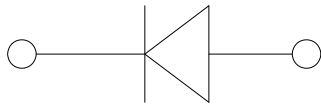
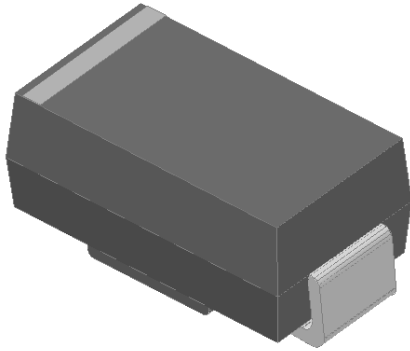


Surface Mount Zener Diodes



Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

Mechanical Data

- **Package:** DO-214AC (SMA)
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

■Maximum Ratings (T_a=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | MAX |
|--|------------------|------|-------------|
| DC power dissipation at TL = 75 °C | P _D | W | 1.5 |
| Maximum instantaneous forward voltage@ I _F =200mA | V _F | V | 1.5 |
| Maximum junction temperature | T _j | °C | -55 to +150 |
| Storage temperature range | T _{stg} | °C | -55 to +150 |

■Thermal Characteristics (T_a=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | Conditions | VALUE |
|-----------------------------|----------------------------------|------|---------------------|-------|
| Thermal resistance(Typical) | R _{θJ-L} ⁽¹⁾ | °C/W | junction to lead | 30 |
| | R _{θJ-A} ⁽¹⁾ | °C/W | junction to ambient | 170 |

Note

(1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

■Electrical Characteristics (T_a=25°C Unless otherwise specified)

| Part Number | Nominal Zener voltage | | | Test current | Maximum dynamic impedance resistance | | | Maximum reverse leakage current | | Maximum DC Zener Current |
|-------------|--|---|--|-----------------|--------------------------------------|------------------------------------|-----------------|---------------------------------|-----------------------------|--------------------------|
| | Min V _Z ⁽¹⁾ at I _{ZT} | Typ. V _Z ⁽¹⁾ at I _{ZT} | Max V _Z ⁽¹⁾ at I _{ZT} | I _{ZT} | Z _{ZT} at I _{ZT} | Z _{ZK} at I _{ZK} | I _{ZK} | I _R | Test voltage V _R | I _{ZM} |
| | V | V | V | mA | Ω | Ω | mA | μA | V | mA |
| SMA5913A | 3.14 | 3.3 | 3.47 | 113.6 | 10.0 | 500 | 1.00 | 100.0 | 1.0 | 455.0 |
| SMA5914A | 3.42 | 3.6 | 3.78 | 104.2 | 9.0 | 500 | 1.00 | 100.0 | 1.0 | 417.0 |
| SMA5915A | 3.71 | 3.9 | 4.10 | 96.1 | 7.5 | 500 | 1.00 | 50.0 | 1.0 | 385.0 |
| SMA5916A | 4.09 | 4.3 | 4.52 | 87.2 | 6.0 | 500 | 1.00 | 10.0 | 1.0 | 349.0 |



