



## DW12D5-B-S ESD Protection Diode

### Feature

- Bi-directional ESD protection of one line
- 120Watts peak pulse power ( $t_p = 8/20\mu s$ )
- Working voltage: 12V
- Junction Capacitance: 10pF(Typ)
- 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) 8A (8/20 $\mu s$ )

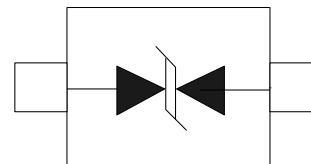
### Application

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

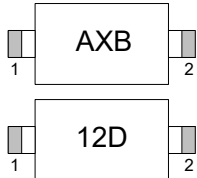
### Mechanical Data

- Package: SOD-523
- Molding compound flammability rating: UL 94V-0
- RoHS/WEEE Compliant

### Schematic & PIN Configuration



### Ordering Information

| Part Number | Package | Marking                                                                             | QTY per Reel | Reel Size |
|-------------|---------|-------------------------------------------------------------------------------------|--------------|-----------|
| DW12D5-B-S  | SOD-523 |  | 5000 pcs     | 7 inches  |



## Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter                                                      | Symbol    | Value                | Units              |
|----------------------------------------------------------------|-----------|----------------------|--------------------|
| Peak Pulse Power ( $t_p=8/20\mu\text{s}$ )                     | $P_{PP}$  | 120                  | Watts              |
| Peak Pulse Current ( $t_p=8/20\mu\text{s}$ ) (note1)           | $I_{pp}$  | 8                    | A                  |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$ | $\pm 30$<br>$\pm 30$ | kV                 |
| Lead Soldering Temperature                                     | $T_L$     | 260(10seconds)       | $^{\circ}\text{C}$ |
| Junction Temperature                                           | $T_J$     | -55 to + 150         | $^{\circ}\text{C}$ |
| Storage Temperature                                            | $T_{stg}$ | -55 to + 150         | $^{\circ}\text{C}$ |

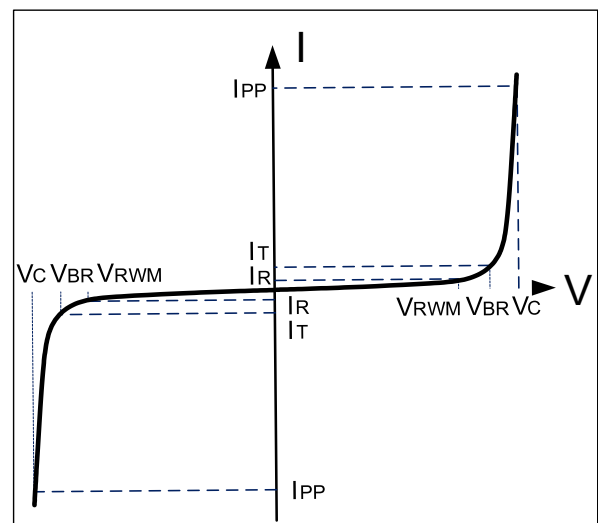
## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter                 | Symbol    | Conditions                                 | Min  | Typical | Max  | Units         |
|---------------------------|-----------|--------------------------------------------|------|---------|------|---------------|
| Reverse Stand-Off Voltage | $V_{RWM}$ |                                            |      |         | 12.0 | V             |
| Reverse Breakdown Voltage | $V_{BR}$  | $I_T=1\text{mA}$                           | 13.3 |         |      | V             |
| Reverse Leakage Current   | $I_R$     | $V_{RWM}=12\text{V}, T=25^{\circ}\text{C}$ |      |         | 0.5  | $\mu\text{A}$ |
| Clamping Voltage          | $V_C$     | $I_{PP}=8\text{A}, t_p=8/20\mu\text{s}$    |      | 16      |      | V             |
| Junction Capacitance      | $C_j$     | $V_R = 0\text{V}, f = 1\text{MHz}$         |      | 10      |      | pF            |

## Electrical Parameters

| 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 $\mu\text{s}$  pulse waveform.





