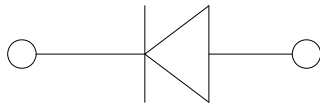
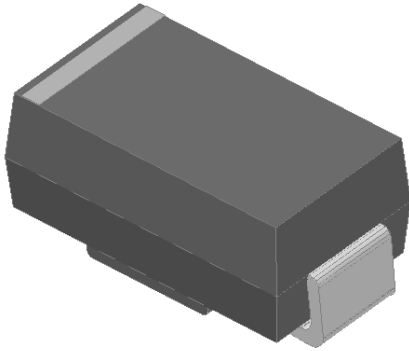


Surface Mount Zener Diodes



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 | 2.0 |
| 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 |

■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 |
| SMA2Z3.3A | 3.14 | 3.3 | 3.47 | 113.6 | 10 | 500 | 1.00 | 100.0 | 1.0 | 548.0 |
| SMA2Z3.6A | 3.42 | 3.6 | 3.78 | 104.2 | 9 | 500 | 1.00 | 100.0 | 1.0 | 502.0 |
| SMA2Z3.9A | 3.71 | 3.9 | 4.10 | 96.1 | 7.5 | 500 | 1.00 | 50.0 | 1.0 | 464.0 |
| SMA2Z4.3A | 4.09 | 4.3 | 4.52 | 87.2 | 6.0 | 500 | 1.00 | 50.0 | 1.0 | 421.0 |
| SMA2Z4.7A | 4.47 | 4.7 | 4.94 | 79.8 | 5.0 | 550 | 1.00 | 10.0 | 1.0 | 385.0 |
| SMA2Z5.1A | 4.85 | 5.1 | 5.36 | 73.5 | 4.0 | 600 | 1.00 | 10.0 | 1.0 | 354.0 |
| SMA2Z5.6A | 5.32 | 5.6 | 5.88 | 66.9 | 2.5 | 500 | 1.00 | 10.0 | 2.0 | 323.0 |
| SMA2Z6.2A | 5.89 | 6.2 | 6.51 | 80.5 | 1.5 | 700 | 1.00 | 10.0 | 3.0 | 292.0 |
| SMA2Z6.8A | 6.46 | 6.8 | 7.14 | 73.5 | 2.0 | 700 | 1.00 | 10.0 | 4.0 | 266.0 |
| SMA2Z7.5A | 7.13 | 7.5 | 7.88 | 66.5 | 2.0 | 700 | 0.50 | 10.0 | 5.0 | 242.0 |
| SMA2Z8.2A | 7.79 | 8.2 | 8.61 | 61.0 | 2.3 | 700 | 0.50 | 10.0 | 6.0 | 220.0 |
| SMA2Z9.1A | 8.65 | 9.1 | 9.56 | 55.0 | 2.5 | 700 | 0.50 | 10.0 | 7.0 | 200.0 |



