

Features

- 10 kA, 8/20 μ s surge capability
- Low clamping voltage under surge
- Bidirectional TVS
- UL Recognized 

Applications

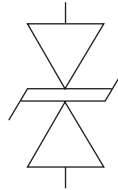
- AC line protection
- High power DC bus protection

PTVS10-xxxC Series High Current TVS Diodes

General Information

The PTVS10-xxxC range of high current bidirectional TVS diodes is designed for use in AC line protection and high power DC bus clamping applications. These devices offer bidirectional port protection from 58 volts to 470 volts.

The devices are RoHS* and UL compliant while also meeting IEC 61000-4-5 8/20 μ s current surge requirements.



Agency Approval

| Description | |
|-------------|----------------------|
| UL | File Number: Pending |

Absolute Maximum Ratings (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

| Rating | Symbol | Value | Unit |
|--|-----------|-------------|------------------|
| Repetitive Standoff Voltage | V_{WM} | 58 | V |
| | | 76 | |
| | | 170 | |
| | | 320 | |
| | | 380 | |
| | | 470 | |
| Peak Current Rating per 8/20 μ s IEC 61000-4-5 | I_{PPM} | 10 | kA |
| Operating Junction Temperature Range | T_J | -40 to +125 | $^\circ\text{C}$ |
| Storage Temperature Range | T_S | -55 to +150 | $^\circ\text{C}$ |
| Lead Temperature, Soldering (10 s) | | 260 | $^\circ\text{C}$ |

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit | |
|------------------------------------|--------------------------------------|-------------|------|------|---------------------|----|
| I_D Standby Current | $V_D = V_{WM}$ | | | 10 | μA | |
| $V_{(BR)}$ Breakdown Voltage | $I_{BR} = 10\text{ mA}$ | PTVS10-058C | 64 | 66 | 70 | V |
| | | PTVS10-076C | 85 | 92 | 95 | |
| | | PTVS10-170C | 190 | 200 | 210 | |
| | | PTVS10-320C | 336 | 350 | 368 | |
| | | PTVS10-380C | 401 | 420 | 443 | |
| | | PTVS10-470C | 490 | 500 | 530 | |
| V_C Clamping Voltage | $I_{PP} = 10\text{ kA}$ | PTVS10-058C | | 120 | 130 | V |
| | | PTVS10-076C | | 150 | 160 | |
| | | PTVS10-170C | | 250 | 300 | |
| | | PTVS10-320C | | 440 | 500 | |
| | | PTVS10-380C | | 520 | 570 | |
| | | PTVS10-470C | | 620 | 680 | |
| $V_{(BR)}$ Temperature Coefficient | | | 0.1 | | $\%/^\circ\text{C}$ | |
| C Capacitance | F = 10 kHz, $V_d = 1\text{ Vrms}$ | PTVS10-058C | | 11.7 | 12.5 | nF |
| | | PTVS10-076C | | 8.6 | 10.0 | |
| | | PTVS10-170C | | 4.0 | 5.0 | |
| | | PTVS10-320C | | 2.7 | 3.5 | |
| | | PTVS10-380C | | 2.0 | 2.5 | |
| | | PTVS10-470C | | 1.7 | 2.2 | |

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*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

Specifications are subject to change without notice.

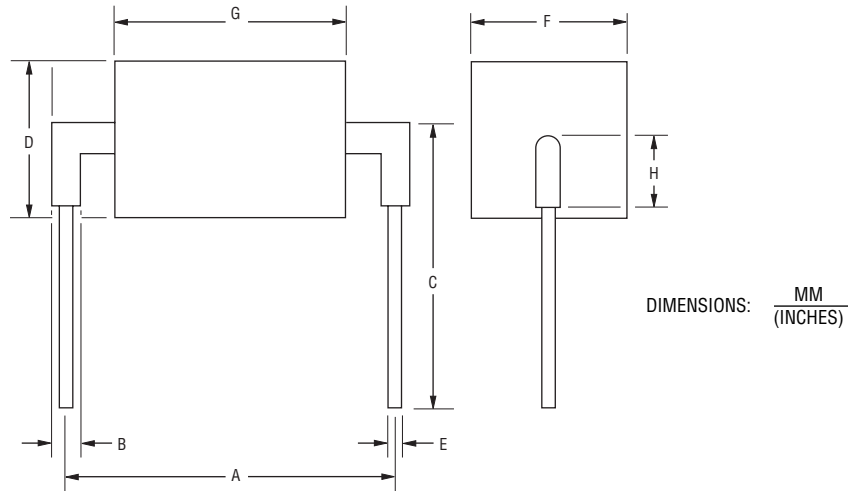
Customers should verify actual device performance in their specific applications.

