

## Features

- 1 kA, 8/20  $\mu$ s surge capability
- Low clamping voltage under surge
- Bidirectional TVS
- Excellent performance over temperature
- RoHS compliant\* and halogen free\*\*

## Applications

- AC line protection
- Protection of power supplies used in exposed and harsh environments
- SPDs and dongles

# PTVS1-xxxC-TH High Voltage, High Current TVS Diodes

### General Information

The Model PTVS1-xxxC-TH high voltage, bidirectional TVS diodes are designed for use in AC line and high power DC bus clamping applications. These devices offer bidirectional port protection and are available with standoff voltage ratings of 66 V, 190 V and 380 V.

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



### Additional Information

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### Agency Recognition

Description	
UL	File Number: <a href="#">E215609</a>

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

Rating		Symbol	Value	Unit
Repetitive Standoff Voltage	PTVS1-066C-TH	$V_{WM}$	66	V
	PTVS1-190C-TH		190	
	PTVS1-380C-TH		380	
Peak Current Rating per 8/20 $\mu$ s IEC 61000-4-5		$I_{PPM}$	1	kA
Operating Junction Temperature Range		$T_J$	-55 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	$\mu\text{A}$	
$V_{(BR)}$ Breakdown Voltage	$I_{BR} = 10\text{ mA}$	PTVS1-066C-TH	71	75	80	V
		PTVS1-190C-TH	200	206	222	
		PTVS1-380C-TH	401	422	443	
$V_C$ Clamping Voltage (1)	$I_{PP} = 1\text{ kA}$	PTVS1-066C-TH		86		V
		PTVS1-190C-TH		227		
		PTVS1-380C-TH		520		
$V_{(BR)}$ Temperature Coefficient			0.1		$\%/^\circ\text{C}$	
C Capacitance	F = 10 kHz, $V_d = 1\text{ Vrms}$	PTVS1-066C-TH		0.744		nF
		PTVS1-190C-TH		0.274		
		PTVS1-380C-TH		0.12		

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



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

\* RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\* Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

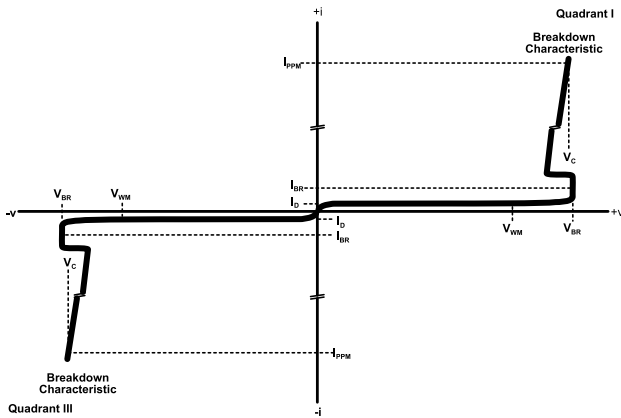
Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

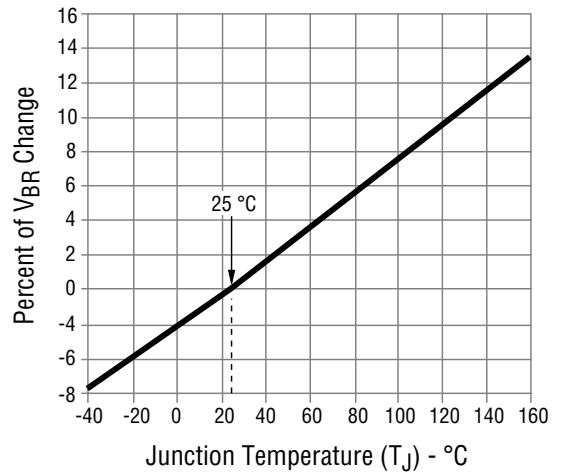
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Performance Graphs

