




**SPECIFICATION SHEET**

|                                |  |
|--------------------------------|--|
| <b>SPECIFICATION SHEET NO.</b> | N1004- SOD5235Z3V3S3C  |
| <b>DATE</b>                    | Oct. 04, 2021  |
| <b>REVISION</b>                | A0   |
| <b>DESCRIPTION</b>             | <p>SMD Plastic-Encapsulate ESD Protection Diodes, SOD-523 series, 2 pads<br/>           ESD5Z3.3C Type, TVs for ESD protection<br/> <i>Reverse Working Voltage: 3.3V, Clamping Voltage 6.5VC Max.</i><br/>           Operating Temp. Range -40°C ~+150°C,<br/>           Package in Tape/Reel, 3000pcs/Reel<br/>           RoHS/RoHS III compliant</p> |
| <b>CUSTOMER</b>                |  |
| <b>CUSTOMER PART NUMBER</b>    |  |
| <b>CROSS REF. PART NUMBER</b>  |  |
| <b>ORIGINAL PART NUMBER</b>    | MDD ESD5Z3.3C  |
| <b>PART CODE</b>               | SOD5235Z3V3S3C   |

|                         |   |  |   |
|-------------------------|---|--|---|
| <b>VENDOR APPROVE</b>   |   |  |   |
| Issued/Checked/Approved |  |  |  |
| DATE: Oct. 04, 2021     |   |  |   |

|                         |  |
|-------------------------|--|
| <b>CUSTOMER APPROVE</b> |  |
|                         |  |
| DATE:                   |  |

## SMD ESD PROTECTION DIODES SOD-523 SERIES

### MAIN FEATURE

- IEC61000-4-2 (ESD) +/-30KV (Air); +/-30KV (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Peak power dissipation: 60W (8/20µs)
- Protects one directional I/O line
- Low clamping voltage
- Working voltages : 3.3V
- Low Leakage Current



### APPLICATION

- High speed line: USB 1.0/2.0, VGA, DVI, SDI
- Serial and Parallel Port
- Notebooks, Desktops, and Servers Cellular
- Handsets and Accessories
- Portable Instrumentation
- Peripherals & Projection TV

**RFQ**

[Request For Quotation](#)

### PART CODE GUIDE

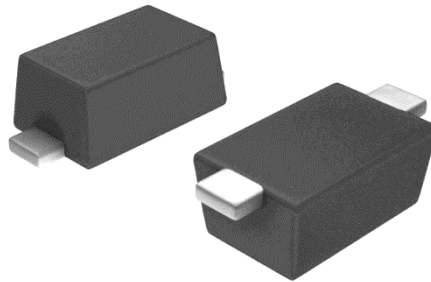
| SOD523 | 5Z3V3 | S | 3C |
|--------|-------|---|----|
| 1      | 2     | 3 | 4  |

- 1) **SOD523**: SMD Plastic-Encapsulate ESD Protection Diodes, SOD-523 series, 2 pads
- 2) **5Z3V3**: Type code for original part number ESD5Z3.3
- 3) **S**: Package code, Package in Tape/Reel, 3000pcs/Reel
- 4) **3C**: Marking code for “3C 00” on the case surface, Different Marking for different specification.

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

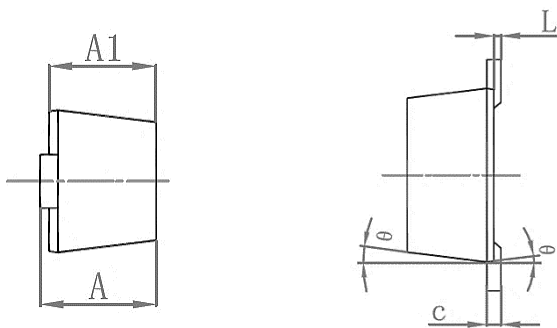
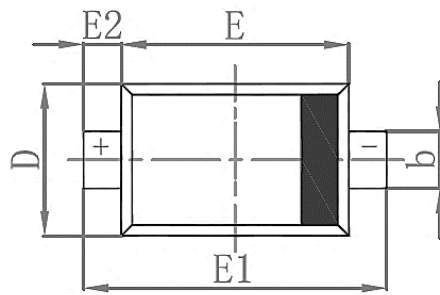
**DIMENSION (Unit: Inch/mm)**

