




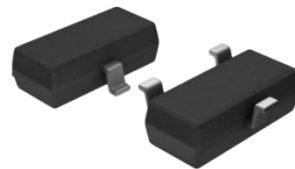
|   |  |   |
|---|--|---|
| <b>SPECIFICATION SHEET NO.</b>          | S0427- SM05000000SM05  |   |
| <b>ORIGINAL MFG/PART NO.</b>            | MDD Diodes/SM05/SOT23SM050SM05   |   |
| <b>NEXTGEN PART CODE</b>                | SM05000000SM05   | Indicate This Code For <a href="#">RFQ</a> /Order |
| <b>DATE</b>                             | Apr. 27, 2025  |   |
| <b>REVISION</b>                         | A3   | Updated With Most Recent Data                     |
| <b>DESCRIPTION AND MAIN PARAMETRICS</b> | <p>SMD Plastic-Encapsulate ESD Protection Diodes, TVS Diodes Array, SM Series</p> <p>Case SOT-23, 3 Pads, Uni-Directional Type</p> <p>Reverse Working Voltage (VRWM): 5.0V</p> <p>Clamping Voltage (VC): 9.8VC Max.@1.0A</p> <p>Operating Temperature Range (TOPT) -55°C ~+150°C</p> <p>Package in Tape/Reel, 3000pcs/Reel</p> <p>RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)</p> |   |
| <b>CUSTOMER</b>                         |  |   |
| <b>CUSTOMER PART NUMBER</b>             |  |   |
| <b>CROSS REF. PART NUMBER</b>           |  |   |
| <b>MEMO</b>                             |  |   |

|   |
|---|
| <b>VENDOR APPROVE</b>   |
| <div> <div>Issued/Checked/Approved</div> <div>    </div> </div> |
| Effective Date: Apr. 27, 2025   |

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

## DESCRIPTION

The SMxx 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).



*Image shown is a representation only. Exact specifications should be obtained from the product dimension.*

## MAIN FEATURE

- 350 Watts Peak Pulse Power per (8/20 $\mu$ s)
- IEC61000-4-2 (ESD)  $\pm$ 30kV (air),  $\pm$ 30kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Protects one bidirectional line or two unidirectional Lines
- Low Clamping Voltage
- Working voltages: 3.3V, 5V, 8V, 12V, 15V, 18V, 20V, 24V, 36V
- Meet MSL 1 Requirement
- Cross Competitors Parts and More.
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)



## APPLICATION

- Cell phone Handsets And Accessories
- Microprocessor Based Equipment and Personal Digital Assistants (PDA's)
- Notebooks, Desktops And Servers
- Portable Instrumentation and Networking and Telecom
- Serial/Parallel Ports/Peripherals

## ELECTRICAL CHARACTERISTICS

- See Page 5 ~Page 6.
- All Parameters are Subject To NextGen Components' Final Confirmation

## HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate NextGen Part Code SM05000000SM05 For RFQ and Order.

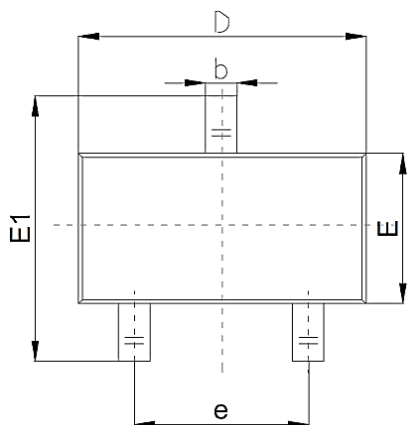
## PART CODE GUIDE

**RFQ**  
[Request For Quotation](#)

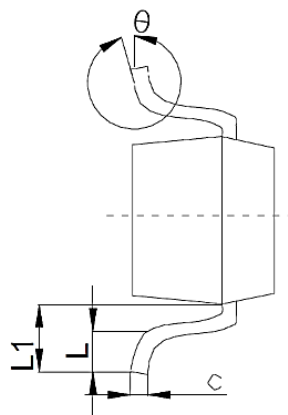
| CODE    | NAME                           | KEY SPECIFICATION OPTION   |
|---------|--------------------------------|--|
| SM      | Product Series Code            | SMD Plastic-Encapsulate ESD Protection Diodes, TVS Diodes Array, Case SOT-23, 3 pads, Uni-Directional Type |
| 05      | Parameters Code                | Letter or Digits (A~Z, a~z or 0~9)   |
| 000000S | Internal Control Code          | Letter or Digits (A~Z, a~z or 0~9)   |
| M05     | Marking Code                   | Marking "M05" or See Marking list For different part code  |
| XX      | Special/Custom Parameters Code | Letter or Digits (A~Z, a~z or 0~9) for Special Parametric<br>Blank: N/A                                    |

**DIMENSION**- Unit: mm, Case SOT-23 Outline

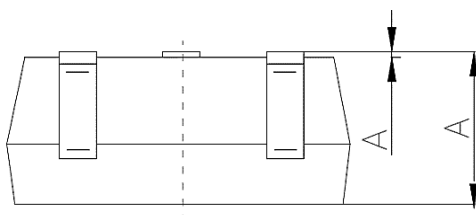
Top View



Side View



Side View

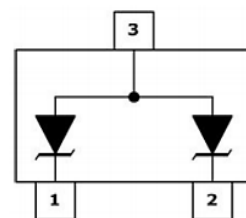
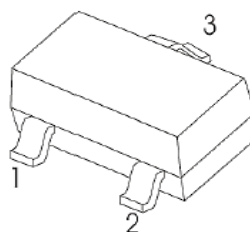
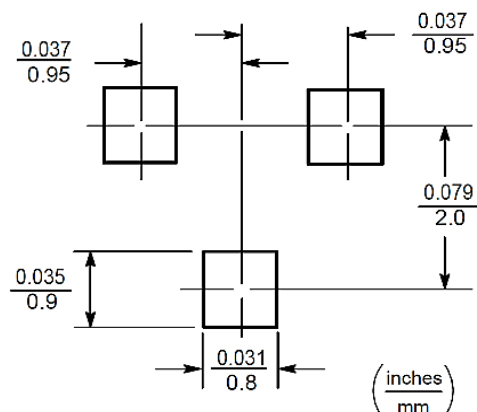


| SYMBOL   | DIMENSION (MM) |      |      |
|----------|----------------|------|------|
|          | MIN.           | TYP. | MAX. |
| A        | 0.65           |      | 1.40 |
| A1       | 0.00           |      | 0.20 |
| b        | 0.30           |      | 0.55 |
| c        | 0.08           |      | 0.20 |
| D        | 2.70           |      | 3.10 |
| E        | 1.15           |      | 1.65 |
| E1       | 2.10           |      | 2.80 |
| e        | 1.70           |      | 2.10 |
| L        | 0.15           |      | 0.50 |
| L1       | 0.35           |      | 0.70 |
| $\theta$ | 0°             |      | 12°  |

Recommend Pad Layout - Tolerance:  $\pm 0.05\text{mm}$

Pin Configuration

Circuit Diagram



## MECHANICAL CHARACTERISTICS

| CASE                             | FLAMMABILITY RATING | TERMINALS  | MARKING                                     |
|----------------------------------|---------------------|--|---|
| JEDEC SOT-23 molded plastic body | UL 94V-0            | Matte tin plated, High temperature soldering guaranteed: 260°C/10s | See Marking list<br>For different part code |

