



Features

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



This series is currently available but not recommended for new designs.

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_A = 25 °C Unless Otherwise Noted)

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

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

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

How to Order

Common Code	CD 0603 - T 05 C
Chip Diode	
Package	
• 0603	
• 1005	
Diode Series	
T = TVS Diode	
Working Peak Voltage	
05 = 5 Volts	
12 = 12 Volts	
24 = 24 Volts	
Directionality	
C = Bidirectional	

*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.

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.

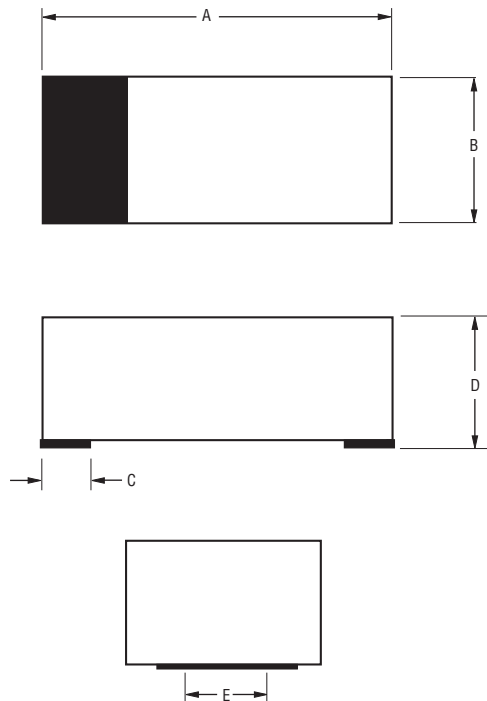
Applications

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

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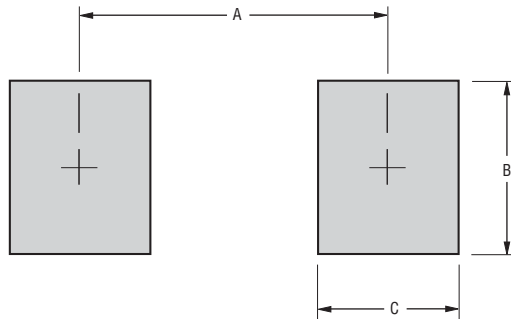
Product Dimensions



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

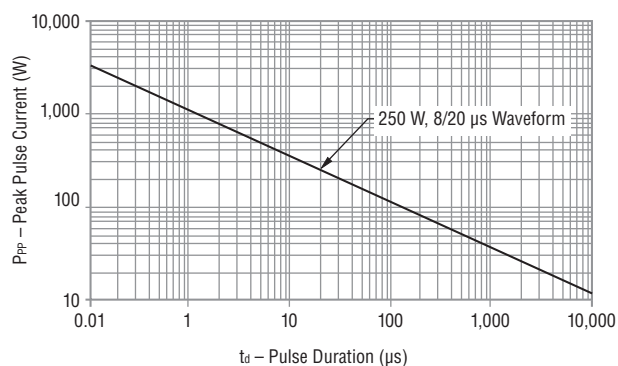
 CD1005-T05C E05
 CD1005-T12C E12
 CD1005-T24C E24

CD0603/CD1005-T Surface Mount TVS Diode Series

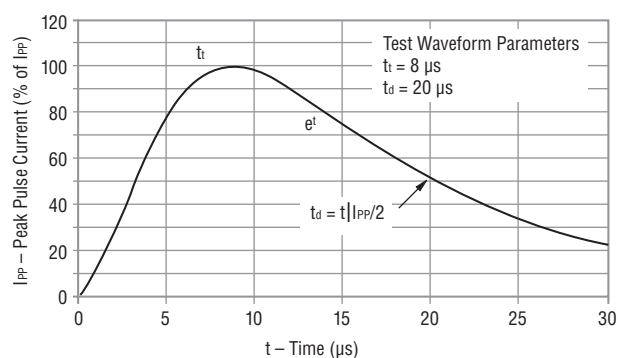
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Rating & Characteristic Curves

