# RSD

AC DC Solid state relay

- 1 N/O SPST DC AC output
- No contact, no spark, long service life
- MOSFET output is used for DC, and TRIAC or SCR output is used for AC, with fast switching response
- Using optocoupler isolation, high isolation voltage
- Wide control voltage range, LED indicator
- Optional IP20 protective cover, panel mounting
- Widely used in constant temperature systems, temperature regulation, electricfurnace heating control, CNC machinery, solenoid valves, motor control, etc.

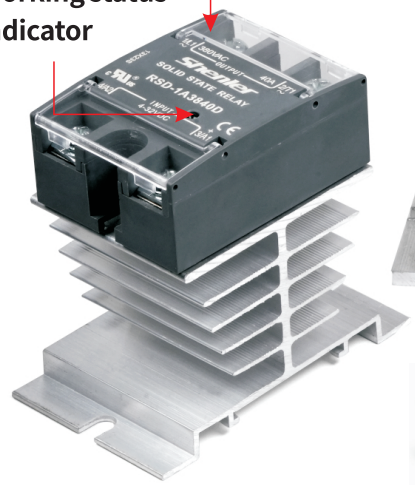
### Metal cooling base plate

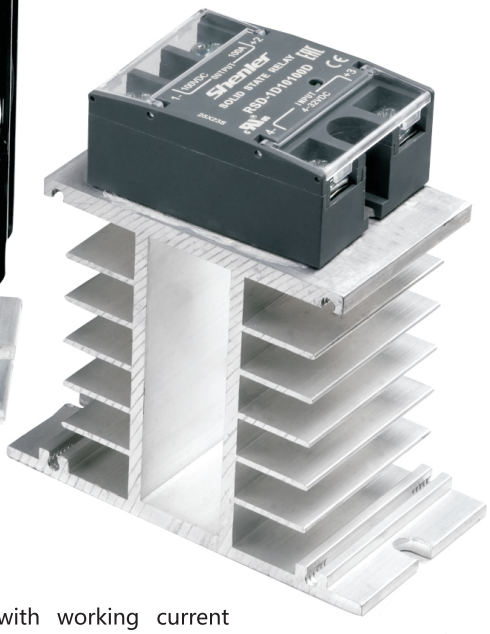
The back adopts thickened metal plate; smooth surface helps fast cooling and avoid overheat.

### Transparent protective cover

High performance polycarbonate transparent cover, safe, dustproof, easy to open, and effectively reduce falling off or loss due to human factors

### Working status indicator





### Auxiliary heat sink

The solid-state relay with working current of more than 10A must be installed with heat sink, and thermal conductive silicone grease is added between the relay and the heat sink (fan forced cooling is added for more than 60A)

# RSD-1D

DC Solid state relay


Relay

RSD 1 D □ □ D □

**Options**
T:TVS

**Control type**
D:4-32VDC DC control

**Load current**

| Code | 20 | 40 | 60 | 80 | 100 |
|---|---|---|---|---|---|
| Current (A) | 20 | 40 | 60 | 80 | 100 |
| Note | | | | For load voltage code 06 and 10 only | |

**Load voltage**

| Code | 06 | 10 | 20 |
|---|---|---|---|
| Voltage Range (VDC) | 7-48 | 7-75 | 7-120 |

