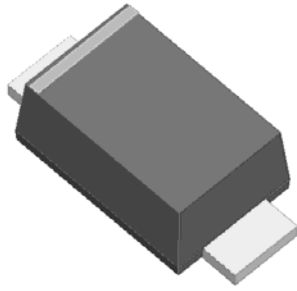


## Surface Mount Zener Diodes



### 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:** SOD-123FL  
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<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                                                    | SYMBOL           | UNIT | MAX         |
|--------------------------------------------------------------|------------------|------|-------------|
| DC power dissipation at T <sub>L</sub> = 75 °C               | P <sub>D</sub>   | W    | 1           |
| Maximum instantaneous forward voltage@ I <sub>F</sub> =500mA | V <sub>F</sub>   | V    | 1.5         |
| Maximum junction temperature                                 | T <sub>j</sub>   | °C   | -55 to +150 |
| Storage temperature range                                    | T <sub>stg</sub> | °C   | -55 to +150 |

### ■Thermal Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                                  | SYMBOL            | UNIT | Conditions          | VALUE |
|--------------------------------------------|-------------------|------|---------------------|-------|
| Thermal resistance(Typical) <sup>(1)</sup> | R <sub>θJ-A</sub> | °C/W | junction to lead    | 60    |
|                                            | R <sub>θJ-L</sub> | °C/W | junction to ambient | 20    |
|                                            | R <sub>θJ-C</sub> | °C/W | junction to case    | 18    |

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<sub>a</sub>=25°C Unless otherwise specified)

| Part Number | Nominal Zener voltage            |                                   |                                  | Test current<br><br>$I_{ZT}$<br><br>mA | Maximum<br>dynamic<br>impedance<br>resistance<br><br>$Z_{ZT}$ at $I_{ZT}$<br><br>$\Omega$ | Maximum reverse leakage<br>current |                             | Maximum DC<br>Zener Current<br><br>$I_{ZM}$<br><br>mA |
|-------------|----------------------------------|-----------------------------------|----------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------|-----------------------------|-------------------------------------------------------|
|             | Min<br>$V_{Z^{(1)}}$ at $I_{ZT}$ | Typ.<br>$V_{Z^{(1)}}$ at $I_{ZT}$ | Max<br>$V_{Z^{(1)}}$ at $I_{ZT}$ |                                        |                                                                                           | $I_R$<br><br>$\mu A$               | Test voltage $V_R$<br><br>V |                                                       |
|             | V                                | V                                 | V                                |                                        |                                                                                           |                                    |                             |                                                       |
| SMFZ5.6B    | 5.6                              | 5.95                              | 6.3                              | 40                                     | 8                                                                                         | 20                                 | 1.5                         | 118                                                   |
| SMFZ6.2B    | 6.2                              | 6.6                               | 7.0                              | 40                                     | 6                                                                                         | 20                                 | 3.0                         | 116                                                   |
| SMFZ6.8B    | 6.8                              | 7.25                              | 7.7                              | 40                                     | 6                                                                                         | 20                                 | 3.5                         | 97                                                    |
| SMFZ7.5B    | 7.5                              | 7.95                              | 8.4                              | 40                                     | 4                                                                                         | 20                                 | 4.0                         | 88                                                    |



## SMFZXXB SERIES

| Part Number | Nominal Zener voltage       |                              |                             | Test current<br>$I_{ZT}$ | Maximum dynamic impedance resistance<br>$Z_{ZT}$ at $I_{ZT}$ | Maximum reverse leakage current |                    | Maximum DC Zener Current<br>$I_{ZM}$ |
|-------------|-----------------------------|------------------------------|-----------------------------|--------------------------|--------------------------------------------------------------|---------------------------------|--------------------|--------------------------------------|
|             | Min $V_Z^{(1)}$ at $I_{ZT}$ | Typ. $V_Z^{(1)}$ at $I_{ZT}$ | Max $V_Z^{(1)}$ at $I_{ZT}$ |                          |                                                              | $I_R$                           | Test voltage $V_R$ |                                      |
|             | V                           | V                            | V                           |                          |                                                              | $\mu A$                         | V                  |                                      |
| SMFZ8.2B    | 8.2                         | 8.75                         | 9.3                         | 40                       | 4                                                            | 20                              | 5.0                | 80                                   |
| SMFZ9.1B    | 9.1                         | 9.65                         | 10.2                        | 40                       | 6                                                            | 20                              | 6.0                | 73                                   |
| SMFZ10B     | 10                          | 10.6                         | 11.2                        | 40                       | 6                                                            | 10                              | 7.0                | 66                                   |
| SMFZ11B     | 11                          | 11.65                        | 12.3                        | 20                       | 8                                                            | 10                              | 8.0                | 60                                   |
| SMFZ12B     | 12                          | 12.75                        | 13.5                        | 20                       | 8                                                            | 10                              | 9.0                | 54.9                                 |
| SMFZ13B     | 13.3                        | 14.15                        | 15                          | 20                       | 10                                                           | 10                              | 10.0               | 49                                   |
| SMFZ15B     | 14.7                        | 15.6                         | 16.5                        | 20                       | 10                                                           | 10                              | 11.0               | 44.9                                 |
| SMFZ16B     | 16.2                        | 17.25                        | 18.3                        | 20                       | 12                                                           | 10                              | 12.0               | 40.6                                 |
| SMFZ18B     | 18                          | 19.15                        | 20.3                        | 20                       | 12                                                           | 10                              | 13.0               | 36.6                                 |
| SMFZ20B     | 20                          | 21.2                         | 22.4                        | 20                       | 14                                                           | 10                              | 15.0               | 33                                   |
| SMFZ22B     | 22                          | 23.25                        | 24.5                        | 10                       | 14                                                           | 10                              | 17.0               | 30.1                                 |
| SMFZ24B     | 24                          | 25.8                         | 27.6                        | 10                       | 16                                                           | 10                              | 19.0               | 27.1                                 |
| SMFZ27B     | 27                          | 28.9                         | 30.8                        | 10                       | 16                                                           | 10                              | 21.0               | 24.2                                 |
| SMFZ30B     | 30                          | 32                           | 34                          | 10                       | 18                                                           | 10                              | 23.0               | 21.9                                 |
| SMFZ33B     | 33                          | 34.9                         | 37                          | 10                       | 18                                                           | 10                              | 25.0               | 20                                   |
| SMFZ36B     | 36                          | 38.1                         | 40                          | 10                       | 20                                                           | 10                              | 27.0               | 18.4                                 |

