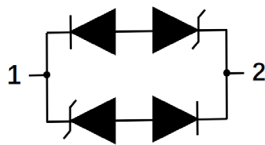


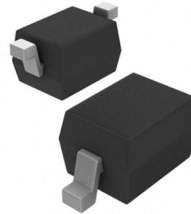
## Features

- \* Ultra low leakage: nA level
- \* Low clamping voltage
- \* RoHS Compliant
- \* REACH & SVHC Compliant
- \* Halogen Compliant
- \* SOD-323 Package

## Circuit Diagram



## Package and Marking Diagram



SOD-323



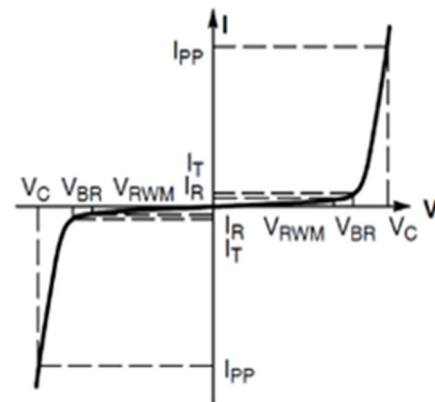
Top view

## Ordering Information

| Part Number | Packaging        | Reel Size |
|-------------|------------------|-----------|
| E03S3-11RB  | 3000/Tape & Reel | 7 inch    |

## Portion Electronics Parameter

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



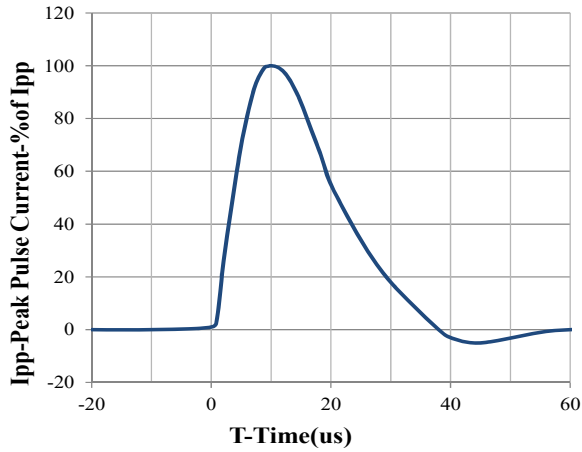
## Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter                                     | Symbol    | Value       | Unit               |
|-----------------------------------------------|-----------|-------------|--------------------|
| Peak Pulse Power (8/20 $\mu\text{s}$ pulse)   | Ppk       | 360         | W                  |
| Peak Pulse Current (8/20 $\mu\text{s}$ pulse) | $I_{PP}$  | 20          | A                  |
| ESD per IEC 61000-4-2 (Air)                   | $V_{ESD}$ | $\pm 30$    | kV                 |
| ESD per IEC 61000-4-2 (Contact)               |           | $\pm 30$    |                    |
| Operating Temperature Range                   | $T_J$     | -40 to +125 | $^{\circ}\text{C}$ |
| Storage Temperature Range                     | Tstg      | -55 to +150 | $^{\circ}\text{C}$ |

