



SOD-123FL Plastic-Encapsulate Diodes

SMF59 SERIES Zener Diodes

Features

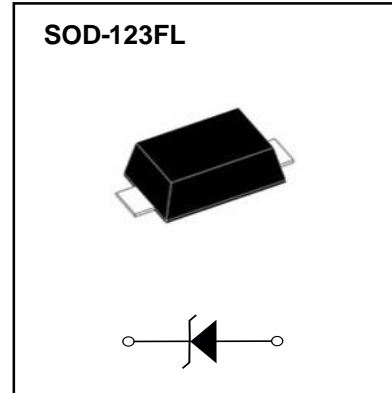
- P_{tot} 1.5W
- V_Z 3.3V- 200V
- The marking bar indicates the cathode

Applications

- Stabilizing Voltage

Marking

- SMF59XXA
XX : From 13 To 57



Limiting Values(Absolute Maximum Rating)

| Item | Symbol | Unit | Conditions | Max |
|------------------------------|-----------|-------------|-------------------|-------------|
| Power dissipation | P_d | W | $T_L=75^{\circ}C$ | 1.5 |
| Zener current | I_Z | mA | | P_V / V_Z |
| Maximum junction temperature | T_j | $^{\circ}C$ | | -65 ~ +150 |
| Storage temperature range | T_{stg} | $^{\circ}C$ | | -65 ~ +150 |

Electrical Characteristics ($T_a=25^{\circ}C$ Unless otherwise specified)

| Item | Symbol | Unit | Conditions | Max |
|--------------------|-----------------|---------------|-----------------------------|-----|
| Thermal resistance | $R_{\theta JA}$ | $^{\circ}C/W$ | Between junction to ambient | 170 |
| | $R_{\theta JL}$ | $^{\circ}C/W$ | Between junction to lead | 25 |
| Forward voltage | V_F | V | $I_F=200mA$ | 1.5 |

