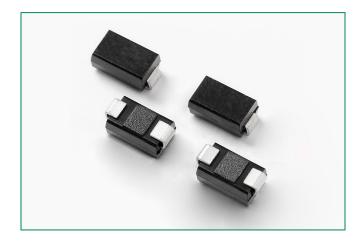


1SMA10CAT3G Series, SZ1SMA10CAT3G Series





Maximum Ratings and Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|--|-----------------------------------|----------------|-------|
| Peak Power Dissipation (Note 1) $@T_L = 25^{\circ}\text{C}$, Pulse Width = 1 ms | P _{PK} | 400 | W |
| DC Power Dissipation @TL = 75°C Measured Zero Lead Length (Note 2) | PD | 1.5 | W |
| Derate Above 75°C | | 20 | mW/°C |
| Thermal Resistance from Junction-to- Lead | RJL | 50 | °C/W |
| | | | |
| DC Power Dissipation (Note 3) @ TA = | P _D | 0.5 | W |
| 25°C Derate Above 25°C | | 4.0 | mW/°C |
| Thermal Resistance from Junction–to– Ambient | R _{OJA} | 250 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{stg} | -65 to +150 | °C |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- 1. 10 X 1000 μs, non-repetitive.
- 2. 1 in square copper pad, FR-4 board.
- 3. FR-4 board, using Littelfuse minimum recommended footprint, as shown in 403B case outline dimensions spec.

Description

The SMA series is designed to protect voltage sensitive components from high voltage, high energy transients. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The SMA series is supplied in the Littelfuse exclusive, cost-effective, highly reliable package and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer applications.

Features

- Working Peak Reverse Voltage Range 10 V to 78 V
- Standard Zener Breakdown Voltage Range –
 11.7 V to 91.3 V
- Peak Power 400 Watts @ 1 ms
- ESD Rating of Class 3 (> 16 kV) per Human Body Model
- Response Time is Typically < 1 ns
- Flat Handling Surface for Accurate Placement
- Package Design for Top Slide or Bottom Circuit Board Mounting
- Low Profile Package
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC— Q101 Qualified and PPAP Capable
- These are Pb-Free Devices

Functional Diagram



Additional Information

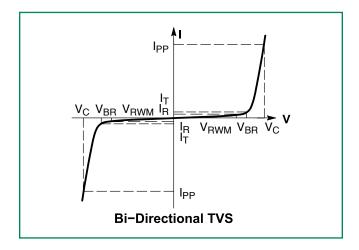






I-V Curve Characteristics $(T_A = 25^{\circ}\text{C unless otherwise noted}, V_F = 3.5 \text{ V Max} @ I_F = 100 \text{ A}) \text{ (Note 5)}$

TVS Diodes



| Symbol | Parameter | | |
|------------------|--|--|--|
| I _{PP} | Maximum Reverse Peak Pulse Current | | |
| V _C | Clamping Voltage @ I _{pp} | | |
| V _{RWM} | Working Peak Reverse Voltage | | |
| I _R | Maximum Reverse Leakage Current @ V _{RWM} | | |
| V _{BR} | Breakdown Voltage @ I _T | | |
| I _T | Test Current | | |
| I _F | Forward Current | | |
| V _F | Forward Voltage @ I _F | | |
| VF | Forward Voltage @ I _F | | |

Surface Mount > 400W > 1SMA10CAT3G Series, SZ1SMA10CAT3G Series

Electrical Characteristics (TA = 25°C unless otherwise noted)

