


## Features

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



Model PTVS10-058C and PTVS10-076C are currently available, but not recommended for new designs. The Model **PTVS10-xxxC-TH** Series is recommended.

## 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  $\mu$ s current surge requirements.



### Agency Approval

Description	
UL	File Number: E313168

### 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 $\mu$ s IEC 61000-4-5	$I_{PPM}$	10	kA
Operating Junction Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$
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	$\mu\text{A}$	
$V_{(BR)}$ 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.

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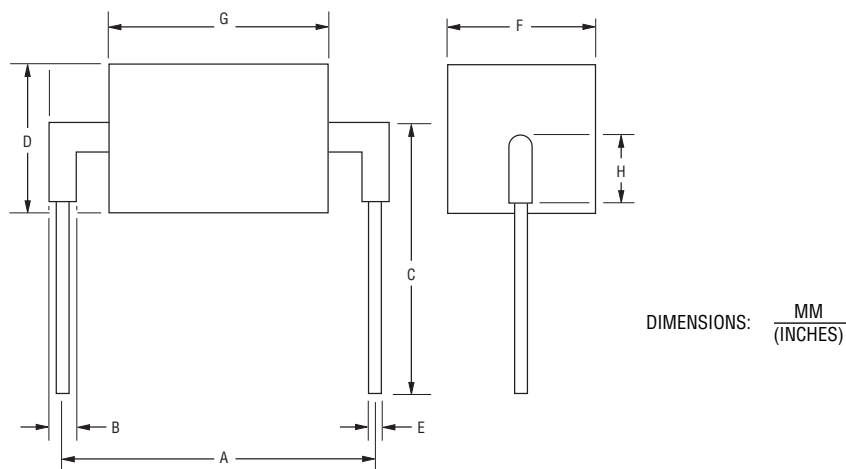
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

# PTVS10-xxxC Series High Current TVS Diodes



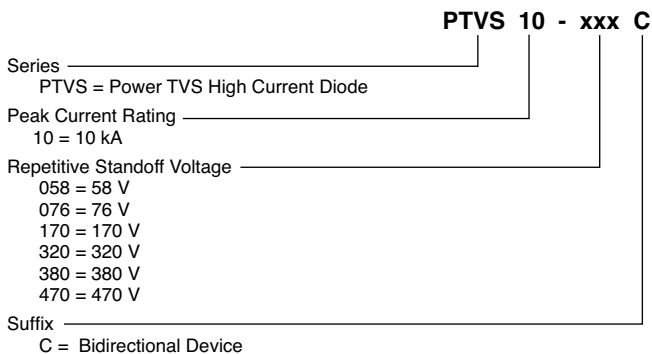
## Product Dimensions

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

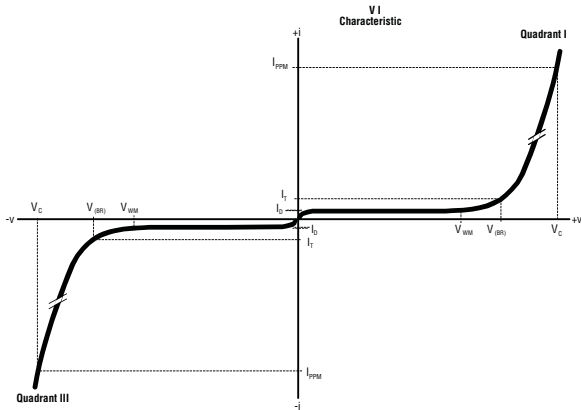
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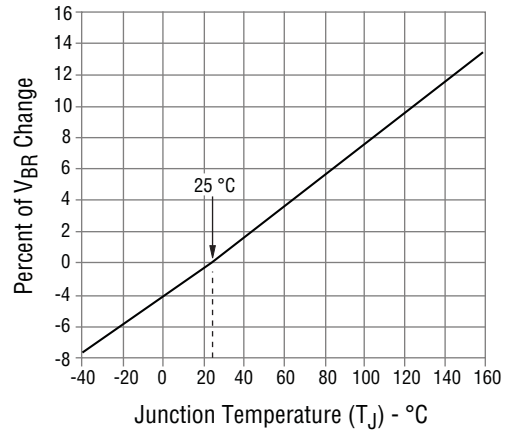
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## Performance Graphs