Image for reference



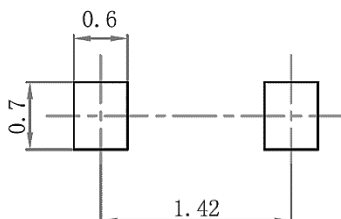
Marking: 3C ∞

SOD-523

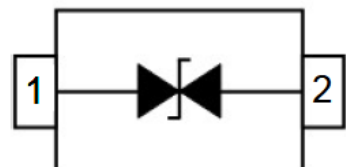


| Symbol | Value ( mm ) |      |       |
|--------|--------------|------|-------|
|        | Min.         | Typ. | Max.  |
| A      | 0.51         |      | 0.770 |
| A1     | 0.50         |      | 0.70  |
| b      | 0.250        |      | 0.350 |
| c      | 0.080        |      | 0.150 |
| D      | 0.750        |      | 0.850 |
| E      | 1.10         |      | 1.30  |
| E1     | 1.50         |      | 1.70  |
| E2     | 0.20 Ref.    |      |       |
| L      | 0.010        |      | 0.070 |
| K      | 7° Ref.      |      |       |

**Recommend Pad Layout**



**Circuit Diagram**



**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**MECHANICAL DATA**

| Case                              | Terminals  | Flammability Rating | Mounting Position | Weight per piece |
|-----------------------------------|--|---------------------|-------------------|------------------|
| JEDEC SOD-523 molded plastic body | Gold plated, solderable per MIL-STD-750, Method 2026 | UL 94V - 0          | -                 | -                |

**ABSOLUTE MAX. RATINGS AT Ta=25 °C (unless otherwise specified)**

| Parameter                                     | SYMBOLS | VALUE      | UNITS |
|---|---------|------------|-------|
|   |         | LIMIT      |       |
| ESD per IEC 61000-4-2 (Air)                   | V ESD   | +/-30      | KV    |
| ESD per IEC 61000-4-2 (Contact)               | V ESD   | +/-30      | KV    |
| Peak Pulse Power (8/20µs)                     | P PP    | 60         | W     |
| Operating Temperature Range                   | T J     | -40 ~+ 150 | °C    |
| Storage Temperature Range                     | T STG   | -40 ~ +150 | °C    |
| Lead Solder Temperature- Max. (10 s Duration) | T L     | 260 /10s   | °C    |

**SMD ESD PROTECTION DIODES SOD-523 SERIES**
**ELECTRICAL CHARACTERISTICS ( Ta=25 °C unless otherwise specified)**

| Parameter  | SYMBOLS           | VALUE |         |      | UNITS |
|--|-------------------|-------|---------|------|-------|
|  |                   | Min.  | Typical | Max. |       |
| Reverse Working Voltage  | V <sub>RWM</sub>  |       |         | 3.3  | V     |
| Reverse Breakdown Voltage @ I <sub>T</sub> = 1.0mA   | V <sub>BR</sub>   | 3.6   |         |      | V     |
| Reverse Leakage Current @V <sub>RWM</sub> = 3.3V,  | I <sub>R</sub>    |       |         | 1.0  | μA    |
| Clamping Voltage @ I <sub>PP</sub> = 1.0A, t <sub>p</sub> = 8/20μs   | V <sub>C</sub>    |       |         | 6.5  | V     |
| Clamping Voltage @ I <sub>PP</sub> = 5.0A, t <sub>p</sub> = 8/20μs   | V <sub>C</sub>    |       |         | 12.0 | V     |
| TLP Clamping Voltage<br>@ I <sub>pp</sub> =16.0A, IEC61000-4-2 Level 4 equivalent<br>(+/-8KV Contact, +/-15KV Air) | V <sub>CTLP</sub> |       | 9.0     |      | V     |
| Junction Capacitance @V <sub>R</sub> =0V, f=1.0MHz   | C <sub>J</sub>    |       |         | 16.5 | pF    |