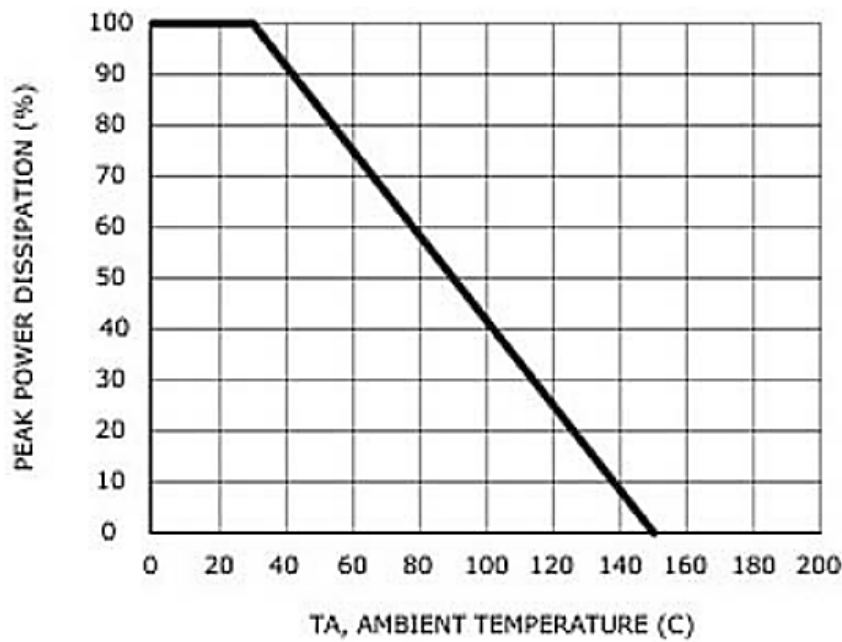
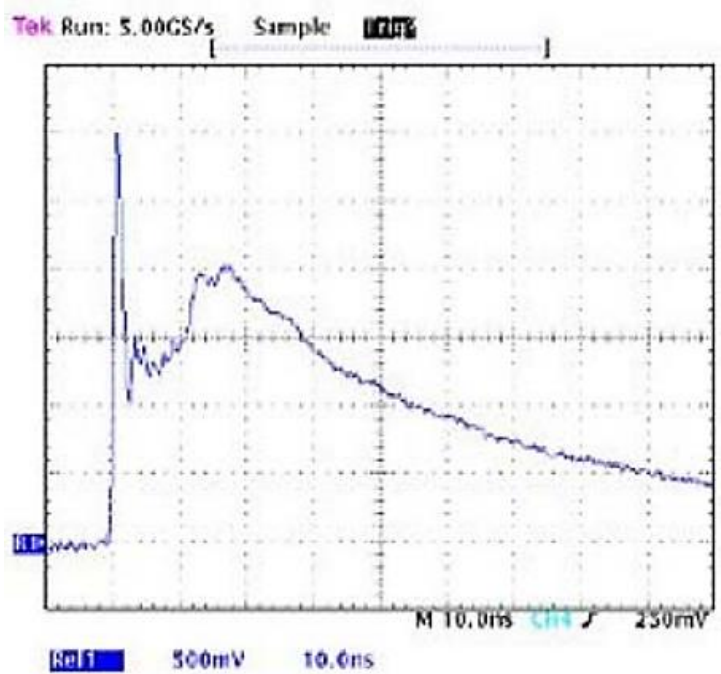
## ABSOLUTE MAX. RATING & CHARACTERISTICS - $T_A=25^\circ\text{C}$ unless otherwise specified, For Reference Only

| PARAMETER  | SYMBOLS | VALUE           | UNITS            |
|--|---------|-----------------|------------------|
| ESD per IEC 61000-4-2 (Air)                        | VESD    | $\pm 30$        | KV               |
| ESD per IEC 61000-4-2 (Contact)                    | VESD    | $\pm 30$        | KV               |
| Peak Pulse Power ( $t_p=8/20\mu\text{s}$ waveform) | PPP     | 350             | W                |
| Operating Temperature Range                        | TOPT    | $-55 \sim +150$ | $^\circ\text{C}$ |
| Storage Temperature Range                          | TSTG    | $-55 \sim +150$ | $^\circ\text{C}$ |
| Lead Solder Temperature- Max. (10s Duration)       | TL      | 260 /10s        | $^\circ\text{C}$ |

