are given for coil without pre-energization, at ambient temperature 20°C

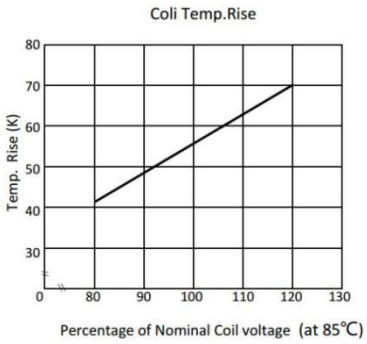
Insulation Data

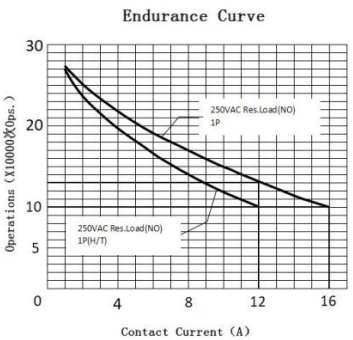
Initial dielectric strength	
between open contacts	1000VAC
between contact and coil	5000VAC
Clearance/Creepage	
between contact and coil（Clearance）	≥10mm(actual)
between contact and coil（Creepage）	≥10mm(actual)
Material group of insulation parts	IIIa
Tracking index of relay base	PTI 175V/PTI 250V

Other Data

Material compliance: EU RoHS/ELV, China RoHS, REACH	
Ambient temperature:	-40℃～+85℃ (No condensation)
	For ambient temperature is 105℃, 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







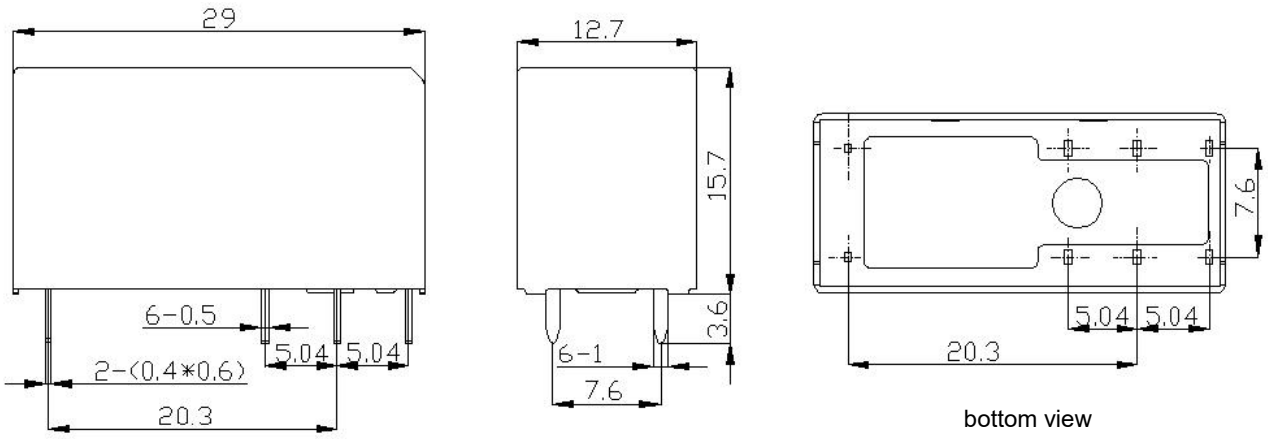
Note:

(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.

