# SSR series

### "Hockey Puck"
### Solid State Relay With
### Paired SCR Output

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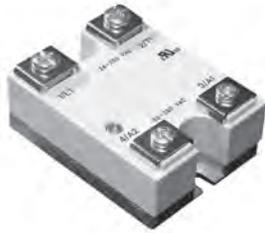
Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

## Features

- Standard "hockey puck" package.
- Enhanced noise immunity (designed to meet level 3 requirements of European EMC Directive).
- LED indicator.
- Inverse parallel SCR output.
- 25, 50, & 125A rms versions.
- 120/240VAC & 480VAC output types.
- Zero voltage and random voltage turn-on versions.
- AC & DC input versions.
- 4,000V rms optical isolation.
- Floating terminal design.

## Engineering Data

**Form:** 1 Form A (SPST-NO).
**Duty:** Continuous.
**Isolation:** 4,000V rms minimum.
**Capacitance:** 8 pf typical (input to output).
**Temperature Range:**
  **Storage:** –40°C to +100°C
  **Operating:** –20°C to +80°C.
  NOTE: Operation to –40°C is permitted for DC input types at an increased minimum input voltage of 4VDC (240V line voltage models) or 5VDC (480V line voltage models).
**Case Material:** Plastic, UL rated 94V-0.
**Case and Mounting:** Refer to outline dimension.
**Termination:** Refer to outline dimension.
**Approximate Weight:** 3.5 oz. (98g).

## Ordering Information

Sample Part Number ▶ **SSR** -**240** **D** **25**

**1. Basic Series:** SSR = "hockey puck" inverse parallel SCR output solid state relay

**2. Line Voltage:** 240 = 24 - 240VAC    480 = 48 - 660VAC

**3. Input Type & Voltage:** A = 90 - 280VAC
D = 3 - 32VDC (240V line voltage model) / 4 - 32VDC (480V line voltage model)

**4. Maximum Switching Rating/Output:** 25 = .1 - 25A rms, mounted to heatsink
50 = .1 - 50A rms, mounted to heatsink
125 = .1 - 125A rms, mounted to heatsink

**5. Options:** Leave Blank = Zero voltage turn-on
R = Random voltage turn-on (phase controllable)

## Our authorized distributors are more likely to maintain the following items in stock for immediate delivery.

| | | |
|---|---|---|
| SSR-240A25 | SSR-240D25 | SSR-240D50 |
| SSR-240A50 | SSR-240D25R | SSR-480D125 |

## Input Specifications

| Parameter | AC Input | DC Input | |
|---|---|---|---|
| | Zero V Turn-on Units | Zero and Random V Turn-on Units | |
| | | 240VAC Rated Models | 480VAC Rated Models |
| Control Voltage Range V$_{IN}$ | 90 - 280VAC | 3 - 32VDC | 4 - 32VDC |
| Must Operate Voltage V$_{IN(OP)}$ (Min.) | 90VAC | 3VDC | 4VDC |
| Must Release Voltage V$_{IN(REL)}$ (Min.) | 10VAC | 1VDC | 1VDC |
| Input Current (Max.) | 15mA | 15mA | 15mA |

Dimensions are shown for reference purposes only.

Dimensions are in inches over (millimeters) unless otherwise specified.

Specifications and availability subject to change.

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## Output Specifications (@ 25° C, unless otherwise specified)

