



## Unidirectional TVS Diode Array

### Description

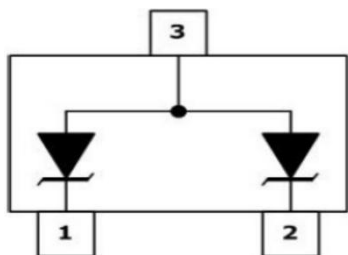
The SMxx Series is designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. These devices are ideal 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).

### Ordering Information

- Device:SMxx
- Package:SOT-23
- Material:Halogen free and RoHS compliant
- Packing:Tape & Reel
- Quantity per reel:3000pcs

### Pin Configuration



### Features

- IEC61000-4-2(ESD)  $\pm 30\text{kV}(\text{air})$   
 $\pm 30\text{kV}(\text{contact})$
- IEC61000-4-4(EFT) 40A (5/50ns)
- Peak power dissipation: 450W( $t_p=8/20\mu\text{s}$ )
- Protects two unidirectional lines
- Low clamping voltage
- Working voltage: 3.3V to 36V
- Low leakage current

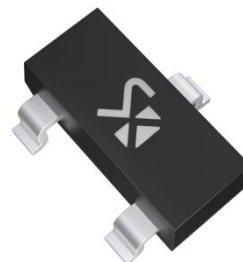
### Mechanical Data

- SOT-23 package
- Flammability rating: UL 94V-0
- Packaging: Tape and Reel
- High temperature soldering guaranteed: 260°C/10s
- Reel size: 7 inch
- MSL 1

### 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

### Package Outline





# SM03 THUR SM36

## Absolute Maximum Rating

| Parameter                      | Symbol    | Value        | Units |
|--------------------------------|-----------|--------------|-------|
| ESD per IEC 61000-4-2(Air)     | $V_{ESD}$ | $\pm 30$     | kV    |
| ESD per IEC 61000-4-2(Contact) |           | $\pm 30$     |       |
| Peak Pulse Power(8/20 $\mu$ s) | $P_{PP}$  | 450          | W     |
| Operating Temperature          | $T_{OPT}$ | -55~+150     | °C    |
| Storage Temperature            | $T_{STG}$ | -55~+150     | °C    |
| Lead Soldering Temperature     | $T_L$     | 260(10 sec.) | °C    |

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

| Part Number | Device Marking | $V_{RWM}$<br>(V)<br>(max.) | $V_B$<br>(V)<br>(min.) | $I_T$<br>(mA) | $V_{C@1A}$<br>(V)<br>(max.) | $V_C$<br>(V)<br>(max.)<br>(@A) |    | $I_R$<br>( $\mu$ A)<br>(max.) | $C_J$<br>(pF)<br>(max.) |
|-------------|----------------|----------------------------|------------------------|---------------|-----------------------------|--------------------------------|----|-------------------------------|-------------------------|
| SM03        | M03            | 3.3                        | 4.0                    | 1             | 7.5                         | 16.0                           | 25 | 40                            | 400                     |
| SM05        | M05            | 5.0                        | 6.0                    | 1             | 9.8                         | 18.0                           | 24 | 10                            | 200                     |
| SM08        | M08            | 8.0                        | 8.5                    | 1             | 13.4                        | 24.0                           | 20 | 2                             | 180                     |
| SM12        | M12            | 12.0                       | 13.3                   | 1             | 19.0                        | 32.0                           | 17 | 1                             | 100                     |
| SM15        | M15            | 15.0                       | 16.7                   | 1             | 24.0                        | 38.0                           | 13 | 1                             | 80                      |
| SM18        | M18            | 18.0                       | 20.0                   | 1             | 29.0                        | 45.0                           | 10 | 1                             | 70                      |
| SM20        | M20            | 20.0                       | 22.3                   | 1             | 35.0                        | 50.0                           | 9  | 1                             | 52                      |
| SM24        | M24            | 24.0                       | 26.7                   | 1             | 43.0                        | 52.0                           | 9  | 1                             | 50                      |
| SM36        | M36            | 36.0                       | 40.0                   | 1             | 60.0                        | 75.0                           | 6  | 1                             | 35                      |



