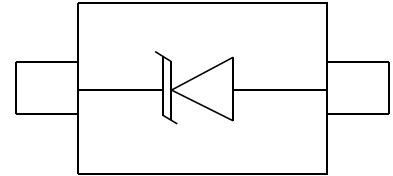


## APPLICATIONS

Serial ATA.  
Desktops, Servers and Notebooks.  
Cellular Phones.  
MDDI Ports.  
USB2.0 Power and Data Line Protection.  
Display Ports  
Digital Visual Interfaces (DVI).



## FEATURES

Protects one data or power line.  
Ultra low leakage: nA level.  
Low clamping voltage.  
2-pin leadless package.  
Complies with following standards:  
IEC 61000-4-2 (ESD):  $\pm 30\text{kV}$ (Air)  
IEC 61000-4-2 (ESD):  $\pm 30\text{kV}$ (Contact)  
IEC61000-4-5 (Lightning) 8A (8/20 $\mu\text{s}$ ).



**SOD-523**

## MACHANICAL DATA

Package: SOD-523.  
Lead Finish: Matte Tin.  
Case Material: "Green" Molding Compound.  
Moisture Sensitivity: Level 3 per J-STD-020.  
Terminal Connections: See Diagram Below.  
Marking Information: See Below.  
Tape & Reel : 3,000pcs.  
Reel Size : 7 inch.  
Marking code: According to the physical

## DEVICE CHARACTERISTICS

### Absolute Maximum Ratings (TA=25°C unless otherwise specified)

| Parameter                       | Symbol | Value       | Unit |
|---------------------------------|--------|-------------|------|
| Peak Pulse Power (8/20μs)       | Ppp    | 300         | W    |
| Peak Pulse Current (8/20μs)     | Ipp    | 8           | A    |
| ESD per IEC 61000-4-2 (Air)     | VESD   | ±30         | kV   |
| ESD per IEC 61000-4-2 (Contact) |        | ±30         |      |
| Operating Temperature Range     | TJ     | -55 to +125 | °C   |
| Storage Temperature Range       | Tstg   | -55 to +150 | °C   |

## ELECTRICAL CHARACTERISTICS(TA=25°C unless otherwise specified)

| Parameter               | Symbol | Min | Typ | Max | Unit | Test Condition            |
|-------------------------|--------|-----|-----|-----|------|---------------------------|
| Reverse Working Voltage | VRWM   |     |     | 36  | V    |                           |
| Breakdown Voltage       | VBR    | 40  |     |     | V    | IT = 1mA                  |
| Reverse Leakage Current | IR     |     |     | 1   | μA   | VRWM = 36V                |
| Clamping Voltage        | VC     |     | 45  | 60  | V    | IPP = 1A (8 x 20μs pulse) |
| Clamping Voltage        | VC     |     | 58  | 70  | V    | IPP = 8A (8 x 20μs pulse) |
| Junction Capacitance    | CJ     |     | 22  |     | pF   | VR = 0V, f = 1MHz         |

### ELECTRICAL CHARACTERISTICS

① Surge waveform: 8/20μs

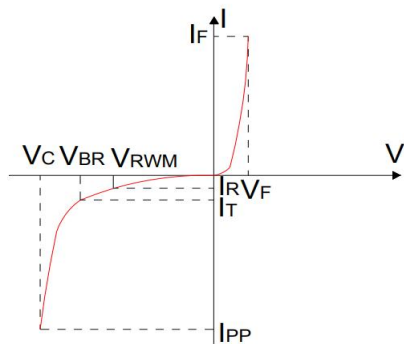
VR : Stand-off Voltage -- Maximum voltage that can be applied

VBR: Breakdown Voltage

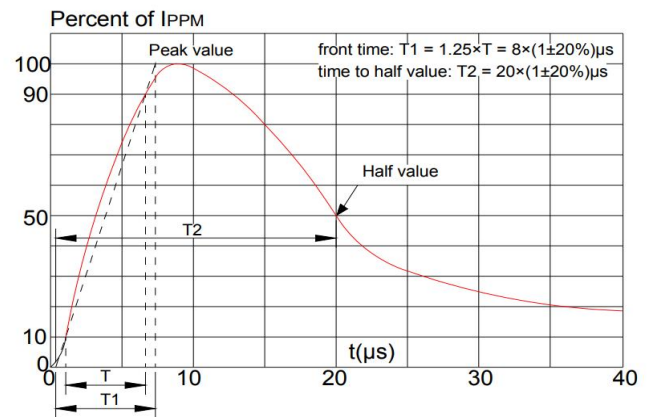
VC: Clamping Voltage -- Peak voltage measured across the suppressor at a specified Ipp

