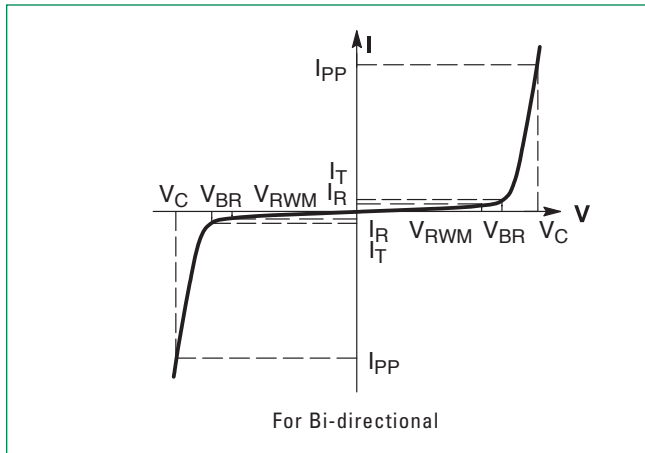
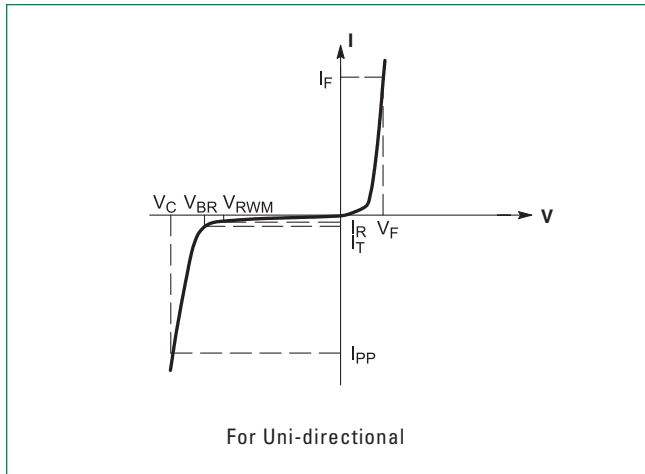


### I-V Curve Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted) – For Bi-directional



| 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-V Curve Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 3.5\text{ V Max.}$ @ $I_F = 30\text{ A}$ for all types) (Note 5) – For Uni-directional



| 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 @ $I_F$                     |

5. 1/2 sine wave or equivalent, PW = 8.3 ms, non-repetitive duty cycle.