## Electrical Characteristics Curve

Fig1. 8/20 $\mu$ s Pulse Waveform

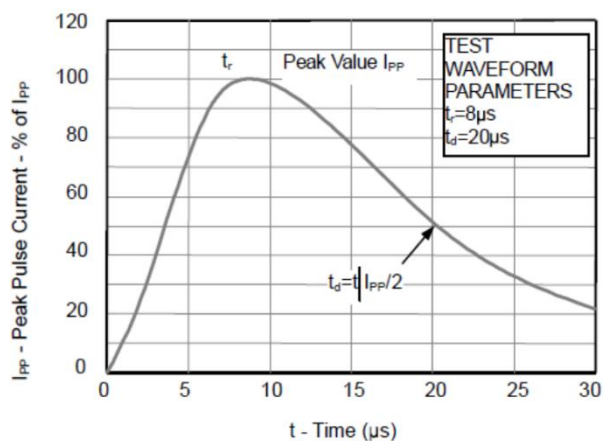


Fig2. Contact Discharge Current Waveform ( IEC 61000-4-2)

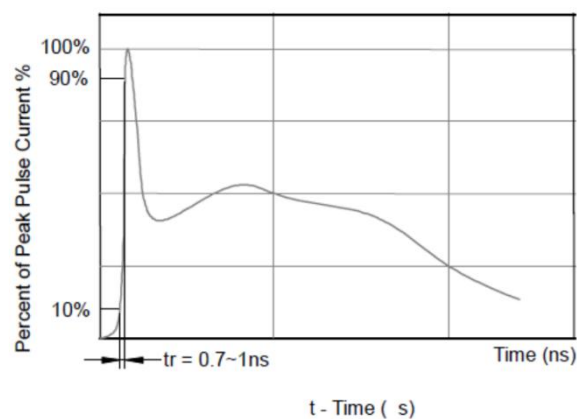


Fig3 Voltage vs Capacitance

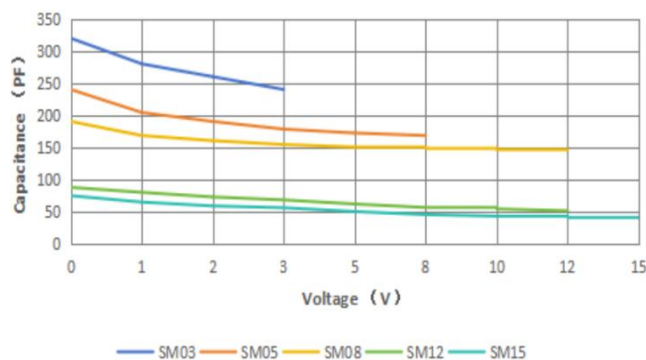


Fig4 Voltage vs Capacitance

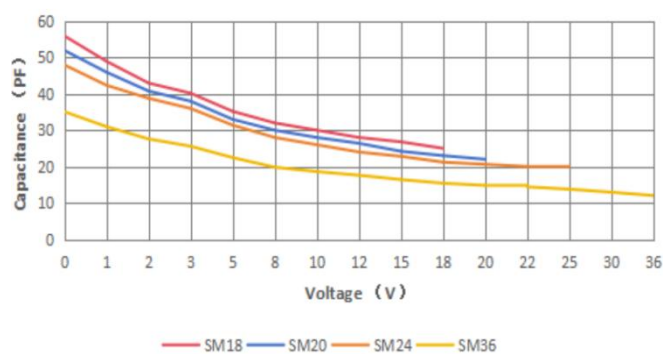


Fig5 Clamping Voltage vs Peak Pulse Current

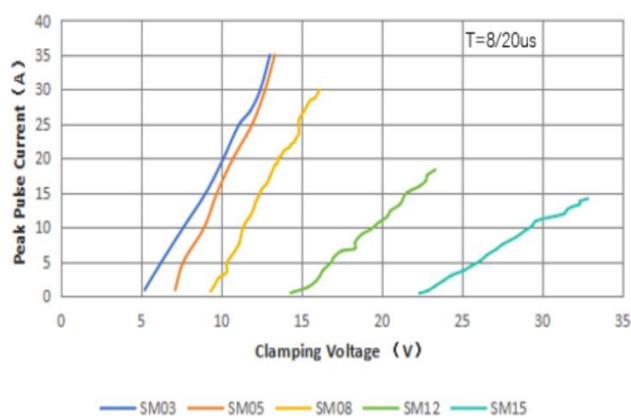
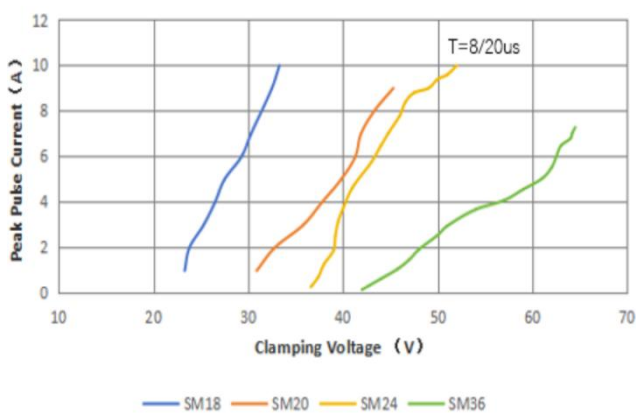