TVS Diodes

| | | | | | Breakdown | Voltage | | V _C @ I _{PP} | (Note 8) | С Тур. |
|-------------|-------------------|----------------------|--------------------------------------|------|-------------------------|---------|------------------|----------------------------------|-----------------|----------|
| Device* | Device Marking | V RWM (Note 6) | I _R @ V _{RWM} | V | _{BR} (V) (Note | 7) | @ I _T | V _c | l _{pp} | (Note 7) |
| | ivialking | Volts | μΑ | MIN | NOM | MAX | mA | Volts | Amps | pF |
| 1SMA10CAT3G | ОХС | 10 | 2.5 | 11.1 | 11.69 | 12.27 | 1.0 | 17.0 | 23.5 | 580 |
| 1SMA12CAT3G | REC | 12 | 2.5 | 13.3 | 14.00 | 14.70 | 1.0 | 19.9 | 20.1 | 490 |
| 1SMA13CAT3G | RGC | 13 | 2.5 | 14.4 | 15.16 | 15.92 | 1.0 | 21.5 | 18.6 | 455 |
| 1SMA15CAT3G | RMC | 15 | 2.5 | 16.7 | 17.58 | 18.46 | 1.0 | 24.4 | 16.4 | 400 |
| 1SMA16CAT3G | RPC | 16 | 2.5 | 17.8 | 18.74 | 19.67 | 1.0 | 26.0 | 15.4 | 375 |
| 1SMA18CAT3G | RTC | 18 | 2.5 | 20 | 21.06 | 22.11 | 1.0 | 29.2 | 13.7 | 335 |
| 1SMA20CAT3G | RVC | 20 | 2.5 | 22.2 | 23.37 | 24.54 | 1.0 | 32.4 | 12.3 | 305 |
| 1SMA24CAT3G | RZC | 24 | 2.5 | 26.7 | 28.11 | 29.51 | 1.0 | 38.9 | 10.3 | 260 |
| 1SMA26CAT3G | SEC | 26 | 2.5 | 28.9 | 30.42 | 31.94 | 1.0 | 42.1 | 9.5 | 240 |
| 1SMA28CAT3G | SGC | 28 | 2.5 | 31.1 | 32.74 | 34.37 | 1.0 | 45.4 | 8.8 | 225 |
| 1SMA30CAT3G | SKC | 30 | 2.5 | 33.3 | 35.06 | 36.81 | 1.0 | 48.4 | 8.3 | 210 |
| 1SMA33CAT3G | SMC | 33 | 2.5 | 36.7 | 38.63 | 40.56 | 1.0 | 53.3 | 7.5 | 190 |
| 1SMA36CAT3G | SPC | 36 | 2.5 | 40 | 42.11 | 44.21 | 1.0 | 58.1 | 6.9 | 175 |
| 1SMA40CAT3G | SRC | 40 | 2.5 | 44.4 | 46.74 | 49.07 | 1.0 | 64.5 | 6.2 | 160 |
| 1SMA48CAT3G | SXC | 48 | 2.5 | 53.3 | 56.11 | 58.91 | 1.0 | 77.4 | 5.2 | 135 |
| 1SMA58CAT3G | TGC | 58 | 2.5 | 64.4 | 67.79 | 71.18 | 1.0 | 93.6 | 4.3 | 115 |
| 1SMA60CAT3G | TKC | 60 | 2.5 | 66.7 | 70.21 | 73.72 | 1.0 | 96.8 | 4.1 | 110 |
| 1SMA70CAT3G | TPC | 70 | 2.5 | 77.8 | 81.90 | 85.99 | 1.0 | 113 | 3.5 | 95 |
| 1SMA78CAT3G | TTC | 78 | 2.5 | 86.7 | 91.27 | 95.83 | 1.0 | 126 | 3.2 | 90 |

^{4.} A transient suppressor is normally selected according to the working peak reverse voltage (V_{RVM}), which should be equal to or greater than the DC or continuous peak operating voltage level

^{5.} VBR measured at pulse test current IT at an ambient temperature of 25°C

^{6.} Surge current waveform per Figure 2 and derate per Figure 3 $\,$

^{7.} Bias voltage = 0 V, F = 1.0 MHz, $T_{_{\rm J}}$ = 25°C.

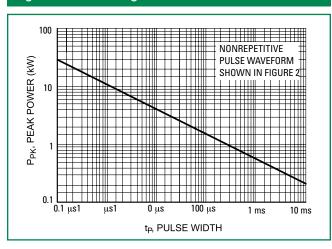
[†]Please see 1SMA5.0AT3 to 1SMA78AT3 for Unidirectional devices.

