



**THE DATASHEET OF
CD1005-T12C**





Features

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



This series is obsolete and not recommended for new designs.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.

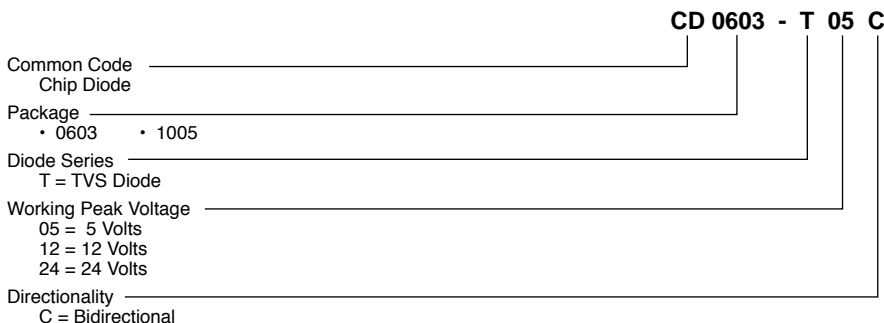
Thermal Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

| 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 | V _{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 | 8 | | | kV |
| | Air Discharge | 15 | | | kV |

How to Order



WARNING
Cancer and Reproductive Harm
www.P65Warnings.ca.gov

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

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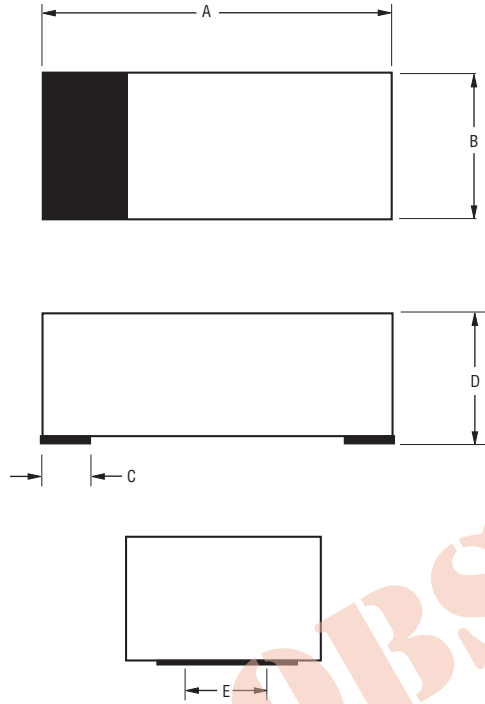
Applications

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

CD0603/CD1005-T Surface Mount TVS Diode Series

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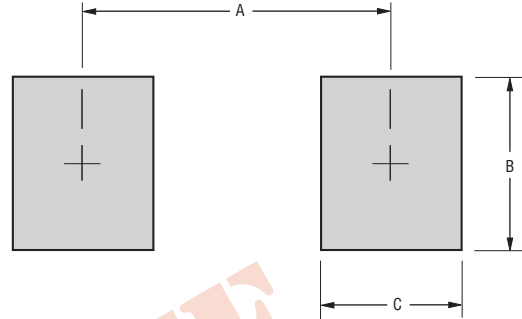
Product Dimensions



| 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

Case0603(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

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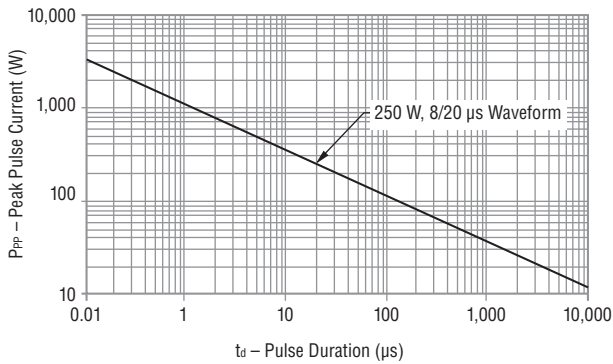
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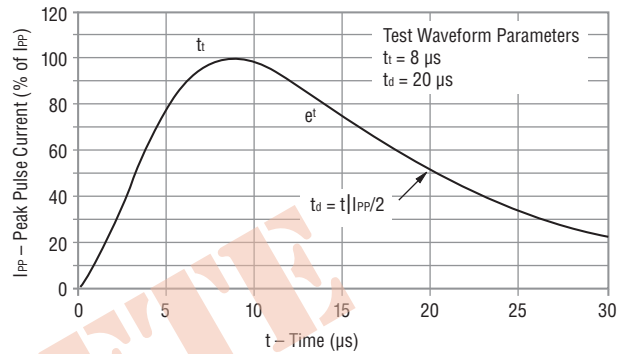


