

VOLTAGE RANGE

3.3 to 200 Volts

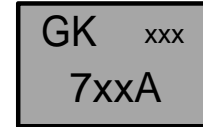
1000mW

FEATURES

- * For surface mount application
- * Built-in strain relief
- * Excellent clamping capability
- * Low profile package
- * Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- * Typical I_R less than 1 A above 10V
- * High temperature soldering guaranteed: 260°C / 10 seconds at terminals

MECHANICAL DATA

- * Case: Molded plastic
- * Epoxy: UL 94V-0 rate flame retardant
- * Lead: Solderable per MIL-STD-202, method 208 guaranteed
- * Polarity: Color band denotes cathode end except Bidirectional
- * Mounting position: Any



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

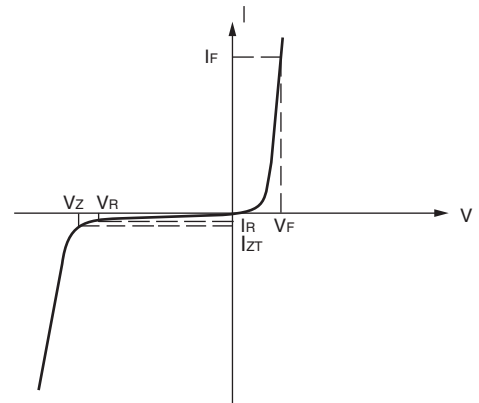
Rating 25°C ambient temperature unless otherwise specified.
Single phase half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| PARAMETER | SYMBOL | VALUE | UNIT |
|--|--------------------------------------|-------------|------|
| Maximum steady state power dissipation at $T_L = 75^\circ\text{C}$ (fig. 1) ⁽¹⁾ | P_{tot} | 1000 | mW |
| Maximum steady state power dissipation at $T_A = 25^\circ\text{C}$ (fig. 1) ⁽²⁾ | P_{tot} | 500 | mW |
| Maximum instantaneous forward voltage at 200 mA for all types ⁽³⁾ | V_F | 1.5 | V |
| Operating junction and storage temperature range | T_J, T_{STG} | -65 to +150 | °C |
| Typical thermal resistance, junction to lead | $R_{\theta\text{JL}}$ ⁽¹⁾ | 50 | °C/W |
| Typical thermal resistance, junction to ambient | $R_{\theta\text{JA}}$ ⁽²⁾ | 250 | °C/W |

Notes

- ⁽¹⁾ Mounted on PCB with 5.0 mm x 5.0 mm copper pads attached to each terminal
- ⁽²⁾ Mounted on minimum recommended pad layout
- ⁽³⁾ Pulse test: 300 μs pulse width, 1 % duty cycle

| ELECTRICAL CHARACTERISTICS | |
|----------------------------|-------------------------------------|
| SYMBOL | PARAMETER |
| V_Z | Reverse Zener voltage at I_{ZT} |
| I_{ZT} | Reverse current |
| Z_{ZT} | Maximum Zener impedance at I_{ZT} |
| I_{ZK} | Reverse current |
| Z_{ZK} | Maximum Zener impedance at I_{ZK} |
| I_R | Reverse leakage current at V_R |
| V_R | Reverse voltage |
| I_F | Forward current |
| V_F | Forward voltage at I_F |
| I_{ZM} | Maximum DC Zener current |