### Electrical Characteristics – For Uni-directional

| Device        | Device Marking | $V_{RWM}$ <sup>Note 6</sup> | $I_R$ @ $V_{RWM}$ | Breakdown Voltage                      |       |       |         | $V_C$ @ $I_{PP}$ <sup>Note 8</sup> |          | C Typ. <sup>Note 9</sup> | Agency Approval  |
|---------------|----------------|-----------------------------|-------------------|----------------------------------------|-------|-------|---------|------------------------------------|----------|--------------------------|-----------------------------------------------------------------------------------------------------|
|               |                |                             |                   | $V_{BR}$ @ $I_T$ (V) <sup>Note 7</sup> |       |       | @ $I_T$ | $V_C$                              | $I_{PP}$ |                          |                                                                                                     |
|               |                | Volts                       | μA                | MIN                                    | NOM   | MAX   | mA      | Volts                              | Amps     | pF                       |                                                                                                     |
| SZ1SMA5.0AT3G | QE             | 5.0                         | 400               | 6.40                                   | 6.70  | 7.00  | 10      | 9.2                                | 43.5     | 2035                     | X                                                                                                   |
| SZ1SMA6.0AT3G | QG             | 6.0                         | 400               | 6.67                                   | 7.02  | 7.37  | 10      | 10.3                               | 38.8     | 1730                     | X                                                                                                   |
| SZ1SMA6.5AT3G | QK             | 6.5                         | 250               | 7.22                                   | 7.60  | 7.98  | 10      | 11.2                               | 35.7     | 1605                     | X                                                                                                   |
| SZ1SMA8.0AT3G | QR             | 8.0                         | 25                | 8.89                                   | 9.36  | 9.83  | 1       | 13.6                               | 29.4     | 1035                     | X                                                                                                   |
| SZ1SMA8.5AT3G | QT             | 8.5                         | 5.0               | 9.44                                   | 9.92  | 10.40 | 1       | 14.4                               | 27.8     | 1265                     | X                                                                                                   |
| SZ1SMA9.0AT3G | QV             | 9.0                         | 2.5               | 10.00                                  | 10.55 | 11.10 | 1       | 15.4                               | 26.0     | 1200                     | X                                                                                                   |
| SZ1SMA10AT3G  | QX             | 10                          | 2.5               | 11.10                                  | 11.70 | 12.30 | 1       | 17.0                               | 23.5     | 1090                     | X                                                                                                   |
| SZ1SMA11AT3G  | QZ             | 11                          | 2.5               | 12.20                                  | 12.85 | 13.50 | 1       | 18.2                               | 22.0     | 1000                     | X                                                                                                   |
| SZ1SMA12AT3G  | RE             | 12                          | 2.5               | 13.30                                  | 14.00 | 14.70 | 1       | 19.9                               | 20.1     | 925                      | X                                                                                                   |
| SZ1SMA13AT3G  | RG             | 13                          | 2.5               | 14.40                                  | 15.15 | 15.90 | 1       | 21.5                               | 18.6     | 860                      | X                                                                                                   |
| SZ1SMA14AT3G  | RH             | 14                          | 2.5               | 15.60                                  | 16.40 | 17.20 | 1       | 23.2                               | 17.2     | 800                      | X                                                                                                   |
| SZ1SMA15AT3G  | RM             | 15                          | 2.5               | 16.70                                  | 17.60 | 18.50 | 1       | 24.4                               | 16.4     | 758                      | X                                                                                                   |
| SZ1SMA16AT3G  | RP             | 16                          | 2.5               | 17.80                                  | 18.75 | 19.70 | 1       | 26.0                               | 15.4     | 715                      | X                                                                                                   |
| SZ1SMA17AT3G  | RR             | 17                          | 2.5               | 18.90                                  | 19.90 | 20.90 | 1       | 27.6                               | 14.5     | 680                      | X                                                                                                   |
| SZ1SMA18AT3G  | RT             | 18                          | 2.5               | 20.00                                  | 21.05 | 22.10 | 1       | 29.2                               | 13.7     | 645                      | X                                                                                                   |
| SZ1SMA20AT3G  | RV             | 20                          | 2.5               | 22.20                                  | 23.35 | 24.50 | 1       | 32.4                               | 12.3     | 585                      | X                                                                                                   |
| SZ1SMA22AT3G  | RX             | 22                          | 2.5               | 24.40                                  | 25.65 | 26.90 | 1       | 35.5                               | 11.3     | 540                      | X                                                                                                   |
| SZ1SMA24AT3G  | RZ             | 24                          | 2.5               | 26.70                                  | 28.10 | 29.50 | 1       | 38.9                               | 10.3     | 500                      | X                                                                                                   |
| SZ1SMA26AT3G  | SE             | 26                          | 2.5               | 28.90                                  | 30.40 | 31.90 | 1       | 42.1                               | 9.5      | 460                      | X                                                                                                   |
| SZ1SMA28AT3G  | SG             | 28                          | 2.5               | 31.10                                  | 32.75 | 34.40 | 1       | 45.4                               | 8.8      | 430                      | X                                                                                                   |
