



## Features

- RoHS compliant\*
- Low capacitance - 15 pF
- ESD protection per IEC 61000-4-2
- Surge protection

## Applications

- Personal Digital Assistants (PDAs)
- Mobile phones & accessories
- Memory card protection
- SIM card port protection
- Portable electronics

# CD0603/CD1005-T Surface Mount TVS Diode Series

## General Information

The markets for portable communications, computing and video equipment are challenging the semiconductor industry to develop increasingly smaller electronic components. Bourns offers TVS Diodes for voltage reference applications, in compact chip package 0603 or 1005 size formats, which offer PCB real estate savings and are considerably smaller than most competitive parts. The TVS Diodes have a working peak voltage range between 5.0 V and 24 V.

The device is designed to meet IEC 61000-4-5 (Surge) protection requirements.

Bourns® Chip Diodes conform to JEDEC standards, are easy to handle on standard pick and place equipment and their flat configuration minimizes roll away.



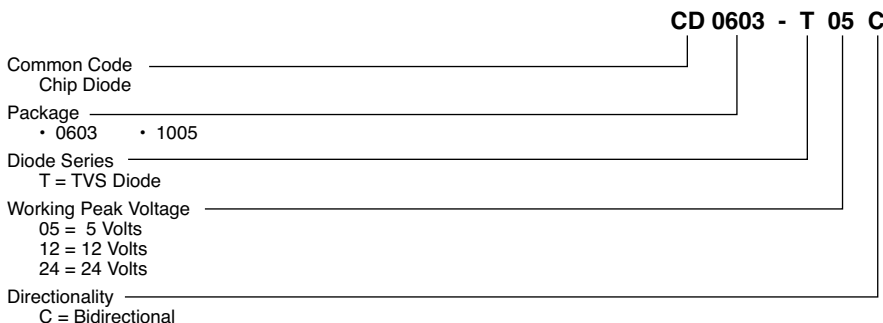
## Thermal Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	CD0603-T / CD1005-T Series	Unit
Package Power	P <sub>PK</sub>	100	mW
Storage Temperature	T <sub>STG</sub>	-40 to +125	°C
Operating Temperature	T <sub>OPR</sub>	-40 to +125	°C

## Electrical Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	CD0603-T / CD1005-T Series			Unit
		05C	12C	24C	
Minimum Breakdown Voltage @ 1 mA	V <sub>BR</sub>	5.1	13	25	V
Typical Breakdown Voltage @ 1 mA	V <sub>BR</sub>	7	17	28	V
Peak Pulse Current (t <sub>p</sub> = 8/20 μs)	I <sub>PPM</sub>	5.1	1	1	A
Maximum Working Peak Voltage	W <sub>WM</sub>	5	12	24	V
Maximum Leakage Current @ V <sub>WM</sub>	I <sub>D</sub>	2.0			μA
Maximum Clamping Voltage @ Max. I <sub>pp</sub>	V <sub>C</sub>	15	25	47	V
Maximum Junction Capacitance @ 0 V 1 MHz	C <sub>D</sub>	20			pF
Typical Junction Capacitance @ 0 V 1 MHz	C <sub>D</sub>	15	12	10	pF
ESD Protection per IEC 61000-4-2	Contact Discharge	8			kV
	Air Discharge	15			kV

## How to Order



# BOURNS®

### Asia-Pacific:

Tel: +886-2 2562-4117  
 Fax: +886-2 2562-4116

### Europe:

Tel: +41-41 768 5555  
 Fax: +41-41 768 5510

### The Americas:

Tel: +1-951 781-5500  
 Fax: +1-951 781-5700

[www.bourns.com](http://www.bourns.com)

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

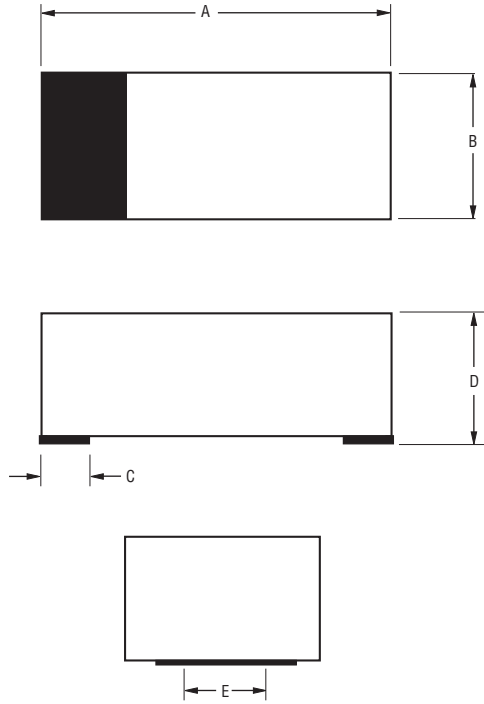
Specifications are subject to change without notice.

