

**Silicon Planar Zener Diodes**

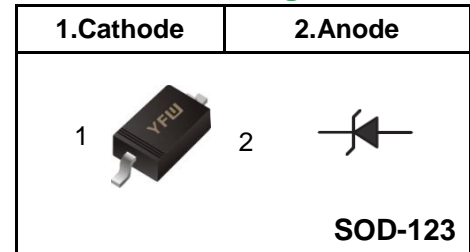
**FEATURES**

- ◆ Total power dissipation: Max. 1 W.
- ◆ Wide zener reverse voltage range 3.3V to 330V.
- ◆ Small plastic package suitable for surface mounted design.
- ◆ Lead free in comply with EU RoHS 2011/65/EU directives

**MECHANICAL DATA**

- ◆ Case: SOD-123
- ◆ Terminals: Solderable per MIL-STD-750, Method 2026
- ◆ Approx. Weight: 15mg /0.00048oz

**Pinning**

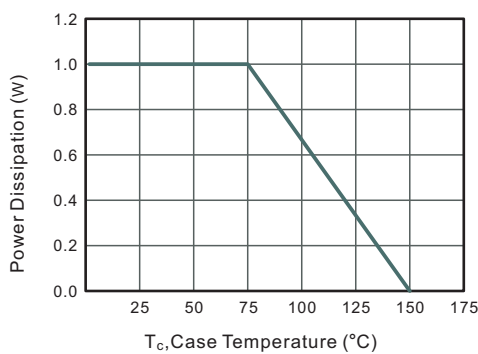


**Absolute Maximum Ratings And Characteristics (Ta = 25 °C)**

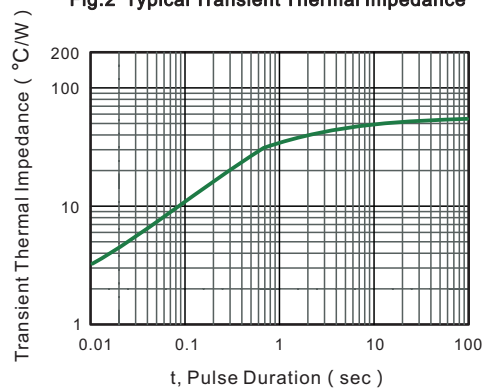
| Parameter   | Symbol                                | Value      | Unit        |
|---|---------------------------------------|------------|-------------|
| Power Dissipation at TL=75°C                                  | <b>P<sub>D</sub></b>                  | 1          | <b>W</b>    |
| Forward Voltage at IF = 200 mA                                | <b>V<sub>F</sub></b>                  | 1.2        | <b>V</b>    |
| Typical thermal resistance junction to ambient <sup>(1)</sup> | <b>R<sub>θJA</sub></b>                | 300        | <b>°C/W</b> |
| Operating and Storage Temperature Range                       | <b>T<sub>j</sub>, T<sub>stg</sub></b> | -55 ~ +150 | <b>°C</b>   |

(1) Thermal resistance from junction to ambient at P.C.B. mounted with 2.0" X 2.0" (5 X 5 cm) copper areas pads.

