

# DC Input / AC Output Compact Solid State Relay

PCS53



## FEATURES

- 10A or 25A Output
- Compact Package
- DC Input 4~32VDC
- Built-In RC Snubber Standard



## INPUT PARAMETERS (Ta = 35°C)

|                                  |            |
|----------------------------------|------------|
| Control Voltage Range (DC Input) | 4~32 VDC   |
| Must Turn-On Voltage             | 4 VDC      |
| Must Turn-Off Voltage            | 1 VDC      |
| Max Input Current                | 25 mA (DC) |
| Max Reverse Protection Voltage   | -32 VDC    |

## CHARACTERISTICS

|                       |   |
|-----------------------|---|
| Insulation Resistance | 1000 MΩ at 500 VDC  |
| Dielectric Strength   | 2500 VAC, 50/60 Hz, 1 min, Input to Base<br>2500 VAC, 50/60 Hz, 1 min, Output to Base<br>4000 VAC, 50/60 Hz, 1 min, Input to Output |
| Operating Temperature | -30°C to 80°C   |
| Storage Temperature   | -30°C to 100°C  |
| Weight                | ~35g  |

## OUTPUT PARAMETERS (Ta = 35°C)

|  |  |                    |
|--|--|--------------------|
| Load Voltage Range                             | 240A : 48 ~ 280 VAC<br>380A : 48 ~ 440 VAC     |                    |
| Max Transient Voltage                          | 240A : 600 Vpk<br>380A : 800 Vpk               |                    |
| Load Current                                   | 10A  | 25A                |
| Load Current Range                             | 0.1~10A  | 0.1~25A            |
| Max I <sup>2</sup> t (10 ms, A <sup>2</sup> s) | 72   | 312                |
| Max Surge Current (10 ms)                      | 100A <sub>pk</sub>                             | 250A <sub>pk</sub> |
| Max Off-State Leakage Current                  | 5 mA   |                    |
| Max On-State Voltage Drop                      | 1.5 VRMS                                       |                    |
| Max Turn-On Time                               | Zero Cross : 1/2 cycles +1 ms<br>Random : 1 ms |                    |
| Max Turn-Off Time                              | 1/2 cycles + 1 ms                              |                    |
| Min Off-State dv/dt                            | 200 V/us                                       |                    |

Values can change due to the switching frequency, desired reliability levels, environmental conditions, and in-rush current levels. It is recommended to test to actual load conditions for the application. It is the users responsibility to determine the performance suitability for their specific application. The use of any coil voltage less than the rated coil voltage may compromise the operation of the relay.