**Load type**
D: DC load

**Single-phase**

**Series name**

## Product performance

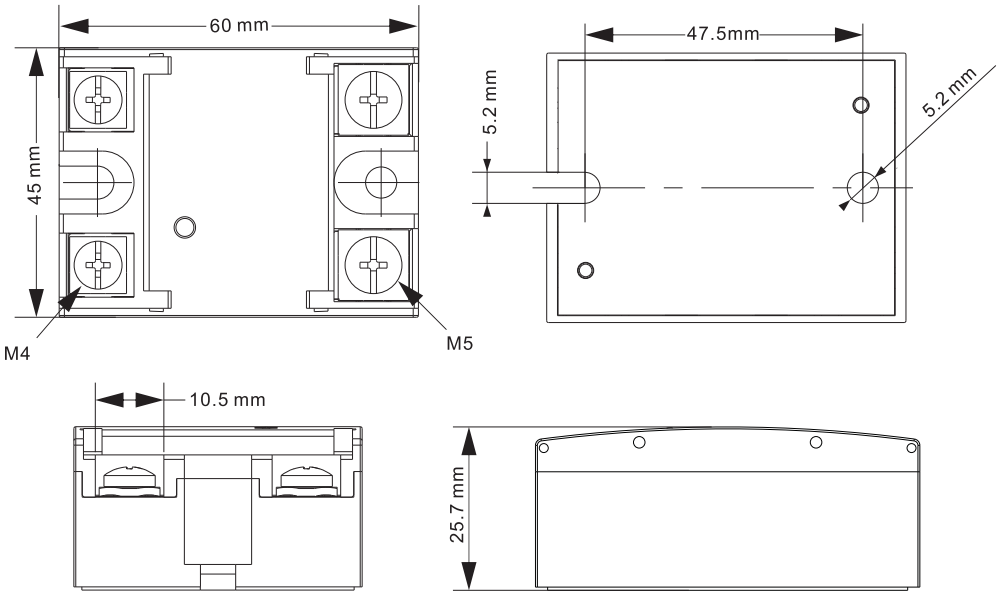
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Input parameter ( Ta=25℃ ) | | | | | | | | | | | | | |
| Control voltage range | 4~32VDC | | | | | | | | | | | | |
| Must ON voltage | 4VDC | | | | | | | | | | | | |
| Must OFF voltage | 1VDC | | | | | | | | | | | | |
| Control current range | 6~20mA | | | | | | | | | | | | |
| Output parameters ( Ta=25℃ ) | | | | | | | | | | | | | |
| Part No. | RSD-1D06xxD | | | | | RSD-1D10xxD | | | | | RSD-1D20xxD | | |
| Load voltage range(VDC) | 7-48 | | | | | 7-75 | | | | | 7-120 | | |
| Blocking voltage(VDC) | 60 | | | | | 100 | | | | | 200 | | |
| Maximum load current(A) | 20 | 40 | 60 | 80 | 100 | 20 | 40 | 60 | 80 | 100 | 20 | 40 | 60 |
| Maximum surge current (Apk,@10ms) | 110 | 160 | 200 | 260 | 300 | 90 | 140 | 180 | 220 | 280 | 80 | 160 | 200 |
| Maximum PWM(Hz) ★ | 900 | 700 | 700 | 500 | 500 | 900 | 600 | 600 | 400 | 400 | 800 | 600 | 400 |
| Maximum conduction voltage drop(V) | ≤1 | | | | | | | | | | ≤1.2 | | |
| Maximum off- state leakage current(mA) | ≤0.3 | | | | | | | | | | | | |
| Minimum load current(mA) | ≥2 | | | | | | | | | | | | |
| Maximum conduction time(ms) | 1 | | | | | | | | | | | | |
| Maximum off time(ms) | 1 | | | | | | | | | | | | |
| Other parameters ( Ta=25℃ ) | | | | | | | | | | | | | |
| Dielectric withstand voltage (50/60Hz) | Between Input and Output | 2500Vrms | | | | | | | | | | | |
| | Input/Output to base | 2500Vrms | | | | | | | | | | | |
| Insulation resistance(@500VDC) | 1000MΩ | | | | | | | | | | | | |
| Operating temperature range | -30℃~+80℃ | | | | | | | | | | | | |
| Storage temperature range | -40℃~+100℃ | | | | | | | | | | | | |
| Operating ambient humidity range | 35~85%RH (No condensation) | | | | | | | | | | | | |
| Cooling mode | fan forced cooling is added for more than 60A | | | | | | | | | | | | |
| Unit weight | approx.90g | | | | | | | | | | | | |

★ Note: For PWM rating, a voltage of at least 8 Vdc must be applied to the control input.

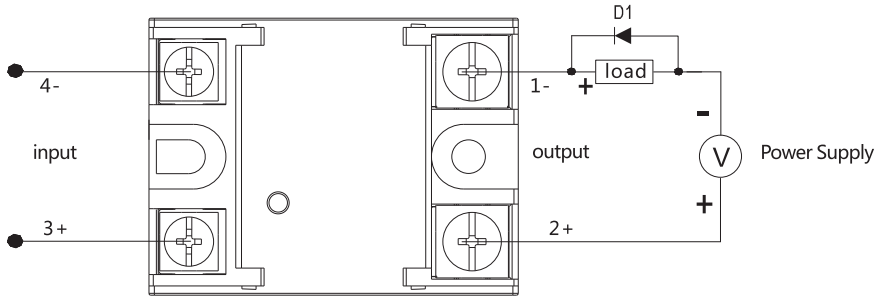
# RSD-1D

DC Solid state relay

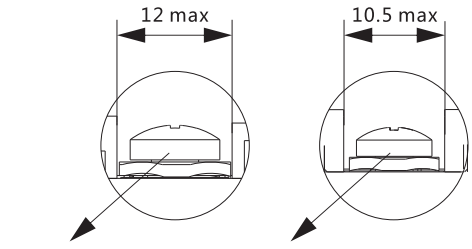
## Dimensions (mm)