SMA59XXA SERIES

| Part Number | Nominal Zener voltage | | | Test current | Maximum dynamic impedance resistance | | | Maximum reverse leakage current | | Maximum DC Zener Current |
|-------------|--------------------------------------|---------------------------------------|--------------------------------------|--------------|--------------------------------------|----------------------|----------|---------------------------------|--------------------|--------------------------|
| | Min V_Z ⁽¹⁾ at I_{ZT} | Typ. V_Z ⁽¹⁾ at I_{ZT} | Max V_Z ⁽¹⁾ at I_{ZT} | I_{ZT} | Z_{ZT} at I_{ZT} | Z_{ZK} at I_{ZK} | I_{ZK} | I_R | Test voltage V_R | I_{ZM} |
| | V | V | V | mA | Ω | Ω | mA | μ A | V | mA |
| SMA5917A | 4.47 | 4.7 | 4.94 | 79.8 | 5.0 | 500 | 1.00 | 10.0 | 1.5 | 319.0 |
| SMA5918A | 4.85 | 5.1 | 5.36 | 73.5 | 4.0 | 350 | 1.00 | 10.0 | 2.0 | 294.0 |
| SMA5919A | 5.32 | 5.6 | 5.88 | 66.9 | 2.0 | 250 | 1.00 | 10.0 | 3.0 | 268.0 |
| SMA5920A | 5.89 | 6.2 | 6.51 | 60.5 | 2.0 | 200 | 1.00 | 10.0 | 4.0 | 242.0 |
| SMA5921A | 6.46 | 6.8 | 7.14 | 55.1 | 2.5 | 200 | 1.00 | 10.0 | 5.2 | 221.0 |
| SMA5922A | 7.13 | 7.5 | 7.88 | 50.0 | 3.0 | 400 | 0.50 | 10.0 | 6.0 | 200.0 |
| SMA5923A | 7.79 | 8.2 | 8.61 | 45.7 | 3.5 | 400 | 0.50 | 10.0 | 6.5 | 183.0 |
| SMA5924A | 8.65 | 9.1 | 9.56 | 41.2 | 4.0 | 500 | 0.50 | 10.0 | 7.0 | 165.0 |
| SMA5925A | 9.50 | 10.0 | 10.50 | 37.5 | 4.5 | 500 | 0.25 | 10.0 | 8.0 | 150.0 |
| SMA5926A | 10.45 | 11.0 | 11.55 | 34.1 | 5.5 | 550 | 0.25 | 0.5 | 8.4 | 136.0 |
| SMA5927A | 11.40 | 12.0 | 12.60 | 31.2 | 6.5 | 550 | 0.25 | 0.5 | 9.1 | 125.0 |
| SMA5928A | 12.35 | 13.0 | 13.65 | 28.8 | 7.0 | 550 | 0.25 | 0.5 | 9.9 | 115.0 |
| SMA5929A | 14.25 | 15.0 | 15.75 | 25.0 | 9.0 | 600 | 0.25 | 0.5 | 11.4 | 100.0 |
| SMA5930A | 15.20 | 16.0 | 16.80 | 23.4 | 10.0 | 600 | 0.25 | 0.5 | 12.2 | 94.0 |
| SMA5931A | 17.10 | 18.0 | 18.90 | 20.8 | 12.0 | 650 | 0.25 | 0.5 | 13.7 | 83.0 |
| SMA5932A | 19.00 | 20.0 | 21.00 | 18.7 | 14.0 | 650 | 0.25 | 0.5 | 15.2 | 75.0 |
| SMA5933A | 20.90 | 22.0 | 23.10 | 17.0 | 17.5 | 650 | 0.25 | 0.5 | 16.7 | 68.0 |
| SMA5934A | 22.80 | 24.0 | 25.20 | 15.6 | 19.0 | 700 | 0.25 | 0.5 | 18.2 | 63.0 |
| SMA5935A | 25.65 | 27.0 | 28.35 | 13.9 | 23.0 | 700 | 0.25 | 0.5 | 20.6 | 56.0 |
| SMA5936A | 28.50 | 30.0 | 31.50 | 12.5 | 26.0 | 750 | 0.25 | 0.5 | 22.8 | 50.0 |
| SMA5937A | 31.35 | 33.0 | 34.65 | 11.4 | 33.0 | 800 | 0.25 | 0.5 | 25.1 | 45.0 |
| SMA5938A | 34.20 | 36.0 | 37.80 | 10.4 | 38.0 | 850 | 0.25 | 0.5 | 27.4 | 42.0 |
| SMA5939A | 37.05 | 39.0 | 40.95 | 9.6 | 45.0 | 900 | 0.25 | 0.5 | 29.7 | 38.0 |
| SMA5940A | 40.85 | 43.0 | 45.15 | 8.7 | 53.0 | 950 | 0.25 | 0.5 | 32.7 | 35.0 |
| SMA5941A | 44.65 | 47.0 | 49.35 | 8.0 | 67.0 | 1000 | 0.25 | 0.5 | 35.8 | 32.0 |
| SMA5942A | 48.45 | 51.0 | 53.55 | 7.3 | 70.0 | 1100 | 0.25 | 0.5 | 38.8 | 29.0 |
| SMA5943A | 53.20 | 56.0 | 58.80 | 6.7 | 86.0 | 1300 | 0.25 | 0.5 | 42.6 | 27.0 |