## ORDERING INFORMATION

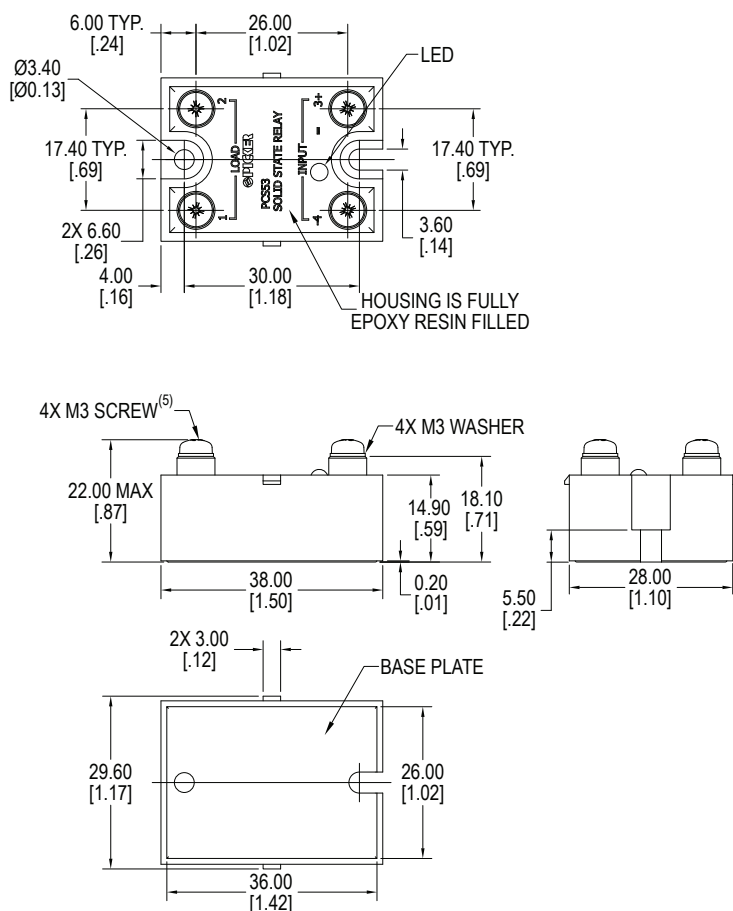
|                 |   |    |       |     |   |  |   |   |
|-----------------|---|----|-------|-----|---|--|---|---|
| Example         | PCS53   | -D | -240A | -10 | Z |  | L | Q |
| Model:          | PCS53   |    |       |     |   |  |   |   |
| Control Voltage | D = 4~32VDC   |    |       |     |   |  |   |   |
| Load Voltage    | 240A = 48~280VAC<br>380A = 48~440VAC  |    |       |     |   |  |   |   |
| Load Current    | 10 = 10A<br>25 = 25A  |    |       |     |   |  |   |   |
| Switching Type  | Z = Zero Crossing<br>R = Random Turn-On / Instantaneous Turn-On                           |    |       |     |   |  |   |   |
| RC Snubber      | Nil = Built-In Snubber  |    |       |     |   |  |   |   |
| Status LED      | L = Indicator LED   |    |       |     |   |  |   |   |
| Terminal Type   | Nil = Screw Terminal<br>Q = Quick Connect (input 0.187" x 0.032"; output 0.250" x 0.032") |    |       |     |   |  |   |   |

## PRECAUTIONS

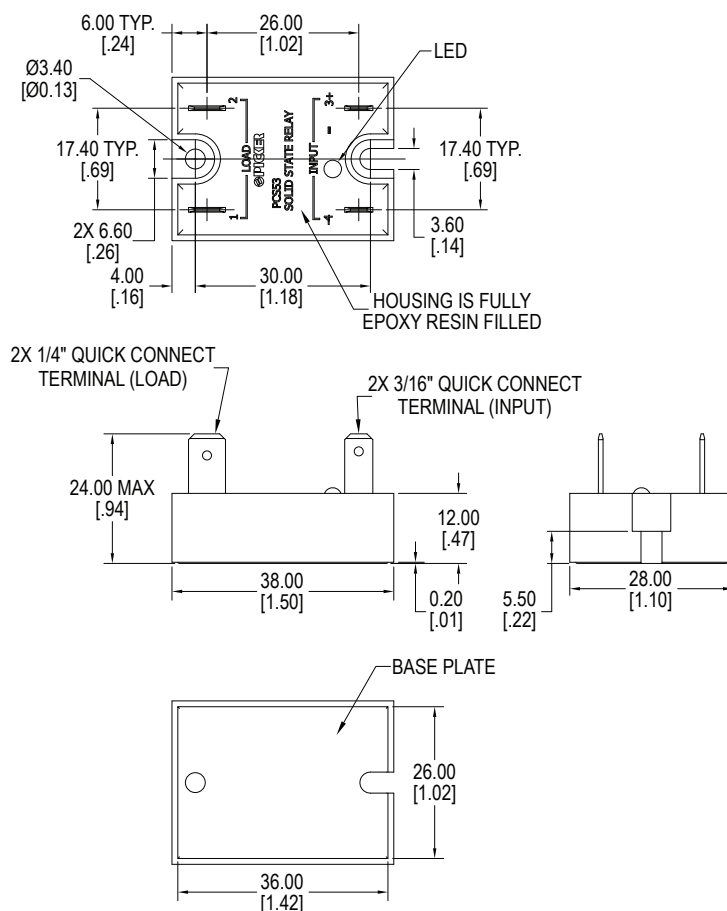
1. When choosing a Solid State Relay (SSR), note the actual load current and ambient temperature and reference the Characteristic Curves.
2. SSRs require adequate heat sinking or other effective cooling measures.
3. With ambient temperature above 25°C, refer to the curve of Max Load Current vs. Ambient Temperature for load current derating.
4. Apply heat-conducting silicon grease or a thermal transfer pad on the space between the SSR and heat sink and screw the SSR firmly to the heat sink to avoid damage from overheating.
5. Tighten the SSR terminal screws properly. We recommend screw installation torque as follows:  
M4 screw mounting torque range is (0.98~1.37)N \* m  
M3 screw mounting torque range is (0.56~0.98)N \* m  
Loose screws will damage the SSR with heat generated from connections. Also, excessive screw torque may damage the relay's internal components.
6. It is recommended to use a heat sink matched to the Current Load. With any heat sink test that the SSR base temperature does not exceed 65°C.
7. When using the PCS53 relay with an inductive load, it is suggested to select Random Turn-On. (i.e. a model with "R" Switching Type)
8. The PCS53 is not suitable for capacitive loads.
9. Listed parameters are based on resistive loads. Do not use the relay beyond the described current, temperature, load or voltage limits as described in this datasheet.