## Wiring Diagrams




*When inductive load is used, suppression circuit must be added, as shown in the figure: reverse parallel freewheeling diode D1 at both ends of the load (D1 is a fast recovery diode)




To use cold rolled copper lugs

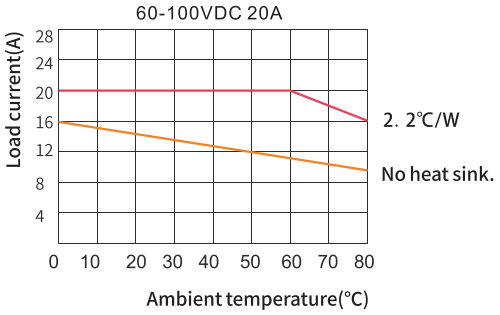
Output screw torque:(1.5-1.8)N·m

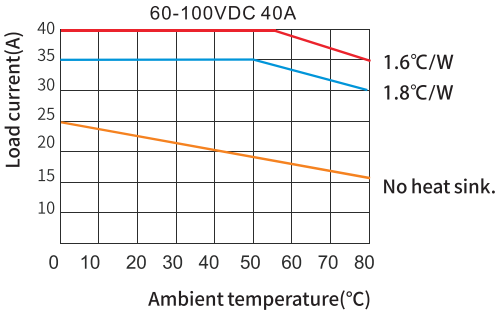
Input screw torque: (1.2-1.4)N·m

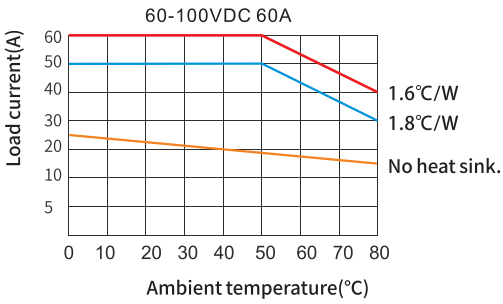
# RSD-1D

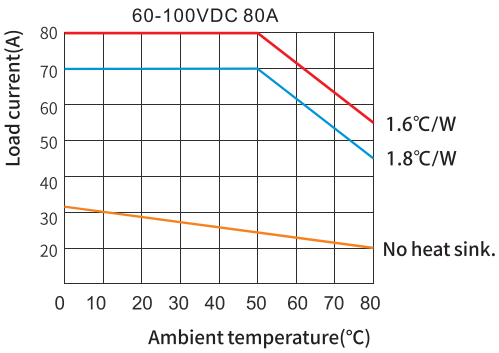
DC Solid state relay

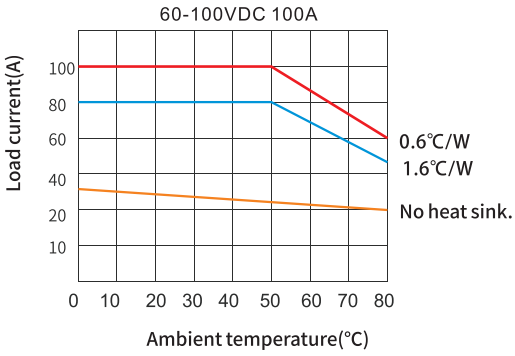
## Performance curve

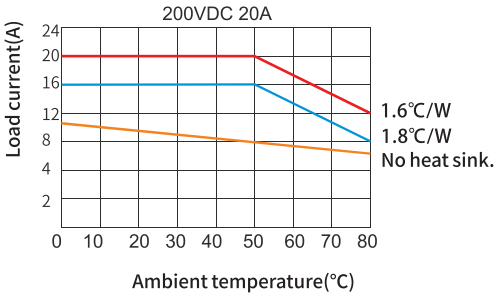


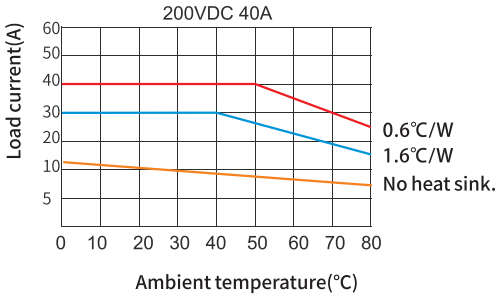



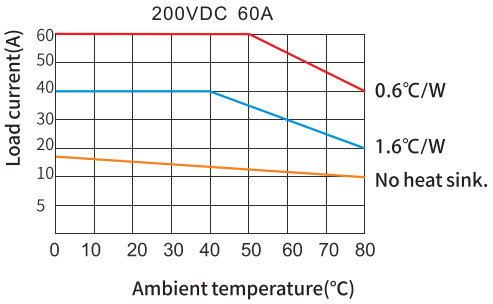



# RSD-1D

DC Solid state relay

## Current level selection

Considering the load surge current and relay overload capacity, to make the relay work with long life and high reliability, it is recommended to select the current magnification corresponding to the load type in the table below.