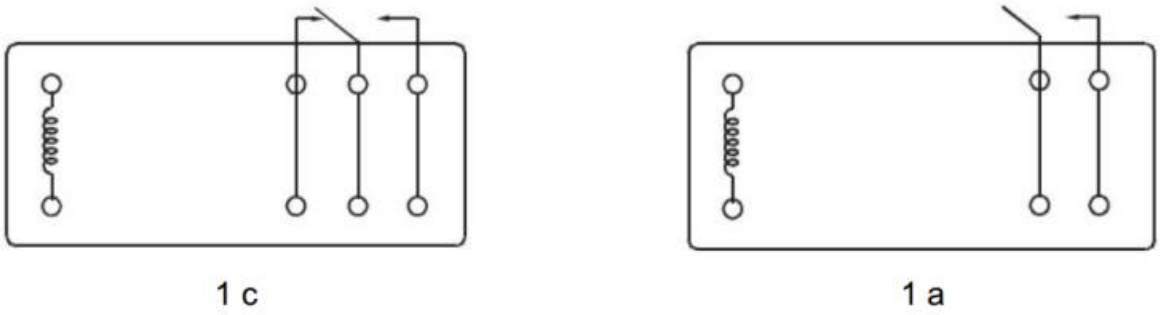
Dimensions

Eg: SM-S-112D4



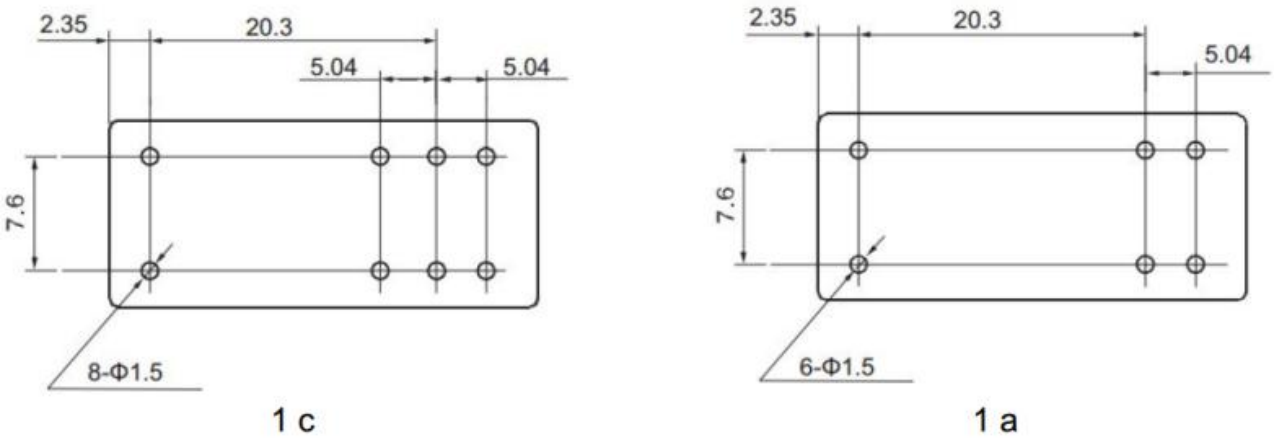
Wiring Diagrams（bottom view）

Eg: SM-S-112D4



PCB Layouts（bottom view）

Eg: SM-S-112D4

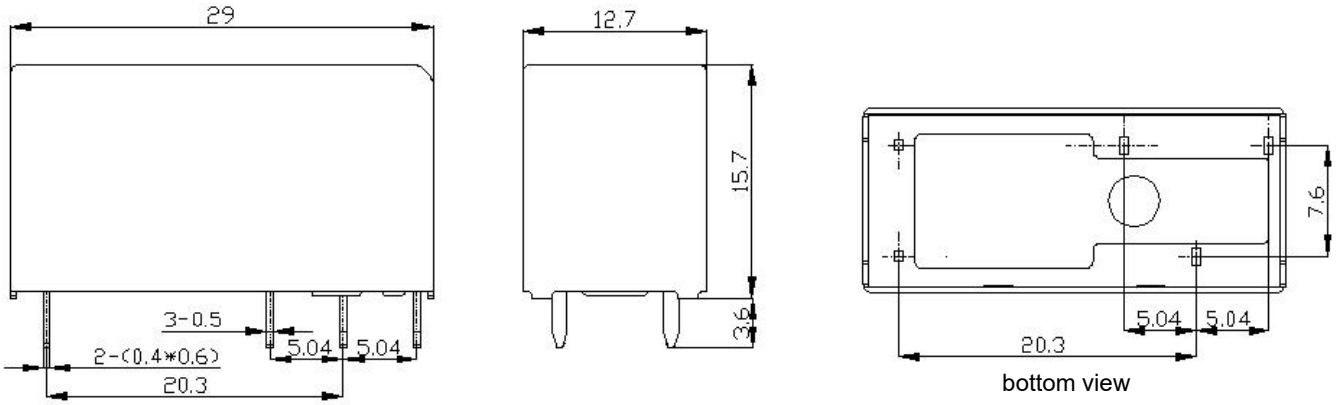


In case of no tolerance shown on outline dimension
If dimension < 1 mm, tolerance: ±0.2mm
If dimension 1~5mm, tolerance: ±0.3mm
If dimension > 5mm, tolerance: ±0.4mm