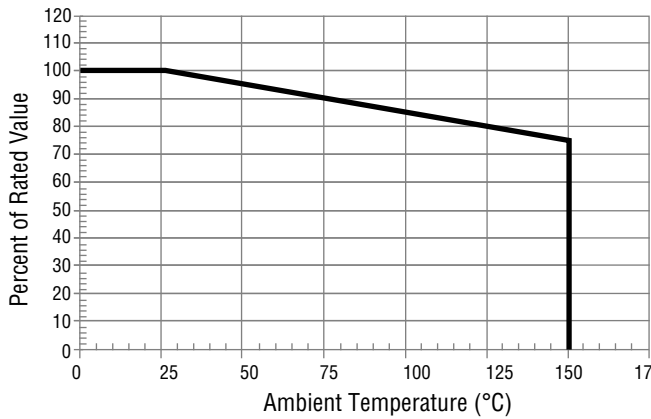
V-I Characteristic



Typical  $V_{BR}$  vs. Junction Temperature

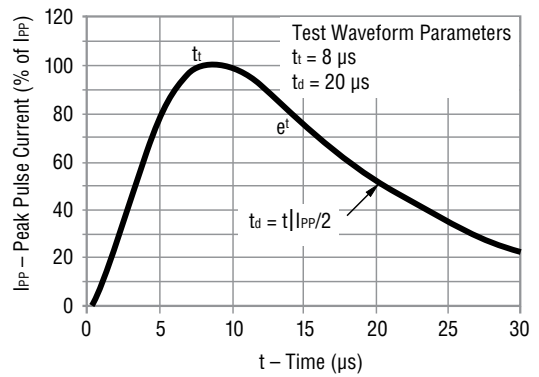


Typical Surge Current Derating

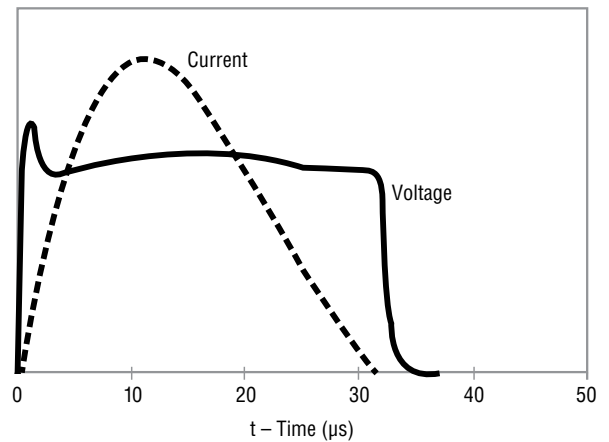


This graph shows the typical device surge current derating versus ambient temperature when subjected to the 8/20  $\mu$ s current waveform per the IEC 61000-4-5 specification. This device is not intended for continuous operation at temperatures above 125 °C.

Current 8/20  $\mu$ s Waveform per IEC 61000-4-5



Typical Waveform Under Surge



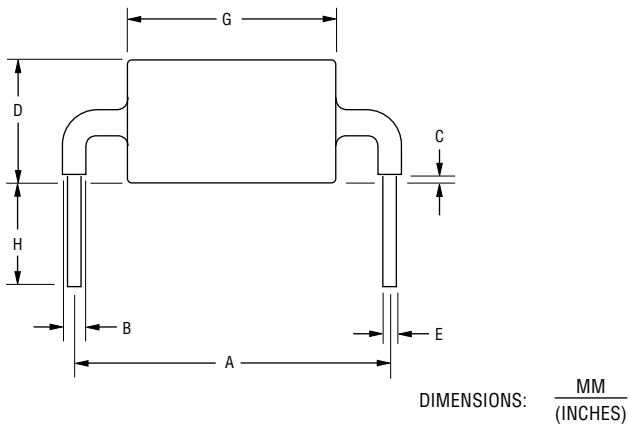
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## Product Dimensions

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:



Dim.	PTVS1-066C-TH	PTVS1-190C-TH	PTVS1-380C-TH
A	$\frac{24.15 \pm 0.72}{(0.951 \pm 0.028)}$		
B	$\frac{2.40 \pm 0.50}{(0.094 \pm 0.020)}$	$\frac{2.00 \pm 0.50}{(0.079 \pm 0.020)}$	
C	$\frac{1.75 \pm 1.25}{(0.069 \pm 0.049)}$		$\frac{0.50 \pm 0.50}{(0.020 \pm 0.020)}$
D	$\frac{8.50}{(0.335)}$ Max.	$\frac{8.00}{(0.315)}$ Max.	
E	$\frac{1.25 \pm 0.05}{(0.049 \pm 0.002)}$		
F	$\frac{7.00}{(0.276)}$ Max.	$\frac{8.00}{(0.315)}$ Max.	
G	$\frac{6.00}{(0.236)}$ Max.	$\frac{10.00}{(0.394)}$ Max.	$\frac{14.50}{(0.571)}$ Max.
H	$\frac{6.00 \pm 1.00}{(0.236 \pm 0.039)}$		

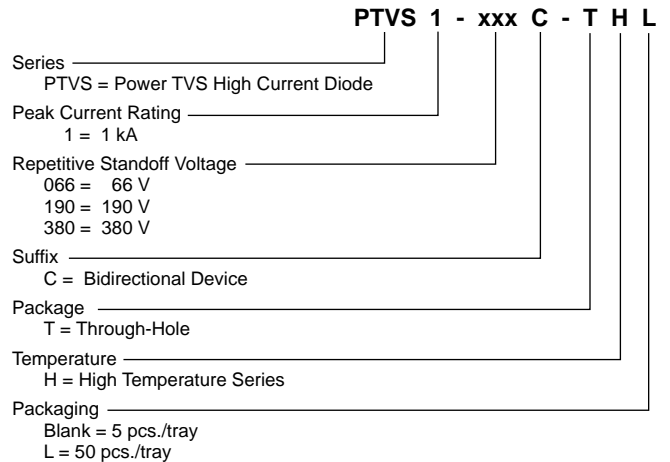
## Typical Part Marking

PTVS1-066C-TH ..... 1066  
 PTVS1-190C-TH ..... 1190  
 PTVS1-380C-TH ..... 1380

## Environmental Specifications

ESD Classification (HBM).....3B

## How to Order



Specifications are subject to change without notice.