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# CD0603/CD1005-T Surface Mount TVS Diode Series



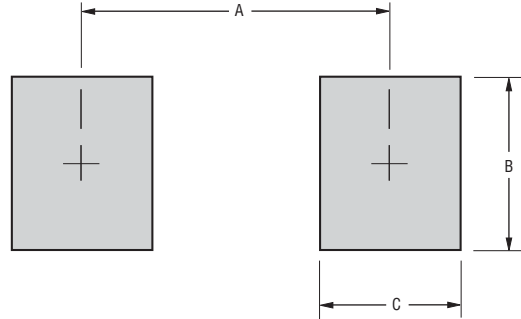
## Product Dimensions



Dimension	0603	1005
A	$\frac{1.60 - 1.80}{(0.063 - 0.071)}$	$\frac{2.40 - 2.60}{(0.095 - 0.102)}$
B	$\frac{0.80 - 1.00}{(0.031 - 0.039)}$	$\frac{1.10 - 1.30}{(0.043 - 0.051)}$
C	$\frac{0.45}{(0.018)}$ Typ.	$\frac{0.50}{(0.020)}$ Typ.
D	$\frac{0.70 - 0.85}{(0.027 - 0.033)}$	$\frac{0.70 - 0.90}{(0.027 - 0.035)}$
E	$\frac{0.70}{(0.028)}$ Typ.	$\frac{1.00}{(0.039)}$ Typ.

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Recommended Pad Layout



Dimension	0603	1005
A (Max.)	$\frac{1.25}{(0.049)}$	$\frac{2.00}{(0.079)}$
B (Min.)	$\frac{1.00}{(0.039)}$	$\frac{1.3}{(0.051)}$
C (Min.)	$\frac{0.6}{(0.024)}$	$\frac{0.7}{(0.028)}$

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Physical Specifications

Case ..... 0603(1608) / 1005(2512) Molded plastic  
 Terminals ..... Solder plated, solderable per MIL-STD-750, Method 2026  
 Polarity..... Indicated by cathode band  
 Mounting Position..... Any

## Typical Part Marking

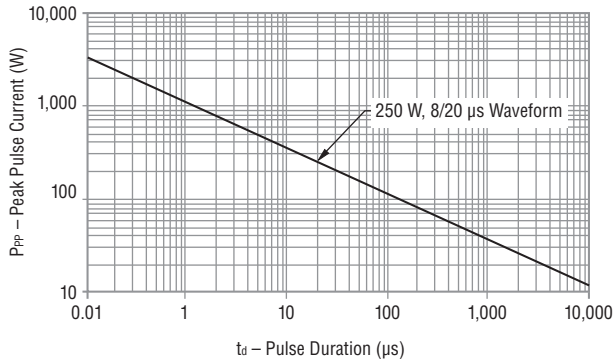
CD0603-T05C ..... E05  
 CD0603-T12C ..... E12  
 CD0603-T24C ..... E24  
 CD1005-T05C ..... E05  
 CD1005-T12C ..... E12  
 CD1005-T24C ..... E24