| SZ1SMA30AT3G  | SK             | 30                          | 1.0               | 33.30                                  | 35.05 | 36.80 | 1       | 48.4                               | 8.3      | 405                      | X                                                                                                   |
| SZ1SMA33AT3G  | SM             | 33                          | 2.5               | 36.70                                  | 38.65 | 40.60 | 1       | 53.3                               | 7.5      | 375                      | X                                                                                                   |
| SZ1SMA36AT3G  | SP             | 36                          | 2.5               | 40.00                                  | 42.10 | 44.20 | 1       | 58.1                               | 6.9      | 345                      | X                                                                                                   |
| SZ1SMA40AT3G  | SR             | 40                          | 2.5               | 44.40                                  | 46.75 | 49.10 | 1       | 64.5                               | 6.2      | 315                      | X                                                                                                   |
| SZ1SMA43AT3G  | ST             | 43                          | 2.5               | 47.80                                  | 50.30 | 52.80 | 1       | 69.4                               | 5.8      | 295                      | X                                                                                                   |
| SZ1SMA45AT3G  | SV             | 45                          | 2.5               | 50.00                                  | 52.65 | 55.30 | 1       | 72.2                               | 5.5      | 280                      | X                                                                                                   |
| SZ1SMA48AT3G  | SX             | 48                          | 2.5               | 53.30                                  | 56.10 | 58.90 | 1       | 77.4                               | 5.2      | 265                      | X                                                                                                   |
| SZ1SMA51AT3G  | SZ             | 51                          | 2.5               | 56.70                                  | 59.70 | 62.70 | 1       | 82.4                               | 4.9      | 252                      | -                                                                                                   |
| SZ1SMA54AT3G  | TE             | 54                          | 2.5               | 60.00                                  | 63.15 | 66.30 | 1       | 87.1                               | 4.6      | 240                      | X                                                                                                   |
| SZ1SMA58AT3G  | TG             | 58                          | 2.5               | 64.40                                  | 67.80 | 71.50 | 1       | 93.6                               | 4.3      | 225                      | X                                                                                                   |
| SZ1SMA60AT3G  | TK             | 60                          | 2.5               | 66.70                                  | 70.20 | 73.72 | 1       | 96.8                               | 4.1      | 219                      | -                                                                                                   |
| SZ1SMA70AT3G  | TP             | 70                          | 2.5               | 77.80                                  | 81.90 | 86.00 | 1       | 113.0                              | 3.5      | 190                      | X                                                                                                   |
| SZ1SMA75AT3G  | TR             | 75                          | 2.5               | 83.3                                   | 87.7  | 92.1  | 1       | 121.0                              | 3.3      | 180                      | -                                                                                                   |
| SZ1SMA78AT3G  | TT             | 78                          | 2.5               | 86.7                                   | 91.25 | 95.8  | 1       | 126.0                              | 3.2      | 178                      | -                                                                                                   |
| SZ1SMA85AT3G  | TV             | 85                          | 2.5               | 94.4                                   | 99.2  | 104   | 1       | 137.0                              | 2.9      | 173                      | -                                                                                                   |
| SZ1SMA90AT3G  | TX             | 90                          | 2.5               | 100                                    | 105.5 | 111   | 1       | 146.0                              | 2.8      | 169                      | -                                                                                                   |
| SZ1SMA100AT3G | TZ             | 100                         | 2.5               | 111                                    | 117   | 123   | 1       | 162.0                              | 2.5      | 162                      | -                                                                                                   |
| SZ1SMA110AT3G | VE             | 110                         | 2.5               | 122                                    | 128.5 | 135   | 1       | 177.0                              | 2.3      | 155                      | -                                                                                                   |
| SZ1SMA120AT3G | VG             | 120                         | 2.5               | 133                                    | 140   | 147   | 1       | 193.0                              | 2.1      | 148                      | -                                                                                                   |
| SZ1SMA130AT3G | VK             | 130                         | 2.5               | 144                                    | 151.5 | 159   | 1       | 209.0                              | 1.9      | 142                      | -                                                                                                   |
| SZ1SMA150AT3G | VM             | 150                         | 2.5               | 167                                    | 176   | 185   | 1       | 243.0                              | 1.7      | 127                      | -                                                                                                   |
| SZ1SMA160AT3G | VP             | 160                         | 2.5               | 178                                    | 187.5 | 197   | 1       | 259.0                              | 1.6      | 119                      | -                                                                                                   |
| SZ1SMA170AT3G | VR             | 170                         | 2.5               | 189                                    | 199   | 209   | 1       | 275.0                              | 1.5      | 112                      | -                                                                                                   |