Rating & Characteristic Curves

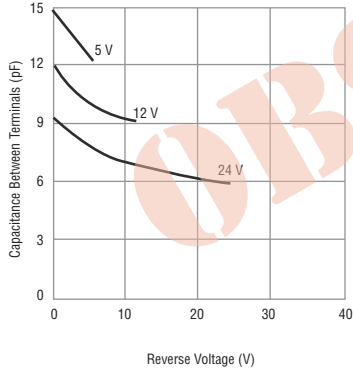
Peak Pulse Power vs. Pulse Time



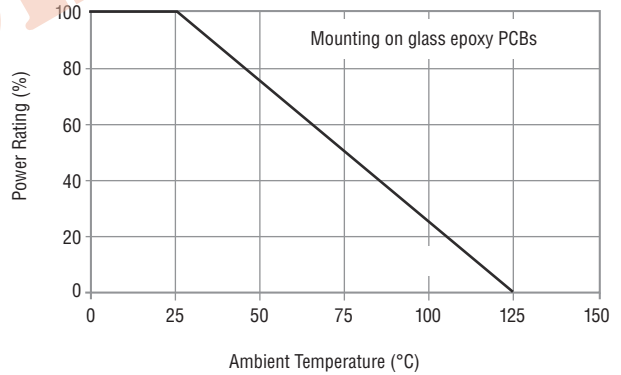
Pulse Waveform



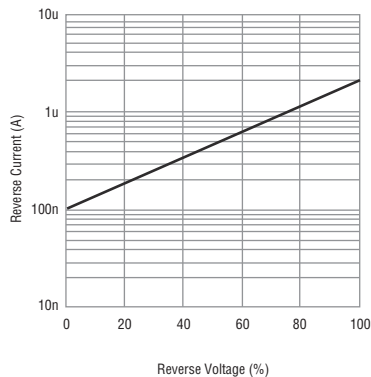
Capacitance Between Terminals



Power Derating Curve



Reverse Characteristics

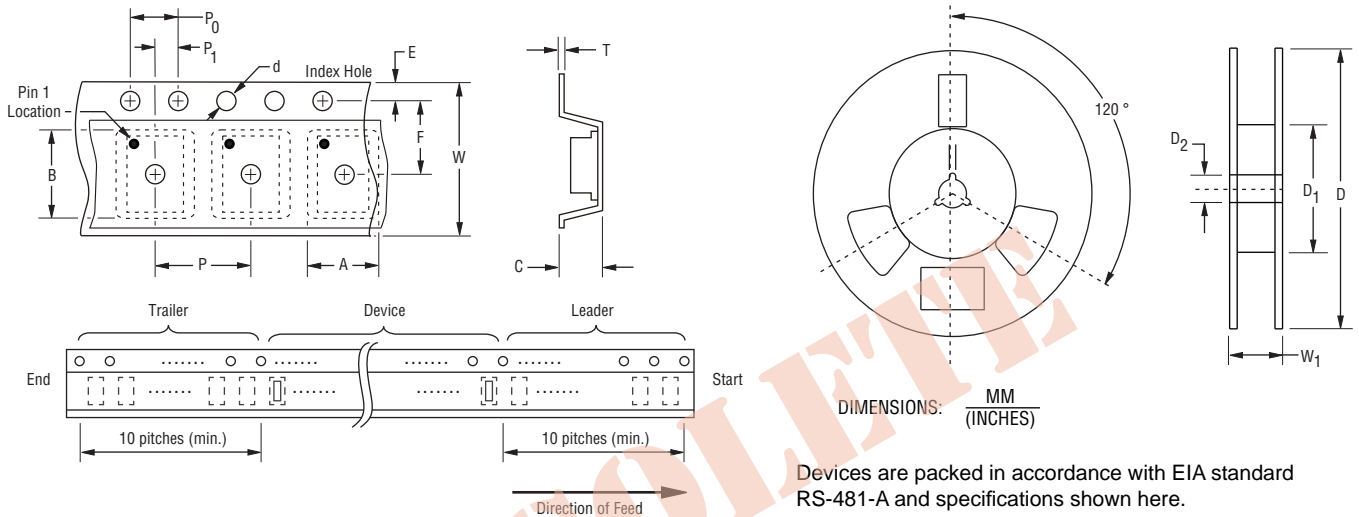


CD0603/CD1005-T Surface Mount TVS Diode Series

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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. 06/21

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