**ELECTRICAL CHARACTERISTICS** - TA=25°C unless otherwise specified, For Reference Only

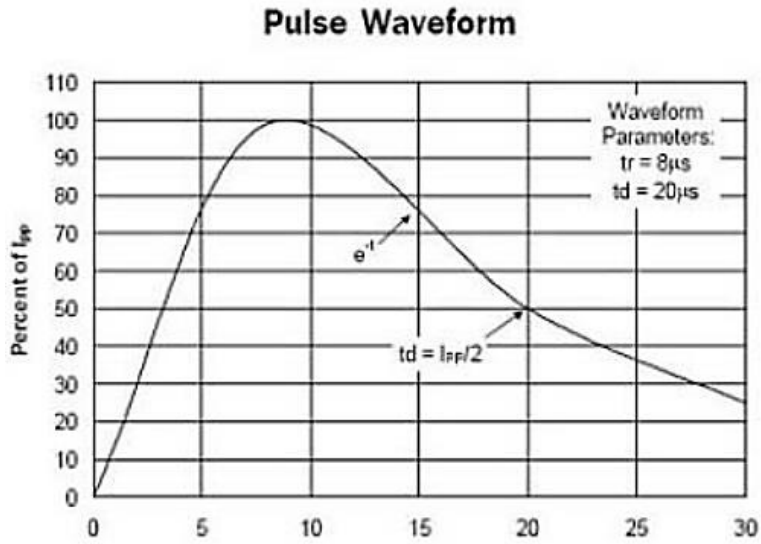
| PART CODE      | MAX.  | MIN. | IT | VC   |    |      |     | MAX. | MAX. | MARKING LIST |
|----------------|-------|------|----|------|----|------|-----|------|------|--------------|
|                | V RWM | VB   |    | MAX. | @A | MAX. | @A  | IR   | CT   |              |
|                | V     | V    |    | V    |    | V    |     | µA   | PF   |              |
| SM03000000SM03 | 3.3   | 4    | 1  | 7.0  | 1  | 14   | 20  | 40   | 450  | M03          |
| SM05000000SM05 | 5     | 6    | 1  | 9.8  | 1  | 18   | 17  | 10   | 300  | M05          |
| SM08000000SM08 | 8     | 8.5  | 1  | 13.4 | 1  | 24   | 15  | 2    | 240  | M08          |
| SM12000000SM12 | 12    | 13.3 | 1  | 19   | 1  | 32   | 11  | 1    | 130  | M12          |
| SM15000000SM15 | 15    | 16.7 | 1  | 24   | 1  | 38   | 10  | 1    | 120  | M15          |
| SM18000000SM18 | 18    | 20   | 1  | 29   | 1  | 45   | 9   | 1    | 100  | M18          |
| SM20000000SM20 | 20    | 22.3 | 1  | 35   | 1  | 50   | 8   | 1    | 90   | M20          |
| SM24000000SM24 | 24    | 26.7 | 1  | 43   | 1  | 52   | 7   | 1    | 80   | M24          |
| SM36000000SM36 | 36    | 40   | 1  | 60   | 1  | 75   | 4.5 | 1    | 60   | M36          |