| Load type | Resistance | Electric heating wire | Incandescent lamp | Transformer/ electromagnet | Motor |
|---|---|---|---|---|---|
| Power factor | 1.0 | 0.7 | 0.5 | 0.4 | 0.2 |
| Magnification | 1.5multiple | 2multiple | 2.5multiple | 4multiple | 7multiple |

## Note

1. Please be sure to set fuse, air circuit breaker and other protective equipment on the power side to prevent short circuit.
2. When connecting inductive load, be sure to reverse parallel freewheeling diode at the load end (see "Terminal configuration and wiring diagram" for specific connection method)!
3. M5 screw and spring washer are used with 2N.m torque. After 3 hours of use, tighten it once with the same torque. To ensure the close contact and firm installation between the base plate of the solid-state relay (hereinafter referred to as the product) and the heat sink.
4. The product wiring shall be standard wire, and the cross-sectional area can be selected according to 5-8A per square millimeter. The terminal shall ensure that the wiring is firm. Loose wiring will lead to abnormal heating and damage to the product. In case of high temperature and high humidity environment, conductive compound shall also be coated on the connection part.
5. The input terminal is standard M4 screw, and the wiring tightening torque is (1.2-1.4) N.m. the output terminal is standard M5 screw, and the wiring tightening torque is (1.5-1.8) N.m.
6. Please do not connect the current above the rated specification. Otherwise, it may cause abnormal heating of the product.
7. Do not apply voltage exceeding the rated value on the input circuit and output circuit, and pay attention to the wrong connection of positive and negative polarity, otherwise the product will fail or burn.
8. Requirements for installation: it shall be installed vertically on the chassis with good ventilation conditions, and make full use of the heat dissipation conditions of air convection. When two or more products are installed side by side, an appropriate large gap shall be reserved.
9. When the ambient temperature of the product is high, please refer to "Performance curve" to check the current temperature curve for derating. When it exceeds 60 ℃, air cooling is needed to ensure that the temperature of the product bottom plate does not exceed 80 ℃.
10. Before installation, maintenance and other operations, be sure to cut off the power supply in case of electric shock!

# RSD-1A

AC Solid state relay


Relay

RSD 1 A □ □ □ □ □

**Protection type**
Blank: RC (standard)
T: TVS

**Switching mode**
Blank: Zero voltage switching
R:Random switching

**Control voltage (input) range**
D:4-32V DC control
A:90-280V AC control
E: 18-36VAC/DC control

**Max. load current**
10：10A
15：15A
25：25A
40：40A
60：60A
80：80A

**Rated load voltage**
38：380VAC
48：480VAC

**Load type**
A: AC

**1: Single phase**

**Series name**

## Current level selection

Considering the load surge current and the overload capacity of the relay, so that the relay can work with long life and high reliability, it is recommended to select the current amplification factor corresponding to the load type in the following table.

| Load type | Resistance | Electric heating wire | Incandescent lamp | Transformer /Electromagnet |
|---|---|---|---|---|
| Power factor | 1.0 | 0.7 | 0.5 | 0.4 |
| Magnification | 1.5 | 2 | 2.5 | 4 |

| Load type | Single phase motor | Three phase motor | Capacitor |
|---|---|---|---|
| Power factor | 0.2 | 0.3 | surge |
| Magnification | 7 | 6 | 10 |

## Voltage option

| Load type | 240V resistive or inductive load | 380V resistive load | 380V inducutive load | Capacitor load |
|---|---|---|---|---|
| Voltage | 380V | | 480V | |

# RSD-1A

AC Solid state relay

## Product performance

Input parameter ( Ta=25℃ )

| Part No. | RSD-1AxxxxD | RSD-1AxxxxDR | RSD-1AxxxxA | RSD-1AxxxxAR |
|---|---|---|---|---|
| Control voltage range | 4~32VDC | | 90~280VAC | |
| Must ON voltage | 4VDC | | 90VAC | |
| Must OFF voltage | 1VDC | | 10VAC | |
| Control current range | 6~25mA | | 6~20mA | |
| Maximum opening time | 1/2cycle | 1ms | 20ms | |
| Maximum closing time | 1/2cycle | 10ms | 30ms | |

| Part No. | RSD-1AxxxxE | RSD-1AxxxxER |
|---|---|---|
| Control voltage range | 18-36VAC/DC | |
| Must ON voltage | 18VAC/DC | |
| Must OFF voltage | 4VAC/DC | |
| Control current range | 6-20mA | |
| Maximum opening time | 20ms | |
| Maximum closing time | 30ms | |