SMA2ZXXA 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 |
| SMA2Z10A | 9.50 | 10.0 | 10.50 | 50.0 | 3.5 | 700 | 0.25 | 10.0 | 7.6 | 182.0 |
| SMA2Z11A | 10.45 | 11.0 | 11.55 | 45.5 | 4.0 | 700 | 0.25 | 1.0 | 8.4 | 166.0 |
| SMA2Z12A | 11.40 | 12.0 | 12.60 | 41.5 | 4.5 | 700 | 0.25 | 1.0 | 9.1 | 152.0 |
| SMA2Z13A | 12.35 | 13.0 | 13.65 | 38.5 | 5.0 | 700 | 0.25 | 0.5 | 9.9 | 138.0 |
| SMA2Z14A | 13.30 | 14.0 | 14.70 | 35.7 | 5.5 | 700 | 0.25 | 0.5 | 10.6 | 130.0 |
| SMA2Z15A | 14.25 | 15.0 | 15.75 | 33.4 | 7.0 | 700 | 0.25 | 0.5 | 11.4 | 122.0 |
| SMA2Z16A | 15.20 | 16.0 | 16.80 | 31.2 | 8.0 | 700 | 0.25 | 0.5 | 12.2 | 114.0 |
| SMA2Z17A | 16.15 | 17.0 | 17.85 | 29.4 | 9.0 | 750 | 0.25 | 0.5 | 13.0 | 107.0 |
| SMA2Z18A | 17.10 | 18.0 | 18.90 | 27.8 | 10.0 | 750 | 0.25 | 0.5 | 13.7 | 100.0 |
| SMA2Z19A | 18.05 | 19.0 | 19.95 | 26.3 | 11.0 | 750 | 0.25 | 0.5 | 14.4 | 95.0 |
| SMA2Z20A | 19.00 | 20.0 | 21.00 | 25.0 | 11.0 | 750 | 0.25 | 0.5 | 15.2 | 90.0 |
| SMA2Z22A | 20.90 | 22.0 | 23.10 | 22.8 | 12.0 | 750 | 0.25 | 0.5 | 16.7 | 82.0 |
| SMA2Z24A | 22.80 | 24.0 | 25.20 | 20.8 | 13.0 | 750 | 0.25 | 0.5 | 18.2 | 76.0 |
| SMA2Z27A | 25.65 | 27.0 | 28.35 | 18.5 | 18.0 | 750 | 0.25 | 0.5 | 20.6 | 68.0 |
| SMA2Z30A | 28.50 | 30.0 | 31.50 | 16.6 | 20.0 | 1000 | 0.25 | 0.5 | 22.5 | 60.0 |
| SMA2Z33A | 31.35 | 33.0 | 34.65 | 15.1 | 23.0 | 1000 | 0.25 | 0.5 | 25.1 | 55.0 |
| SMA2Z36A | 34.20 | 36.0 | 37.80 | 13.9 | 25.0 | 1000 | 0.25 | 0.5 | 27.4 | 50.0 |
| SMA2Z39A | 37.05 | 39.0 | 40.95 | 12.8 | 30.0 | 1000 | 0.25 | 0.5 | 29.7 | 47.0 |
| SMA2Z43A | 40.85 | 43.0 | 45.15 | 11.6 | 35.0 | 1500 | 0.25 | 0.5 | 32.7 | 43.0 |
| SMA2Z47A | 44.65 | 47.0 | 49.35 | 10.6 | 40.0 | 1500 | 0.25 | 0.5 | 35.8 | 39.0 |
| SMA2Z51A | 48.45 | 51.0 | 53.55 | 9.8 | 48.0 | 1500 | 0.25 | 0.5 | 38.8 | 36.0 |
| SMA2Z56A | 53.20 | 56.0 | 58.80 | 9.0 | 55.0 | 2000 | 0.25 | 0.5 | 42.6 | 32.0 |
| SMA2Z62A | 58.90 | 62.0 | 65.10 | 8.1 | 60.0 | 2000 | 0.25 | 0.5 | 47.1 | 29.0 |
| SMA2Z68A | 64.60 | 68.0 | 71.40 | 7.4 | 75.0 | 2000 | 0.25 | 0.5 | 51.7 | 27.0 |
| SMA2Z75A | 71.25 | 75.0 | 78.75 | 6.7 | 90.0 | 2000 | 0.25 | 0.5 | 56.0 | 24.0 |
| SMA2Z82A | 77.90 | 82.0 | 86.10 | 6.1 | 100.0 | 3000 | 0.25 | 0.5 | 62.2 | 22.0 |
| SMA2Z91A | 86.45 | 91.0 | 95.55 | 5.5 | 125.0 | 3000 | 0.25 | 0.5 | 69.2 | 20.0 |
| SMA2Z100A | 95.00 | 100.0 | 105.00 | 5.0 | 175.0 | 3000 | 0.25 | 0.5 | 76.0 | 18.0 |
| SMA2Z110A | 104.50 | 110.0 | 115.50 | 4.5 | 250.0 | 4000 | 0.25 | 0.5 | 83.6 | 17.0 |
| SMA2Z120A | 114.00 | 120.0 | 126.00 | 4.2 | 325.0 | 4500 | 0.25 | 0.5 | 91.2 | 15.0 |
| SMA2Z130A | 123.50 | 130.0 | 136.50 | 3.8 | 400.0 | 5000 | 0.25 | 0.5 | 98.8 | 14.0 |
| SMA2Z140A | 133.00 | 140.0 | 147.00 | 3.6 | 500.0 | 5500 | 0.25 | 0.5 | 106.4 | 13.0 |
| SMA2Z150A | 142.50 | 150.0 | 157.50 | 3.3 | 575.0 | 6000 | 0.25 | 0.5 | 114.0 | 12.0 |
| SMA2Z160A | 152.00 | 160.0 | 168.00 | 3.1 | 650.0 | 6500 | 0.25 | 0.5 | 121.6 | 11.0 |
| SMA2Z170A | 161.50 | 170.0 | 178.50 | 2.9 | 675.0 | 7000 | 0.25 | 0.5 | 130.4 | 11.0 |