## Typical Characteristic

Figure 1: Peak Pulse Power vs. Pulse Time

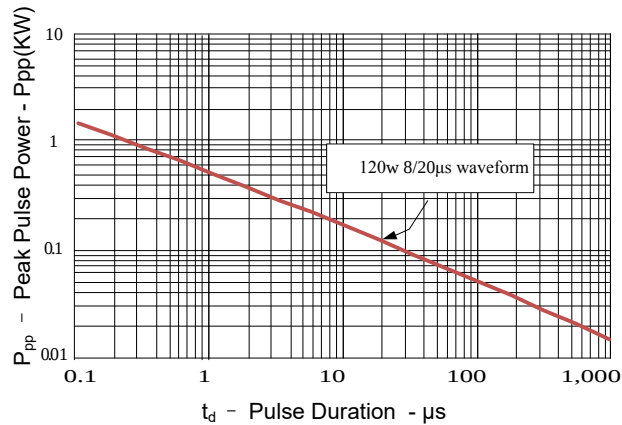


Figure 2: Power Derating Curve

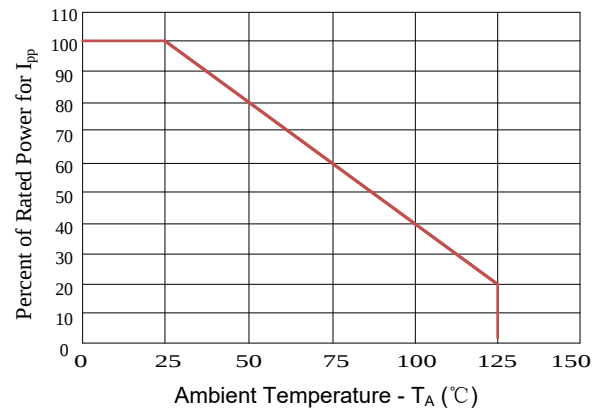


Figure3: Pulse Waveform

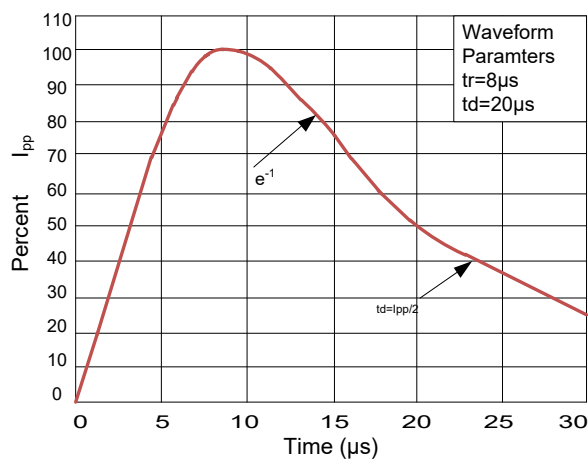
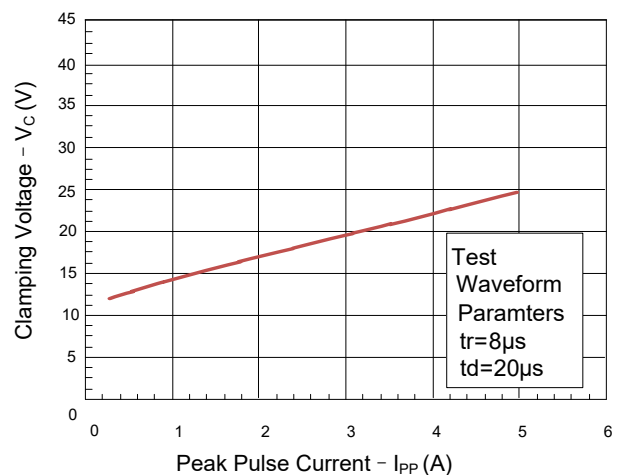
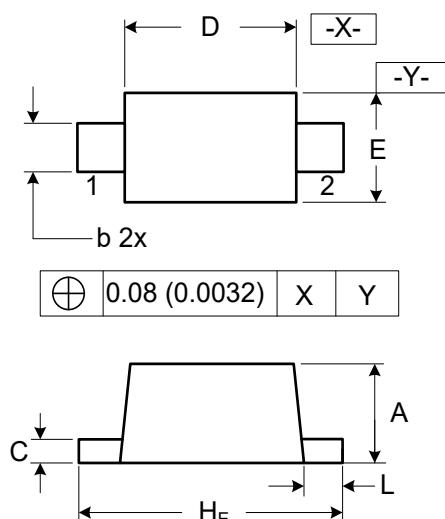


Figure 4: Clamping Voltage vs. I\_pp



## SOD-523 Outline Drawing



DIMENSIONS

| SYMBOL         | MILLIMETER |      | INCHES |        |
|----------------|------------|------|--------|--------|
|                | MIN        | MAX  | MIN    | MAX    |
| A              | 0.50       | 0.70 | 0.020  | 0.028  |
| b              | 0.25       | 0.35 | 0.010  | 0.014  |
| C              | 0.07       | 0.20 | 0.0028 | 0.0079 |
| D              | 1.10       | 1.30 | 0.043  | 0.051  |
| E              | 0.70       | 0.90 | 0.028  | 0.035  |
| H <sub>E</sub> | 1.50       | 1.70 | 0.059  | 0.067  |
| L              | 0.15       | 0.25 | 0.006  | 0.010  |