^{*} Include SZ-prefix devices where applicable.

Surface Mount > 400W > 1SMA10CAT3G Series, SZ1SMA10CAT3G Series

Ratings and Characteristic Curves

Figure 1. Pulse Rating Curve



TVS Diodes

Figure 2. Pulse Waveform

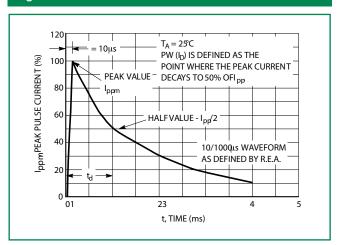


Figure 3. Pulse Derating Curve

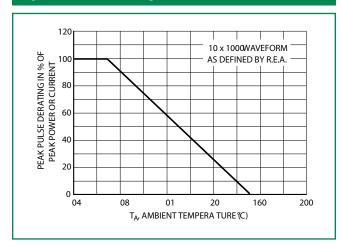
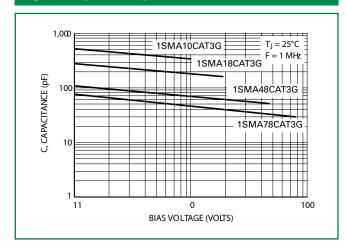
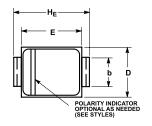
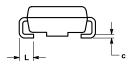


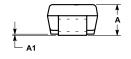
Figure 4. Dynamic Impedance



Dimensions







| . | Inches | | | Millimeters | | |
|----------------|-----------|-------|-------|-------------|----------|------|
| Dim | Min | Nom | Max | Min | Nom | Max |
| А | 0.078 | 0.083 | 0.087 | 1.97 | 2.10 | 2.20 |
| A1 | 0.002 | 0.004 | 0.008 | 0.05 | 0.10 | 0.20 |
| b | 0.050 | 0.057 | 0.064 | 1.27 | 1.45 | 1.63 |
| С | 0.006 | 0.011 | 0.016 | 0.15 | 0.28 | 0.41 |
| D | 0.090 | 0.103 | 0.115 | 2.29 | 2.60 | 2.92 |
| Е | 0.160 | 0.170 | 0.180 | 4.06 | 4.32 | 4.57 |
| H _E | 0.190 | 0.205 | 0.220 | 4.83 | 5.21 | 5.59 |
| L | 0.030 | 0.045 | 0.060 | 0.76 | 1.14 | 1.52 |
| L1 | 0.020 REF | | | | 0.51 REF | |

NOTES

- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- 2. CONTROLLING DIMENSION: INCH.
- 3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.
- 4. 403-01 THRU -02 OBSOLETE, NEW STANDARD 403-03.

Part Marking System



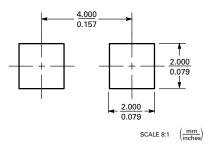
xxC= Device Code (Refer to page 3)

A= Assembly Location

Y= Year WW = Work Week = Pb-Free Package

*Bidirectional devices will not be available in this series.

Soldering Footrpint



ORDERING INFORMATION

| Device | Package | Shipping† | |
|---------------|------------------|------------------------|--|
| 1SMAxxCAT3G | SMa (Pb–Free) | 5,000 / Tape & Reel | |
| SZ1SMAxxCAT3G | SMA (Pb-Free) | 5,000 / Tape & Reel | |

Flow/Wave Soldering (Solder Dipping)

| Peak Temperature : | 260°C |
|--------------------|------------|
| Dipping Time : | 10 seconds |

Physical Specifications

| Case | Void-free, transfer-molded, thermosetting plastic |
|-------------------|--|
| Polarity | Cathode indicated by polarity band |
| Mounting Position | Any |
| Finish | All external surfaces are corrosion resistant and leads are readily solderable |
| Leads | Modified L-Bend providing more contact area to bond pads |

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littleffuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at: www.littleffuse.com/disclaimer-electronics.

单击下面可查看定价,库存,交付和生命周期等信息

>>Littelfuse(美国力特)