




SPECIFICATION SHEET

| | |
|--------------------------------|---|
| SPECIFICATION SHEET NO. | N0310- SOD323SD12CS2D |
| DATE | Mar. 10, 2021 |
| REVISION | A0 |
| DESCRIPTION | SMD Plastic-Encapsulate ESD Protection Diodes, SOD-323 series SD12C Type, Bi-directional TVS Diodes, Reverse Working Voltage : 12V, Peak Pulse Power per: 350 Watts Operating Temp. Range -55°C ~+155°C Package in Tape/Reel, 3000pcs/Reel RoHS/RoHS III compliant |
| CUSTOMER | |
| CUSTOMER PART NUMBER | |
| CROSS REF. PART NUMBER | |
| ORIGINAL PART NUMBER | MDD SD12C |
| PART CODE | SOD323SD12CS2D |

| | | | |
|-------------------------|---|--|---|
| VENDOR APPROVE | | | |
| Issued/Checked/Approved |  |  |  |
| DATE: March 10, 2021 | | | |

| | |
|-------------------------|--|
| CUSTOMER APPROVE | |
| | |
| DATE: | |

SMD ESD PROTECTION DIODES (TUBE) SOD-323 SERIES

MAIN FEATURE

- 350 Watts Peak Pulse Power per (8/20μs)
- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Protects one bidirectional line
- Low clamping voltage
- Low leakage current
- Working voltages : 3V, 5V, 8V, 12V, 15V, 18V, 20V, 24V, 36V
- Meets MSL 1 Requirements



APPLICATION

- 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

PART CODE GUIDE

RFQ

[Request For Quotation](#)

| SOD323 | SD12C | S | 2D |
|--------|-------|---|----|
| 1 | 2 | 3 | 4 |

- 1) **SOD323**: SMD Plastic-Encapsulate ESD Protection Diodes, SOD323 series, 2 pads
- 2) **SD12C**: Type code for original part number SD12C
- 3) **S**: Package code, Package in Tape/Reel, 3000pcs/Reel
- 4) **2D**: Marking code for "2D" on the case surface, Different Marking for different specification.

MORE ITEMS AVAILABLE

| | | | | |
|----------------|----------------|----------------|-----------------------|----------------|
| SOD323SD03CS2A | SOD323SD05CS2B | SOD323SD08CS2C | SOD323SD12CS2D | SOD323SD15CS2J |
| SOD323SD18CS2K | SOD323SD20CS2L | SOD323SD24CS2H | SOD323SD36CS2N | |
| | | | | |

SMD ESD PROTECTION DIODES (TUBE) SOD-323 SERIES

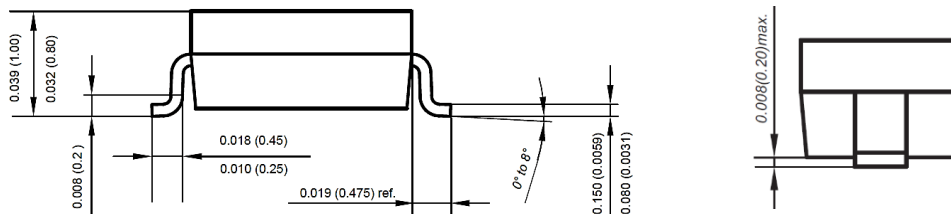
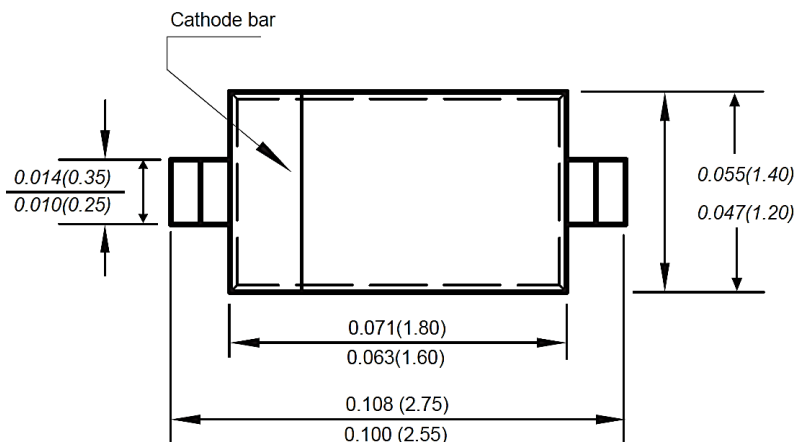
DIMENSION (Unit: Inch/mm)