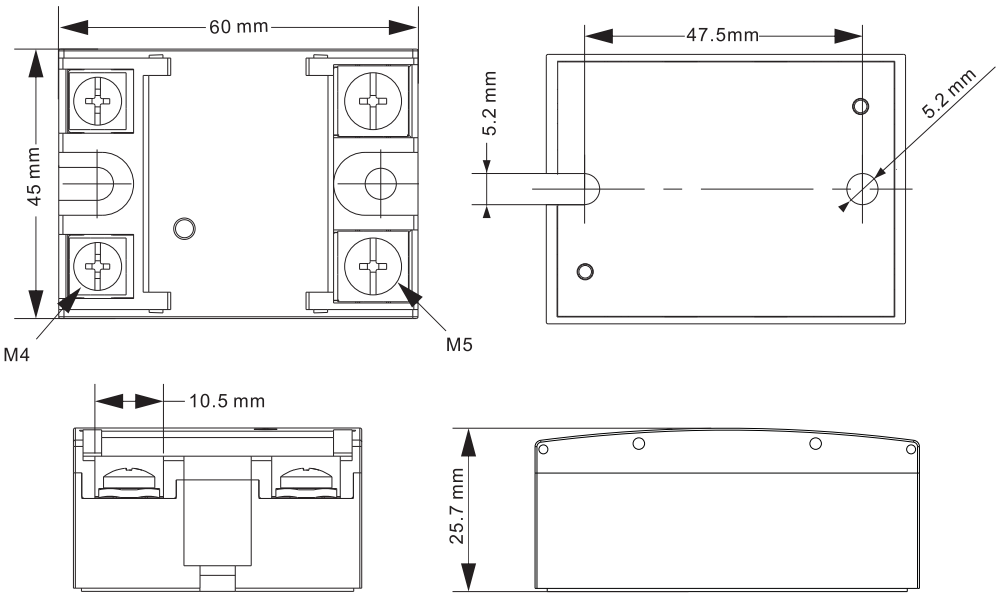
| Input parameter ( Ta=25℃ ) | | | | | | |
|---|---|---|---|---|---|---|
| Part No. | RSD-1A38xxxx | | | RSD-1A48xxxx | | |
| Rated load voltage (47-63Hz) | 380VAC | | | 480VAC | | |
| Load voltage range | 24-440VAC | | | 40-530VAC | | |
| Transient Overvoltage | 800Vpk | | | 1200Vpk | | |
| Critical rise rate of open-state voltage dv/dt | 500V/μs | | | | | |
| Minimum load current | 150mA | | | | | |
| Maximum open-state leakage current (at rated voltage) | 10mA | | | | | |
| Maximum conduction voltage drop (at rated current) | 1.5V | | | | | |
| Maximum load current | 10A | 15A | 25A | 40A | 60A | 80A |
| Maximum surge current [@ 10ms] | 120A | 160A | 250A | 500A | 700A | 1000A |
| Maximum $I^2T$ value [@ 10ms] | $80A^2s$ | $112A^2s$ | $312A^2s$ | $800A^2s$ | $1800A^2s$ | $5000A^2s$ |

| Other parameters (Ta=25 ℃) | | |
|---|---|---|
| Dielectric withstand voltage (50/60Hz) | Input/Output | 4000Vrms |
| | Input,output/base | 2500Vrms |
| Insulation resistance(@500VDC) | 1000MΩ | |
| Operating temperature range | -30℃~+80℃ | |
| Storage temperature range | -40℃~+100℃ | |
| Operating ambient humidity range | 35 ~ 85%RH (No condensation) | |
| Cooling mode | fan forced cooling is added for more than 60A | |
| Unit weight | approx.100g | |