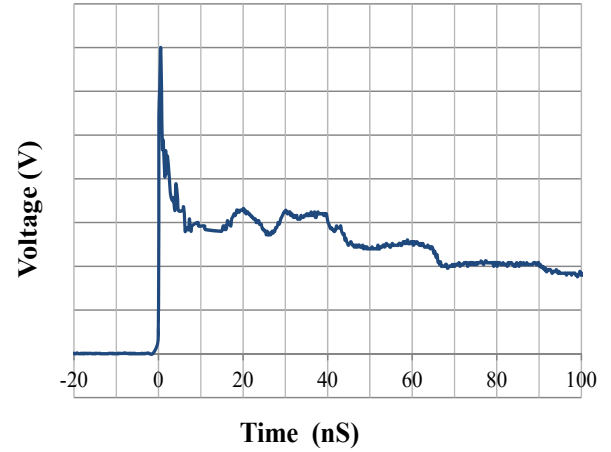
### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter               | Symbol           | Test condition                                       | Min | Typ | Max | Unit |
|-------------------------|------------------|------------------------------------------------------|-----|-----|-----|------|
| Reverse working voltage | $V_{\text{RWM}}$ |                                                      |     |     | 3.3 | V    |
| Breakdown voltage       | $V_{\text{BR}}$  | $I_{\text{T}} = 1\text{mA}$                          | 4.0 | 4.8 | 6.0 | V    |
| Reverse leakage current | $I_{\text{R}}$   | $V_{\text{RWM}} = 3.3\text{V}$                       |     | <10 | 100 | nA   |
| Clamping voltage        | $V_{\text{C}}$   | $I_{\text{PP}} = 1\text{A}$ (8 / 20 $\mu\text{s}$ )  |     | 6   | 8   | V    |
| Clamping voltage        | $V_{\text{C}}$   | $I_{\text{PP}} = 10\text{A}$ (8 / 20 $\mu\text{s}$ ) |     | 9   | 11  | V    |
| Clamping voltage        | $V_{\text{C}}$   | $I_{\text{PP}} = 20\text{A}$ (8 / 20 $\mu\text{s}$ ) |     | 16  | 18  | V    |
| Junction capacitance    | $C_{\text{J}}$   | $V_{\text{R}} = 0\text{V}$ , $f = 1\text{MHz}$       |     | 0.7 | 1.0 | pF   |

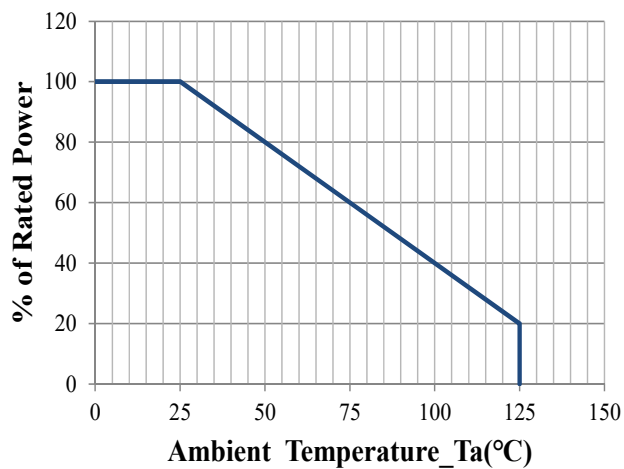
## Typical Performance Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise Specified)



