

## Features

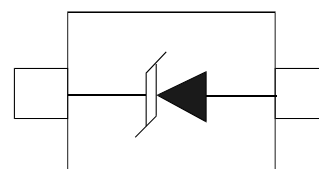
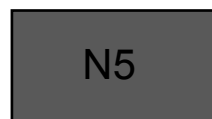
225Watts peak pulse power ( $t_p = 8/20\mu s$ )  
Unidirectional configurations  
Solid-state silicon-avalanche technology  
Low clamping voltage  
Low leakage current  
IEC 61000-4-2  $\pm 30kV$  contact  $\pm 30kV$  air  
IEC 61000-4-4 (EFT) 40A(5/50ns)  
IEC 61000-4-5 (Lightning) 5A(8/20 $\mu s$ )

## Mechanical Data

SOD523 package  
Molding compound flammability rating: UL 94V-0  
Packaging: Tape and Reel  
RoHS/WEEE Compliant

## Applications

Microprocessor based equipment  
Personal Digital Assistants (PDA's)  
Notebooks, Desktops, and Servers  
Portable Instrumentation  
Pagers Peripherals



SOD-523

**Schematic & PIN Configuration**

## Absolute Maximum Rating

| Rating                                                         | Symbol    | Value          | Units       |
|----------------------------------------------------------------|-----------|----------------|-------------|
| Peak Pulse Power ( $t_p = 8/20\mu s$ )                         | $P_{PP}$  | 225            | Watts       |
| Peak Pulse Current ( $t_p = 8/20\mu s$ ) (note1)               | $I_{pp}$  | 5              | A           |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$ | 30<br>30       | kV          |
| Lead Soldering Temperature                                     | $T_L$     | 260(10seconds) | $^{\circ}C$ |
| Junction Temperature                                           | $T_J$     | -55 to + 150   | $^{\circ}C$ |
| Storage Temperature                                            | $T_{stg}$ | -55 to + 150   | $^{\circ}C$ |

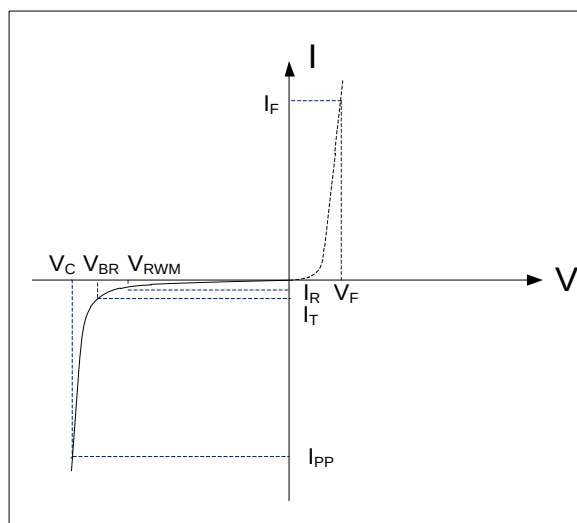
## Electrical Characteristics

| Parameter                 | Symbol    | Conditions                     | Min  | Typical | Max  | Units   |
|---------------------------|-----------|--------------------------------|------|---------|------|---------|
| Reverse Stand-Off Voltage | $V_{RWM}$ |                                |      |         | 24.0 | V       |
| Reverse Breakdown Voltage | $V_{BR}$  | $I_T=1mA$                      | 26.7 |         |      | V       |
| Reverse Leakage Current   | $I_R$     | $V_{RWM}=24.0V, T=25^{\circ}C$ |      |         | 0.5  | $\mu A$ |
| Clamping Voltage          | $V_C$     | $I_{PP}=5A, t_p=8/20\mu s$     |      | 45      |      | V       |
| Junction Capacitance      | $C_j$     | $V_R = 0V, f = 1MHz$           |      | 30      |      | pF      |