**Fig.1 Maximum Continuous Power Derating**



**Fig.2 Typical Transient Thermal Impedance**



| Type    | Marking | Zener Voltage Range <sup>(1)</sup>    |         |         | I <sub>ZT</sub><br>(mA) | Dynamic<br>Impedance<br>Z <sub>ZT</sub> (at I <sub>ZT</sub> )<br>Max (Ω) | Reverse Current |                   | Admissible<br>Zener Current<br>I <sub>ZM</sub> (mA) |
|---------|---------|---------------------------------------|---------|---------|-------------------------|--|-----------------|-------------------|---|
|         |         | V <sub>ZT</sub> (at I <sub>ZT</sub> ) |         |         |                         |  | I <sub>R</sub>  | at V <sub>R</sub> |   |
|         |         | Min (V)                               | Nom (V) | Max (V) |                         |  | Max (μA)        | (V)               |   |
| MM1W3V3 | FHD     | 3.10                                  | 3.3     | 3.50    | 75                      | 10   | 100             | 1                 | 285   |
| MM1W3V6 | FHE     | 3.40                                  | 3.6     | 3.80    | 69                      | 10   | 100             | 1                 | 263   |
| MM1W3V9 | FHF     | 3.70                                  | 3.9     | 4.10    | 64                      | 9.0  | 50              | 1                 | 243   |
| MM1W4V3 | FHG     | 4.06                                  | 4.3     | 4.56    | 58                      | 9.0  | 25              | 1                 | 219   |
| MM1W4V7 | FHJ     | 4.50                                  | 4.7     | 4.93    | 53                      | 8.0  | 10              | 1                 | 203   |
| MM1W5V1 | FHK     | 4.84                                  | 5.1     | 5.36    | 49                      | 7.0  | 10              | 1                 | 186   |
| MM1W5V6 | FHL     | 5.32                                  | 5.6     | 5.92    | 45                      | 5.0  | 10              | 2                 | 170   |
| MM1W6V2 | FHN     | 5.86                                  | 6.2     | 6.51    | 41                      | 2.0  | 10              | 3                 | 154   |
| MM1W6V8 | FHO     | 6.46                                  | 6.8     | 7.18    | 37                      | 3.5  | 10              | 4                 | 140   |
| MM1W7V5 | FHQ     | 7.12                                  | 7.5     | 7.88    | 34                      | 4.0  | 10              | 5                 | 127   |
| MM1W8V2 | FHR     | 7.79                                  | 8.2     | 8.67    | 31                      | 4.5  | 10              | 6                 | 116   |
| MM1W9V1 | FHT     | 8.60                                  | 9.1     | 9.59    | 28                      | 5.0  | 10              | 7                 | 104   |
| MM1W10  | FHU     | 9.50                                  | 10      | 10.5    | 25                      | 7.0  | 10              | 7                 | 95  |
| MM1W11  | FHV     | 10.4                                  | 11      | 11.6    | 23                      | 8.0  | 5               | 8                 | 86  |
| MM1W12  | FHW     | 11.4                                  | 12      | 12.6    | 21                      | 9.0  | 5               | 9                 | 79  |
| MM1W13  | FHX     | 12.4                                  | 13      | 14.1    | 19                      | 10   | 5               | 10                | 71  |
| MM1W15  | FHZ     | 13.8                                  | 15      | 15.8    | 17                      | 14   | 5               | 11                | 63  |
| MM1W16  | FJA     | 15.2                                  | 16      | 17.1    | 16                      | 16   | 5               | 12                | 58  |
| MM1W18  | FJF     | 16.8                                  | 18      | 19.2    | 14                      | 20   | 5               | 13                | 52  |
| MM1W20  | FJG     | 19.0                                  | 20      | 21.2    | 13                      | 22   | 5               | 15                | 47  |
| MM1W22  | FJK     | 20.8                                  | 22      | 23.3    | 12                      | 23   | 5               | 17                | 43  |
| MM1W24  | FJL     | 22.8                                  | 24      | 26.0    | 11                      | 25   | 5               | 18                | 38  |
| MM1W27  | FJN     | 25.3                                  | 27      | 28.9    | 9.5                     | 35   | 5               | 21                | 35  |
| MM1W30  | FJQ     | 28.2                                  | 30      | 32.0    | 8.5                     | 40   | 5               | 23                | 31  |
| MM1W33  | FJR     | 31.3                                  | 33      | 34.9    | 7.5                     | 45   | 5               | 25                | 28  |
| MM1W36  | FJS     | 34.2                                  | 36      | 37.9    | 7.0                     | 50   | 5               | 27                | 26  |