Image for reference

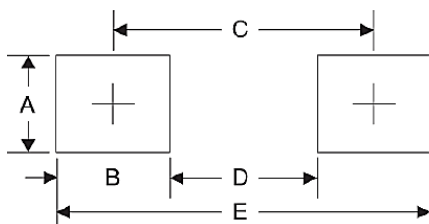


Marking: 2D

SOD-323



Recommend Pad Layout



| Symbol | Unit (inch) | Unit (mm) |
|--------|-------------|-----------|
| A | 0.028 | 0.70 |
| B | 0.028 | 0.70 |
| C | 0.085 | 2.15 |
| D | 0.071 | 1.80 |
| E | 0.112 | 2.85 |

SMD ESD PROTECTION DIODES (TUBE) SOD-323 SERIES
MECHANICAL DATA

| Case | Terminals | High temperature soldering Guaranteed | Flammability Rating | Weight per piece |
|-----------------------------------|------------------|---------------------------------------|---------------------|-----------------------------|
| JEDEC SOD-323 molded plastic body | Matte tin plated | 260°C/10s | UL 94V-0 | 0.00019 Ounce, 0.0059 grams |

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

| Parameter | SYMBOLS | VALUE | UNITS |
|--|---------|--------------|-------|
| | | LIMIT | |
| ESD per IEC 61000-4-2 (Air) | V ESD | +/-15 | KV |
| ESD per IEC 61000-4-2 (Contact) | V ESD | +/-8 | KV |
| Peak Pulse Power(tp=8/20us waveform) | P PP | 350 | W |
| Operating Temperature Range | TOPT | -55 ~+ 150 | °C |
| Storage Temperature Range | T STG | -55 ~ +150 | °C |
| Lead Solder Temperature – Maximum (10 Second Duration) | T J | 260(10 sec.) | °C |

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

| Parameter | SYMBOLS | VALUE | | | UNITS |
|--|---------|-------|---------|------|-------|
| | | Min. | Typical | Max. | |
| Reverse Working Voltage Any I/O pin to Ground | V RWM | | | 12 | V |
| Reverse Breakdown Voltage @ I _T = 1.0mA Any I/O pin to Ground | V BR | 13.3 | | | V |
| Test Current | I T | | | 1.0 | mA |
| Clamping Voltage @ 1A | V C | | | 19 | V |
| Clamping Voltage @ 11A | V C | | | 32 | V |
| Reverse Leakage Current | I R | | | 1.0 | µA |
| Test Capacitance | C T | | | 75 | pF |

Note:

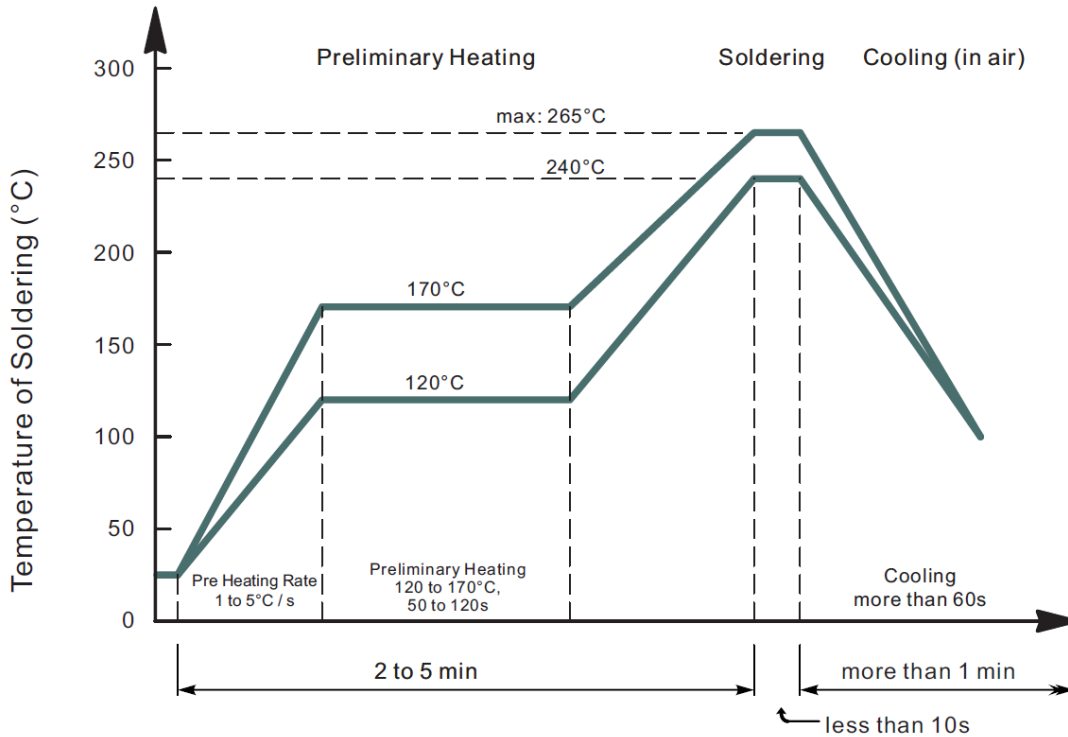
1) I/O pins are pin 1,2,4,5, GND pins are pin 3,8. 2) The above data are for reference only.