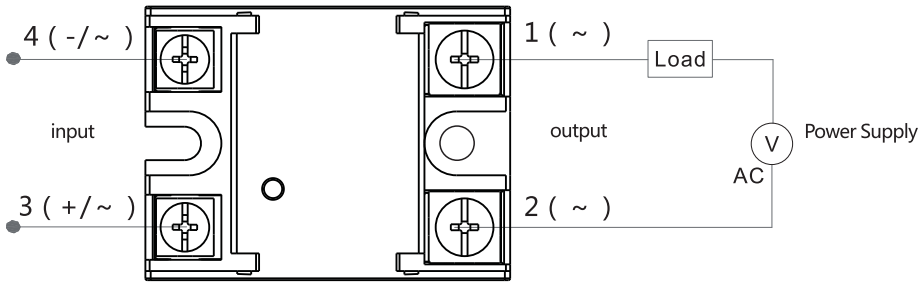
# RSD-1A

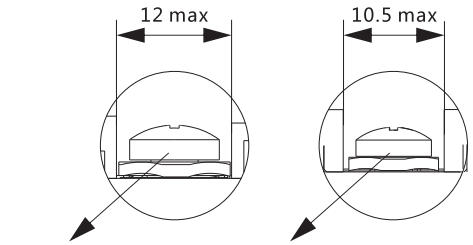
AC Solid state relay

## Dimensions (mm)




## Wiring Diagrams




To use cold rolled copper lugs

Output screw torque:(1.5-1.8)N·m

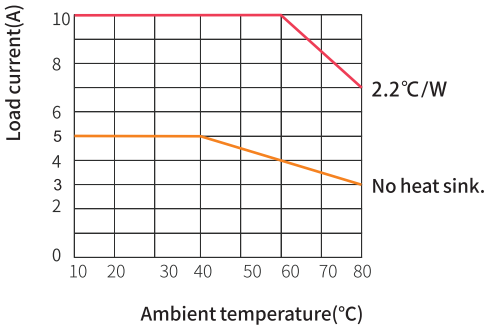
Input screw torque: (1.2-1.4)N·m

# RSD-1A

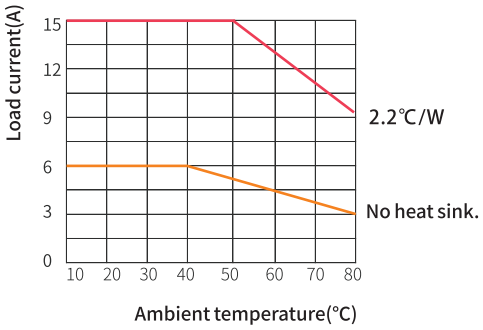
AC Solid state relay

## Performance curve

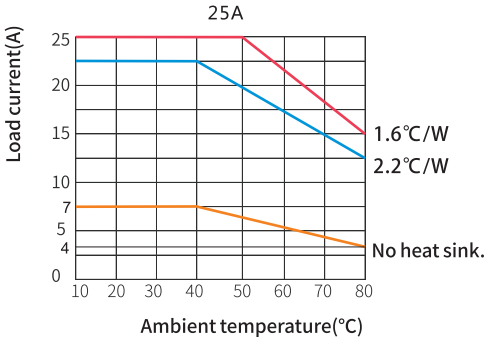
10A



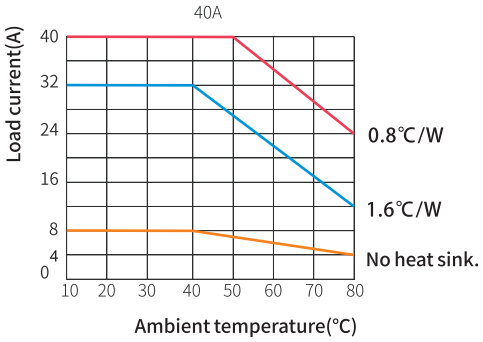

15A



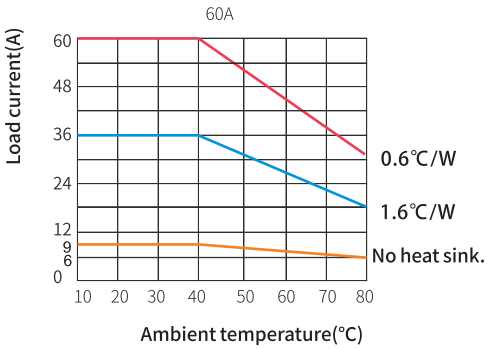

25A



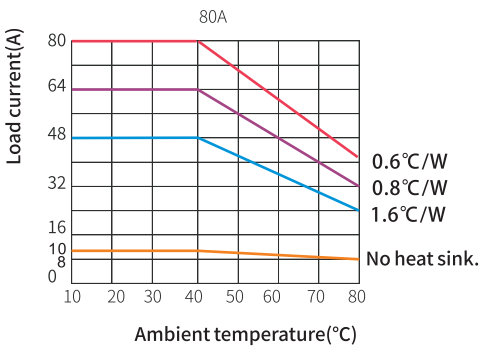

40A




60A




80A



# RSD-1A

AC Solid state relay

## Matters needing attention

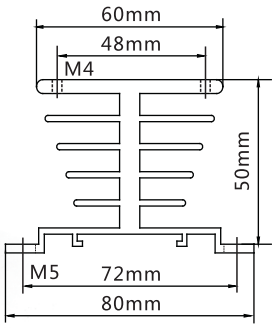
1. Please be sure to set fast fuse, air switch and other protective equipment on the power supply side to prevent short circuit. The principle of selecting the current level of the breaker is slightly greater than the load current. Resistive load and inductive load should be protected by fast fuse, and motor, power compensation capacitor and other loads should be protected by air switch.
2. When the solid-state relay (hereinafter referred to as SSR) works below - 20 ℃, the minimum control voltage needs to be increased by 1V.
3. Selection of SSR: For AC load and most AC inductive load, zero-crossing SSR shall be selected; For 380V inductive load and capacitive load, it is recommended to use 480V zero-crossing trigger SSR; It is used as phase output control or optional when the frequency is high.
4. Overvoltage protection selection: built-in RC absorption circuit (standard configuration); Built-in transient voltage suppression diode TVS.
5. Installation between SSR and radiator: select the matching radiator (thermal resistance shall be as small as possible), and evenly coat the SSR base plate with thermal conductive silicone grease orPlace the silicone pad, use M5 screws and spring washers, and tighten them with 2N. m torque. After 3 hours of use, tighten them with the same torqueTimes. To ensure that the SSR base plate is in close contact with the radiator and installed firmly.