**SMD ESD PROTECTION DIODES SOD-523 SERIES**
**RELIABILITY**

| Number | Experiment Items                   | Experiment Method And Conditions   | Reference Documents             |
|--------|------------------------------------|--|---------------------------------|
| 1      | Solder Resistance Test             | Test 260°C± 5°C for 10 ± 2 sec.<br>Immerse body into solder 1/16" ± 1/32"                                      | MIL-STD-750D<br>METHOD-2031.2   |
| 2      | Solderability Test                 | 230°C ±5°C for 5 sec.  | MIL-STD-750D<br>METHOD-2026.1 0 |
| 3      | Pull Test                          | 1 kg in axial lead direction for 10 sec.   | MIL-STD-750D<br>METHOD-2036.4   |
| 4      | Bend Test                          | 0.5Kg Weight Applied To Each Lead,<br>Bending Arcs 90 °C ± 5 °C For 3 Times                                    | MIL-STD-750D<br>METHOD-2036.4   |
| 5      | High Temperature Reverse Bias Test | TA=100°C for 1000 Hours at VR=80%<br>Rated VR  | MIL-STD-750D<br>METHOD-1038.4   |
| 6      | Forward Operation Life Test        | TA=25°C Rated Average Rectified<br>Current   | MIL-STD-750D<br>METHOD-1027.3   |
| 7      | Intermittent Operation Life Test   | On state: 5 min with rated IRMS Power<br>Off state: 5 min with Cool Forced Air.<br>On and off for 1000 cycles. | MIL-STD-750D<br>METHOD-1036.3   |
| 8      | Pressure Cooker Test               | 15 PSIG, TA=121°C, 4 hours   | MIL-S-19500<br>APPENOIXC        |
| 9      | Temperature Cycling Test           | -55°C~+125°C; 30 Minutes For Dwelled<br>Time 5 minutes for transferred time.<br>Total: 10 cycles.              | MIL-STD-750D<br>METHOD-1051.7   |
| 10     | Thermal Shock Test                 | 0°C for 5 minutes., 100°C for 5minutes,<br>Total: 10 cycles  | MIL-STD-750D<br>METHOD-1056.7   |
| 11     | Forward Surge Test                 | 8.3ms Single Sale Sine-wave One Surge.   | MIL-STD-750D<br>METHOD-4066.4   |
| 12     | Humidity Test                      | TA=65°C, RH=98% for 1000 hours.  | MIL-STD-750D<br>METHOD-1021.3   |
| 13     | High Temperature Storage life Test | 150°C for 1000 Hours   | MIL-STD-750D<br>METHOD-1031.5   |

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**SUGGESTED REFLOW PROFILE (For Reference Only)**



|  |                                  |                   |
|--|----------------------------------|-------------------|
| <b>Profile Feature</b>                                 |                                  | Pb-Free Assembly  |
| <b>Average Ramp-up Rate (Ts Max to Tp)</b>             |                                  | 3°C/second Max    |
| <b>Preheat</b>   | <b>Temperature Min (Ts Min.)</b> | 150°C             |
|  | <b>Temperature Max (Ts Max.)</b> | 200°C             |
|  | <b>Time (ts Min. to ts Max.)</b> | 60 ~ 180 seconds  |
| <b>Time maintained above</b>                           | <b>Temperature (Tl)</b>          | 217°C             |
|  | <b>Time (tl)</b>                 | 60 ~ 150 seconds  |
| <b>Peak/Classification Temperature (Tp)</b>            |                                  | 260 °C            |
| <b>Time within 5°C of actual Peak Temperature (tp)</b> |                                  | 20 ~ 40 seconds   |
| <b>Ramp-down rate</b>                                  |                                  | 6 °C /Second Max. |
| <b>Time 25 °C to Peak Temperature</b>                  |                                  | 8 minutes Max.    |
| <b>Suggest reflow times</b>                            |                                  | 3 Times Max.      |

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**RATINGS AND CHARACTERISTIC CURVES (For Reference Only)**