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

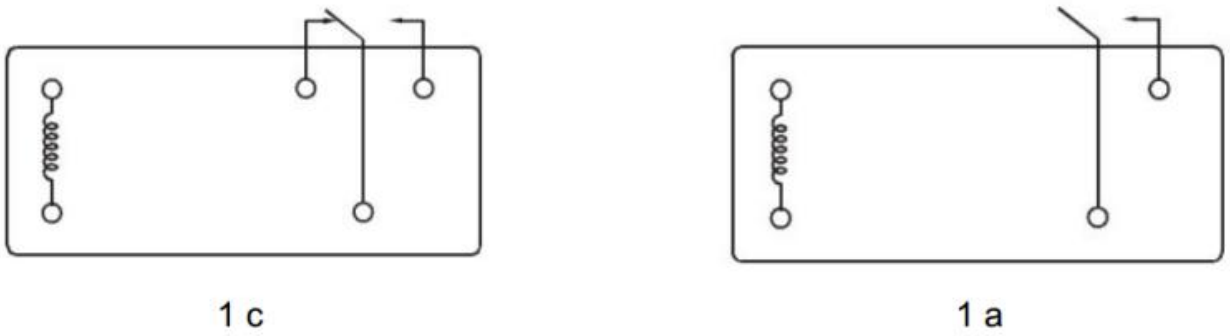
Dimensions

Eg: SM-S-112DH1



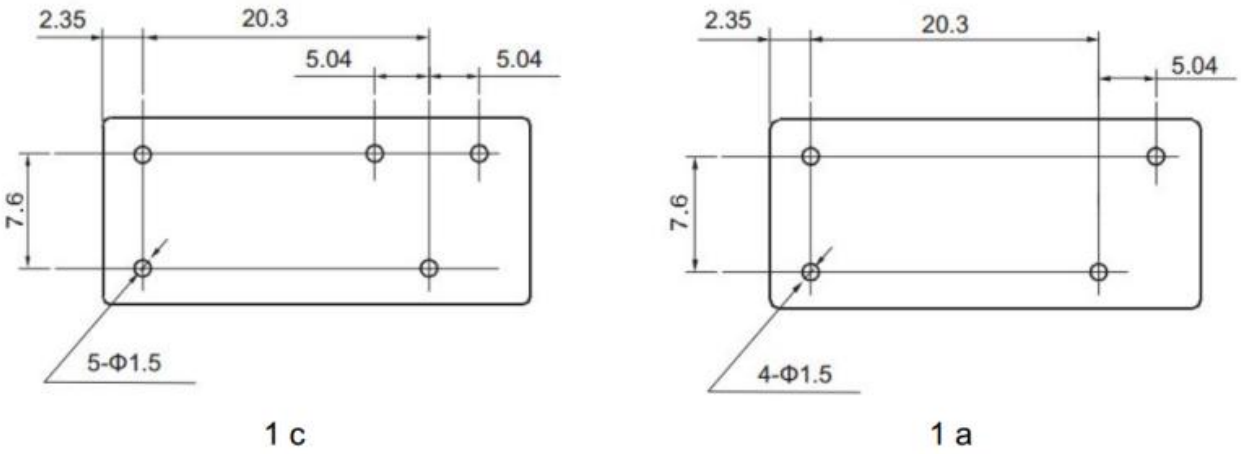
Wiring Diagrams（bottom view）

Eg: SM-S-112DH1



PCB Layouts（bottom view）

Eg: SM-S-112DH1



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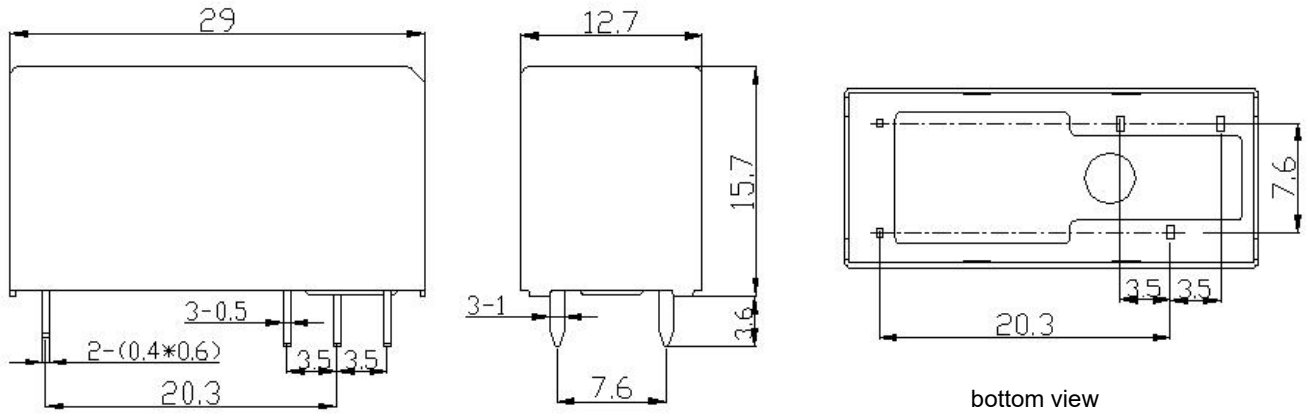
If dimension 1~5mm, tolerance: ±0.3mm
If dimension > 5mm, tolerance: ±0.4mm

