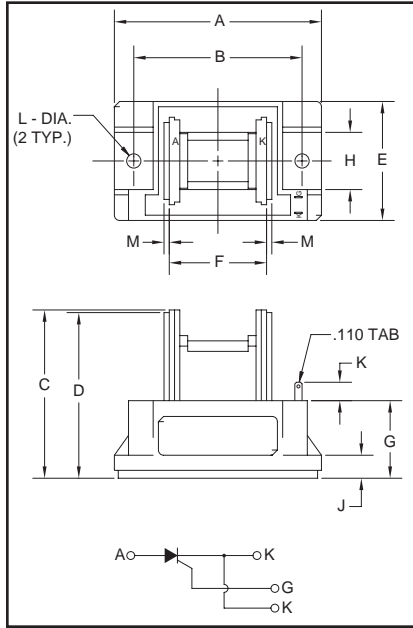


**Single SCR  
POW-R-BLOK™ Modules  
400 Amperes/1200-1600 Volts**



**Outline Drawing**

| Dimension | Inches      | Millimeters |
|-----------|-------------|-------------|
| A         | 3.15        | 80          |
| B         | 2.559±0.012 | 65±0.3      |
| C         | 2.56        | 65          |
| D         | 2.52        | 64          |
| E         | 1.81        | 46          |
| F         | 1.48        | 36          |
| G         | 1.18        | 30          |
| H         | 0.87        | 22          |
| J         | 0.35        | 9           |
| K         | 0.28        | 7           |
| L         | 0.216 Dia.  | Dia. 5.5    |
| M         | 0.08        | 2           |



**CSD3120H, CSD3160H  
Single SCR  
POW-R-BLOK™ Modules  
400 Amperes/1200-1600 Volts**

**Description:**

Powerex Single SCR POW-R-BLOK™ Modules are designed for use in applications requiring phase control and isolated packaging. The modules are isolated for easy mounting with other components on common heatsinks.

**Features:**

- Isolated Mounting
- Metal Baseplate
- Low Thermal Impedance

**Applications:**

- Solid State Starters
- By-Pass Switch
- AC and DC Motor Control

**Ordering Information:**

Select the complete eight digit module part number you desire from the table below.

Example: CSD3120H is a 1200 Volt, 400 Ampere Single SCR POW-R-BLOK™ Module.

| Type | Voltage<br>Volts (x100) | Current Rating<br>Amperes (400) |
|------|-------------------------|---------------------------------|
| CSD3 | 12<br>16                | 0H                              |



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**CSD3120H, CSD3160H**  
**Single SCR POW-R-BLOK™ Modules**  
 400 Amperes/1200-1600 Volts

**Absolute Maximum Ratings**

| Characteristics   | Symbol       | CSD3120H   | CSD3160H   | Units            |
|---|--------------|------------|------------|------------------|
| Peak Forward Blocking Voltage                                       | $V_{DRM}$    | 1200       | 1600       | Volts            |
| Transient Peak Forward Blocking Voltage (Non-Repetitive) $t < 5ms$  | $V_{DSM}$    | 1350       | 1700       | Volts            |
| DC Forward Blocking Voltage   | $V_{D(DC)}$  | 960        | 1280       | Volts            |
| Peak Reverse Blocking Voltage                                       | $V_{RRM}$    | 1200       | 1600       | Volts            |
| Transient Peak Reverse Blocking Voltage (Non-Repetitive), $t < 5ms$ | $V_{RSM}$    | 1350       | 1700       | Volts            |
| DC Reverse Blocking Voltage   | $V_{R(DC)}$  | 960        | 1280       | Volts            |
| RMS On-State Current  | $I_{T(RMS)}$ | 620        | 620        | Amperes          |
| Average On-State Current, $T_C = 66^\circ C$                        | $I_{T(AV)}$  | 400        | 400        | Amperes          |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)       | $I_{TSM}$    | 8000       | 8000       | Amperes          |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)       | $I_{TSM}$    | 7300       | 7300       | Amperes          |
| $I^2t$ (for Fusing), 8.3 milliseconds                               | $I^2t$       | 267,000    | 267,000    | $A^2sec$         |
| Critical Rate-Of-Rise of On-State Current*                          | $di/dt$      | 100        | 100        | Amperes/ $\mu s$ |
| Peak Gate Power Dissipation   | $P_{GM}$     | 10         | 10         | Watts            |
| Average Gate Power Dissipation                                      | $P_{G(AV)}$  | 3          | 3          | Watts            |
| Peak Forward Gate Voltage   | $V_{GFM}$    | 10         | 10         | Volts            |
| Peak Reverse Gate Voltage   | $V_{GRM}$    | 5.0        | 5.0        | Volts            |
| Peak Forward Gate Current   | $I_{GFM}$    | 4.0        | 4.0        | Amperes          |
| Storage Temperature   | $T_{STG}$    | -40 to 125 | -40 to 125 | $^\circ C$       |
| Operating Temperature   | $T_j$        | -40 to 125 | -40 to 125 | $^\circ C$       |
| Maximum Mounting Torque M5 Mounting Screw                           | —            | 17         | 17         | in.-lb.          |
| Maximum Mounting Torque M8 Terminal Screw                           | —            | 72         | 72         | in.-lb.          |
| Module Weight (Typical)   | —            | 450        | 450        | Grams            |
| V Isolation   | $V_{RMS}$    | 2500       | 2500       | Volts            |