## Electronics Parameter

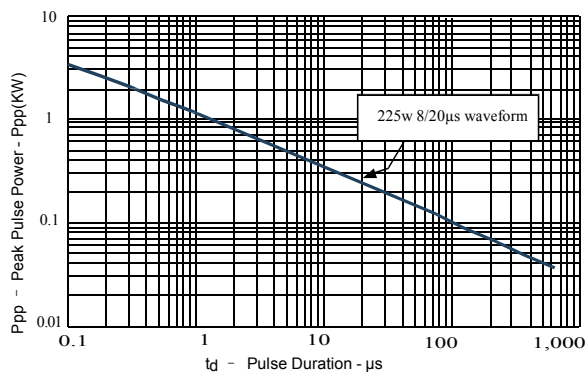
| Symbol    | Parameter                                   |
|-----------|---------------------------------------------|
| $I_{PP}$  | Maximum Reverse Peak Pulse Current          |
| $V_C$     | Clamping Voltage @ $I_{PP}$                 |
| $V_{RWM}$ | Working Peak Reverse Voltage                |
| $I_R$     | Maximum Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$  | Breakdown Voltage @ $I_T$                   |
| $I_T$     | Test Current                                |

Note: 8/20 $\mu s$  pulswaveform.

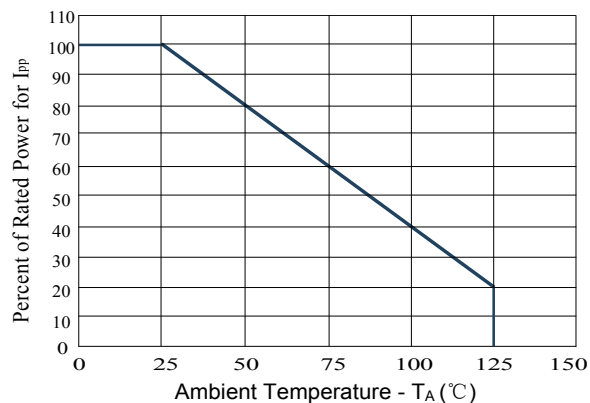


## RATING AND CHARACTERISTIC CURVES

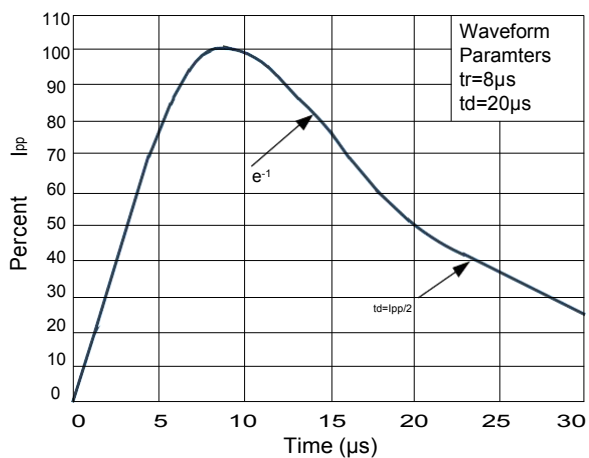
**Figure 1: Peak Pulse Power vs. Pulse Time**



