PTVS6-xxxC-TH Series High Voltage, High Current TVS Diodes

Features
- 6 kA, 8/20 µs surge capability
- Low clamping voltage under surge
- Bidirectional TVS
- Excellent performance over temperature

Applications
- AC line protection
- High power DC bus protection

General Information

The Model PTVS6-xxxC-TH high voltage, bidirectional TVS diode series is designed for use in AC line and high power DC bus clamping applications.

The devices are RoHS* compliant. They also meet IEC 61000-4-5 8/20 µs current surge requirements.

Absolute Maximum Ratings (@ TA = 25 °C Unless Otherwise Noted)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive Standoff Voltage</td>
<td>V_WM</td>
<td>380</td>
<td>V</td>
</tr>
<tr>
<td>PTVS6-380C-TH</td>
<td></td>
<td>430</td>
<td></td>
</tr>
<tr>
<td>PTVS6-430C-TH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Current Rating per 8/20 μs</td>
<td>I_PPM</td>
<td>6</td>
<td>kA</td>
</tr>
<tr>
<td>IEC 61000-4-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Junction Temperature Range</td>
<td>T_J</td>
<td>-55 to +125</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>T_S</td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
<tr>
<td>Lead Temperature, Soldering (10 s)</td>
<td>V_C</td>
<td>260</td>
<td>°C</td>
</tr>
</tbody>
</table>

Electrical Characteristics (@ TA = 25 °C Unless Otherwise Noted)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>F = 10 kHz, V_d = 1 Vrms</th>
</tr>
</thead>
<tbody>
<tr>
<td>I_D Standby Current</td>
<td>V_D = V_WM</td>
<td>10 µA</td>
</tr>
<tr>
<td>V_(BR) Breakdown Voltage</td>
<td>I_BR = 10 mA</td>
<td>401 440</td>
</tr>
<tr>
<td>V_C Clamping Voltage (1)</td>
<td>I_PP = 10 kA</td>
<td>520 580</td>
</tr>
<tr>
<td>V_(BR) Temperature Coefficient</td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>C Capacitance</td>
<td></td>
<td>0.65 0.70 nF</td>
</tr>
</tbody>
</table>

(1) V_C measured at the time which is coincident with the peak surge current.

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WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

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Performance Graphs

V-I Characteristic

Typical V<sub>BR</sub> vs. Junction Temperature

This graph shows the typical device surge current derating versus ambient temperature when subjected to the 8/20 µs current waveform per the IEC 61000-4-5 specification. This device is not intended for continuous operation at temperatures above 125 °C.

Typical Surge Current Derating

Current 8/20 µs Waveform per IEC 61000-4-5

Typical Waveform Under Surge
PTVS6-xxxC-TH Series High Voltage, High Current TVS Diodes

Product Dimensions

Epoxy encapsulation materials conform to UL 94V-0. Silver plated lead finish conforms to the solderability requirements of JESD22-B102, Pb free solder. Package dimensions are shown below:

![Diode Dimensions Diagram]

### Typical Part Marking

- **PTVS6-380C-TH** .......................................................... 6380
- **PTVS6-430C-TH** .......................................................... 6430

### How to Order

- **PTVS 6 - 380 C - T H**

  - **Series**
    - **PTVS** = Power TVS High Current Diode
  - **Peak Current Rating**
    - **6** = 6 kA
  - **Repetitive Standoff Voltage**
    - **380** = 380 V
    - **430** = 430 V
  - **Suffix**
    - **C** = Bidirectional Device
  - **Package**
    - **T** = Through-Hole
  - **Temperature**
    - **H** = High Temperature Series

### Specifications

- **Dim.**
  - **A** 24.15 ± 0.72 (0.951 ± 0.028)
  - **B** 2.40 ± 0.50 (0.094 ± 0.020)
  - **C** 1.75 ± 1.25 (0.069 ± 0.049)
  - **D** 12.00 Max. (0.472)
  - **E** 1.25 ± 0.05 (0.049 ± 0.002)
  - **F** 11.50 Max. (0.453)
  - **G** 16.50 Max. (0.650)
  - **H** 6.00 ± 1.00 (0.236 ± 0.039)
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