| MM1W39  | FJT     | 37.2                                  | 39      | 41.5    | 6.5                     | 60   | 5               | 30                | 24  |
| MM1W43  | FLG     | 40.9                                  | 43      | 45.6    | 6.0                     | 70   | 1               | 32                | 22  |
| MM1W47  | FLJ     | 44.9                                  | 47      | 49.8    | 5.5                     | 80   | 1               | 35                | 20  |
| MM1W51  | FLK     | 48.6                                  | 51      | 54.0    | 5.0                     | 95   | 1               | 38                | 18  |
| MM1W56  | FLL     | 53.6                                  | 56      | 58.8    | 4.5                     | 110  | 1               | 42                | 17  |
| MM1W62  | FLN     | 58.9                                  | 62      | 65.6    | 4.0                     | 125  | 1               | 47                | 15  |
| MM1W68  | FLO     | 64.6                                  | 68      | 71.7    | 3.7                     | 150  | 1               | 52                | 14  |
| MM1W75  | FLQ     | 71.2                                  | 75      | 78.8    | 3.3                     | 175  | 1               | 56                | 12  |
| MM1W82  | FLR     | 77.9                                  | 82      | 87.0    | 3.0                     | 200  | 1               | 62                | 11  |
| MM1W91  | FLT     | 86.0                                  | 91      | 96.0    | 2.8                     | 250  | 1               | 69                | 10  |
| MM1W100 | FLU     | 95.0                                  | 100     | 105     | 2.5                     | 350  | 1               | 76                | 9.5   |
| MM1W110 | FLV     | 104                                   | 110     | 116     | 2.3                     | 450  | 1               | 84                | 8.6   |
| MM1W120 | FLW     | 114                                   | 120     | 127     | 2.0                     | 550  | 1               | 91                | 7.8   |
| MM1W135 | FLX     | 125                                   | 135     | 142     | 1.9                     | 700  | 1               | 100               | 7.0   |
| MM1W150 | FLZ     | 140                                   | 150     | 157     | 1.7                     | 900  | 1               | 110               | 6.3   |
| MM1W165 | FPA     | 155                                   | 165     | 172     | 1.6                     | 1100   | 1               | 120               | 5.8   |
| MM1W180 | FPF     | 170                                   | 180     | 191     | 1.4                     | 1200   | 1               | 135               | 5.2   |
| MM1W200 | FPG     | 189                                   | 200     | 211     | 1.2                     | 1400   | 1               | 150               | 4.7   |
| MM1W220 | FPK     | 209                                   | 220     | 231     | 1.0                     | 1600   | 1               | 165               | 4.3   |
| MM1W240 | FPL     | 229                                   | 240     | 251     | 1.0                     | 1800   | 1               | 180               | 3.9   |
| MM1W260 | FPM     | 249                                   | 260     | 271     | 1.0                     | 2000   | 1               | 190               | 3.7   |
| MM1W280 | FPN     | 269                                   | 280     | 291     | 1.0                     | 2100   | 1               | 205               | 3.4   |
| MM1W300 | FPQ     | 289                                   | 300     | 315     | 1.0                     | 2300   | 1               | 230               | 3.1   |
| MM1W330 | FLR     | 313                                   | 330     | 346     | 1.0                     | 2500   | 1               | 250               | 2.8   |

(1) V<sub>ZT</sub> is tested with pulses (20 ms)

**Package Outline SOD-123**

Plastic surface mounted package; 2 leads



| UNIT |     | A   | C    | D   | E   | E <sub>1</sub> | L <sub>1</sub> | b   | A <sub>1</sub> | ∠  |
|------|-----|-----|------|-----|-----|----------------|----------------|-----|----------------|----|
| mm   | max | 1.3 | 0.22 | 1.8 | 2.8 | 3.9            | 0.45           | 0.7 | 0.2            | 9° |
|      | min | 0.9 | 0.09 | 1.5 | 2.5 | 3.6            | 0.25           | 0.5 | —              |    |
| mil  | max | 51  | 8.7  | 71  | 110 | 154            | 18             | 28  | 8              |    |
|      | min | 35  | 3.5  | 59  | 98  | 142            | 10             | 20  | —              |    |

**The recommended mounting pad size**



Unit:  $\frac{\text{mm}}{\text{mil}}$

**Summary of Packing Options**

| Package | Packing Description | Packing Quantity | Industry Standard |
|---------|---------------------|------------------|-------------------|
| SOD-123 | Tape/Reel, 7" reel  | 3000             | EIA-481-1         |