# CD0603/CD1005-T Surface Mount TVS Diode Series

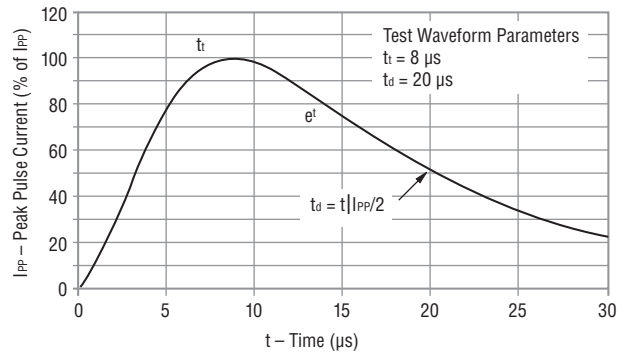


## Rating & Characteristic Curves

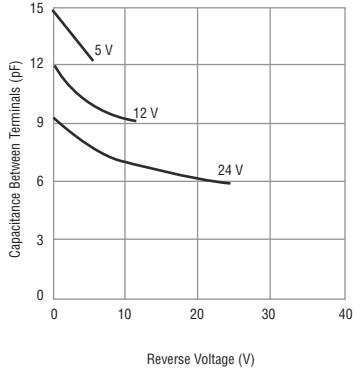
### Peak Pulse Power vs. Pulse Time



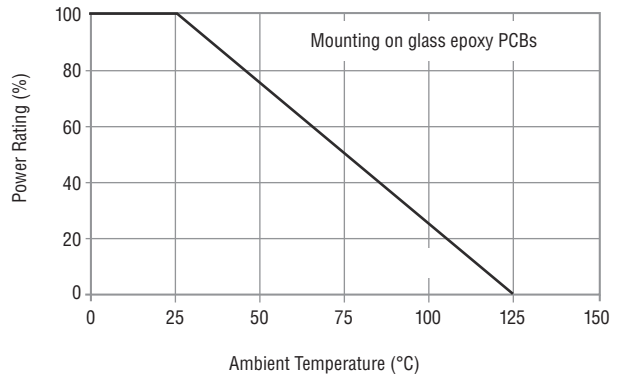
### Pulse Waveform



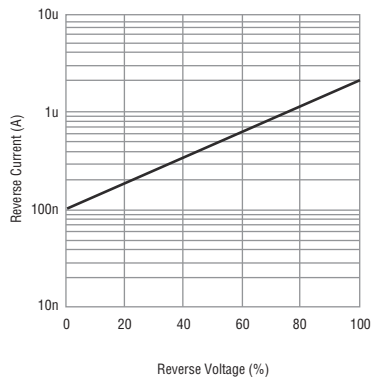
### Capacitance Between Terminals



### Power Derating Curve



### Reverse Characteristics



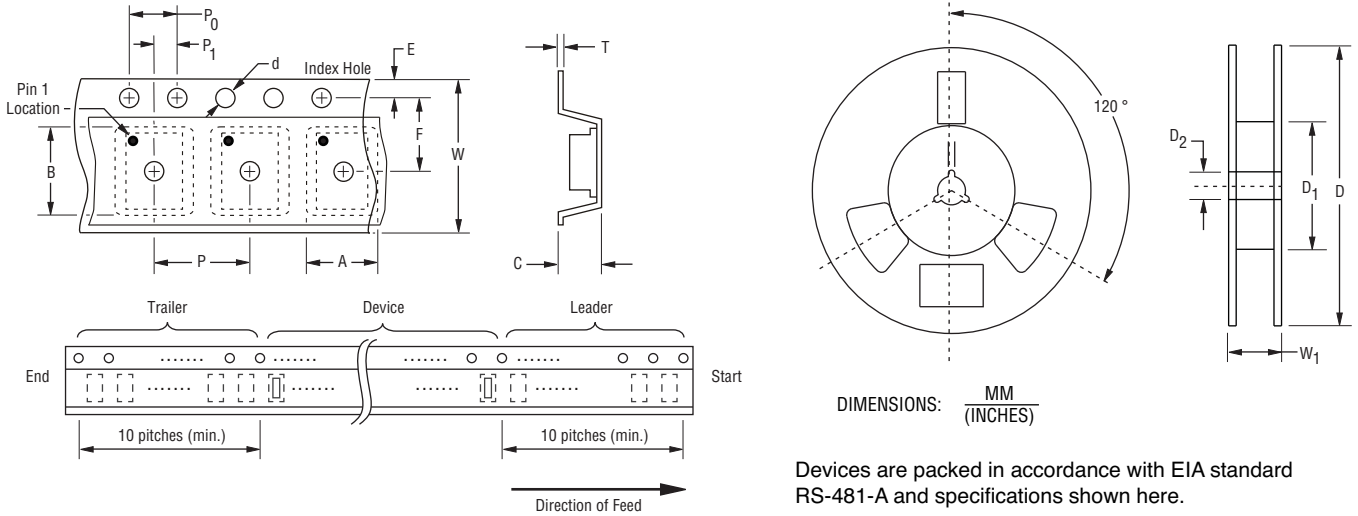
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# CD0603/CD1005-T Surface Mount TVS Diode Series

# BOURNS®

## Packaging Information

The product is dispensed in tape and reel format (see diagram below).



Item	Symbol	0603	1005
Carrier Width	A	$\frac{1.00 \pm 0.10}{(0.039 \pm 0.004)}$	$\frac{1.55 \pm 0.10}{(0.061 \pm 0.004)}$
Carrier Length	B	$\frac{1.85 \pm 0.10}{(0.073 \pm 0.004)}$	$\frac{2.65 \pm 0.10}{(0.104 \pm 0.004)}$
Carrier Depth	C	$\frac{1.00 \pm 0.10}{(0.039 \pm 0.004)}$	$\frac{1.05 \pm 0.10}{(0.041 \pm 0.004)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 \pm 0.002)}$	$\frac{1.55 \pm 0.10}{(0.061 \pm 0.004)}$
Reel Outside Diameter	D	$\frac{178}{(7.008)}$	$\frac{178}{(7.008)}$
Reel Inner Diameter	D <sub>1</sub>	$\frac{60.0}{(2.362)}$ MIN.	$\frac{60.0}{(2.362)}$ MIN.
Feed Hole Diameter	D <sub>2</sub>	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
Punch Hole Position	F	$\frac{3.50 \pm 0.05}{(0.138 \pm 0.002)}$	$\frac{3.50 \pm 0.05}{(0.138 \pm 0.002)}$
Punch Hole Pitch	P	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Sprocket Hole Pitch	P <sub>0</sub>	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P <sub>1</sub>	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
Overall Tape Thickness	T	$\frac{0.20 \pm 0.10}{(0.008 \pm 0.004)}$	$\frac{0.20 \pm 0.10}{(0.008 \pm 0.004)}$
Tape Width	W	$\frac{8.00 \pm 0.20}{(0.315 \pm 0.008)}$	$\frac{8.00 \pm 0.20}{(0.315 \pm 0.008)}$
Reel Width	W <sub>1</sub>	$\frac{13.5}{(0.531)}$ MAX.	$\frac{13.5}{(0.531)}$ MAX.
Quantity per Reel	--	4,000	4,000

REV. 07/13

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