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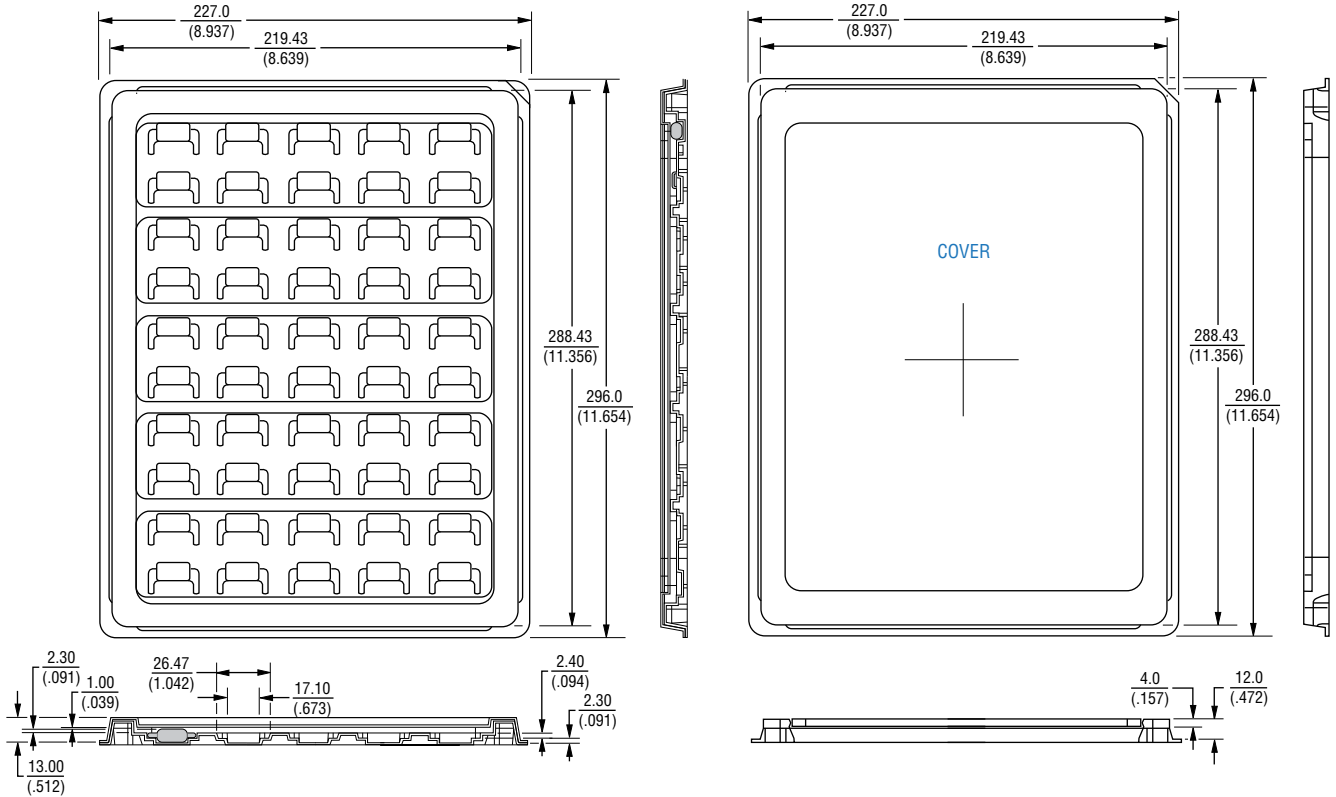
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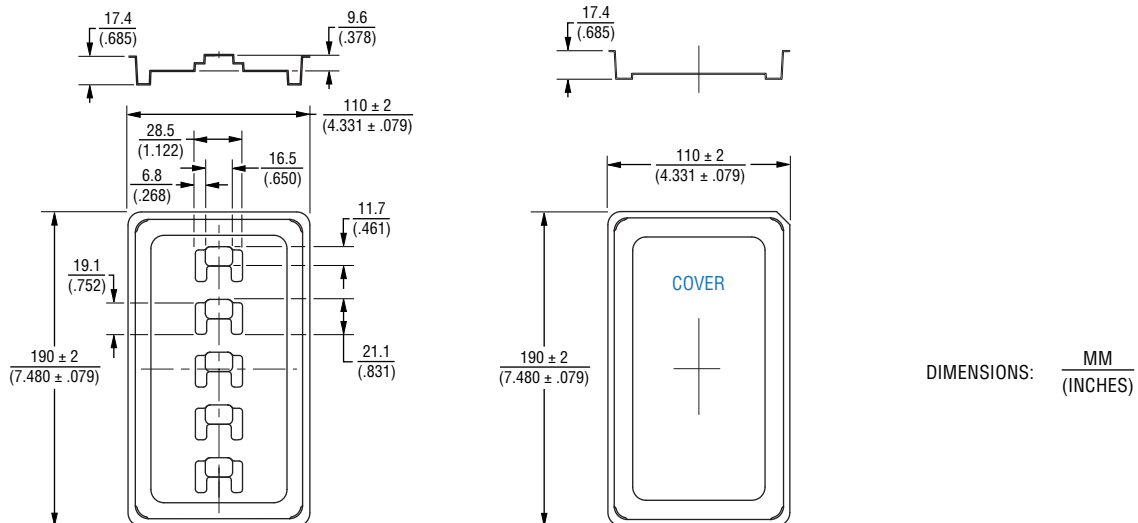


## Packaging Information

The Model PTVS1-xxxC-THL is packaged in a 296 mm x 227 mm x 13 mm tray, 50 pcs. per tray.



The Model PTVS1-xxxC-TH is packaged in a 190 mm x 110 mm x 17.4 mm tray, 5 pcs. per tray.



REV. 02/22

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