### Electrical Characteristics - For Bi-directional

| Device        | Device Marking | V <sub>RWM</sub> <sup>Note 6</sup> | I <sub>R</sub> @ V <sub>RWM</sub> | Breakdown Voltage                                      |       |       |                  | V <sub>C</sub> @ I <sub>PP</sub> <sup>Note 8</sup> |                 | Agency Approval<br> |
|---------------|----------------|------------------------------------|-----------------------------------|--------------------------------------------------------|-------|-------|------------------|----------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------|
|               |                |                                    |                                   | V <sub>BR</sub> @ I <sub>T</sub> (V) <sup>Note 7</sup> |       |       | @ I <sub>T</sub> | V <sub>C</sub>                                     | I <sub>PP</sub> |                                                                                                        |
|               |                | Volts                              | μA                                | MIN                                                    | NOM   | MAX   | mA               | Volts                                              | Amps            |                                                                                                        |
| SZ1SMA10CAT3G | QXC            | 10                                 | 2.5                               | 11.10                                                  | 11.69 | 12.27 | 1                | 17.0                                               | 23.5            | X                                                                                                      |
| SZ1SMA12CAT3G | REC            | 12                                 | 2.5                               | 13.30                                                  | 14.00 | 14.70 | 1                | 19.9                                               | 20.1            | X                                                                                                      |
| SZ1SMA13CAT3G | RGC            | 13                                 | 2.5                               | 14.40                                                  | 15.16 | 15.92 | 1                | 21.5                                               | 18.6            | X                                                                                                      |
| SZ1SMA15CAT3G | RMC            | 15                                 | 2.5                               | 16.70                                                  | 17.58 | 18.46 | 1                | 24.4                                               | 16.4            | X                                                                                                      |
| SZ1SMA16CAT3G | RPC            | 16                                 | 2.5                               | 17.80                                                  | 18.74 | 19.67 | 1                | 26.0                                               | 15.4            | X                                                                                                      |
| SZ1SMA18CAT3G | RTC            | 18                                 | 2.5                               | 20.00                                                  | 21.06 | 22.11 | 1                | 29.2                                               | 13.7            | X                                                                                                      |
| SZ1SMA20CAT3G | RVC            | 20                                 | 2.5                               | 22.20                                                  | 23.37 | 24.54 | 1                | 32.4                                               | 12.3            | X                                                                                                      |
| SZ1SMA22CAT3G | RXC            | 22                                 | 2.5                               | 24.4                                                   | 25.65 | 26.90 | 1                | 35.5                                               | 11.3            | -                                                                                                      |
| SZ1SMA24CAT3G | RZC            | 24                                 | 2.5                               | 26.70                                                  | 28.11 | 29.51 | 1                | 38.9                                               | 10.3            | X                                                                                                      |
| SZ1SMA26CAT3G | SEC            | 26                                 | 2.5                               | 28.90                                                  | 30.42 | 31.94 | 1                | 42.1                                               | 9.5             | X                                                                                                      |
| SZ1SMA28CAT3G | SGC            | 28                                 | 2.5                               | 31.10                                                  | 32.74 | 34.37 | 1                | 45.4                                               | 8.8             | X                                                                                                      |
| SZ1SMA30CAT3G | SKC            | 30                                 | 2.5                               | 33.30                                                  | 35.06 | 36.81 | 1                | 48.4                                               | 8.3             | X                                                                                                      |
| SZ1SMA33CAT3G | SMC            | 33                                 | 2.5                               | 36.70                                                  | 38.63 | 40.56 | 1                | 53.3                                               | 7.5             | X                                                                                                      |
| SZ1SMA36CAT3G | SPC            | 36                                 | 2.5                               | 40.00                                                  | 42.11 | 44.21 | 1                | 58.1                                               | 6.9             | X                                                                                                      |
| SZ1SMA40CAT3G | SRC            | 40                                 | 2.5                               | 44.40                                                  | 46.74 | 49.07 | 1                | 64.5                                               | 6.2             | X                                                                                                      |
| SZ1SMA43CAT3G | STC            | 43                                 | 2.5                               | 47.80                                                  | 50.30 | 52.80 | 1                | 69.4                                               | 5.8             | -                                                                                                      |
| SZ1SMA45CAT3G | SVC            | 45                                 | 2.5                               | 50.00                                                  | 52.65 | 55.30 | 1                | 72.2                                               | 5.5             | -                                                                                                      |
| SZ1SMA48CAT3G | SXC            | 48                                 | 2.5                               | 53.30                                                  | 56.11 | 58.91 | 1                | 77.4                                               | 5.2             | X                                                                                                      |
| SZ1SMA58CAT3G | TGC            | 58                                 | 2.5                               | 64.40                                                  | 67.79 | 71.18 | 1                | 93.6                                               | 4.3             | X                                                                                                      |
| SZ1SMA60CAT3G | TKC            | 60                                 | 2.5                               | 66.70                                                  | 70.21 | 73.72 | 1                | 96.8                                               | 4.1             | X                                                                                                      |
| SZ1SMA70CAT3G | TPC            | 70                                 | 2.5                               | 77.80                                                  | 81.90 | 85.99 | 1                | 113.0                                              | 3.5             | X                                                                                                      |
| SZ1SMA78CAT3G | TTC            | 78                                 | 2.5                               | 86.70                                                  | 91.27 | 95.83 | 1                | 126.0                                              | 3.2             | X                                                                                                      |