IR: Reverse Leakage Current

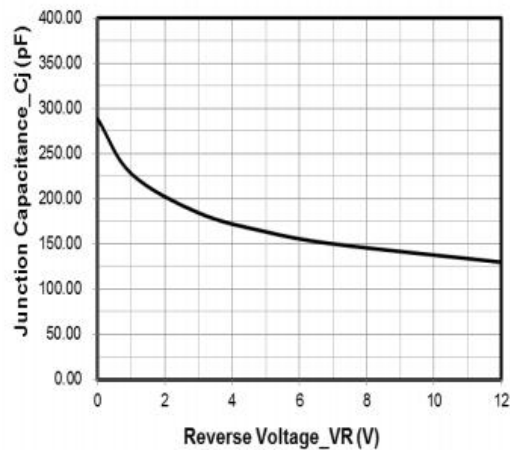
**FIG.1: V- I curve characteristics (Uni-directional)**



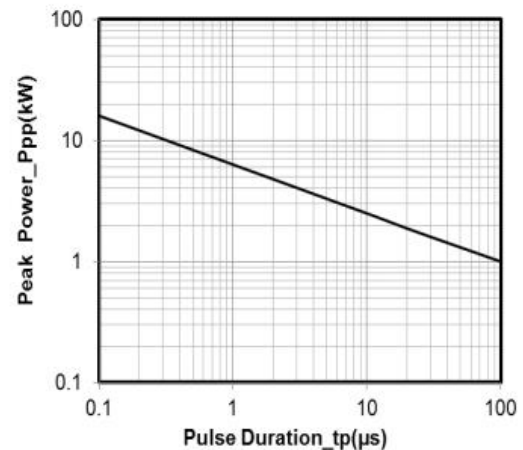
**FIG.2: Pulse waveform (8/20μs)**



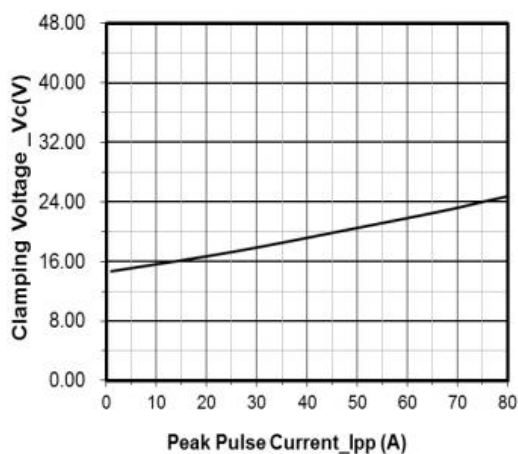
**TYPICAL CHARACTERISTICS(TA=25°C unless otherwise Specified)**



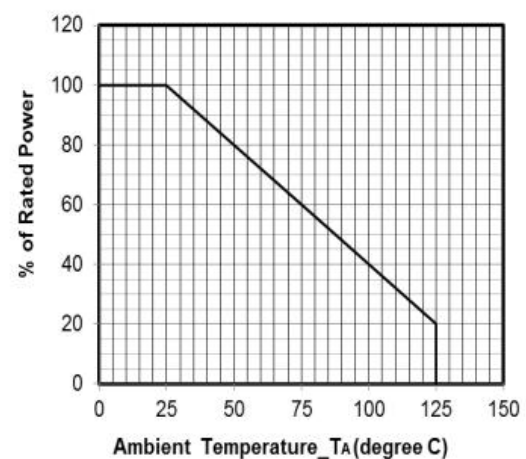
**Junction Capacitance vs. Reverse Voltage**