6. The product wiring should use standard wire, the sectional area can be selected according to 5-8A per square millimeter, and the terminal should ensure that the wiring is firm and looseIt will cause abnormal heating of the product and damage the product. In case of high temperature and high humidity environment, conductive paste should also be applied to the connection part.
7. Input terminal adopts M4 screw, wiring tightening torque is (1.2-1.4) N.m, output terminal adopts M5 screw, wiring tightening torqueIs (1.5-1.8) N.m
8. Please do not connect the current above the rated specification. Otherwise, abnormal heat of SSR may be caused.
9. Do not apply voltage exceeding the rated value on the input circuit and output circuit, otherwise it will cause SSR failure or burning.
10. Requirements for installation conditions: it should be installed vertically on the case with good ventilation conditions, and make full use of the heat dissipation conditions of air convection. When two or more SSRs are installed side by side, there should be an appropriate large gap.
11. The SSR needs to install a radiator. Refer to the product derating curve.Fan forced cooling is added for more than 60A, air cooling should also be used. In order to prevent the SSR from overheating and damage, a temperature control switch of 80 ℃ can be installed on the radiator in series in the control circuit for protection.

12. Warning! During installation, maintenance and other operations, be sure to cut off the power supply before installation or maintenance. In case of electric shock!

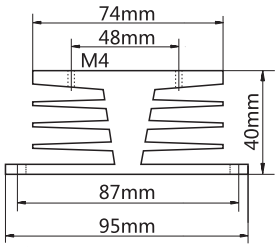
# KSR-1

## Single phase heat sink

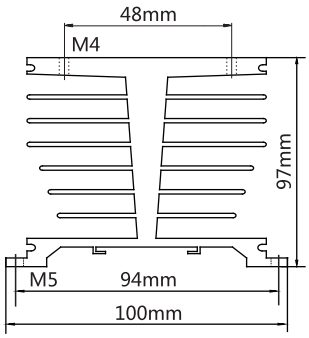
- Selection of heat sink: select the heat sink corresponding to thermal resistance according to "Performance curve" of solid-state relay . The smaller the thermal resistance value, the better the heat dissipation effect. >>>>>




| Part No. | L x W x H | Weight≈ | Thermal resistance |
|---|---|---|---|
| KSR-1A-50 | 50×80×50 | 70g | 2.2℃/W |

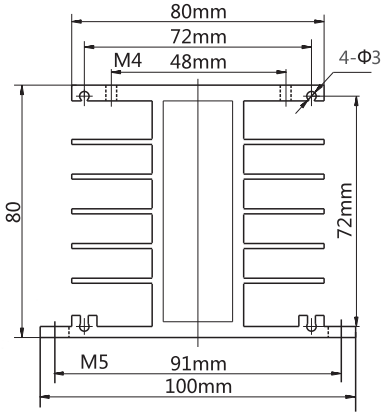



| Part No. | L x W x H | Weight≈ | Thermal resistance |
|---|---|---|---|
| KSR-1E-50 | 50×95×40 | 225g | 1.8℃/W |




| Part No. | L x W x H | Weight≈ | Thermal resistance |
|---|---|---|---|
| KSR-1T-50 | 50×100×97 | 324g | 1.6℃/W |
| KSR-1TF-76 | 76×100×97 | 580g | 0.6℃/W |