SMA59XXA SERIES

| Part Number | Nominal Zener voltage | | | Test current | Maximum dynamic impedance resistance | | | Maximum reverse leakage current | | Maximum DC Zener Current |
|-------------|-----------------------------|------------------------------|-----------------------------|--------------|--------------------------------------|----------------------|----------|---------------------------------|--------------------|--------------------------|
| | Min $V_Z^{(1)}$ at I_{ZT} | Typ. $V_Z^{(1)}$ at I_{ZT} | Max $V_Z^{(1)}$ at I_{ZT} | I_{ZT} | Z_{ZT} at I_{ZT} | Z_{ZK} at I_{ZK} | I_{ZK} | I_R | Test voltage V_R | I_{ZM} |
| | V | V | V | mA | Ω | Ω | mA | μA | V | mA |
| SMA5944A | 58.90 | 62.0 | 65.10 | 6.0 | 100.0 | 1500 | 0.25 | 0.5 | 47.1 | 24.0 |
| SMA5945A | 64.60 | 68.0 | 71.40 | 5.5 | 120.0 | 1700 | 0.25 | 0.5 | 51.7 | 22.0 |
| SMA5946A | 71.25 | 75.0 | 78.75 | 5.0 | 140.0 | 2000 | 0.25 | 0.5 | 56.0 | 20.0 |
| SMA5947A | 77.90 | 82.0 | 86.10 | 4.6 | 160.0 | 2500 | 0.25 | 0.5 | 62.2 | 18.0 |
| SMA5948A | 86.45 | 91.0 | 95.55 | 4.1 | 200.0 | 3000 | 0.25 | 0.5 | 69.2 | 16.0 |
| SMA5949A | 95.00 | 100.0 | 105.00 | 3.7 | 250.0 | 3100 | 0.25 | 0.5 | 76.0 | 15.0 |
| SMA5950A | 104.50 | 110.0 | 115.50 | 3.4 | 300.0 | 4000 | 0.25 | 0.5 | 83.6 | 14.0 |
| SMA5951A | 114.00 | 120.0 | 126.00 | 3.1 | 380.0 | 4500 | 0.25 | 0.5 | 91.2 | 13.0 |
| SMA5952A | 123.50 | 130.0 | 136.50 | 2.9 | 450.0 | 5000 | 0.25 | 0.5 | 98.8 | 12.0 |
| SMA5953A | 142.50 | 150.0 | 157.50 | 2.5 | 600.0 | 6000 | 0.25 | 0.5 | 114.0 | 10.0 |
| SMA5954A | 152.00 | 160.0 | 168.00 | 2.3 | 700.0 | 6500 | 0.25 | 0.5 | 121.6 | 9.4 |
| SMA5955A | 171.00 | 180.0 | 189.00 | 2.1 | 900.0 | 7000 | 0.25 | 0.5 | 136.8 | 8.3 |
| SMA5956A | 190.00 | 200.0 | 210.00 | 1.9 | 1200.0 | 8000 | 0.25 | 0.5 | 152.0 | 7.5 |

Notes:

(1) Nominal Zener voltage Range: 95% Typ. V_Z (1) at I_{ZT} ----105% Typ. V_Z (1) at I_{ZT}

■ Characteristics (Typical)

FIG1: Power Temperature Derating Curve

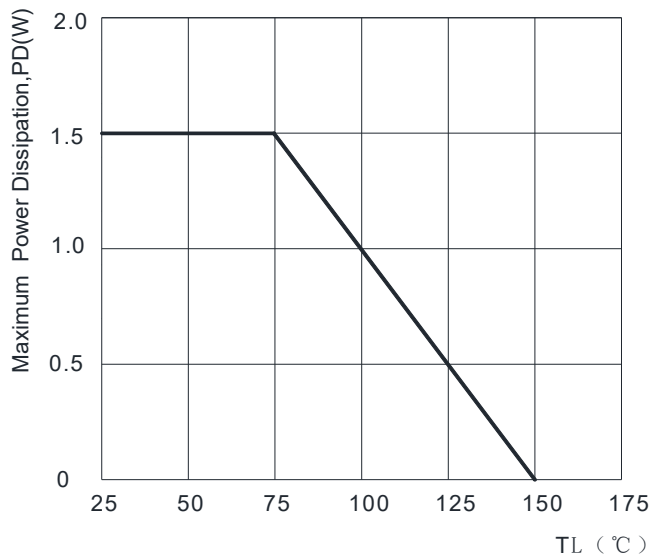
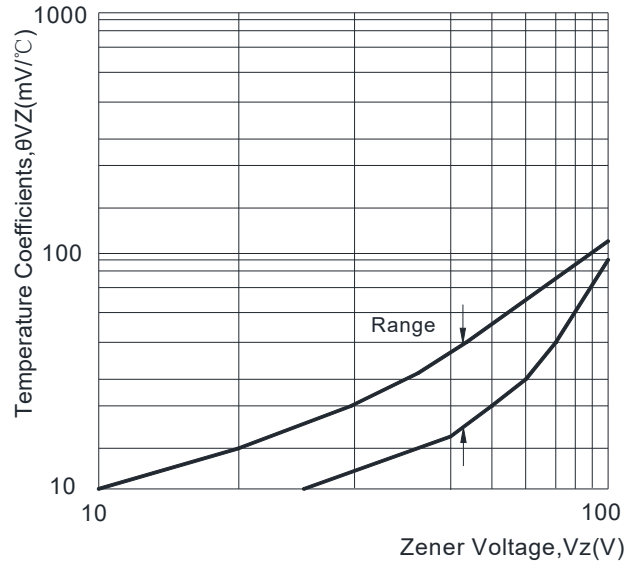