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

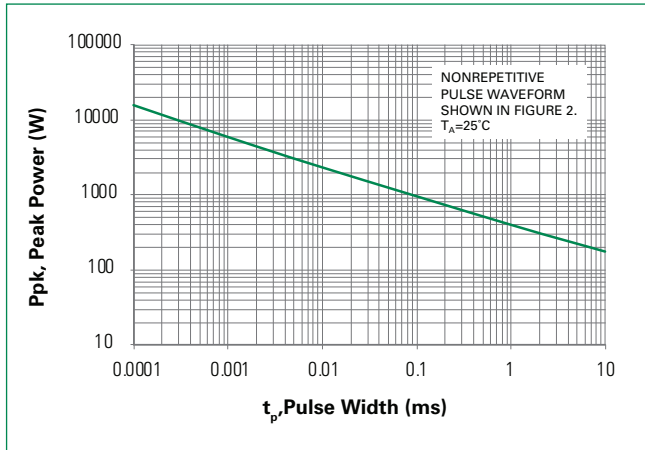
7.  $V_{BR}$  measured at pulse test current  $I_T$  at an ambient temperature of 25°C

8. Surge current waveform per Figure 2 and derate per Figure 3

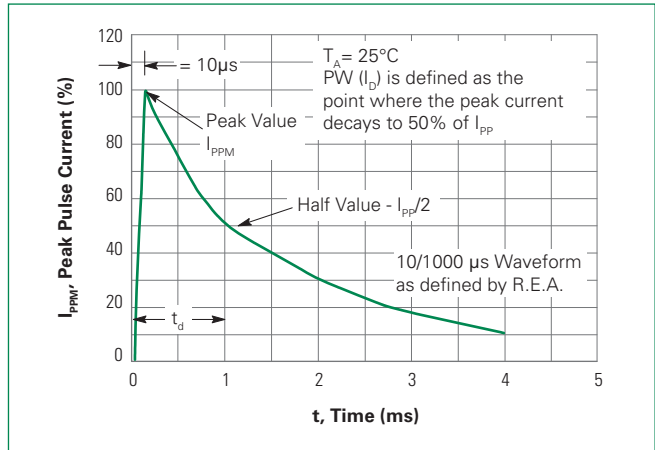
9. Bias voltage = 0 V, F = 1.0 MHz,  $T_J$  = 25°C.