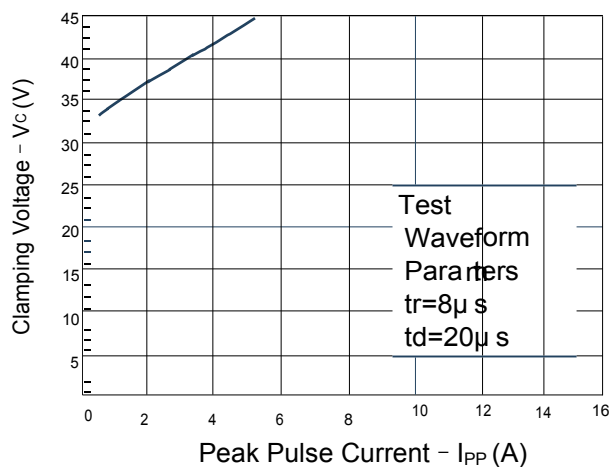
**Figure 2: Power Derating Curve**



**Figure3: Pulse Waveform**

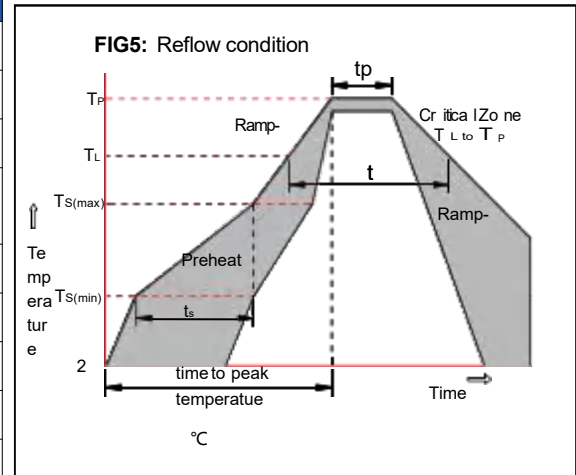


**Figure 4: Clamping Voltage vs. Ipp**



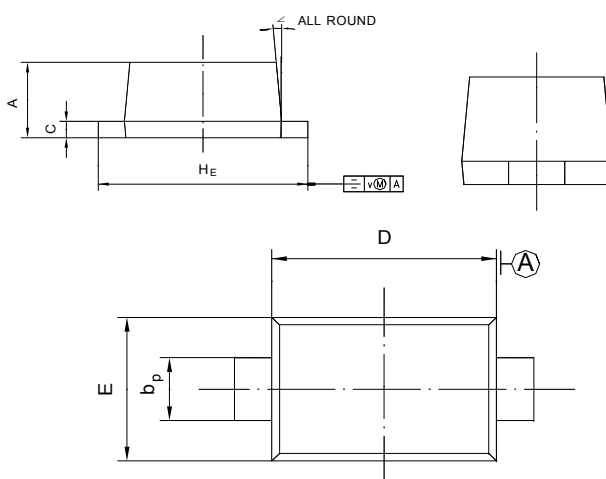
## Soldering parameters

| Reflow Condition                                        |                                    | Pb-Free assembly<br>(see as below) |
|---------------------------------------------------------|------------------------------------|------------------------------------|
| Pre Heat                                                | -Temperature Min ( $T_{s(min)}$ )  | +150 °C                            |
|                                                         | -Temperature Max ( $T_{s(max)}$ )  | +200 °C                            |
|                                                         | -Time (Min to Max) (ts)            | 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                      |
| Time 25 °C to Peak Temp ( $T_P$ )                       |                                    | 8 min. Max                         |
| Do not exceed                                           |                                    | +260 °C                            |

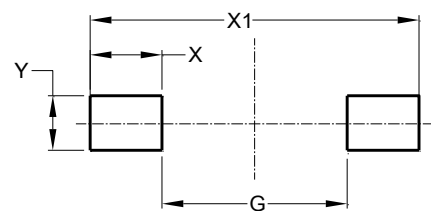


## Package Dimensions & Suggested Pad Layout

SOD523



| UNIT | A            | b <sub>p</sub> | C            | D            | E            | H <sub>E</sub> | V   | ∠  |
|------|--------------|----------------|--------------|--------------|--------------|----------------|-----|----|
| mm   | 0.70<br>0.50 | 0.40<br>0.20   | 0.14<br>0.05 | 1.30<br>1.10 | 0.90<br>0.75 | 1.70<br>1.50   | 0.1 | 5° |



| Dimensions | Value (in mm) |
|------------|---------------|
| G          | 0.85          |
| X          | 0.70          |
| X1         | 2.25          |
| Y          | 0.80          |

## Tape & reel specification

| Tape    | Symbol            | Dimension (mm) |
|---------|-------------------|----------------|
|         | P0                | 4.00±0.20      |
|         | P1                | 2.00±0.20      |
|         | P2                | 2.00±0.20      |
|         | D0                | 1.55±0.20      |
|         | D1                | 0.50±0.20      |
|         | E                 | 1.55±0.25      |
|         | F                 | 3.60±0.20      |
|         | W                 | 8.00±0.20      |
|         | A0                | 1.30±0.20      |
|         | B0                | 2.35±0.20      |
|         | K0                | 0.95±0.20      |
|         | T                 | 0.20±0.20      |
|         | D2                | 177.0±5.0      |
|         | D3                | 55Min.         |
| 7" Reel | D4                | R24.6±2.0      |
|         | G                 | R82.0±2.0      |
|         | I                 | 13.0±2.0       |
|         | W1                | 10.20±3.0      |
|         | Quantity: 3000PCS |                |