**RATINGS AND CHARACTERISTICS CURVES**- For Reference Only, Ta=25°C Unless Otherwise Specified.

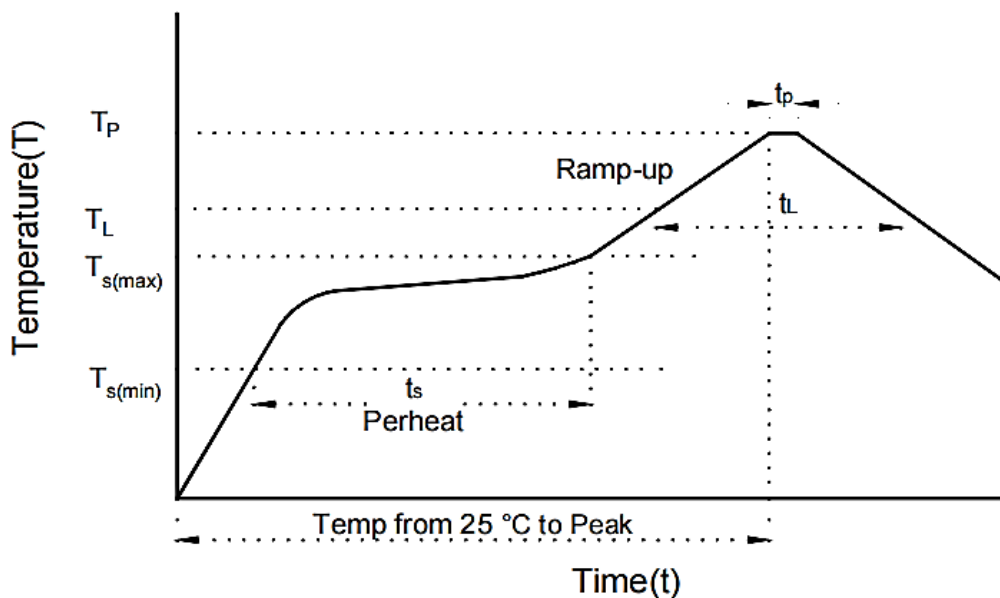


Power Derating Curve

**RATINGS AND CHARACTERISTICS CURVES-** For Reference Only, Ta=25°C Unless Otherwise Specified.

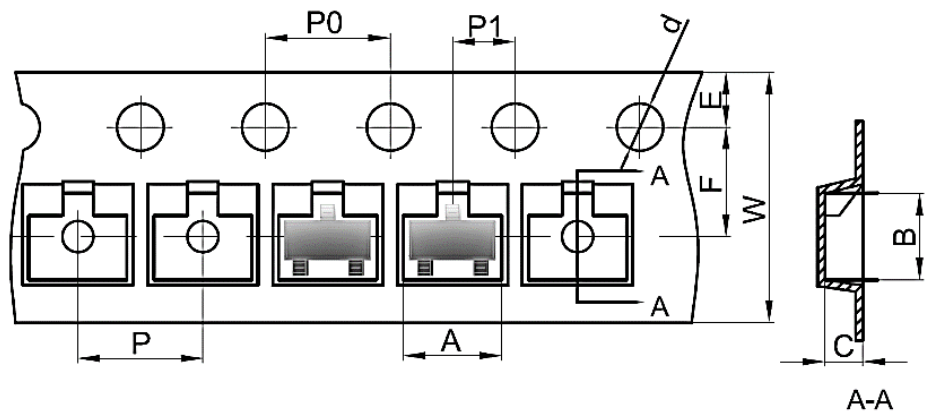




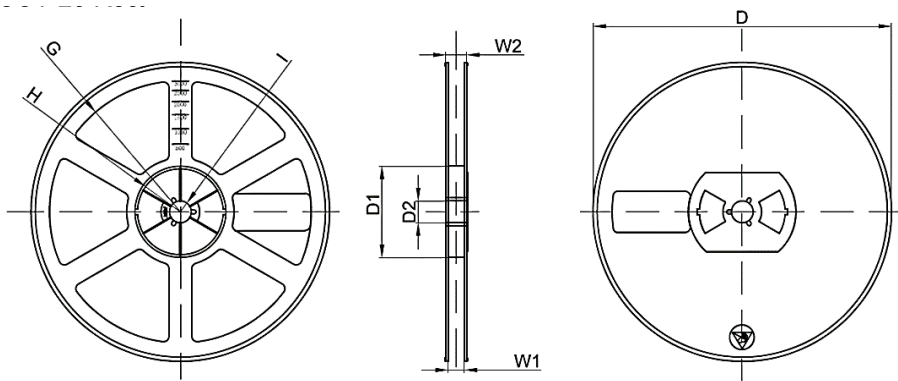
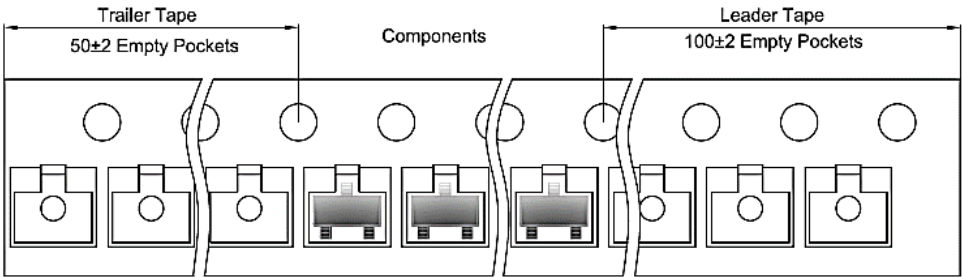
**RECOMMENDED SOLDERING PARAMETERS – FOR REFERENCE ONLY**


| PROFILE FEATURE                                      |                                  | PB-FREE ASSEMBLY  |
|--|----------------------------------|-------------------|
| Average Ramp-up Rate ( $T_L$ Max to $T_p$ )          |                                  | 3°C/second Max    |
| Preheat  | Temperature Min ( $T_s$ Min.)    | 150°C             |
|  | Temperature Max ( $T_s$ Max.)    | 200°C             |
|  | Time ( $t_s$ Min. to $t_s$ Max.) | 60 ~ 180 seconds  |
| Time maintained above                                | Temperature ( $T_L$ )            | 217°C             |
|  | Time ( $t_L$ )                   | 60 ~ 150 seconds  |
| Peak/Classification Temperature ( $T_p$ )            |                                  | 260 °C            |
| Time within 5°C of actual Peak Temperature ( $t_p$ ) |                                  | 10 seconds Max.   |
| Ramp-down Rate                                       |                                  | 6 °C /Second Max. |