| Parameter | Nom. Line Voltage | Conditions | Units | 25A Models | 50A Models | 125A Models |
|---|---|---|---|---|---|---|
| Load Voltage Range $V_L$ | 120/240V Model | | V rms | 24 - 280 | | |
| | 480V Model | | V rms | 48 - 660 | | |
| Repetitive Blocking Voltage (Min.) | 120/240 Model | | V peak | 600 | | |
| | 480V Model | | V peak | 1200 | | |
| Load Current Range $I_L$* | 120/240 & 480V Models | Resistive | A rms | .05 - 25 | .1 - 50 | .1 - 125 |
| Single Cycle Surge Current (Min.) | 120/240 & 480V Models | | A peak | 250 | 750 | 1,700 |
| Leakage Current (Off-State) (Max.) | 120/240V Model | f = 60 Hz. $V_L$ = 240V rms | mA rms | .1 | | |
| | 480V Model | f = 60 Hz. $V_L$ = 480V rms | | .25 | | |
| On-State Voltage Drop (Max.) | 120/240 & 480V Models | $I_L$ = Max. | | 1.35 | | |
| Static dv/dt (Off-State) (Min.) | 120/240 & 480V Models | | V/s | 500 | | |
| Thermal Resistance, Junction to Case ($R_{\theta J-C}$) (Max.) | 120/240 & 480V Models | | C/W | 0.4 | 0.25 | .15 |
| Turn-On Time (Max.) | 120/240 & 480V Models | f = 60 Hz. | ms | 8.3 for Zero Voltage Turn-On DC input types, 20 for Zero Voltage Turn-On AC input types, 0.02 for Random Voltage Turn-On Models | | |
| Turn-Off Time (Max.) | 120/240 & 480V Models | f = 60 Hz. | ms | 8.3 for DC input types, 30 for AC input types | | |
| $I^2T$ Rating | 120/240 & 480V Models | t = 8.3 ms | $A^2$ Sec. | 937 | 2,458 | 12,000 |
| Load Power Factor Rating | 120/240 & 480V Models | $I_L$ = Max. | | 0.5 - 1.0 | | |

*See Derating Curves

## Electrical Characteristics (Thermal Derating Curves)

### 25A Units



### 50A Units



### 125A Units
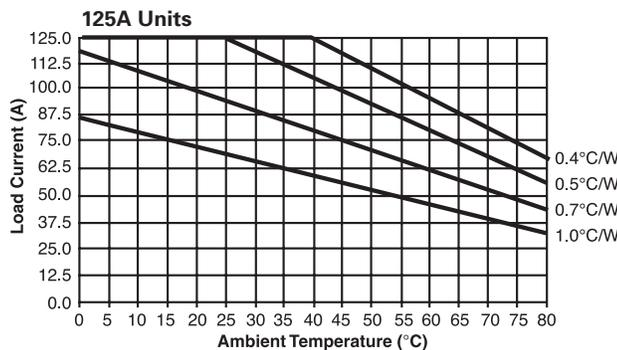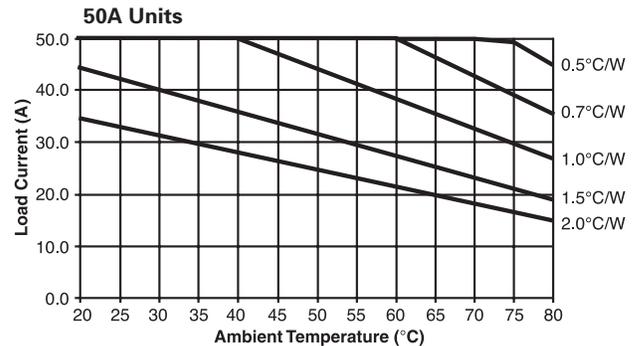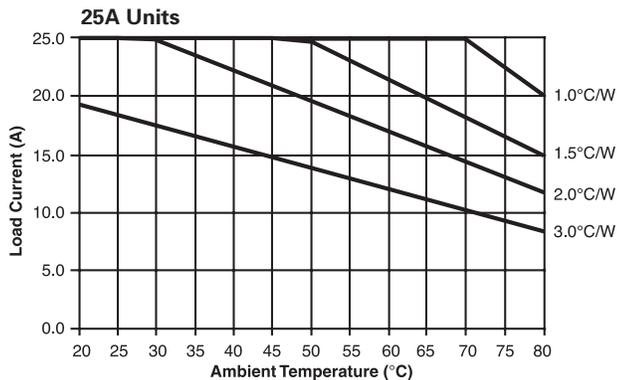


### Heatsink Recommendations

- We recommend that solid state relay modules be mounted to a heatsink sufficient to maintain the module's base temperature at less than 85°C under worst case ambient temperature and load conditions.
- The heatsink mounting surface should be a smooth (30-40 micro-inch finish), flat (30-40 micro-inch flatness across mating area), un-painted surface which is clean and free of oxidation.
- An even coating of thermal compound (Dow Corning DC340 or equivalent) should be applied to both the heatsink and module mounting surfaces and spread to a uniform depth of .002″ to eliminate all air pockets.
- The module should be mounted to the heatsink using two #10 screws.

## Operating Diagrams



† Random Turn-on Units have a Random Turn-on circuit instead of Zero Voltage Circuit

## Outline Dimensions



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