三友繼電器 SANYOU RELAYS

SM-K Series Latching Relay

Features

- ◇ 20A contact switching capability
- ◇ 1 coil latching and 2 coils latching optional
- ◇ Environmental friendly product (RoHS Compliant)
- ◇ Dielectric strength between coil and contact: 5KV
- ◇ Dimensions: 29mm×13mm×16mm

Safety Approval

- ◇ UL、CU-L File No.:E190598
- ◇ VDE File No.:40052321
- ◇ CQC File No.:CQC19002226456

Contact Capacity

Type	SM-K
Rated load	16A 250VAC
Max.switching current	20A
Max.switching voltage	277VAC
Max.switching power	5,540 VA
Min.switching load	6V 1A

Characteristic Date

Contact material	Silver alloy	
Contact resistance	100mΩ Max.(at 1A 24VDC)	
Operate time	10msec. Max.	
Release time	10msec. Max.	
Insulation resistance	1,000MΩ Min.(at 500VDC)	
Impulse withstand voltage	Between coil and contact: 10KV(1.2/50us)	
Dielectric strength	Between open contacts: 1,000VAC,50/60Hz 1min.	
	Between coil and contact: 5,000VAC,50/60Hz 1min.	
Vibration resistance	10～55Hz，1.5 mm at double amplitude of 1.5mm	
Shock resistance	Destructive	100G Min.
	Functional	10G Min.
Endurance(Operations)	Mechanical endurance(3,600ops/h)	1,000,000 cycles(at room temperature)
	(2)Electrical endurance(360ops/h)	50,000 cycles(at room temperature)
Ambient temperature	-40℃～+85℃ (no condensation)	
Humidity	5%～85%RH	
Unit weight	Appprox. 13.5g	

(1) The date shown above are initial values.

(2) The electrical endurance test has been carried out on flux proofed version.

◆ Coil Data (at 20℃)

Nominal voltage (VDC)	Coil resistance±10% (Ω)		Max allowable voltage	Set/Reset voltage (Max.)	Pulse width (ms)	Coil power
	1 coil latching	2 coils latching				
5	62.5	42+42	150% of Nominal Voltage	80% of Nominal Voltage	≥50ms	1 coil: 0.4W 2 coils: 0.6W
6	90	60+60				
9	202.5	135+135				
12	360	240+240				
24	1440	886+886				

(1) The date shown above are initial values.

(2) Apply full rated voltage value to the product, pulse time ≥50ms.

(2) Do not energize the maximum allowable voltage of the coil for more than 1 minute to avoid overheating of the coil.

◆ Safety Approval Ratings (Note: Please refer to the certificates for more detailed information of the ratings)

Approval	CQC	VDE	UL/CUL
File No.	CQC19002226456	40052321	E190598
Approved Ratings	16A 125/250/277VAC	16A125/250/277VAC	20A125/250/277VAC 16A125/250/277VAC 1.5HP 250VAC TV-8 120/250VAC

(1) All values unspecified are at room temperature.

(2) Only typical loads are listed above. Other load specifications can be available upon request. The electrical endurance cycles of each load is different due to the different test conditions. If more details are required, please contact us.

(3) The electrical endurance test has been carried out on flux proofed version.

◆ Ordering Information

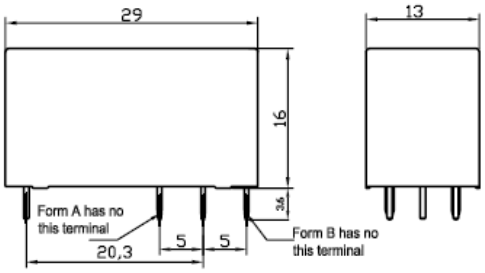
SM-K	-S	-1	12	D	M	2	-1C	-R	-XX	
										Special code : Nil-Standard , Letter or number-Special requirement
										Polarity : Nil-Standard, R-reverse polarity
										Coil form : 1C-1 coil latching, 2C-2 coils latching
										Contact material : Nil--$AgSnO_2$, 2-$AgSnO_2$&AgNi
										Contact form : Nil-FormC,M-FormA,B-FormB
										Coil power : D:Standard-0.4W(1 coil)/0.6W(2 coils)
										Rated coil voltage(VDC) : 05 , 06 , 09 , 12 , 24
										Number of poles : 1-1Pole
										Protective construction : S-Flux proofed , SH-Sealed type washable
										Basic series : SM-K

(1) Flux-proofed relays can not be used in the environment with pollutants like H_2S, SO_2, NO_2, dust, etc.

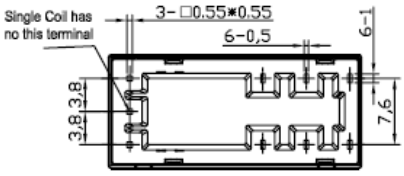
(2) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.

(3) The customer special requirement express as special code after evaluating by Sanyou.