Fig 1 8/20µs Waveform per IEC61000-4-5

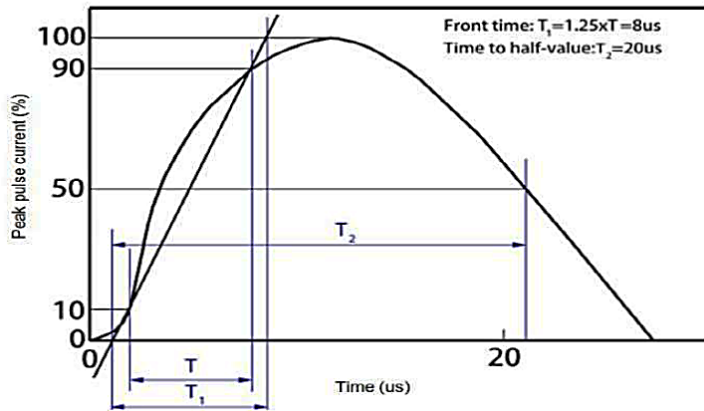


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

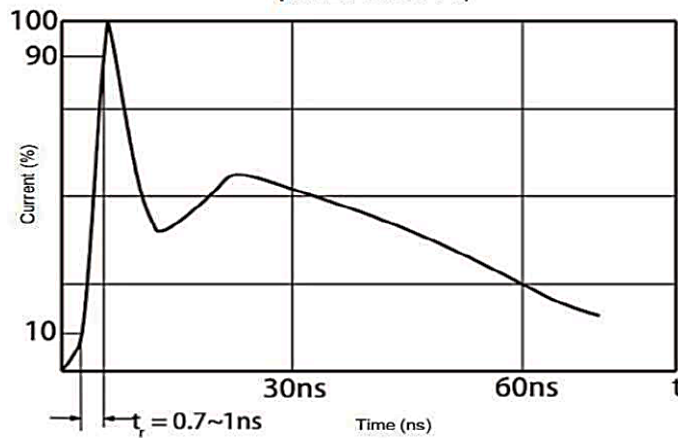
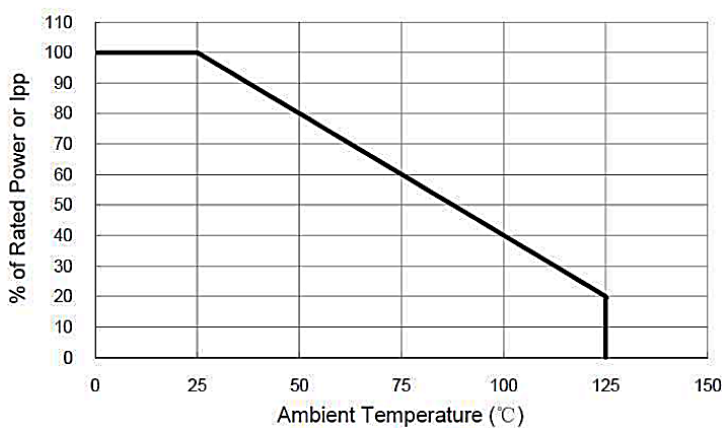