| Time 25 °C to Peak Temperature                       |                                  | 8 Minutes Max.    |
| Suggest reflow times                                 |                                  | 3 Times Max.      |

**TAPE/REEL** - Unit: mm, All Devices are packed in accordance with EIA standard RS-481-A and specifications



| Case   | A    | B    | C    | d    | E    | F   | P0  | P   | P1  | W   |
|--------|------|------|------|------|------|-----|-----|-----|-----|-----|
| SOT-23 | 3.15 | 2.77 | 1.22 | Ø1.5 | 1.75 | 3.5 | 4.0 | 4.0 | 2.0 | 8.0 |



| Reel Size | D    | D1   | D2   | G     | H     | I    | W1  | W2   | Qty. (pcs) |
|-----------|------|------|------|-------|-------|------|-----|------|------------|
| 7"        | Ø178 | 54.4 | 13.0 | R78.0 | R25.6 | R6.5 | 9.5 | 12.3 | 3000       |

## IMPORTANT NOTES AND DISCLAIMER

1. **ROHS COMPLIANCE:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained at Download Center.
2. **REACH COMPLIANCE:** REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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8. *NextGen* requires that customers first obtain an RMA (Returned Merchandise Authorization) number prior to returning any products. Returns must be made within 30 days of the date of invoice, be in the original packaging, unused and like-new condition. At the time of quoting or purchasing, a product may say that it is Non-Cancelable/ Non-Returnable (NCNR). These products are not returnable and not refundable.