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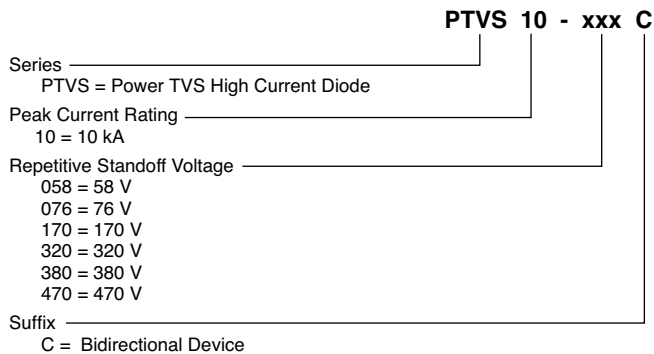
Product Dimensions

The product is epoxy encapsulated per UL Class 94V-0 with Ag plated leads solderable per MIL-STD-750, Method 2026. The package dimensions and part marking are shown below.



| Dim. | PTVS10-058C | PTVS10-076C | PTVS10-170C | PTVS10-320C | PTVS10-380C | PTVS10-470C |
|------|--|--|--|--|--|--|
| A | $\frac{24.15 \pm 0.72}{(0.950 \pm 0.028)}$ | $\frac{24.15 \pm 0.72}{(0.950 \pm 0.028)}$ | $\frac{24.15 \pm 0.72}{(0.950 \pm 0.028)}$ | $\frac{24.15 \pm 0.72}{(0.950 \pm 0.028)}$ | $\frac{24.15 \pm 0.72}{(0.950 \pm 0.028)}$ | $\frac{24.15 \pm 0.72}{(0.950 \pm 0.028)}$ |
| B | $\frac{2.40}{(0.094)}$ Typ. | $\frac{2.40}{(0.094)}$ Typ. | $\frac{2.40}{(0.094)}$ Typ. | $\frac{2.40}{(0.094)}$ Typ. | $\frac{2.40}{(0.094)}$ Typ. | $\frac{2.40}{(0.094)}$ Typ. |
| C | $\frac{15.0}{(0.59)}$ Min. | $\frac{15.0}{(0.59)}$ Min. | $\frac{15.0}{(0.59)}$ Min. | $\frac{15.0}{(0.59)}$ Min. | $\frac{15.0}{(0.59)}$ Min. | $\frac{15.0}{(0.59)}$ Min. |
| D | $\frac{16.0}{(0.63)}$ Max. | $\frac{16.0}{(0.63)}$ Max. | $\frac{16.0}{(0.63)}$ Max. | $\frac{16.0}{(0.63)}$ Max. | $\frac{16.0}{(0.63)}$ Max. | $\frac{16.0}{(0.63)}$ Max. |
| E | $\frac{1.25 \pm 0.05}{(0.049 \pm 0.002)}$ | $\frac{1.25 \pm 0.05}{(0.049 \pm 0.002)}$ | $\frac{1.25 \pm 0.05}{(0.049 \pm 0.002)}$ | $\frac{1.25 \pm 0.05}{(0.049 \pm 0.002)}$ | $\frac{1.25 \pm 0.05}{(0.049 \pm 0.002)}$ | $\frac{1.25 \pm 0.05}{(0.049 \pm 0.002)}$ |
| F | $\frac{16.0}{(0.63)}$ Max. | $\frac{16.0}{(0.63)}$ Max. | $\frac{16.0}{(0.63)}$ Max. | $\frac{16.0}{(0.63)}$ Max. | $\frac{16.0}{(0.63)}$ Max. | $\frac{16.0}{(0.63)}$ Max. |
| G | $\frac{5.0}{(0.20)}$ Max. | $\frac{6.0}{(0.24)}$ Max. | $\frac{13.0}{(0.51)}$ Max. | $\frac{19.0}{(0.75)}$ Max. | $\frac{19.0}{(0.75)}$ Max. | $\frac{21.0}{(0.83)}$ Max. |
| H | $\frac{8.0}{(0.32)}$ Max. | $\frac{8.0}{(0.32)}$ Max. | $\frac{8.0}{(0.32)}$ Max. | $\frac{8.0}{(0.32)}$ Max. | $\frac{8.0}{(0.32)}$ Max. | $\frac{8.0}{(0.32)}$ Max. |