◆ Outline Dimensions,Wiring Diagram,P.C.Board Layout (unit:mm)



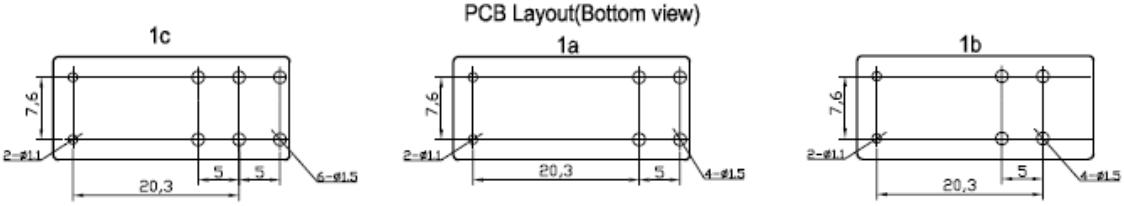
Outline Dimensions



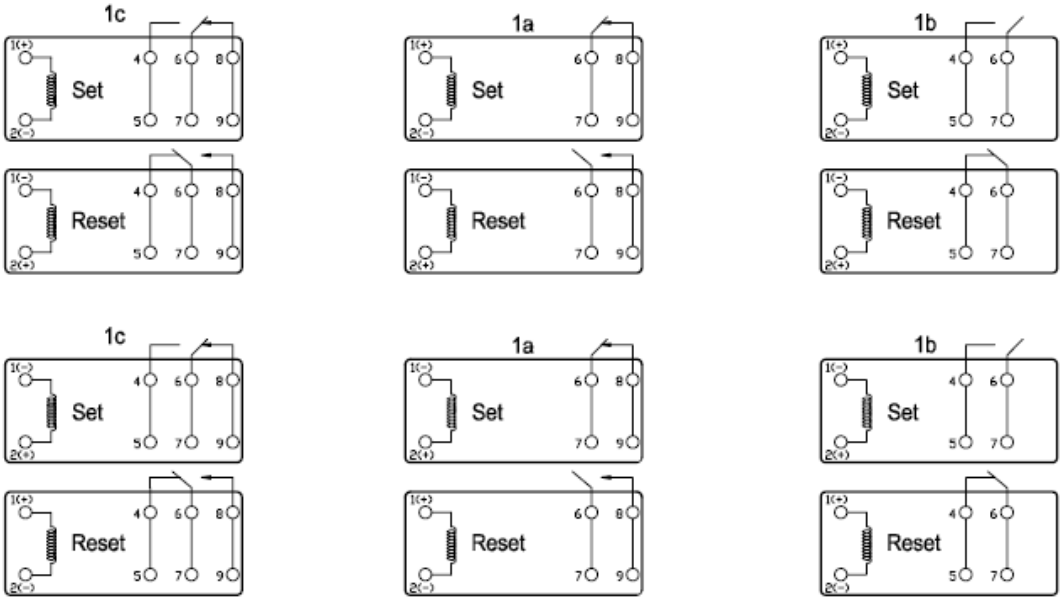
Unless otherwise specified:
If dimension <1mm, tolerance:0.2mm;
If dimension 1-5mm, tolerance:0.3mm ;
If dimension >5mm, tolerance:0.4mm.
Note: 1. Extended terminal dimension is dimension before soldering.
2. Tolerance o f P. C. B. layout 0.1 mm

Single Coil

PCB Layout(Bottom view)



Wiring Diagram(bottom view)



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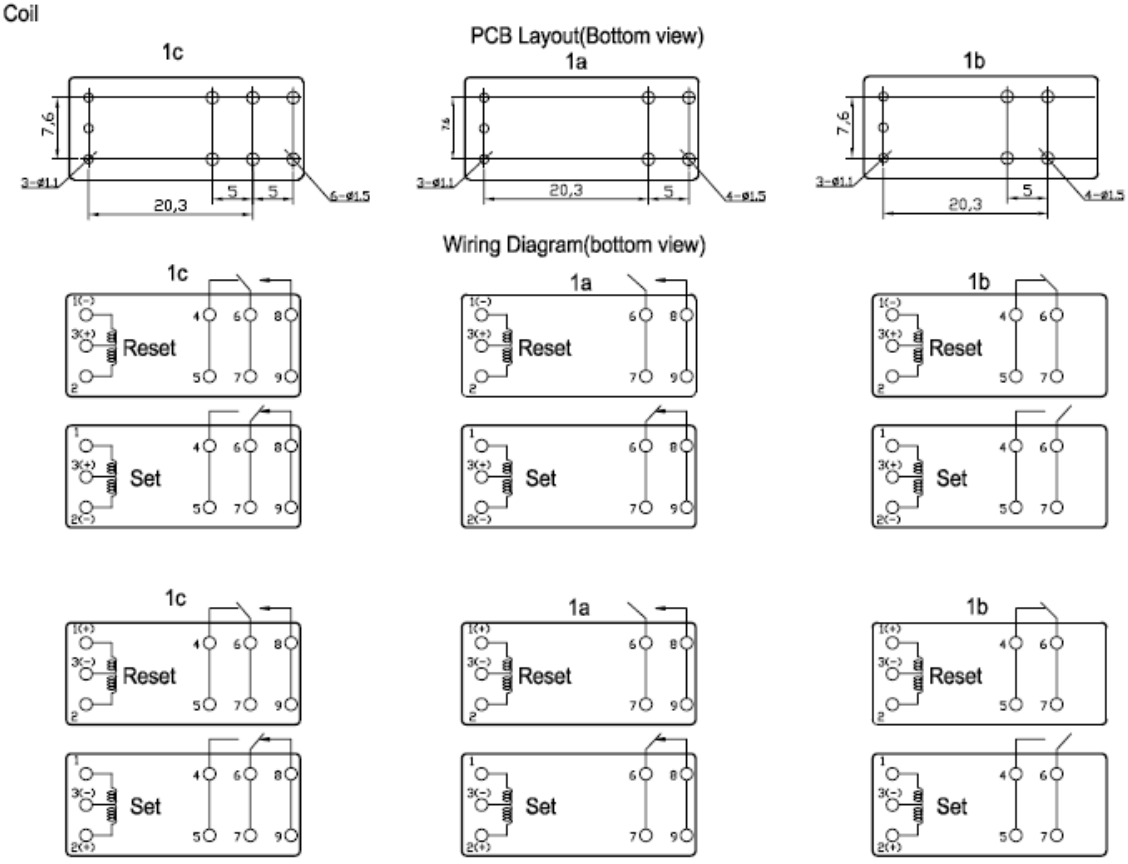
Dual Coil



