Type SPT315 thyristor is optimized especially for pulse power and static transfer switch applications for which lowest on-state voltage is achieved. The silicon junction design utilizes a second generation pilot gate and a unique orientation of emitter shorts which promote the lateral expansion of conducting plasma resulting in lower spreading losses while achieving high dv/dt withstand. It is supplied in a reliable plastic light weight package. The design utilizes a new termination technique which eliminates heavy refractory metal as a substrate but still employs the alloyed anode interface necessary for high surge current duty. External posts are available for adjoining commercially available heat dissipators using clamping hardware.

**SPT315 100mm THYRISTOR**

**2500V / 4700A**

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**ON-STATE CHARACTERISTIC**

**Process Maximum**

![Graph showing on-state characteristic process maximum](image)

**THERMAL IMPEDANCE vs. ON-TIME**

![Graph showing thermal impedance vs. on-time](image)

---

**Maximum Off-State & Reverse Blocking Voltage Ratings**

<table>
<thead>
<tr>
<th>Type</th>
<th>V_{DRM} (volts)</th>
<th>V_{RRM} (volts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPT315DK</td>
<td>2500</td>
<td>2500</td>
</tr>
<tr>
<td>SPT315DH</td>
<td>2400</td>
<td>2400</td>
</tr>
<tr>
<td>SPT315DF</td>
<td>2300</td>
<td>2300</td>
</tr>
<tr>
<td>SPT315DD</td>
<td>2200</td>
<td>2200</td>
</tr>
<tr>
<td>SPT315DB</td>
<td>2100</td>
<td>2100</td>
</tr>
<tr>
<td>SPT315TT</td>
<td>2000</td>
<td>2000</td>
</tr>
</tbody>
</table>

- External clamping force 15000 - 18000 lb
- Optional external posts drw.# 0215B8331
- Ni plated copper, 0.350" thick each.
- Compressed thickness including external posts 0.885"
- Weight: 10 oz
- 2 lb 9 oz with posts

---

**Nominal Dimensions**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>inch</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A dia.</td>
<td>5 3/8</td>
<td>136.5</td>
</tr>
<tr>
<td>B dia.</td>
<td>3 11/32</td>
<td>85</td>
</tr>
<tr>
<td>C</td>
<td>51/64</td>
<td>20.24</td>
</tr>
<tr>
<td>D</td>
<td>0.306</td>
<td>7.77</td>
</tr>
</tbody>
</table>
SPT315

Repetitive peak off-state & reverse volts

- $V_{OH}$ to 115°C up to 2600 V
- $V_{PH}$ to 115°C 300 mA

Average on-state current

- $I_{(AV)}$ at 70°C 4700 A

Peak half-cycle non-rep surge current

- $I_{PH}$ 8.3 ms 60 kA
- $I_{PH}$ 1.5 ms 90 kA

On-state voltage

- $V_{O}$ 4000 V 1.3 V

Critical gate trigger current / voltage

- $I_{C}$ 12 V 200 mA
- $V_{G}$ 25°C 5 V

Non-trigger gate current

- $I_{D}$ 2000 V 15 mA

Maximum peak recovery current

- $I_{RM}$ $di/dt = 2$ A/us 117 A

Critical rate of rise of on-state current

- $di/dt$ 60 Hz 100 A/us
- $di/dt$ with 60A snubber discharge 1000 V/us

Critical rate of rise of off-state voltage

- $dv/dt$ 90°C 1000 V/us
- $V_{O}$ 67% $V_{OH}$

Turn-on delay

- $t_{b}$ 50 V $V_{OH}$ 3 µs

Turn-off time

- $t_{RM}$ 5A/us, -100V 20V/us to 2000V 300 µs

Recommended gate drive to sustain turn-on $di/dt$ rating

- $V_{OC} = 40$ V
- $I_{SS} = 4$ A
- rise time = 0.5 µs
- duration 10 - 20 µs