Zener Voltage Regulator

Characteristics at Ta = 25°C

| Type | Marking | Zener Voltage Range ⁽¹⁾ | | | I _{ZT} (mA) | Dynamic Impedance Z _{ZT} (at I _{ZT}) Max (Ω) | Reverse Current | | Admissible Zener Current I _{ZM} (mA) |
|-----------|---------|---------------------------------------|---------|---------|-------------------------|---|----------------------------|--------------------------|--|
| | | V _{ZT} (at I _{ZT}) | | | | | I _R Max (μA) | at V _R (V) | |
| | | Min (V) | Nom (V) | Max (V) | | | | | |
| 1SMA4728A | 728A | 3.10 | 3.3 | 3.50 | 75 | 10 | 100 | 1 | 285 |
| 1SMA4729A | 729A | 3.40 | 3.6 | 3.80 | 69 | 10 | 100 | 1 | 263 |
| 1SMA4730A | 730A | 3.70 | 3.9 | 4.10 | 64 | 9.0 | 50 | 1 | 243 |
| 1SMA4731A | 731A | 4.06 | 4.3 | 4.56 | 58 | 9.0 | 25 | 1 | 219 |
| 1SMA4732A | 732A | 4.50 | 4.7 | 4.93 | 53 | 8.0 | 10 | 1 | 203 |
| 1SMA4733A | 733A | 4.84 | 5.1 | 5.36 | 49 | 7.0 | 10 | 1 | 186 |
| 1SMA4734A | 734A | 5.32 | 5.6 | 5.92 | 45 | 5.0 | 10 | 2 | 170 |
| 1SMA4735A | 735A | 5.86 | 6.2 | 6.51 | 41 | 2.0 | 10 | 3 | 154 |
| 1SMA4736A | 736A | 6.46 | 6.8 | 7.18 | 37 | 3.5 | 10 | 4 | 140 |
| 1SMA4737A | 737A | 7.12 | 7.5 | 7.88 | 34 | 4.0 | 10 | 5 | 127 |
| 1SMA4738A | 738A | 7.79 | 8.2 | 8.67 | 31 | 4.5 | 10 | 6 | 116 |
| 1SMA4739A | 739A | 8.60 | 9.1 | 9.59 | 28 | 5.0 | 10 | 7 | 104 |
| 1SMA4740A | 740A | 9.50 | 10 | 10.5 | 25 | 7.0 | 10 | 7 | 95 |
| 1SMA4741A | 741A | 10.4 | 11 | 11.6 | 23 | 8.0 | 5 | 8 | 86 |
| 1SMA4742A | 742A | 11.4 | 12 | 12.6 | 21 | 9.0 | 5 | 9 | 79 |
| 1SMA4743A | 743A | 12.4 | 13 | 14.1 | 19 | 10 | 5 | 10 | 71 |
| 1SMA4744A | 744A | 13.8 | 15 | 15.8 | 17 | 14 | 5 | 11 | 63 |
| 1SMA4745A | 745A | 15.2 | 16 | 17.1 | 16 | 16 | 5 | 12 | 58 |
| 1SMA4746A | 746A | 16.8 | 18 | 19.2 | 14 | 20 | 5 | 13 | 52 |
| 1SMA4747A | 747A | 19.0 | 20 | 21.2 | 13 | 22 | 5 | 15 | 47 |
| 1SMA4748A | 748A | 20.8 | 22 | 23.3 | 12 | 23 | 5 | 17 | 43 |