**Peak Pulse Power vs. Pulse Time**

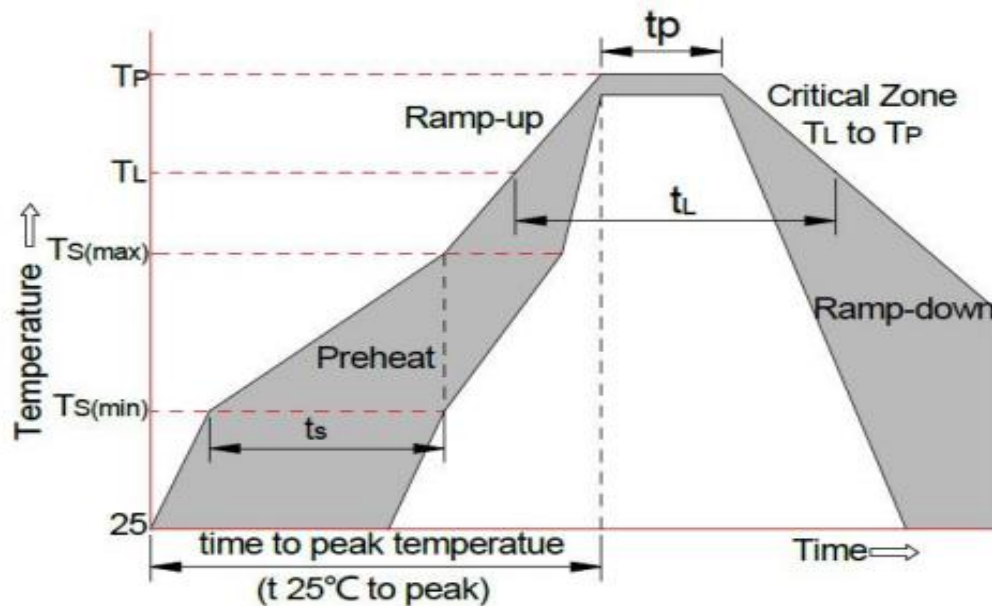


**Clamping Voltage vs. Peak Pulse Current**



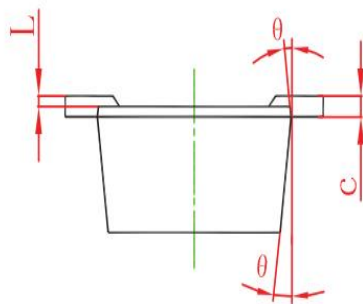
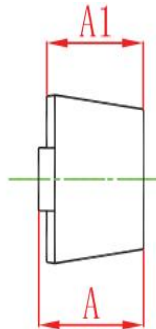
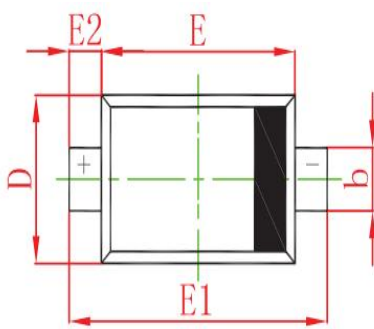
**Power Derating Curve**