Note: the length of KSR-1TF-76 with fan is 76mm



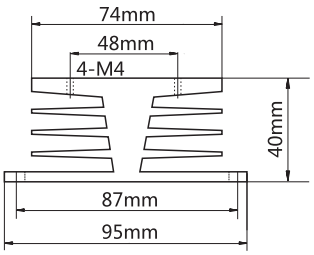

| Part No. | L x W x H | Weight≈ | Thermal resistance |
|---|---|---|---|
| KSR-1H-50 | 50×100×80 | 220g | 1.8℃/W |
| KSR-1HF-76 | 76×100×80 | 480g | 0.8℃/W |

Note: the length of KSR-1HF-76 with fan is 76mm

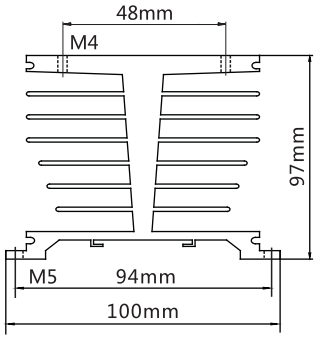
# KSR-3

Three phase heat sink

- Installation: Evenly coat the bottom plate of the solid-state relay with thermal grease or place a silicone pad, then install and tighten the screws.

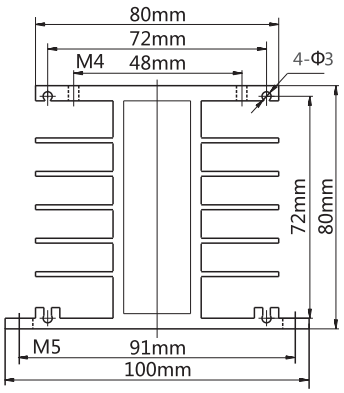



| Part No. | L x W x H | Weight≈ | Thermal resistance |
|---|---|---|---|
| KSR-3E-105 | 105×95×40 | 460g | 1.1℃/W |



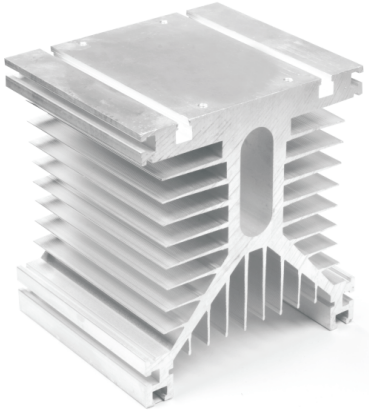

| Part No. | L x W x H | Weight≈ | Thermal resistance |
|---|---|---|---|
| KSR-3T-110 | 110×100×97 | 750g | 0.8℃/W |
| KSR-3TF-136 | 136×100×97 | 1100g | 0.35℃/W |

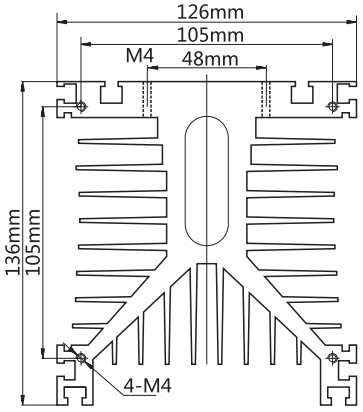
Note: the length of KSR-3TF-136 with fan is 136mm.




| Part No. | L x W x H | Weight≈ | Thermal resistance |
|---|---|---|---|
| KSR-3H-110 | 110×100×80 | 460g | 1℃/W |
| KSR-3H-150 | 150×100×80 | 630g | 0.8℃/W |
| KSR-3HF-136 | 136×100×80 | 670g | 0.5℃/W |
| KSR-3HF-176 | 176×100×80 | 840g | 0.4℃/W |

Note: the length of KSR-3HF-136 with fan is 136mm.
Note: the length of KSR-3HF-176 with fan is 176mm






| Part No. | L x W x H | Weight≈ | Thermal resistance |
|---|---|---|---|
| KSR-3Y-110 | 110×126×136 | 1400g | 0.5℃/W |
| KSR-3Y-150 | 150×126×136 | 1900g | 0.4℃/W |

The length of fan is 38mm.