FIG2: Temperature Coefficients v.s. Zener Voltage





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FIG3: Typical Thermal Resistance v.s. Lead Length

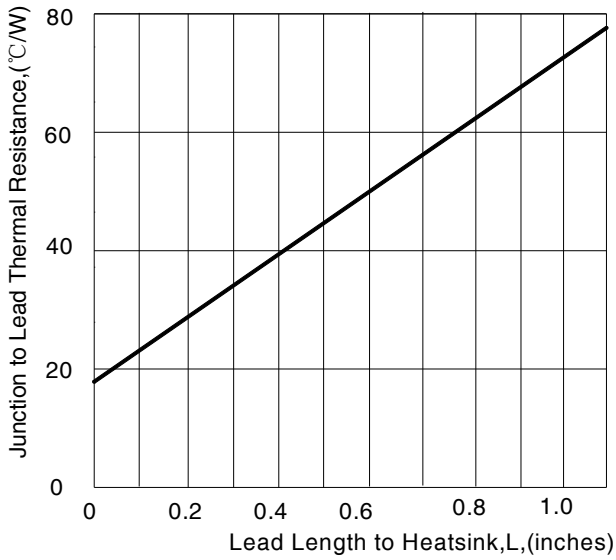


FIG4: Maximum Surge Power

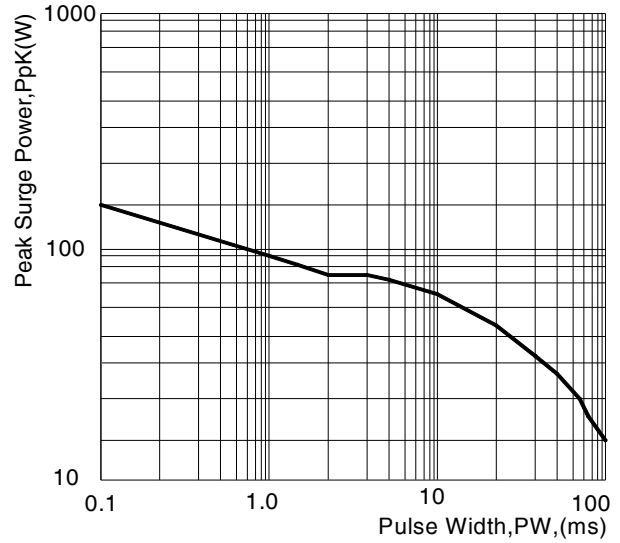
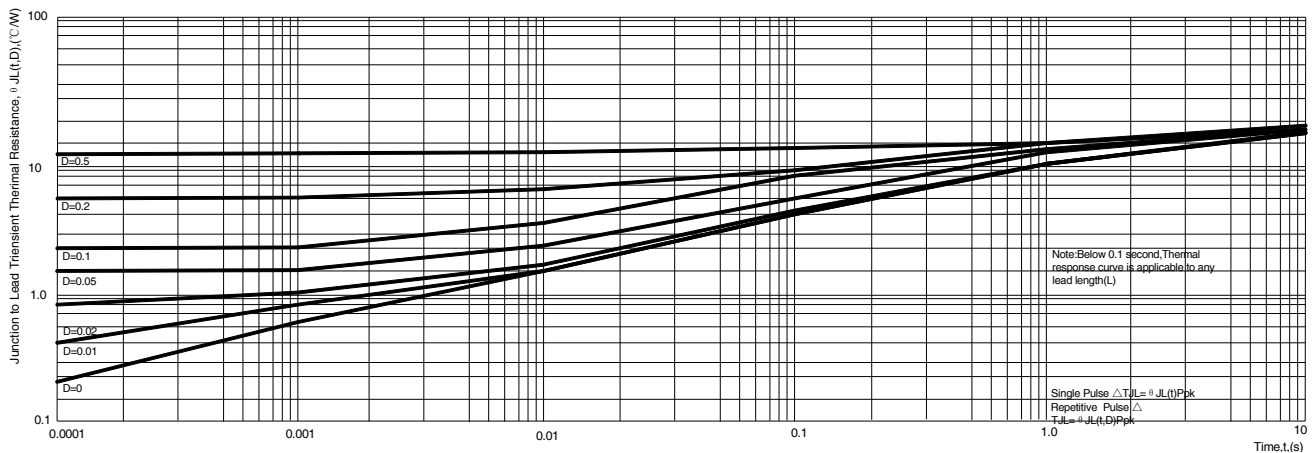