Fig6 Clamping Voltage vs Peak Pulse Current



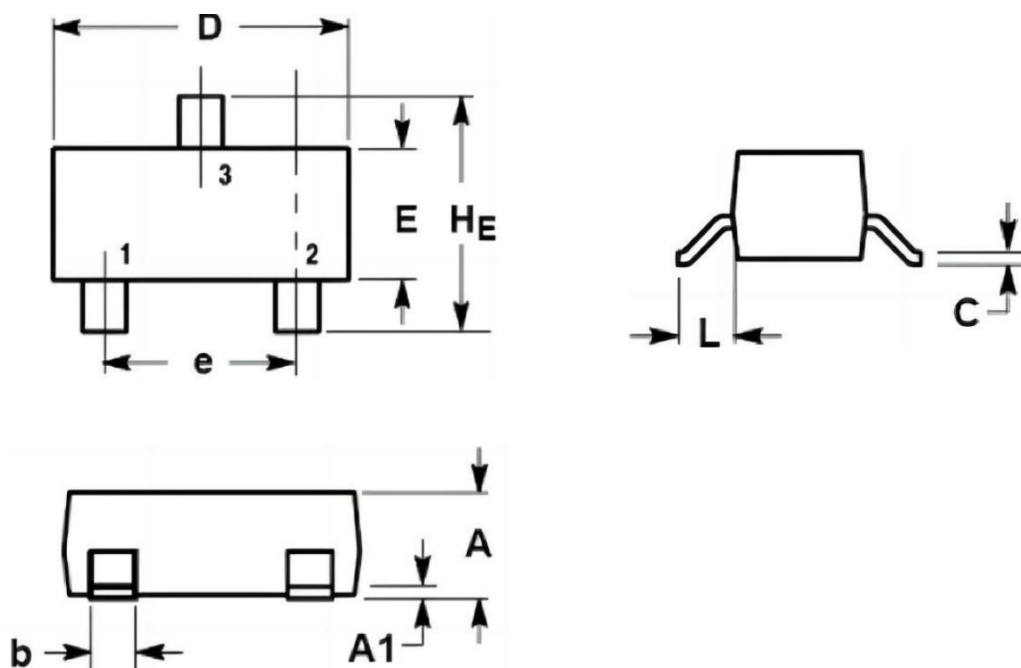


# SM03 THUR SM36

## Package Information

### SOT-23

### Dimensions in mm



| Symbol | Dimensions In Millimeters |      |      | Dimensions In Inches |       |       |
|--------|---------------------------|------|------|----------------------|-------|-------|
|        | Min                       | Nom  | Max  | Min                  | Nom   | Max   |
| A      | 0.89                      | 1.00 | 1.11 | 0.035                | 0.040 | 0.044 |
| A1     | 0.01                      | 0.06 | 0.10 | 0.001                | 0.002 | 0.004 |
| b      | 0.37                      | 0.44 | 0.50 | 0.015                | 0.018 | 0.020 |
| c      | 0.09                      | 0.13 | 0.18 | 0.003                | 0.005 | 0.007 |
| D      | 2.80                      | 2.90 | 3.04 | 0.110                | 0.114 | 0.120 |
| E      | 1.20                      | 1.30 | 1.40 | 0.047                | 0.051 | 0.055 |
| e      | 1.78                      | 1.90 | 2.04 | 0.070                | 0.075 | 0.081 |
| L      | 0.35                      | 0.54 | 0.69 | 0.014                | 0.021 | 0.029 |
| HE     | 2.10                      | 2.40 | 2.64 | 0.083                | 0.094 | 0.104 |



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