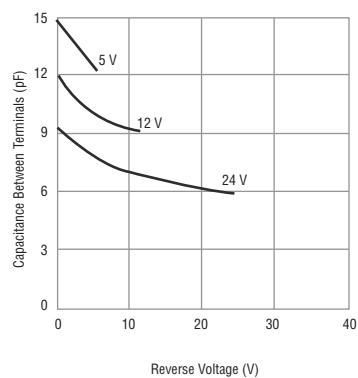
Peak Pulse Power vs. Pulse Time



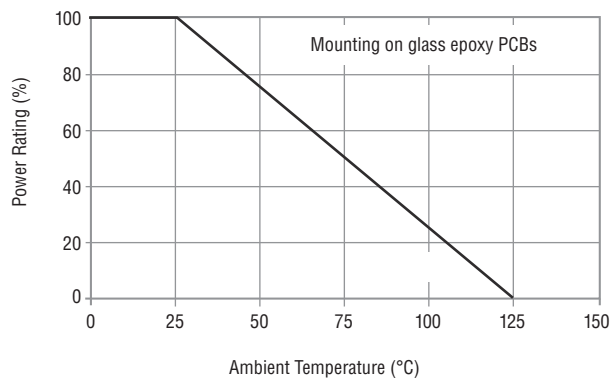
Pulse Waveform



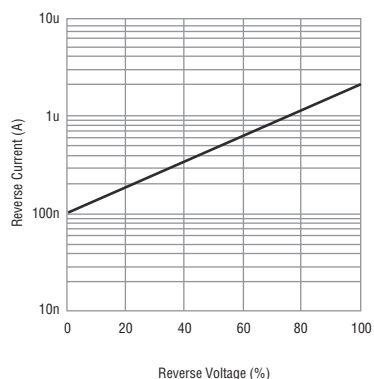
Capacitance Between Terminals



Power Derating Curve



Reverse Characteristics



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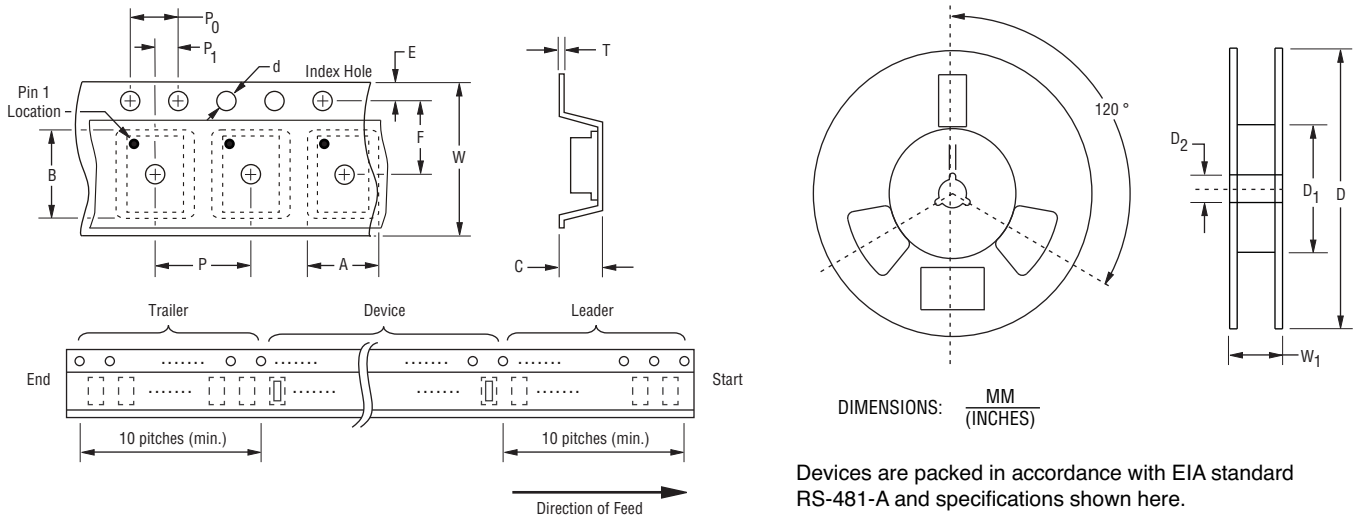
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Packaging Information

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



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

REV. 12/15

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