Note: The above is the typical installation diagram, and the design can be made according to customer requirements or jointly with customer; If the relay needs to be connected with other parts, please contact us.

◆ **Precautions**

（1）Latching relays are shipped from the factory in the reset state. A shock to the relay during shipping or installation may cause it to change to the set state. Therefore, it is recommended that the relay be used in a circuit which initializes the relay to the required state (set or reset) whenever the power is turned on.

（2）In order to maintain set or reset status, energized voltage to coil should reach the rated voltage, the minimum pulse width should be at least 5 times of the set time or reset time. Do not energize voltage to set coil and reset coil simultaneously. And also long energized time(more than 1 min) should be avoided.

（3）Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.

（4）The contact maximum switching voltage (or current) does not permit the continuous application. Apply not more than the rated voltage (or current) for the specified performance.

（5）Setting and reset pulse time.

● The setting and reset time of magnetic holding type should be based on the change of operating environment temperature and reliable operating conditions. The rated voltage (the recommended pulse time is more than 100ms) should be applied to the coil operation and the reset pulse time should be in the coil.

（6）Soldering

●Wave soldering conditions

Please obey the following conditions when soldering automatically.

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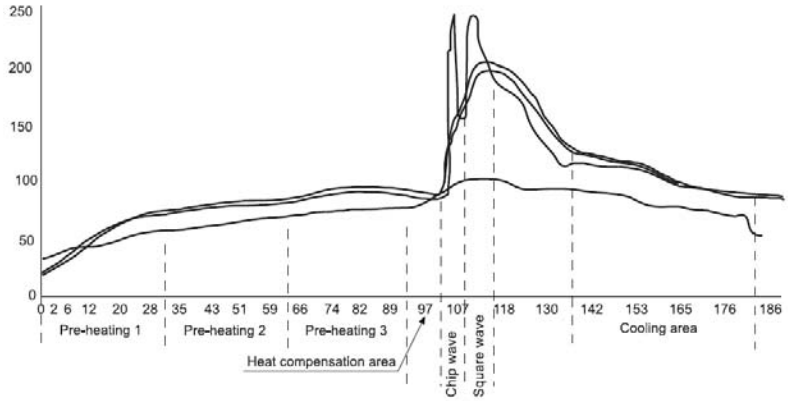
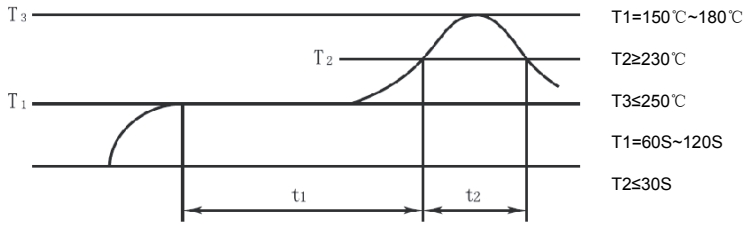
Pre-heating: within 150 °C(solder surface terminal portion)and within 150 seconds.

Wave soldering temperature distribution chart



The recommended soldering temperature range and duration is 240°C to 260°C, 3s to 5s;



Furthermore, because the type of PC board used and other factors may influence the relays, test that the relays function properly on the actual PC board on which they are mounted.

●Reflow soldering conditions (Pin-in- Paste process)

Rise in relay temperature depends greatly on the component mix on a given PC board and the heating method of the reflow equipment. Therefore, please test beforehand using actual equipment to ensure that the temperature where the relay terminals are soldered and the temperature at the top of the relay case are within the conditions given above.

Disclaimer :

The specification is for reference only. Specifications subject to change without notice.

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

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