SMA2ZXXA 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} | | Z_{ZT} at I_{ZT} | Z_{ZK} at I_{ZK} | I_{ZK} | I_R | Test voltage V_R | |
| | V | V | V | mA | Ω | Ω | mA | μA | V | mA |
| SMA2Z180A | 171.00 | 180.0 | 189.00 | 2.8 | 725.0 | 7000 | 0.25 | 0.5 | 136.8 | 10.0 |
| SMA2Z190A | 180.50 | 190.0 | 199.50 | 2.6 | 825.0 | 8000 | 0.25 | 0.5 | 144.8 | 10.0 |
| SMA2Z200A | 190.00 | 200.0 | 210.00 | 2.5 | 1900.0 | 9990 | 0.25 | 0.5 | 152.0 | 9.0 |
| SMA2Z220A | 209.00 | 220.0 | 231.00 | 2.0 | 2000.0 | 8500 | 0.25 | 0.5 | 167.0 | 8.0 |

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

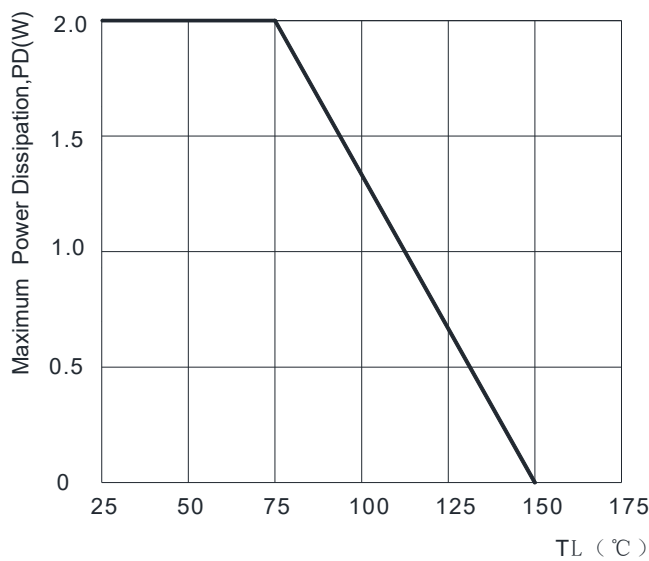


FIG2: Typical Instantaneous Forward Characteristics

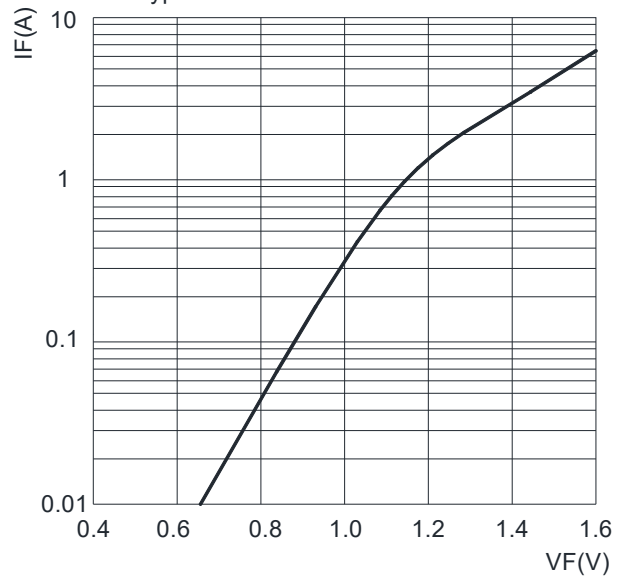


FIG3: Typical Reverse Characteristics

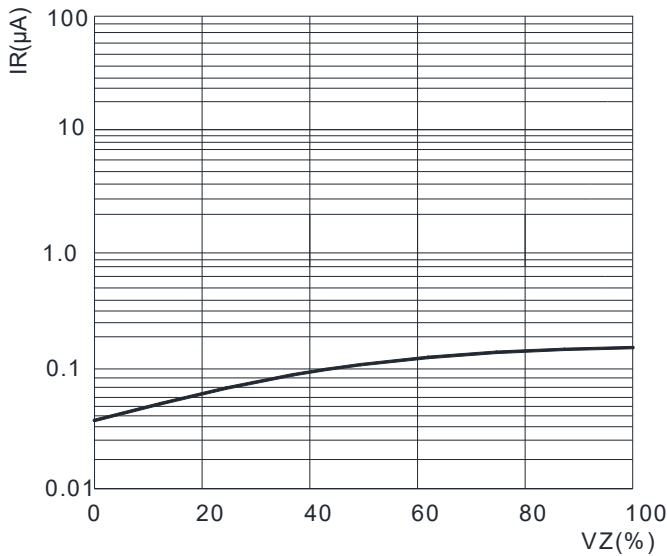
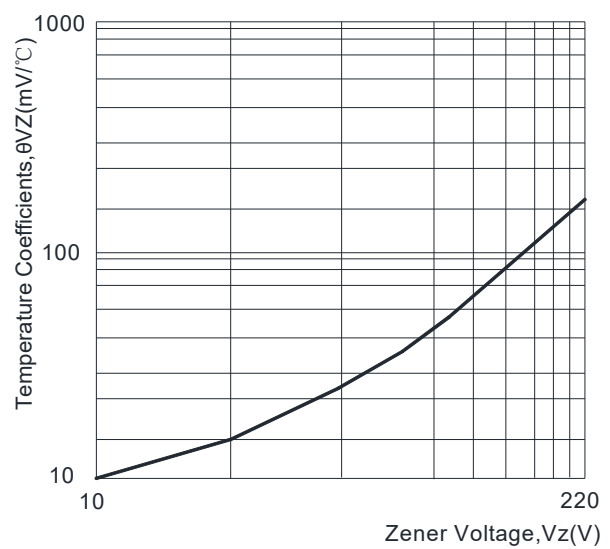