\* $T_j = 125^\circ C$ ,  $I_G = 1.0A$ ,  $V_D = 1/2 V_{DRM}$



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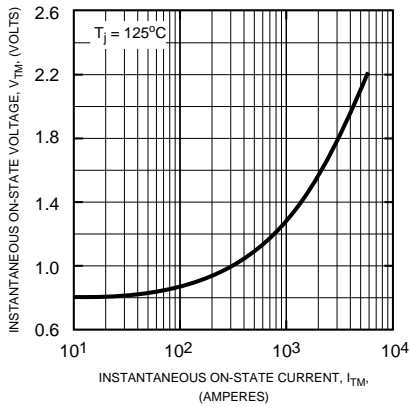
**CSD3120H, CSD3160H**  
**Single SCR POW-R-BLOK™ Modules**  
 400 Amperes/1200-1600 Volts

**Electrical and Thermal Characteristics,  $T_j = 25^\circ\text{C}$  unless otherwise specified**

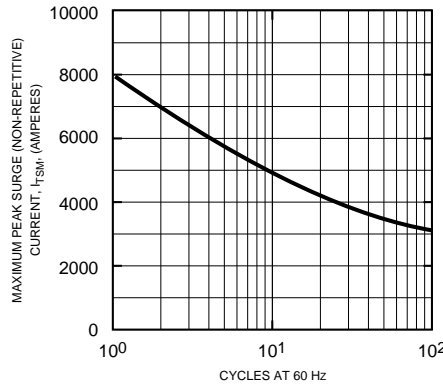
| Characteristics                               | Symbol                   | Test Conditions   | CSD3120H/CSD3160H | Units                        |
|---|--------------------------|---|-------------------|------------------------------|
| <b>Blocking State Maximums</b>                |                          |   |                   |                              |
| Forward Leakage Current, Peak                 | $I_{\text{DRM}}$         | $T_j = 125^\circ\text{C}$ , $V_{\text{DRM}} = \text{Rated}$     | 40                | mA                           |
| Reverse Leakage Current, Peak                 | $I_{\text{RRM}}$         | $T_j = 125^\circ\text{C}$ , $V_{\text{RRM}} = \text{Rated}$     | 40                | mA                           |
| <b>Conducting State Maximums</b>              |                          |   |                   |                              |
| Peak On-State Voltage                         | $V_{\text{FM}}$          | $I_{\text{TM}} = 1200\text{A}$                                  | 1.4               | Volts                        |
| <b>Switching Minimums</b>                     |                          |   |                   |                              |
| Critical Rate-Of-Rise of Off-State Voltage    | dv/dt                    | $T_j = 125^\circ\text{C}$ , $V_{\text{D}} = 2/3 V_{\text{DRM}}$ | 500               | Volts/ $\mu\text{s}$         |
| <b>Thermal Maximums</b>                       |                          |   |                   |                              |
| Thermal Resistance, Junction-to-Case          | $R_{\theta(\text{J-C})}$ | Per Module  | 0.1               | $^\circ\text{C}/\text{Watt}$ |
| Thermal Resistance, Case-to-Sink (Lubricated) | $R_{\theta(\text{C-S})}$ | Per Module  | 0.08              | $^\circ\text{C}/\text{Watt}$ |
| <b>Gate Parameters Maximums</b>               |                          |   |                   |                              |
| Gate Current to Trigger                       | $I_{\text{GT}}$          | $V_{\text{D}} = 6\text{V}$ , $R_{\text{L}} = 2\Omega$           | 100               | mA                           |
| Gate Voltage to Trigger                       | $V_{\text{GT}}$          | $V_{\text{D}} = 6\text{V}$ , $R_{\text{L}} = 2\Omega$           | 3.0               | Volts                        |
| Non-Triggering Gate Voltage                   | $V_{\text{GDM}}$         | $T_j = 125^\circ\text{C}$ , $V_{\text{D}} = 1/2 V_{\text{DRM}}$ | 0.25              | Volts                        |