FIG5: Typical Thermal Response L, Lead Length=3/8inch



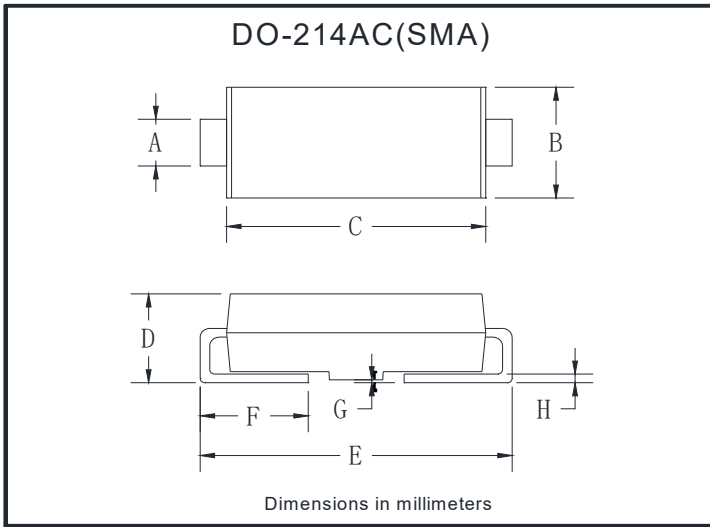
Ordering Information (Example)

| PREFERRED P/N | PACKAGE CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|-----------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| SMA59XXA SERIES | F1 | Approximate 0.059 | 5000 | 10000 | 80000 | 13" reel |
| SMA59XXA SERIES | F2 | Approximate 0.059 | 7500 | 15000 | 120000 | 13" reel |
| SMA59XXA SERIES | F3 | Approximate 0.059 | 7500 | 15000 | 60000 | 13" reel |
| SMA59XXA SERIES | F4 | Approximate 0.059 | 1800 | 7200 | 57600 | 7" reel |
| SMA59XXA SERIES | F5 | Approximate 0.059 | 2000 | 8000 | 64000 | 7" reel |
| SMA59XXA SERIES | F6 | Approximate 0.059 | 5000 | 10000 | 100000 | 13" reel |



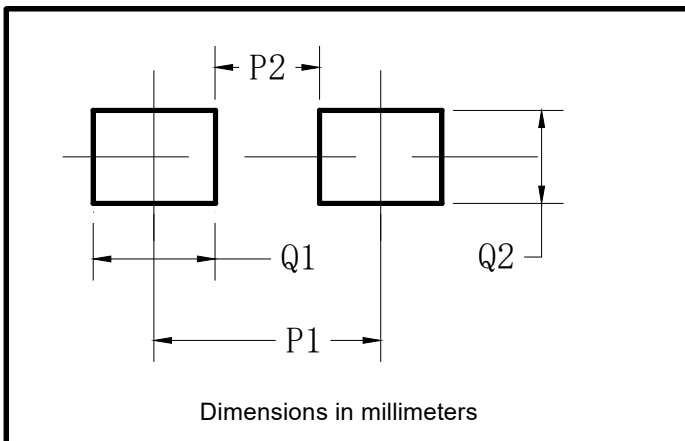
SMA59XXA SERIES

■ Outline Dimensions



| DO-214AC(SMA) | | |
|---------------|------|------|
| Dim | Min | Max |
| A | 1.25 | 1.58 |
| B | 2.40 | 2.83 |
| C | 4.25 | 4.75 |
| D | 1.90 | 2.30 |
| E | 4.93 | 5.28 |
| F | 0.76 | 1.41 |
| G | 0.08 | 0.20 |
| H | 0.15 | 0.31 |

■ Suggested Pad Layout



| DO-214AC(SMA) | |
|---------------|-------------|
| Dim | Millimeters |
| P1 | 4.00 |
| P2 | 1.50 |
| Q1 | 2.50 |
| Q2 | 1.70 |



SMA59XXA SERIES

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