## SOLDERING PARAMETERS



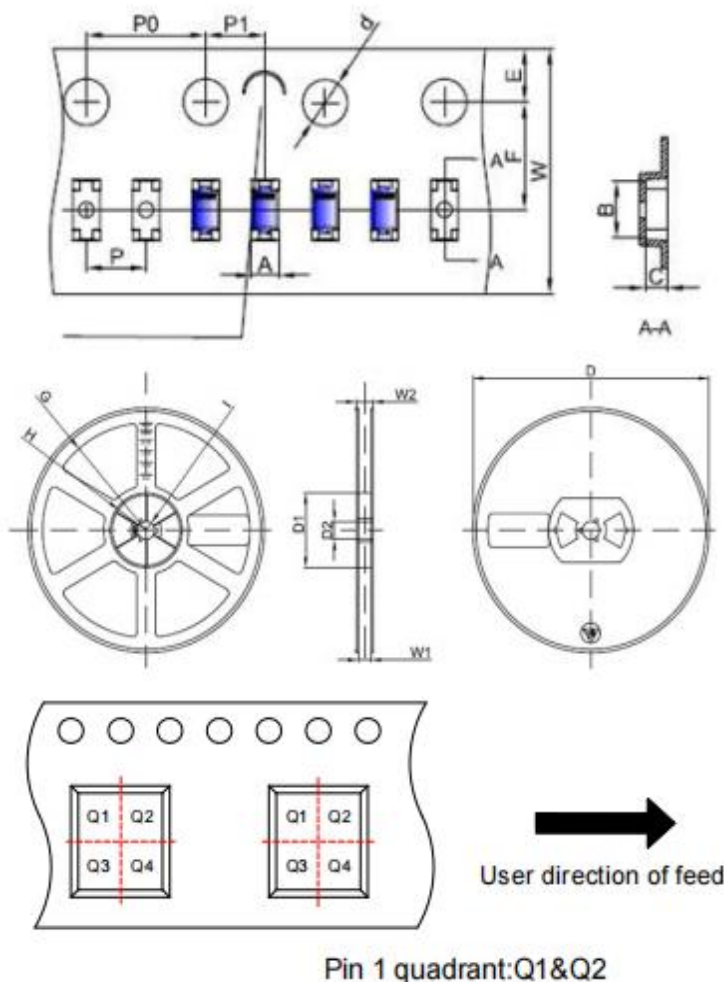
| Reflow Condition                                        |                                   | Pb-Free assembly<br>(see FIG.5) |
|---------------------------------------------------------|-----------------------------------|---------------------------------|
| Pre Heat                                                | -Temperature Min ( $T_{s(min)}$ ) | +150°C                          |
|                                                         | -Temperature Max( $T_{s(max)}$ )  | +200°C                          |
|                                                         | -Time (Min to Max) ( $t_s$ )      | 60-180 secs.                    |
| Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak) |                                   | 3°C/sec. Max                    |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                    |                                   | 3°C/sec. Max                    |
| Reflow                                                  | -Temperature( $T_L$ )(Liquid us)  | +217°C                          |
|                                                         | -Temperature( $t_L$ )             | 60-150 secs.                    |
| Peak Temp ( $T_P$ )                                     |                                   | +260(+0/-5)°C                   |
| Time within 5°C of actual Peak Temp ( $t_p$ )           |                                   | 30 secs. Max                    |
| Ramp-down Rate                                          |                                   | 6°C/sec. Max                    |
| xTime 25°C to Peak Temp ( $T_P$ )                       |                                   | 8 min. Max                      |
| Do not exceed                                           |                                   | +260°C                          |

**SOD-523 PACKAGE OUTLINE DRAWING**



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.510                     | 0.770 | 0.020                | 0.031 |
| A1     | 0.400                     | 0.700 | 0.015                | 0.028 |
| b      | 0.250                     | 0.350 | 0.010                | 0.014 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 0.750                     | 0.850 | 0.030                | 0.033 |
| E      | 1.100                     | 1.300 | 0.043                | 0.051 |
| E1     | 1.500                     | 1.700 | 0.059                | 0.067 |
| E2     | 0.200 REF                 |       | 0.008 REF            |       |
| L      | 0.010                     | 0.070 | 0.001                | 0.003 |
| θ      | 7° REF                    |       | 7° REF               |       |

## TAPE AND REEL SPECIFICATION-SOD-523



### Packaging Description:

SOD-523 parts are shipped in tape. The carrier tape is made from a dissipative(carbon filled) polycarbonate resin. The cover tape is a multilayer film(heat activated adhesive in nature)primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 5,000 or 8,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and made of polystyrene plastic(anti-static coated).

| Symbol | Millimeters | Inches |
|--------|-------------|--------|
|        | Typ.        | Typ.   |
| A      | 0.95        | 0.037  |
| B      | 1.92        | 0.076  |
| C      | 0.73        | 0.029  |
| d      | Φ1.50       | Φ0.059 |
| E      | 1.75        | 0.069  |
| F      | 3.50        | 0.138  |
| P0     | 4.00        | 0.157  |
| P      | 2.00        | 0.079  |
| P1     | 2.00        | 0.079  |
| W      | 8.00        | 0.315  |
| D      | Φ178        | Φ7.008 |
| D1     | 54.40       | 2.142  |
| D2     | 13.00       | 0.512  |
| G      | R78.00      | R3.071 |
| H      | R25.60      | R1.008 |
| I      | R6.50       | R0.256 |
| W1     | 9.50        | 0.374  |
| W2     | 12.30       | 0.484  |