## DIMENSIONS mm (inches)

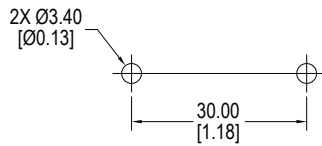
Screw Terminal



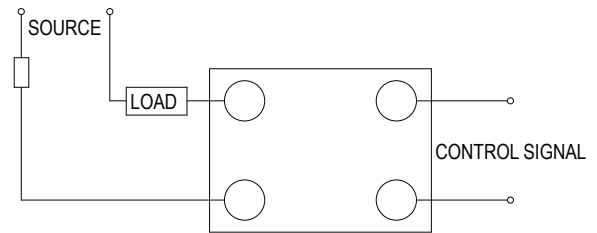
Quick Connect



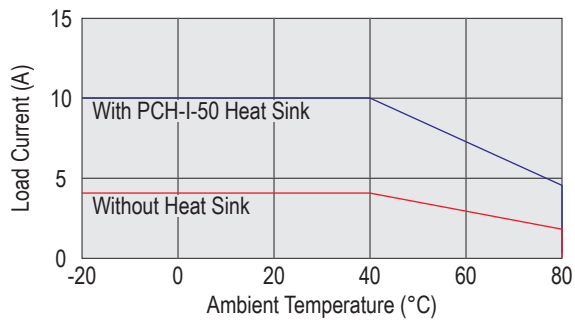
## MOUNTING LAYOUT



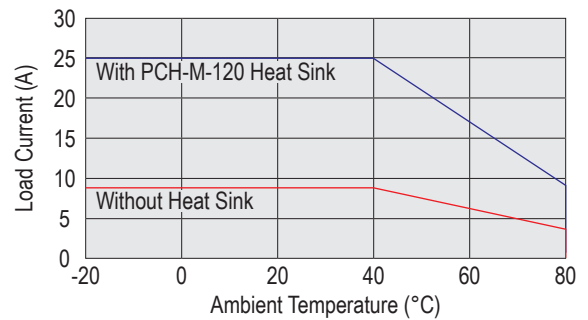
## WIRING DIAGRAM



## CHARACTERISTIC CURVES



Max Load Current vs. Ambient Temperature - 10A



Max Load Current vs. Ambient Temperature - 25A

## ACCESSORIES

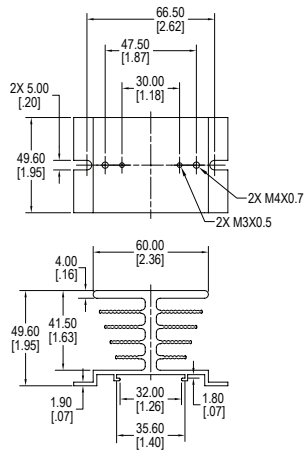
|                   |  |
|-------------------|--|
| Heat Transfer Pad | HTP50  |
| Protective Cover  | SSR50  |
| Heat Sink         | PCH-I-50 for 10 Amp applications @ 25°C<br>PCH-M-120 for 15~25 Amp applications @ 25°C |

## ACCESSORIES

HTP50 — Heat Transfer Pad



PCH-I-50 Heat Sink



PCH-M-120 Heat Sink