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

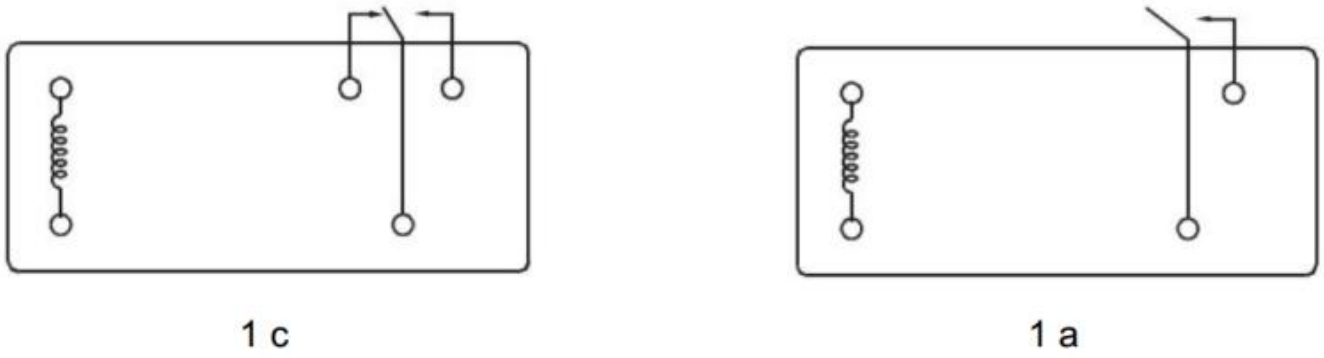
Dimensions

Eg: SM-S-112DT1



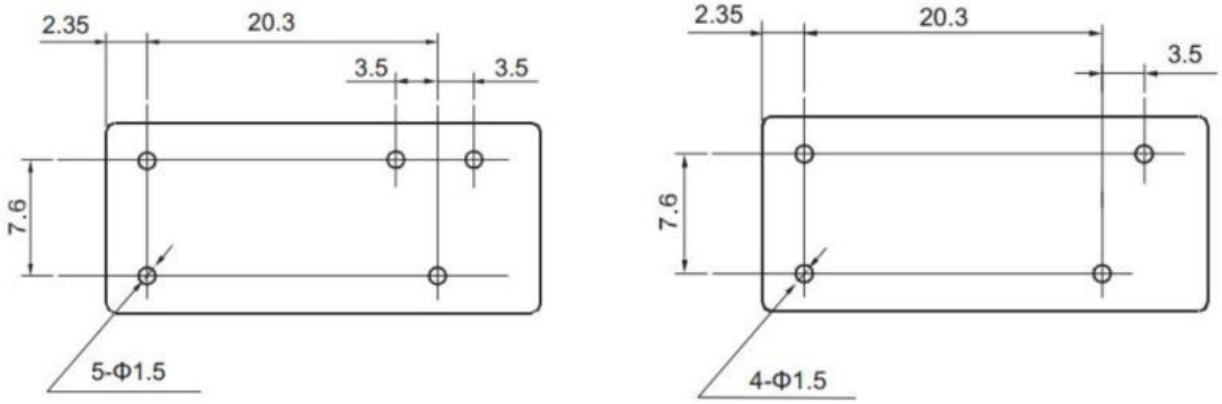
Wiring Diagrams（bottom view）

Eg: SM-S-112DT1



PCB Layouts（bottom view）

Eg: SM-S-112DT1



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If dimension > 5mm, tolerance: ±0.4mm

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: Nil-AgNi 1-$AgSnO_2$ 2-AgNi & $AgSnO_2$ 3-3 Compounds AgNi (Form C) 4-3 Compounds $AgSnO_2$ (Form C)
										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

(1) Plastic sealing type can not be used in polluted environment (containing H_2S, $S0_2$, $N0_2$, dust and other pollutants).

(2) After the plastic seal product is loaded into PCB welding, the whole cleaning or surface treatment can not be carried out.

(3) Special requirements of customers (XX) shall be evaluated by our company and marked by characteristic symbols.

Examples of Ordering Codes

SM-S-112DM1 relay SM , Flux-proof , rated DC voltage 12V , coil power 0.4W, 1NO, and contact material $AgSnO_2$.

SM-S-112D4 relay SM, Flux-proof , rated DC voltage 12V , coil power 0.4W, 1CO, and contact material $AgSnO_2$.

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.