How to Order



Typical Part Marking

| | |
|-------------------|-------|
| PTVS10-058C | 10058 |
| PTVS10-076C | 10076 |
| PTVS10-170C | 10170 |
| PTVS10-320C | 10320 |
| PTVS10-380C | 10380 |
| PTVS10-470C | 10470 |

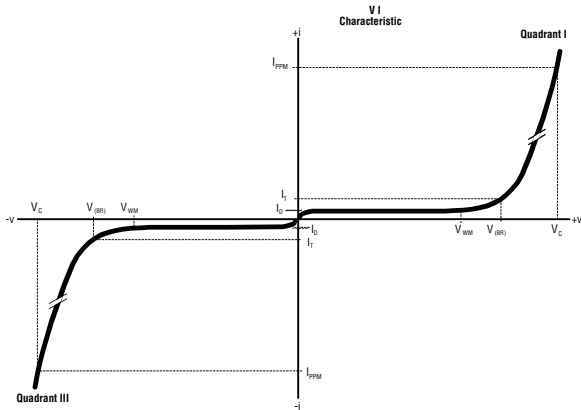
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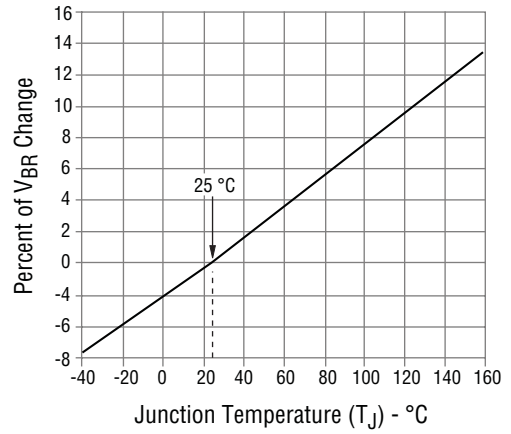
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Performance Graphs

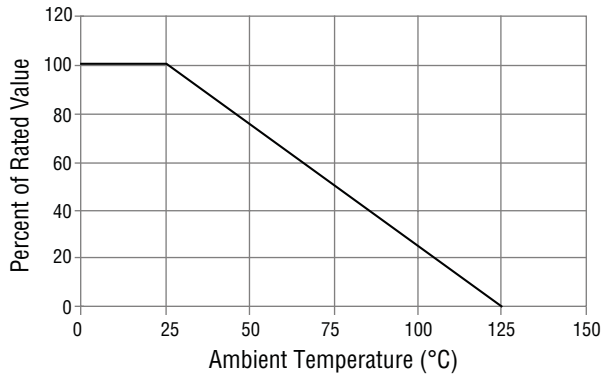
V-I Characteristic



Typical V_{BR} vs. Junction Temperature

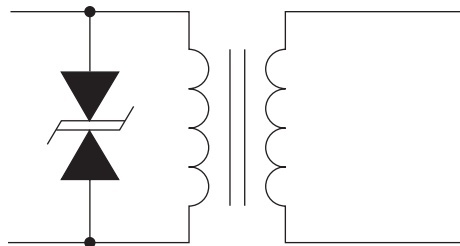


Typical Peak Power Derating



Application

A typical application for Power TVS products includes AC power line primary protection.