Fig 3 Power Derating Curve

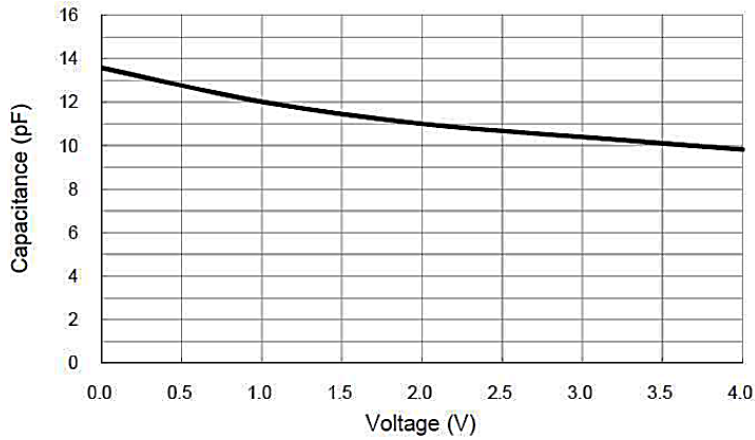




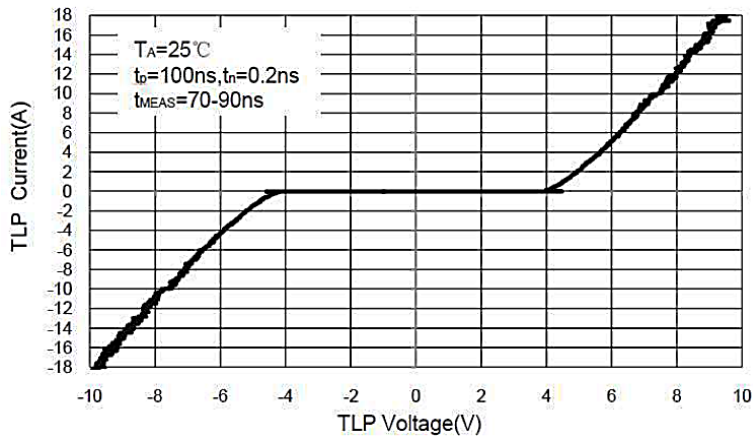
**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**RATINGS AND CHARACTERISTIC CURVES (For Reference Only)**

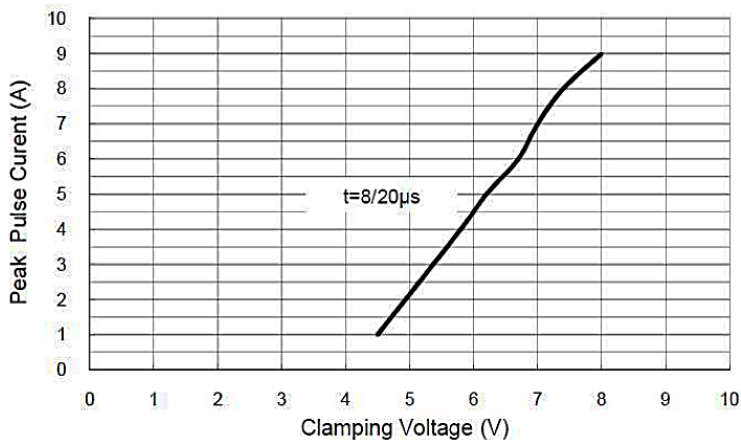
**Fig 4 Voltage vs Capacitance**



**Fig 5 Transmission Line Pulsing (TLP) Measurement**



**Fig 6 Clamping Voltage vs Peak Pulse Current**



**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**TAPE/REEL (Unit: mm)**

All Devices are packed in accordance with EIA standard RS-481-A and specifications.



| Item                    | Symbol | Tolerance | SOD-523 |
|-------------------------|--------|-----------|---------|
| Carrier width           | A      | 0.1       | 2.10    |
| Carrier Length          | B      | 0.1       | 4.00    |
| Carrier Depth           | C      | 0.1       | 1.60    |
| Sprocket hole           | d      | 0.05      | 1.55    |
| 7"Reel outside diameter | D      | 2.0       | 178.00  |
| 7"Reel inner diameter   | D1     | Min.      | 50.00   |
| Feed hole diameter      | D2     | 0.5       | 13.00   |
| Sprocket hole position  | E      | 0.1       | 1.75    |
| Punch hole position     | F      | 0.1       | 3.50    |
| Punch hole pitch        | P      | 0.1       | 4.00    |
| Sprocket hole pitch     | P0     | 0.1       | 4.00    |
| Embossment center       | P1     | 0.1       | 2.00    |
| Overall tape thickness  | T      | 0.1       | 0.25    |
| Tape width              | W      | 0.3       | 8.15    |
| Reel width              | W1     | 1.0       | 10.50   |

**SMD ESD PROTECTION DIODES SOD-523 SERIES**

**SPQ PACKAGE for Reference**

| Item         | Unit | Value          |
|--------------|------|----------------|
| Case Code    |      | SOD-523        |
| Reel Size    | Inch | 7              |
| Reel Size    | mm   | 178            |
| Tape Space   | mm   | /              |
| SPQ /Reel    | pcs  | 3000           |
| Weigh /SPQ   | LBS  |                |
| Weigh /SPQ   | KGs  |                |
| Qty. Per Box | pcs  | 6,000          |
| Inner Box    | Inch | L8.0*W8.0*H1.5 |

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