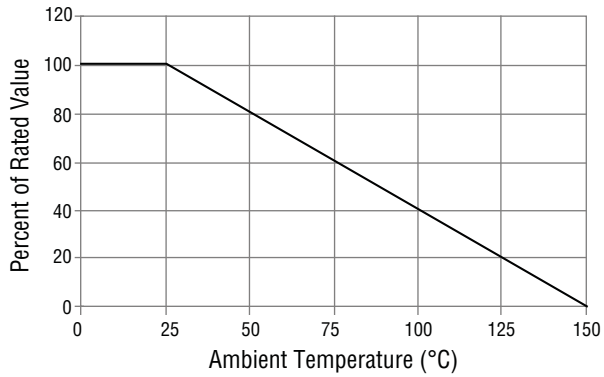
### V-I Characteristic



### Typical $V_{BR}$ vs. Junction Temperature

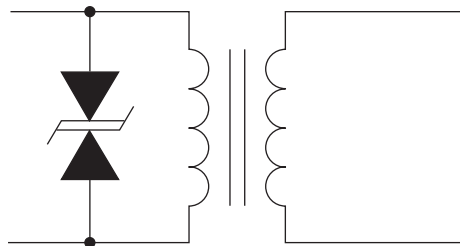


### Typical Peak Power Derating



## Application

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



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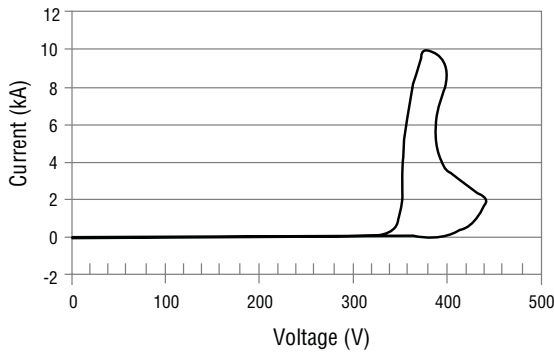
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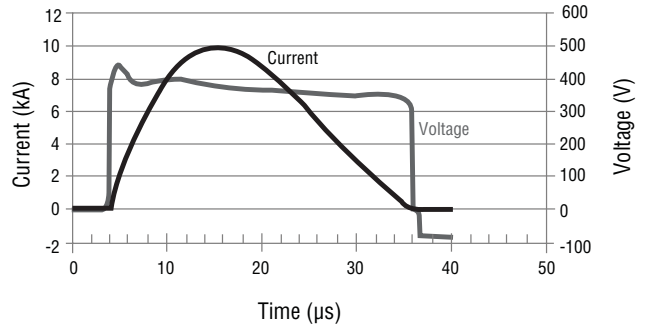
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## Performance Graphs (Continued)

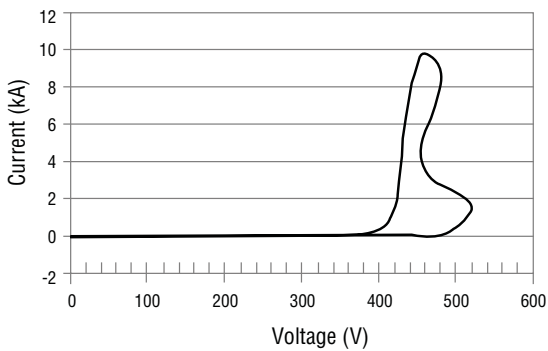
### Surge Response - PTVS10-320C



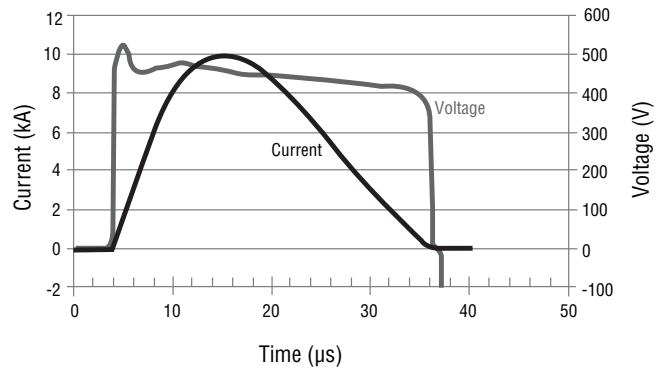
### Surge Response (1.2/50, 8/20 Surge) - PTVS10-320C



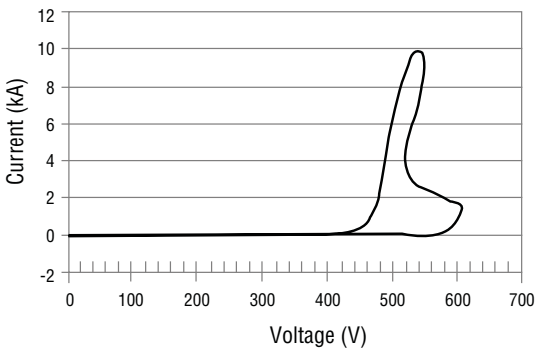
### Surge Response - PTVS10-380C



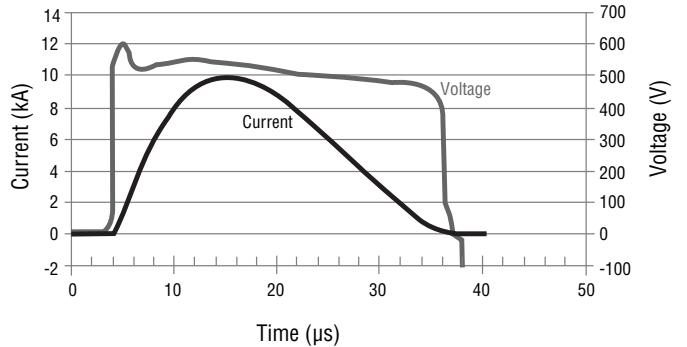
### Surge Response (1.2/50, 8/20 Surge) - PTVS10-380C



### Surge Response - PTVS10-470C



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



REV. 04/14

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