SMD ESD PROTECTION DIODES (TUBE) SOD-323 SERIES
RELIABILITY

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

SMD ESD PROTECTION DIODES (TUBE) SOD-323 SERIES

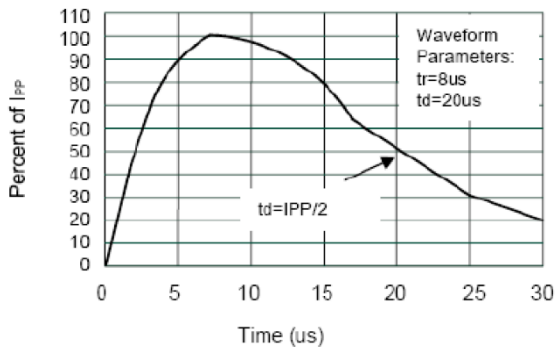
SUGGESTED REFLOW PROFILE (For Reference Only)



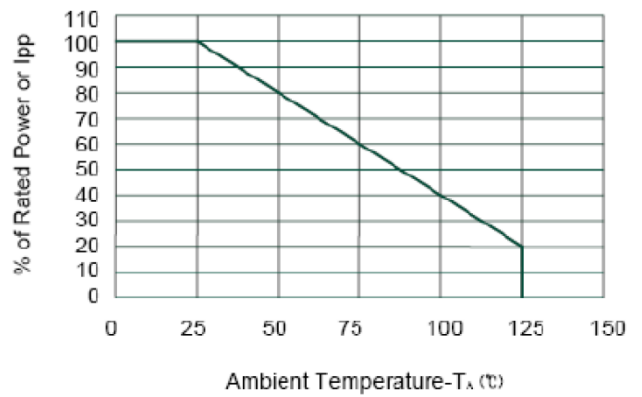
- Recommended peak temperature is over 245°C, If peak temperature is below 245 °C, you may adjust the following parameters; time length of peak temperature (longer), time length of soldering (longer), thickness of solder paste (thicker)
- Welding shall not exceed 2 times
- Remark: lead free solder paste (96.5 sn/3.0 Ag/0.5Cu)

SMD ESD PROTECTION DIODES (TUBE) SOD-323 SERIES

RATINGS AND CHARACTERISTIC CURVES (For Reference Only)