**8/20us Pulse Waveform**

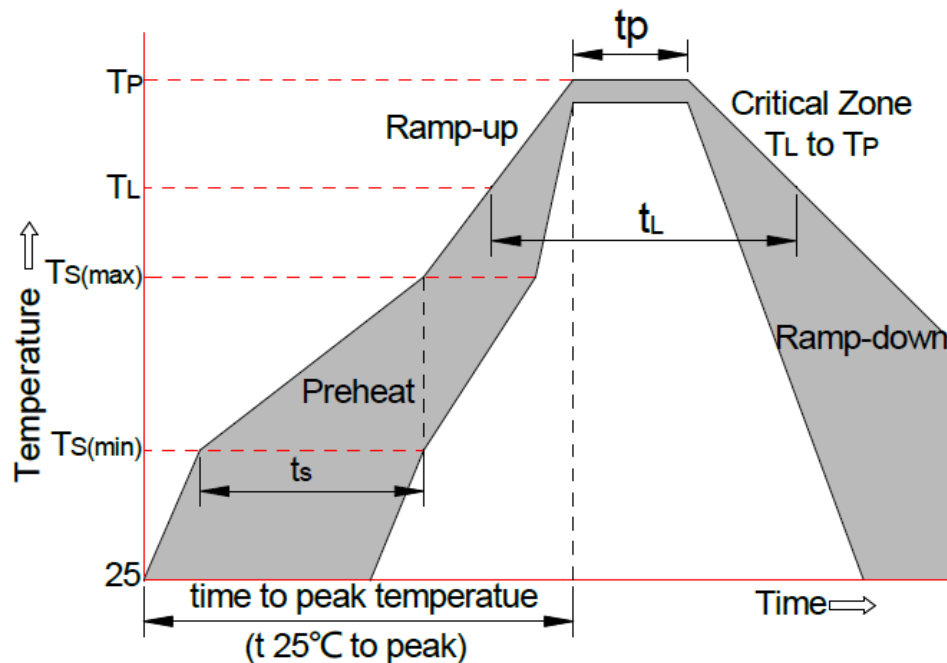


**IEC61000-4-2 Pulse Waveform**



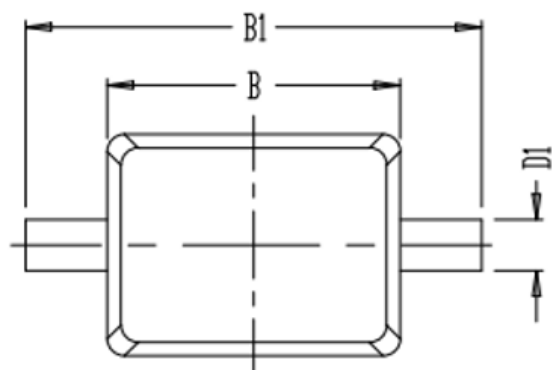
**Power Derating Curve**

## Soldering Parameters

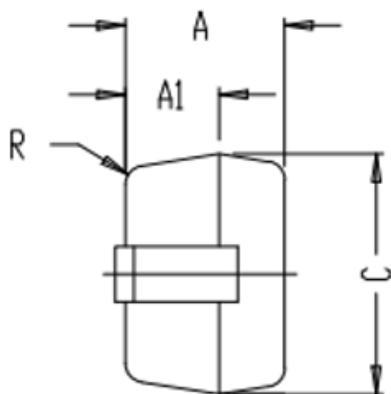


| Reflow Conditions                                       |                                    | Pb-Free Assembly |
|---------------------------------------------------------|------------------------------------|------------------|
| Pre-heat                                                | -Temperature 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/secs. Max   |
| Time 25°C to Peak Temp ( $T_P$ )                        |                                    | 8 min. Max       |
| Do not exceed                                           |                                    | +260°C           |

## SOD-323 Package Outline Drawing

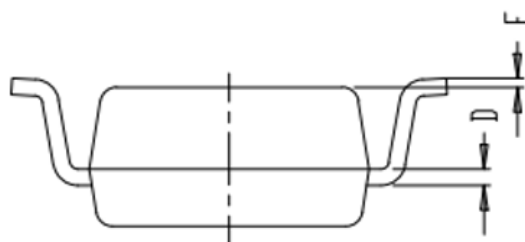


**TOP VIEW**



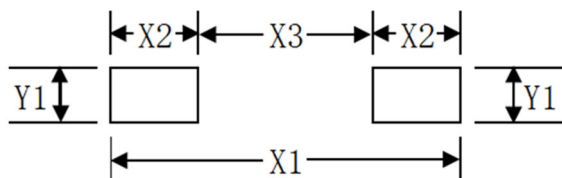
**SIDE VIEW**

| SYM | DIMENSIONS  |      |      |        |        |        |
|-----|-------------|------|------|--------|--------|--------|
|     | MILLIMETERS |      |      | INCHES |        |        |
|     | Min         | Typ  | Max  | Min    | Typ    | Max    |
| A   | 0.70        | 0.80 | 0.90 | 0.0276 | 0.0315 | 0.0354 |
| A1  | 0.45        | 0.50 | 0.55 | 0.0177 | 0.0197 | 0.0217 |
| B   | 1.65        | 1.70 | 1.75 | 0.0650 | 0.0669 | 0.0689 |
| B1  | 2.55        | 2.65 | 2.75 | 0.1004 | 0.1043 | 0.1083 |
| C   | 1.25        | 1.30 | 1.35 | 0.0492 | 0.0512 | 0.0531 |
| D   | 0.10        | 0.11 | 0.12 | 0.0039 | 0.0043 | 0.0047 |
| D1  | 0.28        | 0.30 | 0.32 | 0.0110 | 0.0118 | 0.0126 |
| E   | —           | —    | 0.10 | —      | —      | 0.0039 |
| R   | 0.02        | —    | 0.05 | 0.0008 | —      | 0.0020 |



**SIDE VIEW**

## Suggested Land Pattern



| SYM | DIMENSIONS  |        |
|-----|-------------|--------|
|     | MILLIMETERS | INCHES |
| X1  | 3.20        | 0.126  |
| X2  | 0.80        | 0.031  |
| X3  | 1.60        | 0.063  |
| Y1  | 0.50        | 0.020  |