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Part Number | Nominal Zener Voltage @ I_T | | | I_{ZT} (mA) | Maximum Zener Impedance | | | Maximum Reverse Leakage Current | | Maximum DC Zener Current |
|-------------|-------------------------------|-----------------|-----------------|---------------|-------------------------------|-------------------------------|---------------|---------------------------------|-----------|--------------------------|
| | $V_{Z AVE}$ (V) | $V_{Z MIN}$ (V) | $V_{Z MAX}$ (V) | | $Z_{ZT MAX}^{(1)}$ @ I_{ZT} | $Z_{ZK MAX}^{(1)}$ @ I_{ZK} | I_{ZK} (mA) | I_R (μA)@ V_R | V_R (V) | |
| SMF5913A | 3.3 | 3.135 | 3.465 | 113.6 | 10 | 500.0 | 1.00 | 100.0 | 1.0 | 274.0 |
| SMF5914A | 3.6 | 3.42 | 3.78 | 104.2 | 9.0 | 500.0 | 1.00 | 75.0 | 1.0 | 251.0 |
| SMF5915A | 3.9 | 3.71 | 4.10 | 96.1 | 7.5 | 500.0 | 1.00 | 25.0 | 1.0 | 232.0 |
| SMF5916A | 4.3 | 4.09 | 4.52 | 87.2 | 6.0 | 500.0 | 1.00 | 5.0 | 1.0 | 210.0 |
| SMF5917A | 4.7 | 4.47 | 4.94 | 79.8 | 5.0 | 500.0 | 1.00 | 5.0 | 1.5 | 192.0 |
| SMF5918A | 5.1 | 4.85 | 5.36 | 73.5 | 4.0 | 350.0 | 1.00 | 5.0 | 2.0 | 177.0 |
| SMF5919A | 5.6 | 5.32 | 5.88 | 66.9 | 2.0 | 250.0 | 1.00 | 5.0 | 3.0 | 161.0 |
| SMF5920A | 6.2 | 5.89 | 6.51 | 60.5 | 2.0 | 200.0 | 1.00 | 2.5 | 4.0 | 146.0 |
| SMF5921A | 6.8 | 6.46 | 7.14 | 55.1 | 2.5 | 200.0 | 1.00 | 2.5 | 5.2 | 133.0 |
| SMF5922A | 7.5 | 7.13 | 7.88 | 50.0 | 3.0 | 400.0 | 0.50 | 2.5 | 6.0 | 121.0 |
| SMF5923A | 8.2 | 7.79 | 8.61 | 45.7 | 3.5 | 400.0 | 0.50 | 2.5 | 6.5 | 110.0 |
| SMF5924A | 9.1 | 8.65 | 9.56 | 41.2 | 4.0 | 500.0 | 0.50 | 2.5 | 7.0 | 100.0 |
| SMF5925A | 10.0 | 9.50 | 10.50 | 37.5 | 4.5 | 500.0 | 0.25 | 2.5 | 8.0 | 91.0 |
| SMF5926A | 11.0 | 10.45 | 11.55 | 34.1 | 5.5 | 550.0 | 0.25 | 0.5 | 8.4 | 83.0 |
| SMF5927A | 12.0 | 11.40 | 12.60 | 31.2 | 6.5 | 550.0 | 0.25 | 0.5 | 9.1 | 76.0 |
| SMF5928A | 13.0 | 12.35 | 13.65 | 28.8 | 7.0 | 550.0 | 0.25 | 0.5 | 9.9 | 69.0 |
| SMF5929A | 15.0 | 14.25 | 15.75 | 25.0 | 9.0 | 600.0 | 0.25 | 0.5 | 11.4 | 61.0 |
| SMF5930A | 16.0 | 15.20 | 16.80 | 23.4 | 10.0 | 600.0 | 0.25 | 0.5 | 12.2 | 57.0 |
| SMF5931A | 18.0 | 17.10 | 18.90 | 20.8 | 12.0 | 650.0 | 0.25 | 0.5 | 13.7 | 50.0 |