| 1SMA4749A | 749A | 22.8 | 24 | 26.0 | 11 | 25 | 5 | 18 | 38 |
| 1SMA4750A | 750A | 25.3 | 27 | 28.9 | 9.5 | 35 | 5 | 21 | 35 |
| 1SMA4751A | 751A | 28.2 | 30 | 32.0 | 8.5 | 40 | 5 | 23 | 31 |
| 1SMA4752A | 752A | 31.3 | 33 | 34.9 | 7.5 | 45 | 5 | 25 | 28 |
| 1SMA4753A | 753A | 34.2 | 36 | 37.9 | 7.0 | 50 | 5 | 27 | 26 |
| 1SMA4754A | 754A | 37.2 | 39 | 41.5 | 6.5 | 60 | 5 | 30 | 24 |
| 1SMA4755A | 755A | 40.9 | 43 | 45.6 | 6.0 | 70 | 1 | 32 | 22 |
| 1SMA4756A | 756A | 44.9 | 47 | 49.8 | 5.5 | 80 | 1 | 35 | 20 |
| 1SMA4757A | 757A | 48.6 | 51 | 54.0 | 5.0 | 95 | 1 | 38 | 18 |
| 1SMA4758A | 758A | 53.6 | 56 | 58.8 | 4.5 | 110 | 1 | 42 | 17 |
| 1SMA4759A | 759A | 58.9 | 62 | 65.6 | 4.0 | 125 | 1 | 47 | 15 |
| 1SMA4760A | 760A | 64.6 | 68 | 71.7 | 3.7 | 150 | 1 | 52 | 14 |
| 1SMA4761A | 761A | 71.2 | 75 | 78.8 | 3.3 | 175 | 1 | 56 | 12 |
| 1SMA4762A | 762A | 77.9 | 82 | 87.0 | 3.0 | 200 | 1 | 62 | 11 |
| 1SMA4763A | 763A | 86.0 | 91 | 96.0 | 2.8 | 250 | 1 | 69 | 10 |
| 1SMA4764A | 764A | 95.0 | 100 | 105 | 2.5 | 350 | 1 | 76 | 9.5 |
| 1SMA4765A | 765A | 104 | 110 | 116 | 2.3 | 450 | 1 | 84 | 8.6 |
| 1SMA4766A | 766A | 114 | 120 | 127 | 2.0 | 550 | 1 | 91 | 7.8 |
| 1SMA4767A | 767A | 125 | 135 | 142 | 1.9 | 700 | 1 | 100 | 7.0 |
| 1SMA4768A | 768A | 140 | 150 | 157 | 1.7 | 900 | 1 | 110 | 6.3 |
| 1SMA4769A | 769A | 155 | 165 | 172 | 1.6 | 1100 | 1 | 120 | 5.8 |
| 1SMA4770A | 770A | 170 | 180 | 191 | 1.4 | 1200 | 1 | 135 | 5.2 |
| 1SMA4771A | 771A | 189 | 200 | 211 | 1.2 | 1400 | 1 | 150 | 4.7 |
| 1SMA4772A | 772A | 209 | 220 | 231 | 1.0 | 1600 | 1 | 165 | 4.3 |
| 1SMA4773A | 773A | 229 | 240 | 251 | 1.0 | 1800 | 1 | 180 | 3.9 |
| 1SMA4774A | 774A | 249 | 260 | 271 | 1.0 | 2000 | 1 | 190 | 3.7 |
| 1SMA4775A | 775A | 269 | 280 | 291 | 1.0 | 2100 | 1 | 205 | 3.4 |
| 1SMA4776A | 776A | 289 | 300 | 315 | 1.0 | 2300 | 1 | 230 | 3.1 |
| 1SMA4777A | 777A | 313 | 330 | 346 | 1.0 | 2500 | 1 | 250 | 2.8 |