## Ratings and Characteristic Curves

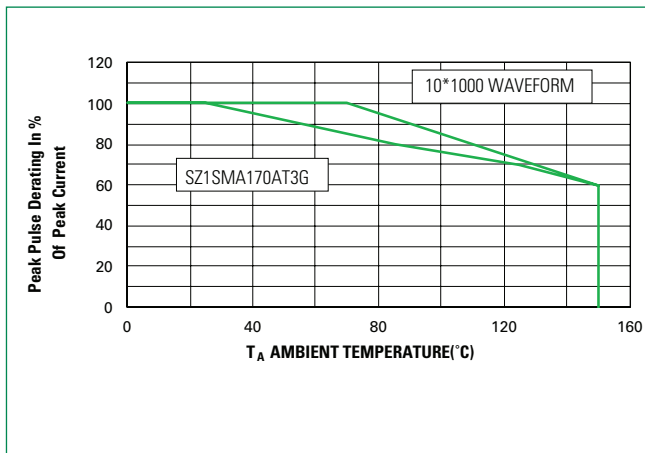
**Figure 1. Pulse Rating Curve**



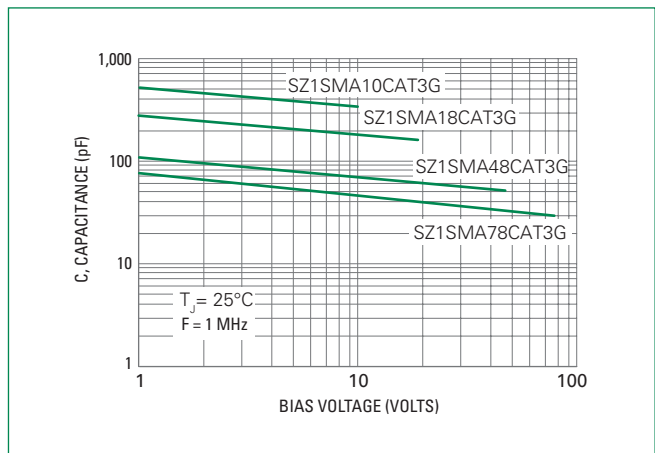
**Figure 2. Pulse Waveform**



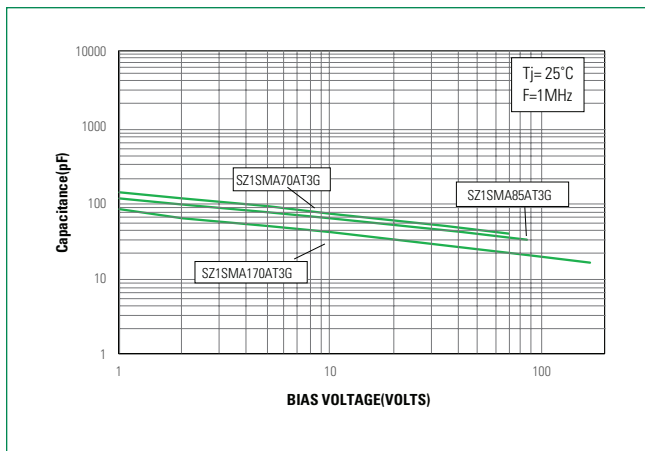
**Figure 3 - Surge Derating Curve**



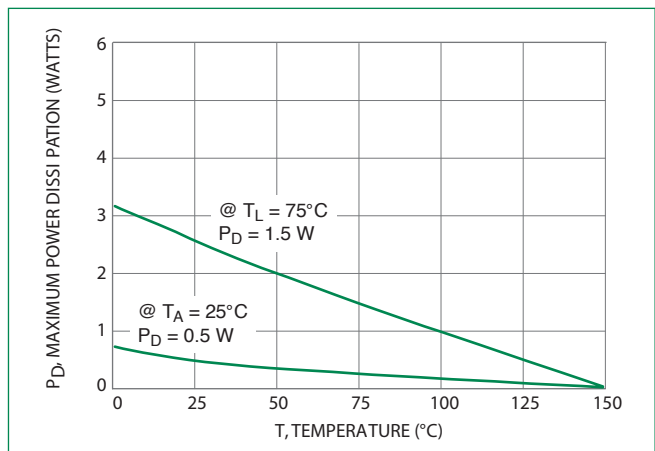
**Figure 4. Typical Junction Capacitance vs. Bias Voltage**



**Figure 5. Typical Junction Capacitance vs. Bias Voltage**

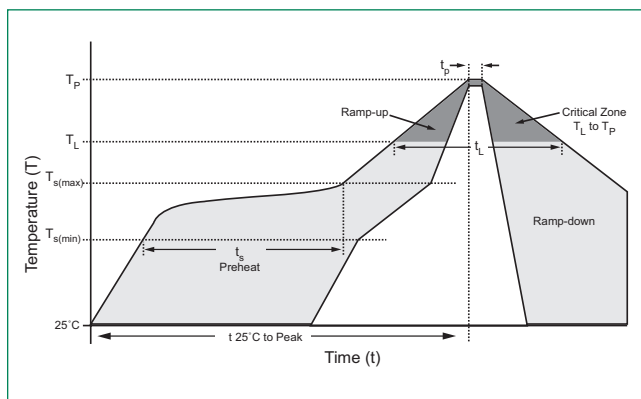


**Figure 6. Steady State Power Derating**



### Soldering Parameters

| Reflow Condition                                       |                                    | Lead-free assembly      |
|--------------------------------------------------------|------------------------------------|-------------------------|
| Pre Heat                                               | - Temperature Min ( $T_{s(min)}$ ) | 150°C                   |
|                                                        | - Temperature Max ( $T_{s(max)}$ ) | 200°C                   |
|                                                        | - Time (min to max) ( $t_s$ )      | 60 – 120 secs           |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak) |                                    | 3°C/second max          |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                   |                                    | 3°C/second max          |
| Reflow                                                 | - Temperature ( $T_L$ ) (Liquidus) | 217°C                   |
|                                                        | - Time (min to max) ( $t_L$ )      | 60 – 150 seconds        |
| Peak Temperature ( $T_p$ )                             |                                    | 260 <sup>+0/-5</sup> °C |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                    | 30 seconds max          |
| Ramp-down Rate                                         |                                    | 6°C/second max          |
| Time 25°C to peak Temperature ( $T_p$ )                |                                    | 8 minutes max.          |
| Do not exceed                                          |                                    | 260°C                   |