| SMF5932A | 20.0 | 19.00 | 21.00 | 18.7 | 14.0 | 650.0 | 0.25 | 0.5 | 15.2 | 45.0 |
| SMF5933A | 22.0 | 20.90 | 23.10 | 17.0 | 17.5 | 650.0 | 0.25 | 0.5 | 16.7 | 41.0 |
| SMF5934A | 24.0 | 22.80 | 25.20 | 15.6 | 19.0 | 700.0 | 0.25 | 0.5 | 18.2 | 38.0 |
| SMF5935A | 27.0 | 25.65 | 28.35 | 13.9 | 23.0 | 700.0 | 0.25 | 0.5 | 20.6 | 34.0 |
| SMF5936A | 30.0 | 28.50 | 31.50 | 12.5 | 26.0 | 750.0 | 0.25 | 0.5 | 22.8 | 30.0 |
| SMF5937A | 33.0 | 31.35 | 34.65 | 11.4 | 33.0 | 800.0 | 0.25 | 0.5 | 25.1 | 27.0 |
| SMF5938A | 36.0 | 34.20 | 37.80 | 10.4 | 38.0 | 850.0 | 0.25 | 0.5 | 27.4 | 25.0 |
| SMF5939A | 39.0 | 37.05 | 40.95 | 9.6 | 45.0 | 900.0 | 0.25 | 0.5 | 29.7 | 23.0 |
| SMF5940A | 43.0 | 40.85 | 45.15 | 8.7 | 53.0 | 950.0 | 0.25 | 0.5 | 32.7 | 22.0 |
| SMF5941A | 47.0 | 44.65 | 49.35 | 8.0 | 67.0 | 1000.0 | 0.25 | 0.5 | 35.8 | 19.0 |
| SMF5942A | 51.0 | 48.45 | 53.55 | 7.3 | 70.0 | 1100.0 | 0.25 | 0.5 | 38.8 | 18.0 |
| SMF5943A | 56.0 | 53.20 | 58.80 | 6.7 | 86.0 | 1300.0 | 0.25 | 0.5 | 42.6 | 16.0 |
| SMF5944A | 62.0 | 58.90 | 65.10 | 6.0 | 100.0 | 1500.0 | 0.25 | 0.5 | 47.1 | 14.0 |
| SMF5945A | 68.0 | 64.60 | 71.40 | 5.5 | 120.0 | 1700.0 | 0.25 | 0.5 | 51.7 | 13.0 |
| SMF5946A | 75.0 | 71.25 | 78.75 | 5.0 | 140.0 | 2000.0 | 0.25 | 0.5 | 56.0 | 12.0 |
| SMF5947A | 82.0 | 77.90 | 86.10 | 4.6 | 160.0 | 2500.0 | 0.25 | 0.5 | 62.2 | 11.0 |
| SMF5948A | 91.0 | 86.45 | 95.55 | 4.1 | 200.0 | 3000.0 | 0.25 | 0.5 | 69.2 | 10.0 |
| SMF5949A | 100.0 | 95.00 | 105.00 | 3.7 | 250.0 | 3100.0 | 0.25 | 0.5 | 76.0 | 9.0 |
| SMF5950A | 110.0 | 104.50 | 115.50 | 3.4 | 300.0 | 4000.0 | 0.25 | 0.5 | 83.6 | 8.6 |
| SMF5951A | 120.0 | 114.00 | 126.00 | 3.1 | 380.0 | 4500.0 | 0.25 | 0.5 | 91.2 | 7.8 |
| SMF5952A | 130.0 | 123.50 | 136.50 | 2.9 | 450.0 | 5000.0 | 0.25 | 0.5 | 98.8 | 7.0 |
| SMF5953A | 150.0 | 142.50 | 157.50 | 2.5 | 600.0 | 6000.0 | 0.25 | 0.5 | 114.0 | 6.4 |
| SMF5954A | 160.0 | 152.00 | 168.00 | 2.3 | 700.0 | 6500.0 | 0.25 | 0.5 | 121.6 | 5.8 |
| SMF5955A | 180.0 | 171.00 | 189.00 | 2.1 | 900.0 | 7000.0 | 0.25 | 0.5 | 136.8 | 5.2 |
| SMF5956A | 200.0 | 190.00 | 210.00 | 1.9 | 1200.0 | 8000.0 | 0.25 | 0.5 | 152.0 | 4.7 |