**CSD3120H, CSD3160H**  
**Single SCR POW-R-BLOK™ Modules**  
 400 Amperes/1200-1600 Volts

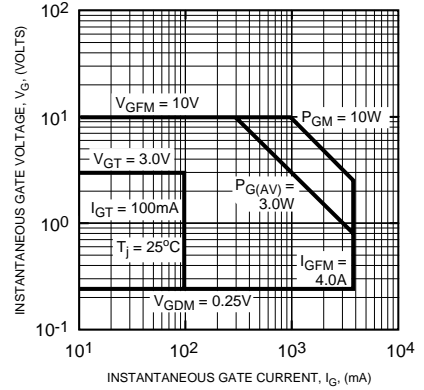
**MAXIMUM ON-STATE CHARACTERISTICS**



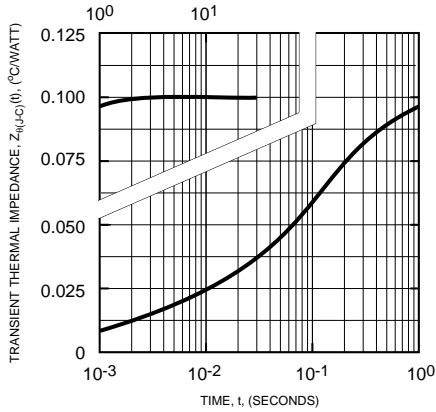
**MAXIMUM ALLOWABLE PEAK SURGE (NON-REPETITIVE) CURRENT**



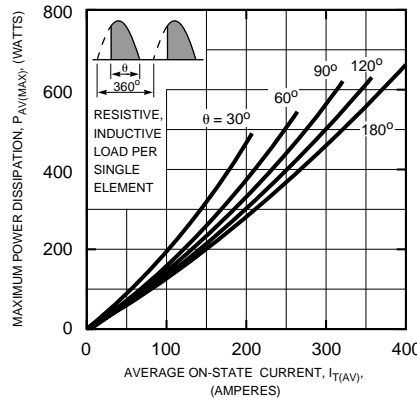
**TRIGGERING CHARACTERISTICS**



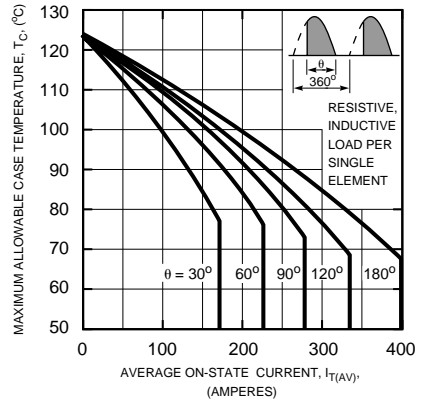
**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION-TO-CASE)**



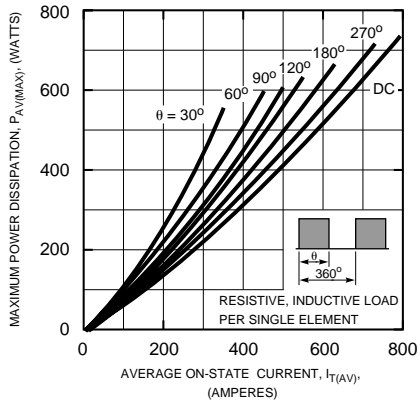
**MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)**



**MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)**



**MAXIMUM AVERAGE ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)**



**MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)**