Pulse Waveform

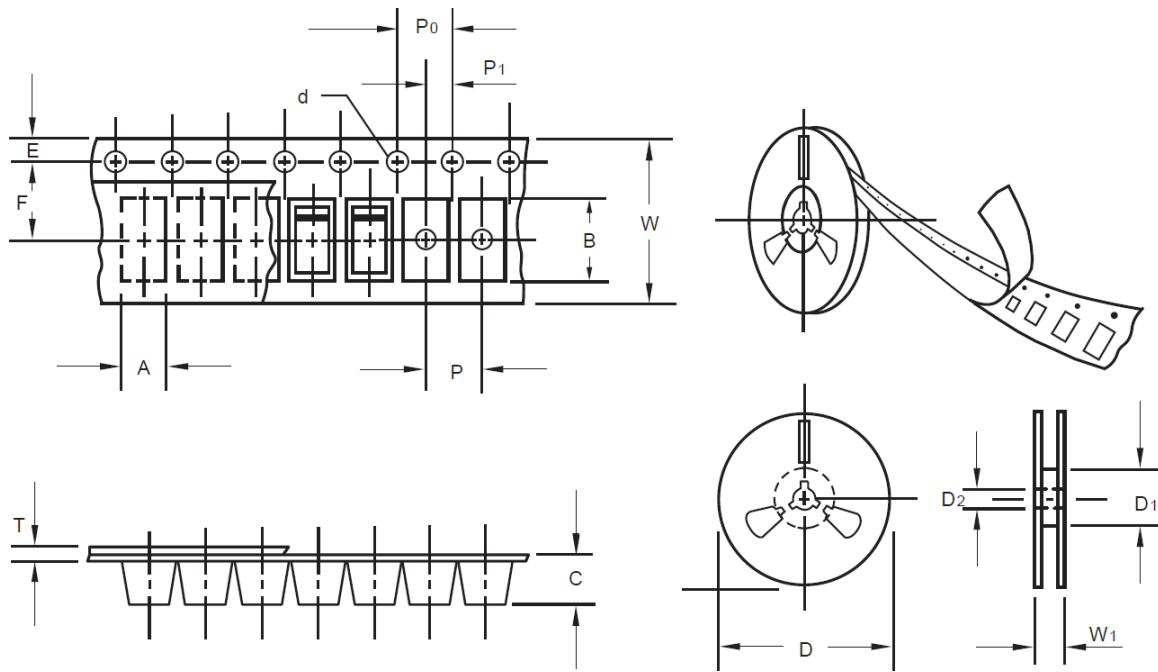


Ambient Temperature-T_a (°C)

SMD ESD PROTECTION DIODES (TUBE) SOD-323 SERIES

TAPE/REEL (Unit: mm)

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

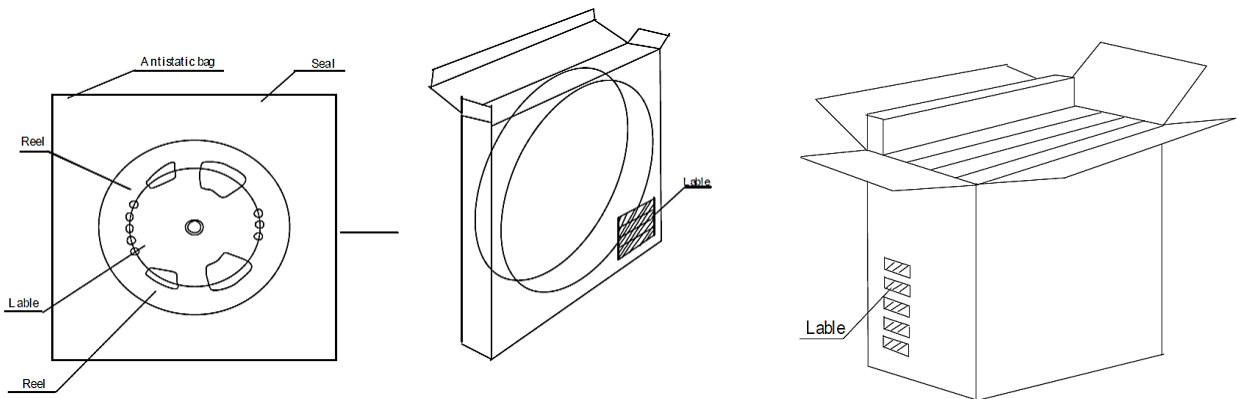


| Item | Symbol | Tolerance | SOD-323 |
|--------------------------|--------|-----------|---------|
| Carrier width | A | 0.1 | 2.10 |
| Carrier Length | B | 0.1 | 4.00 |
| Carrier Depth | C | 0.1 | 1.60 |
| Sprocket hole | d | 0.05 | 1.55 |
| 13"Reel outside diameter | - | - | - |
| 13"Reel inner diameter | - | - | - |
| 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 (TUBE) SOD-323 SERIES

PACKAGE

| Case Code | Reel Size | MPQ (pcs) | Component Spacing (mm) | Qty. Per Box (pcs) | Inner Box L*W*H (mm) | Reel Size (mm) | Carton size L*W*H (mm) | Qty. Per Carton (pcs) | G. W (kg) |
|-----------|-----------|-----------|------------------------|--------------------|----------------------|----------------|------------------------|-----------------------|-----------|
| SOD-323 | 7" | 3,000 | - | 24,000 | 210*208*203 | 178 | 400*400*250 | 180,000 | 8.0 |



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