Notes :

- (1) The type number listed have a standard tolerance on the nominal zener voltage of $\pm 5\%$
- (2) The reverse surge current is a non-repetitive, 8.3ms pulse width square wave or equivalent sine-wave superimposed on IZT per method.

Typical Characteristics

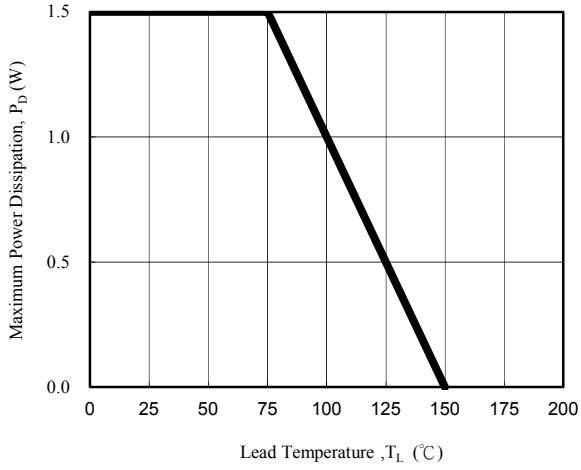


Fig. 1 - Power Temperature Derating Curve

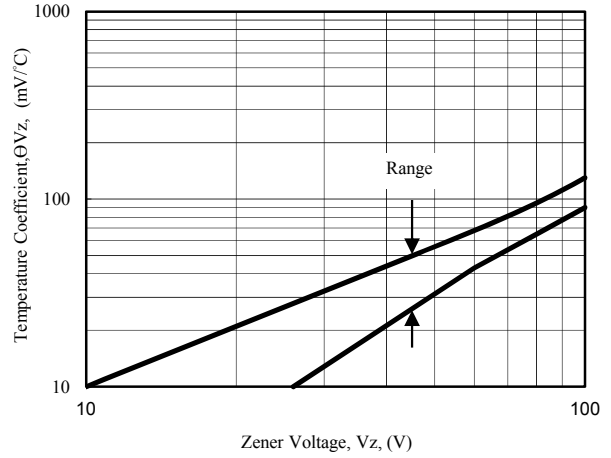


Fig. 2 - Temperature Coefficients v.s. Zener Voltage



Fig. 3 - Typical Thermal Resistance v.s. Lead Length