RATING AND CHARACTERISTIC CURVES

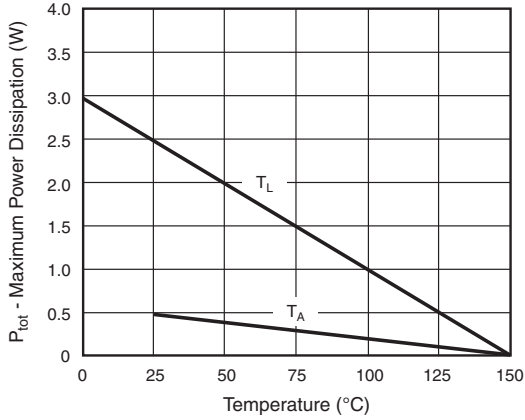


Fig. 1 - Steady State Power Derating

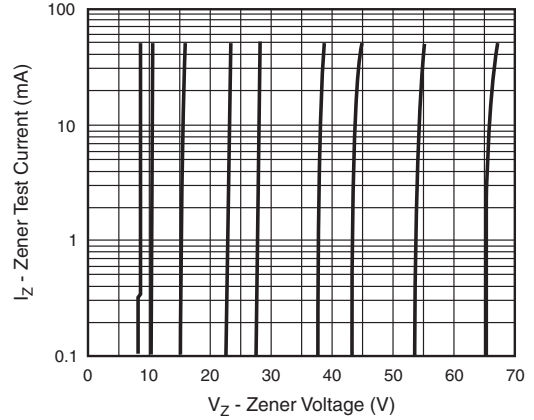


Fig. 3 - Typical Zener Voltage

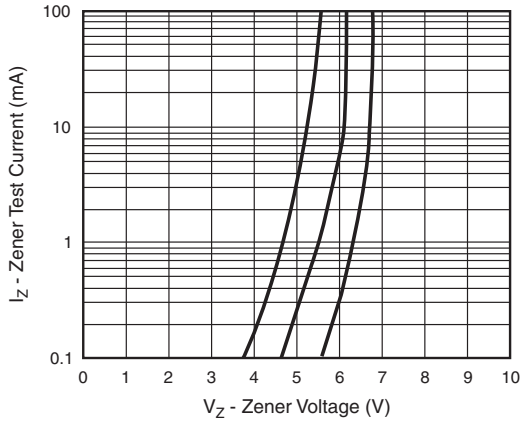


Fig. 2 - Typical Zener Voltage

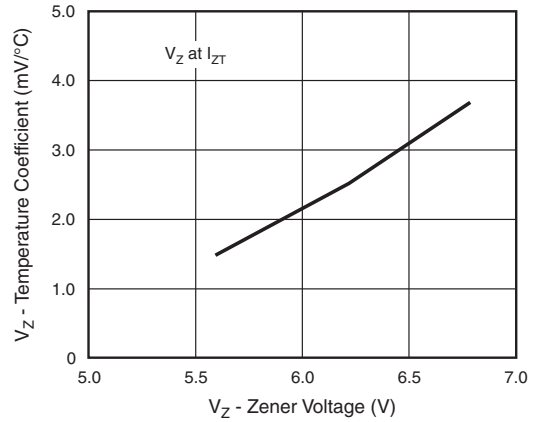


Fig. 4 - Typical Temperature Coefficients

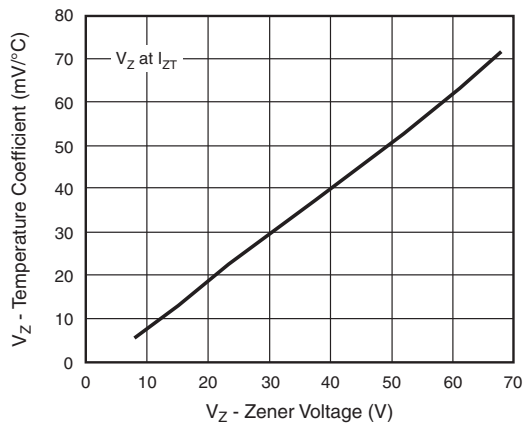


Fig. 5 - Typical Temperature Coefficients

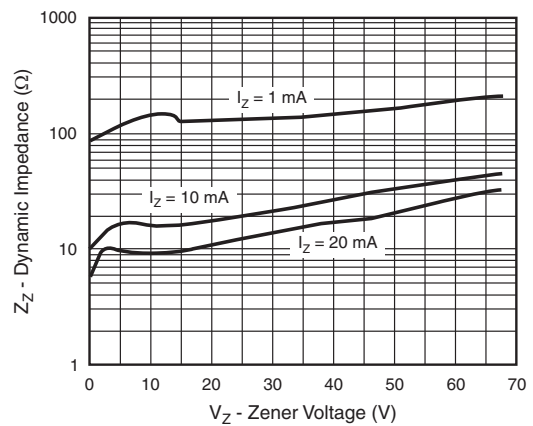


Fig. 6 - Typical Zener Impedance

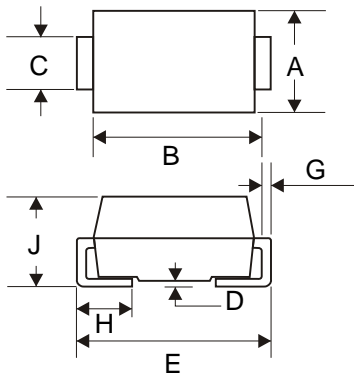
Soldering parameters

| Reflow Condition | | Pb-Free assembly (see as below) |
|---|------------------------------------|------------------------------------|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150 °C |
| | -Temperature Max ($T_{s(max)}$) | +200 °C |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp (T_L) to peak) | | 3 °C/sec. Max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3 °C/sec. Max |
| Reflow | -Temperature (T_L) (Liquid us) | +217 °C |
| | -Temperature (t_L) | 60-150 secs. |
| Peak Temp (T_P) | | +260(+0/-5) °C |
| Time within 5 °C of actual Peak Temp (t_p) | | 30 secs. Max |
| Ramp-down Rate | | 6 °C/sec. Max |
| Time 25 °C to Peak Temp (T_P) | | 8 min. Max |
| Do not exceed | | +260 °C |