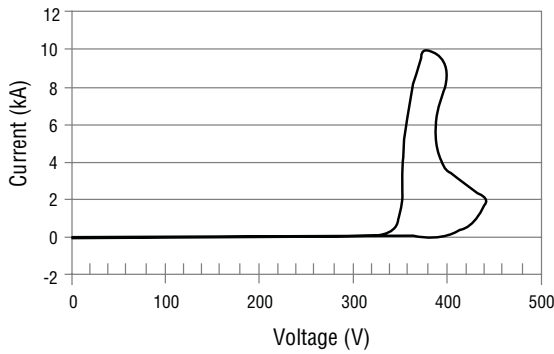
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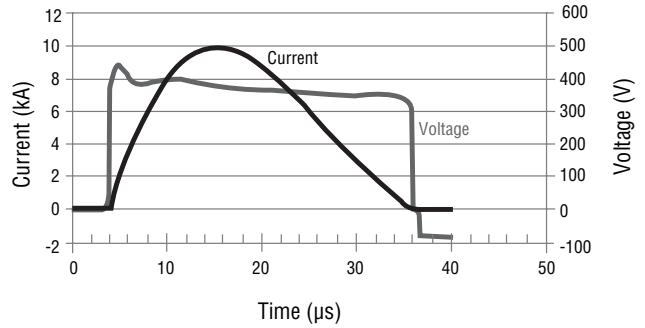


Performance Graphs (Continued)

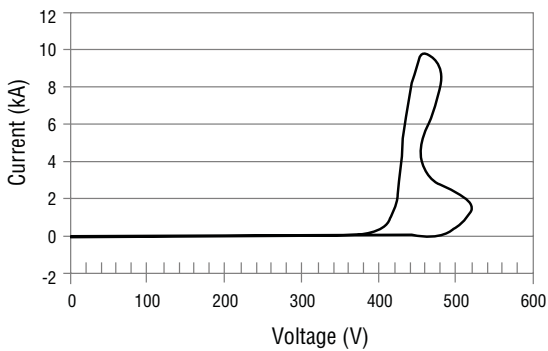
Surge Response - PTVS10-320C



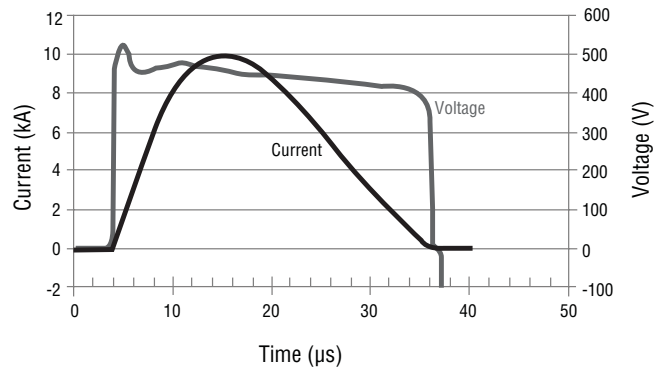
Surge Response (1.2/50, 8/20 Surge) - PTVS10-320C



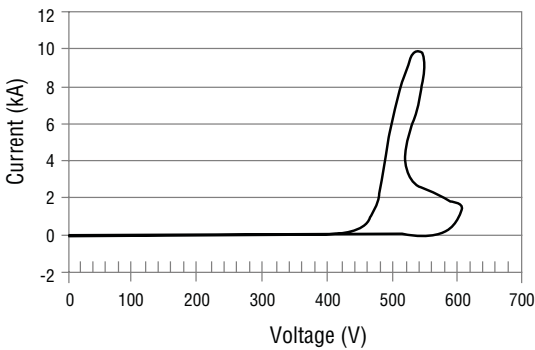
Surge Response - PTVS10-380C



Surge Response (1.2/50, 8/20 Surge) - PTVS10-380C



Surge Response - PTVS10-470C



Surge Response (1.2/50, 8/20 Surge) - PTVS10-470C