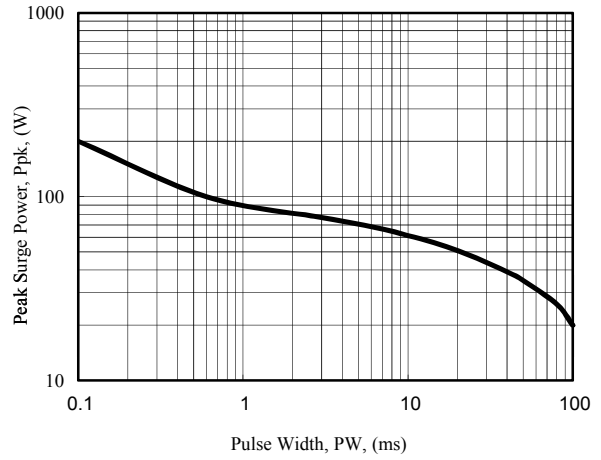


Fig. 4 - Maximum Surge Power

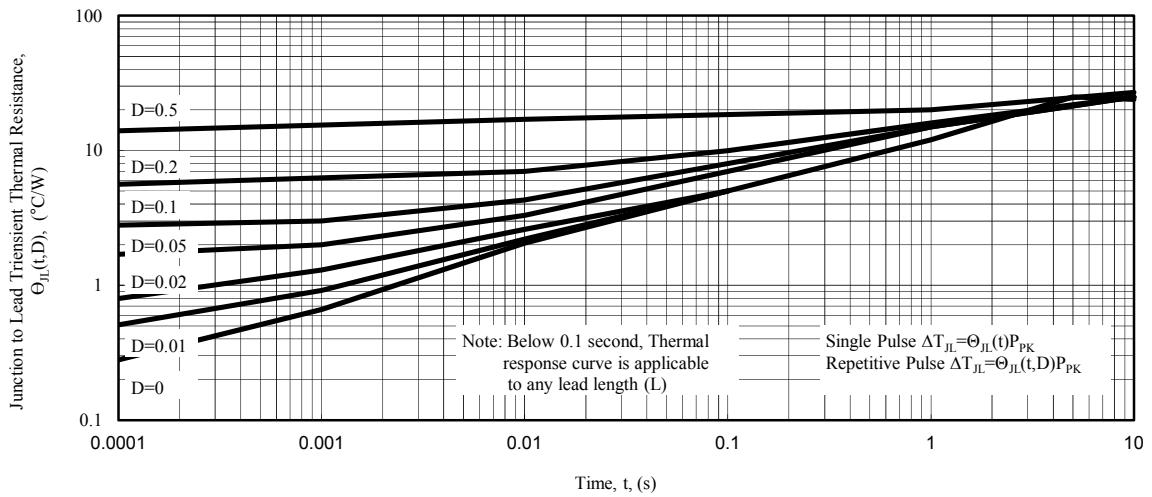
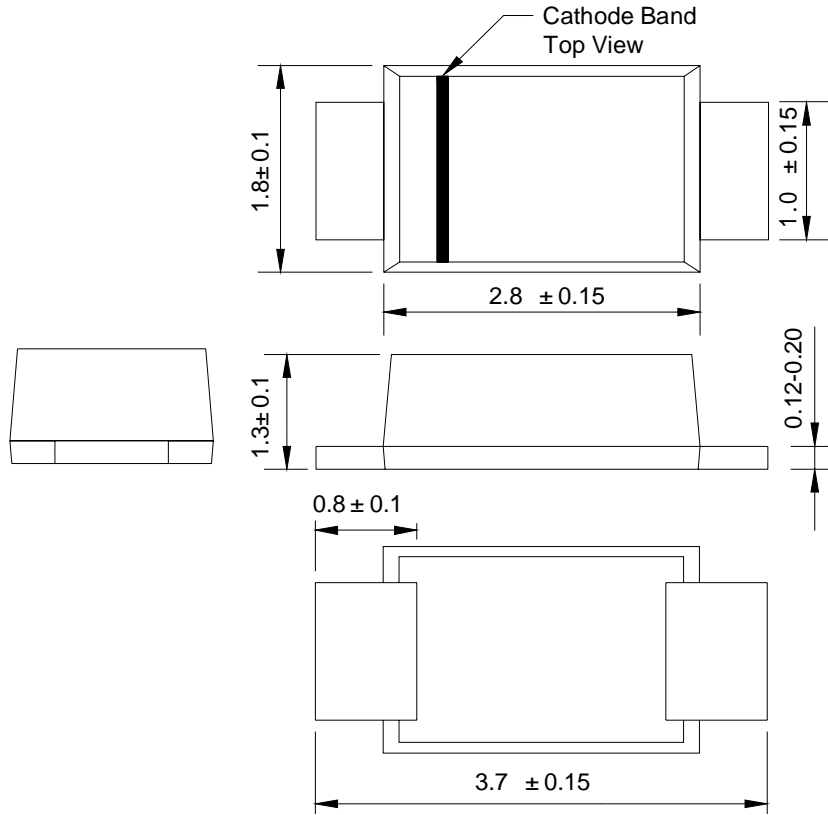


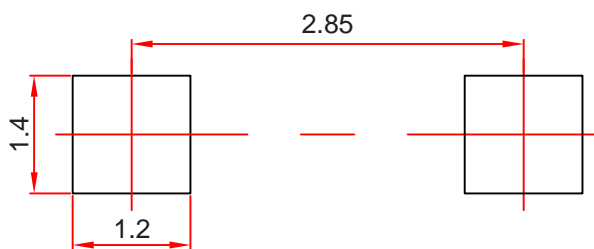
Fig. 5 - Typical Thermal Response L, Lead Length=3/8inch

SOD-123FL Package Outline Dimensions



Dimensions in millimeters

SOD-123FL Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

NOTICE

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Reel Taping Specifications For Surface Mount Devices-SOD-123FL