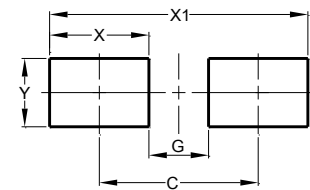


Package Dimensions & Suggested Pad Layout

SMA

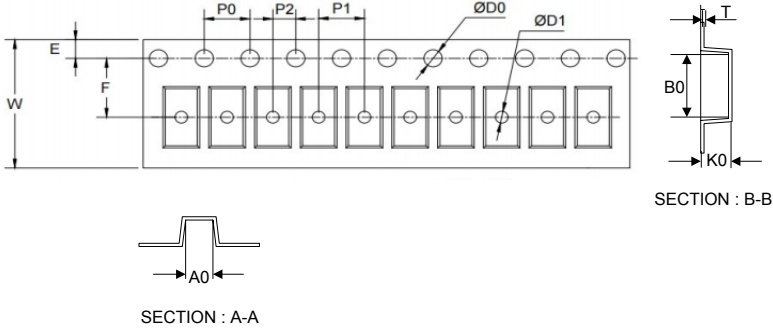
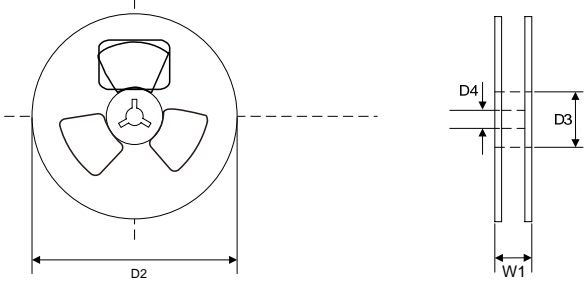
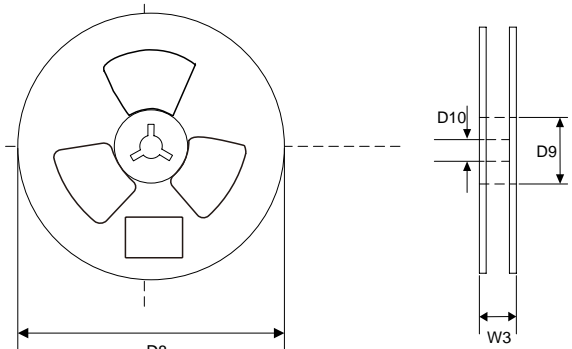


| SMA | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 2.40 | 2.79 |
| B | 3.99 | 4.50 |
| C | 1.32 | 1.47 |
| D | - | 0.20 |
| E | 4.93 | 5.28 |
| G | 0.15 | 0.31 |
| H | 0.76 | 1.52 |
| J | 1.98 | 2.29 |
| All Dimensions in mm | | |



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 4.20 |
| G | 1.90 |
| X | 2.30 |
| X1 | 6.50 |
| Y | 2.00 |

Tape & reel specification

| Tape | Symbol | Dimension (mm) |
|---|-------------------|----------------|
|  | P0 | 4.00±0.20 |
| | P1 | 4.00±0.20 |
| | P2 | 2.00±0.20 |
| | D0 | 1.60±0.20 |
| | D1 | 1.60±0.20 |
| | E | 1.75±0.20 |
| | F | 5.50±0.15 |
| | W | 12.00±0.25 |
| | A0 | 2.75±0.20 |
| | B0 | 5.25±0.20 |
| K0 | 2.45±0.25 | |
| T | 0.20±0.10 | |
| <p>7" Reel</p>  | D2 | 176.0±5.0 |
| | D3 | 55.0Min. |
| | D4 | 14.0±2.5 |
| | W1 | 14.0±2.5 |
| | Quantity: 2000PCS | |
| <p>13" Reel</p>  | D8 | 330.0±5.0 |
| | D9 | 73.0Min. |
| | D10 | 14.0±2.5 |
| | W3 | 14.0±2.5 |
| | Quantity: 5000PCS | |