## SOD-323 Plastic-Encapsulate ESD Protection Diodes

## DESCRIPTION

The SDxx Series is designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. These devices are ideal for situations where board space is at a premium.

This series has been specifically designed to protect sensitive components which are connected to power , data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

## Features

- 350 Watts Peak Pulse Power per ( $8 / 20 \mu \mathrm{~s}$ )
- IEC61000-4-2 (ESD) $\pm 15 \mathrm{kV}$ (air), $\pm 8 \mathrm{kV}$ (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Protects one I/O line (unidirectional)
- Low clamping voltage
- Low leakage current
- Working voltages : $3 \mathrm{~V}, 5 \mathrm{~V}, 12 \mathrm{~V}, 15 \mathrm{~V}, 18 \mathrm{~V}, 20 \mathrm{~V}$, 24V, 36V
- Meets MSL 1 Requirements


## Applications

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Networking and Telecom
- Serial and Parallel Ports
- Peripherals


## Pin Configuration

## RơHS <br> COMPLIANT



## Circuit Diagram



## Mechanical Characteristics

- Package: SOD-323
- Flammability Rating: UL 94V-0
- High temperature soldering guaranted: $260^{\circ} \mathrm{C} / 10 \mathrm{~s}$
- Packaging: Tape and Reel


## Absolute Maximum Ratings ( $\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
| :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { ESD per IEC 61000-4-2 (Air) } \\ & \text { ESD per IEC 61000-4-2 (Contact) } \end{aligned}$ | Vesd | $\begin{gathered} \pm 15 \\ \pm 8 \end{gathered}$ | KV |
| Peak Pulse Power(tp=8/20us waveform) | PPP | 350 | W |
| Operating Temperature | TOPT | -55 to +150 | ${ }^{\circ} \mathrm{C}$ |
| Storage Temperature | TstG | -55 to +150 | ${ }^{\circ} \mathrm{C}$ |
| Lead Solder Temperature - Maximum (10 Second Duration) | TL | 260(10 sec.) | ${ }^{\circ} \mathrm{C}$ |

The above data are for reference only.

Electrical Characteristics ( $\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}$ unless otherwise specified)

| PART <br> NUMBER | DEVICE <br> MARKING | $\begin{aligned} & \hline \mathrm{V}_{\mathrm{RWM}} \\ & (\mathrm{~V}) \\ & \text { (max.) } \end{aligned}$ | $\begin{gathered} \mathrm{V}_{\mathrm{B}} \\ (\mathrm{~V}) \\ (\text { min. }) \end{gathered}$ | $\begin{gathered} \mathrm{I}_{\mathrm{T}} \\ (\mathrm{~mA}) \end{gathered}$ | $\text { V } \mathrm{V}_{\mathrm{c}} @ 1 \mathrm{~A}$ <br> (V) <br> (max.) | $V_{c}$ <br> (V) |  | $\begin{gathered} \mathrm{I}_{\mathrm{R}} \\ (\mu \mathrm{~A}) \\ (\max .) \end{gathered}$ | $\begin{gathered} \mathrm{C}_{\mathrm{T}} \\ (\mathrm{pF}) \\ (\text { max. }) \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SD03 | 03W | 3.3 | 4 | 1 | 6.5 | 14 | 20 | 40 | 450 |
| SD05 | 05W | 5 | 6 | 1 | 9.8 | 18 | 17 | 10 | 300 |
| SD12 | 12W | 12 | 13.3 | 1 | 19 | 32 | 11 | 1 | 130 |
| SD15 | 15W | 15 | 16.7 | 1 | 24 | 38 | 10 | 1 | 120 |
| SD18 | 18W | 18 | 20.0 | 1 | 29 | 45 | 9 | 1 | 100 |
| SD20 | 20W | 20 | 22.3 | 1 | 35 | 50 | 8 | 1 | 90 |
| SD24 | 24W | 24 | 26.7 | 1 | 43 | 52 | 7 | 1 | 80 |
| SD36 | 36W | 36 | 40 | 1 | 60 | 75 | 5 | 1 | 60 |

The above data are for reference only.

## ELECTRICAL CHARACTERISTICS CURVE

## Non-Repetitive Peak Pulse Power vs. Pulse Time



Pulse Waveform


Capacitance vs. Reverse Voltage


Power Derating Curve


Clamping Voltage vs. Peak Pulse Current


Forward Voltage vs. Forward Current


The above data are for reference only.

## Outlitne Drawing

## SOD-323 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |  | Dimensions In Inches |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Min. | Max. | Min. | Max. |
| A |  | 1.000 |  | 0.039 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A | 0.800 | 0.900 | 0.031 | 0.035 |
| b | 0.250 | 0.350 | 0.010 | 0.014 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 1.200 | 1.400 | 0.047 | 0.055 |
| E | 1.600 | 1.800 | 0.063 | 0.071 |
| E1 | 2.550 | 2.750 | 0.100 | 0.108 |
| L | 0.475 REF. |  | 0.019 REF. |  |
| L1 | 0.250 | 0.400 | 0.010 | 0.016 |
| $\theta$ | $0^{\circ}$ | $8^{\circ}$ | $0^{\circ}$ | $8^{\circ}$ |

## Suggested Pad Layout



Note:
1.Controlling dimension:in/millimeters.
2. General tolerance: $\pm 0.05 \mathrm{~mm}$.
3.The pad layout is for reference purposes only.

PACKAGE SPECIFICATIONS

| Package | Reel Size | Reel DIA. <br> $(\mathbf{m m})$ | Q'TY/Reel <br> $(\mathbf{p c s})$ | Box Size <br> $(\mathbf{m m})$ | QTY/Box <br> (pcs) | Carton Size <br> $(\mathbf{m m})$ | Q'TY/Carton <br> $(\mathbf{p c s})$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SOD-323 | $7^{\prime}$ | 178 | 3000 | $183 \times 188 \times 80$ | 45,000 | $386 \times 265 \times 215$ | 180,000 |

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