FIG4: Temperature Coefficients v.s. Zener Voltage



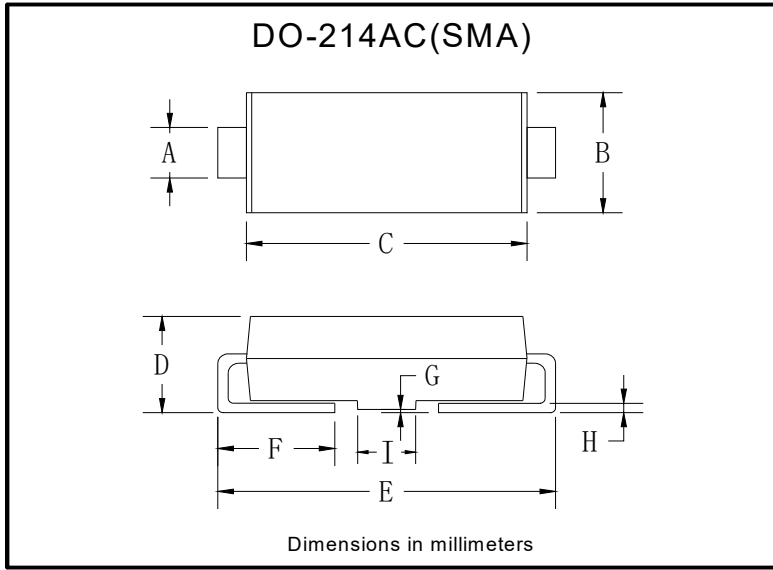
■ Ordering Information (Example)

| PREFERRED P/N | PACKAGE CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|-----------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| SMA2ZXXA SERIES | F1 | Approximate 0.059 | 5000 | 10000 | 80000 | 13" reel |



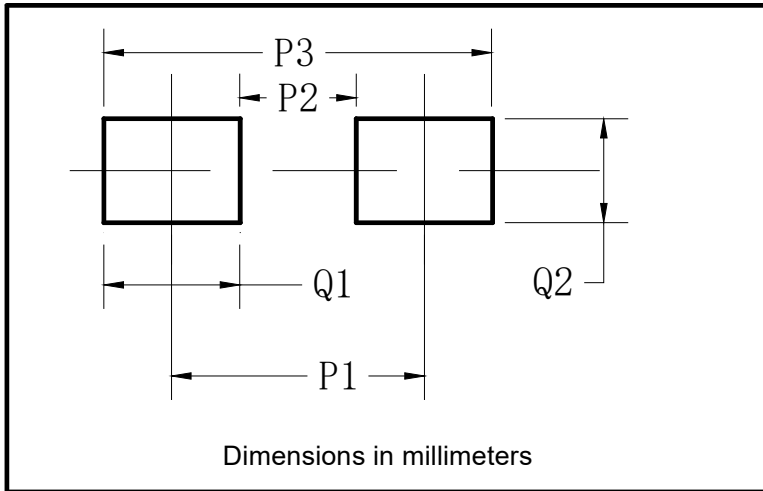
SMA2ZXXA SERIES

■ Outline Dimensions



| DO-214AC(SMA) | | |
|---------------|------|------|
| Dim | Min | Max |
| A | 1.25 | 1.58 |
| B | 2.40 | 2.83 |
| C | 4.00 | 4.75 |
| D | 1.90 | 2.30 |
| E | 4.93 | 5.28 |
| F | 0.76 | 1.41 |
| G | 0.05 | 0.20 |
| H | 0.15 | 0.31 |
| I | 1.70 | 2.10 |

■ Suggested Pad Layout



| DO-214AC(SMA) | |
|---------------|-------------|
| Dim | Millimeters |
| P1 | 4.00 |
| P2 | 1.50 |
| P3 | 6.50 |
| Q1 | 2.50 |
| Q2 | 1.70 |



SMA2ZXXA SERIES

Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.