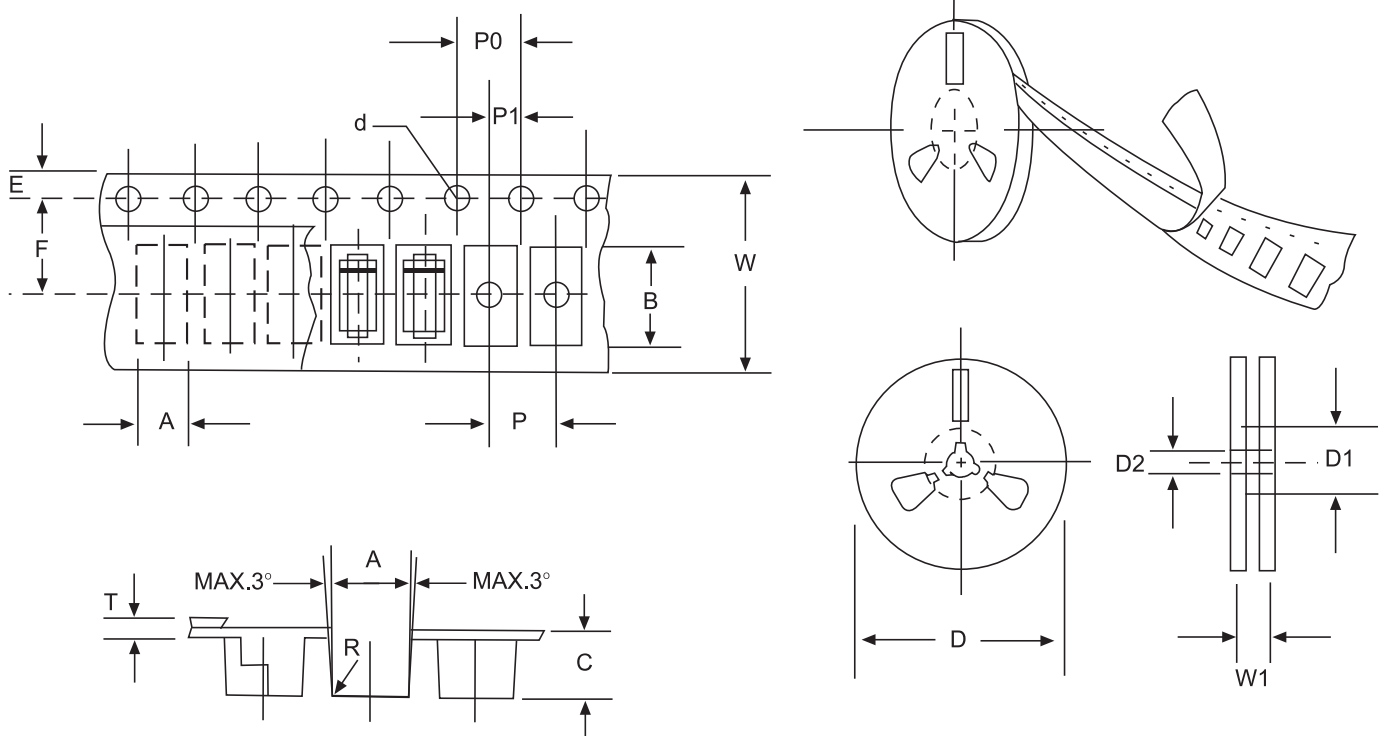


FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING

| ITEM | SYMBOL | SOD-123FLmm(inch) |
|------------------------|--------|------------------------|
| Carrier width | A | 2.05±0.1(0.081±0.004) |
| Carrier length | B | 3.95±0.1(0.156±0.004) |
| Carrier depth | C | 1.45±0.1(0.057±0.004) |
| Sprocket hole | d | 1.55±0.05(0.061±0.002) |
| Reel outside diameter | D | 178±2.0(7.0±0.079) |
| Reel inner diameter | D1 | 54±1.0(2.13±0.039) |
| Feed hole diameter | D2 | 13±0.5(0.512±0.020) |
| Sprocket hole position | E | 1.75±0.1(0.069±0.004) |
| Punch hole position | F | 3.50±0.1(0.138±0.002) |
| Punch hole pitch | P | 4.0±0.1(0.157±0.004) |
| Sprocket hole pitch | P0 | 4.0±0.1(0.157±0.004) |
| Embossment center | P1 | 2.0±0.1(0.079±0.004) |
| Totall tape thickness | T | 0.21±0.25(0.008±0.010) |
| Tape width | W | 8.0±0.2(0.315±0.008) |
| Reel width | W1 | 10.0±2.0(0.394±0.079) |

NOTE: Devices are packed in accordance with EIA standard RS-481-A and specification given above.