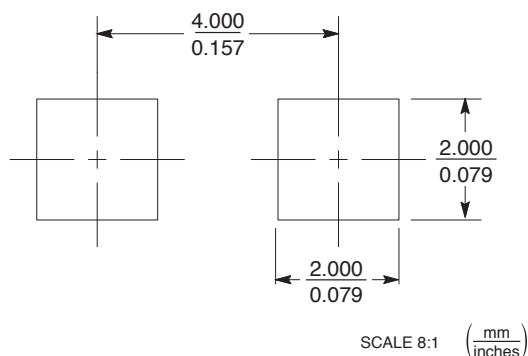
### Physical Specifications

|          |                                                                                       |
|----------|---------------------------------------------------------------------------------------|
| Weight   | 0.00246 ounce, 0.0767 grams                                                           |
| Case     | JEDEC DO214AC. Void-Free, Transfer-Molded, Thermosetting Plastic Epoxy Meets UL 94V-0 |
| Polarity | Color band denotes cathode for unidirectional components.                             |
| Terminal | Matte Tin-plated leads, Solderable per JESD22-B102                                    |

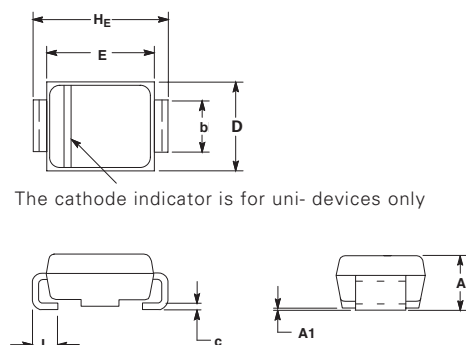
### Environmental Specifications

|                     |                          |
|---------------------|--------------------------|
| High Temp. Storage  | JESD22-A103              |
| HTRB                | JESD22-A108              |
| Temperature Cycling | JESD22-A104              |
| MSL                 | JEDEC-J-STD-020, Level 1 |
| H3TRB               | JESD22-A101              |
| RSH                 | JESD22-A111              |

### Soldering Footprint



### Dimensions



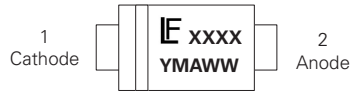
### Ordering Information

| Device**      | Package       | Shipping            |
|---------------|---------------|---------------------|
| SZ1SMAxxAT3G  | SMA (Pb-Free) | 5,000 / Tape & Reel |
| SZ1SMAxxCAT3G | SMA (Pb-Free) | 5,000 / Tape & Reel |

\*\*The "T3" suffix refers to a 13 inch reel

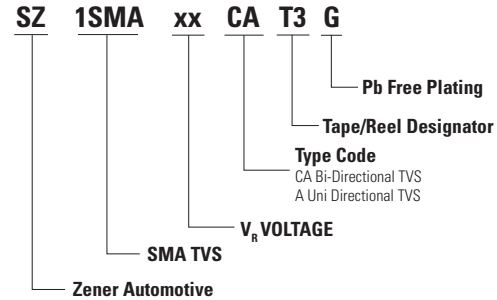
| Dim            | Inches |       |       | Millimeters |      |      |
|----------------|--------|-------|-------|-------------|------|------|
|                | Min    | Nom   | Max   | Min         | Nom  | Max  |
| A              | 0.078  | 0.083 | 0.087 | 1.97        | 2.10 | 2.20 |
| A1             | 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 |
| c              | 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 |
| E              | 0.160  | 0.170 | 0.180 | 4.06        | 4.32 | 4.57 |
| H <sub>E</sub> | 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 |

### Part Marking System



XXXX = Device Code (max four digits)  
Y = Year  
M = Month  
A = Assembly Location  
WW = Lot Code

### Part Numbering System



### Tape and Reel Specification