### Notes:

- (1) Nominal Zener voltage Range: 95% Typ.  $V_Z$  (1) at  $I_{ZT}$ ---105% Typ.  $V_Z$  (1) at  $I_{ZT}$
- (2) Surge current is a non-repetitive, 8.3ms pulse width square wave or equivalent sine-wave superimposed on  $I_{ZT}$  per JEDEC method

### ■ Characteristics (Typical)

FIG1: Power Temperature Derating Curve

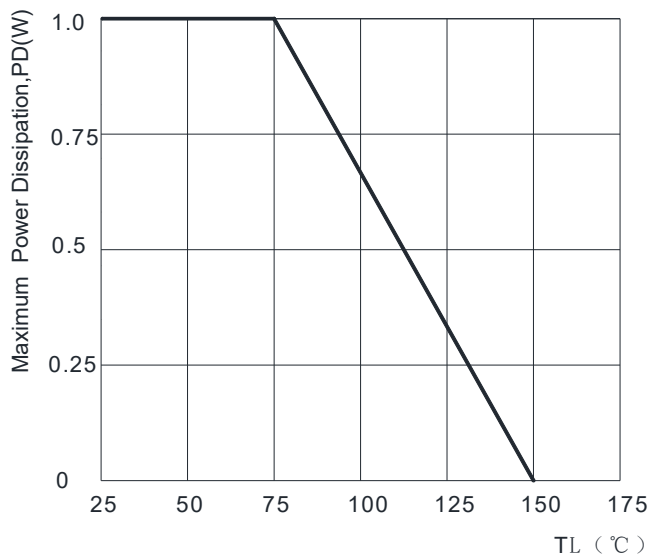
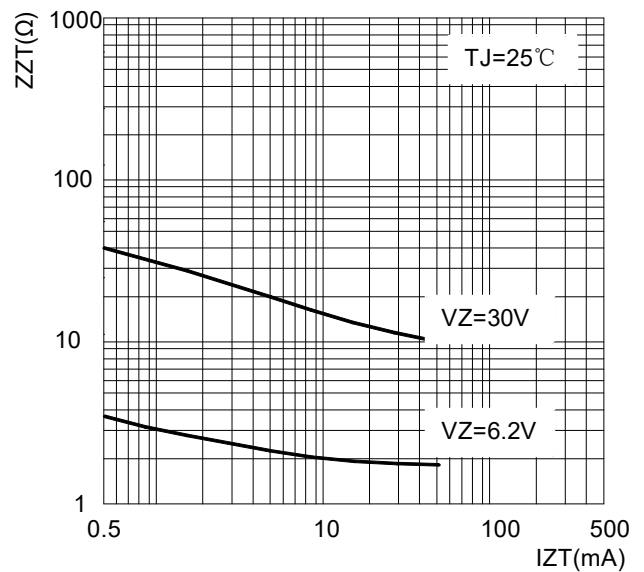


FIG2: Typical Zener Impedance





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### ■ Characteristics (Typical)

FIG3: Pulse Waveform

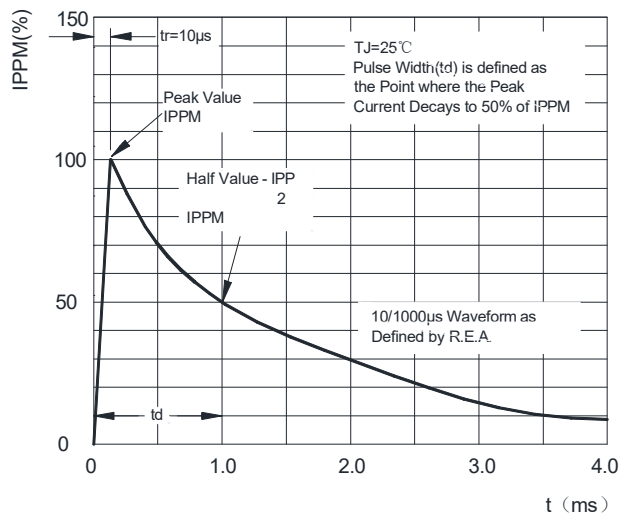


FIG4: Temperature Coefficients v.s. Zener Voltage

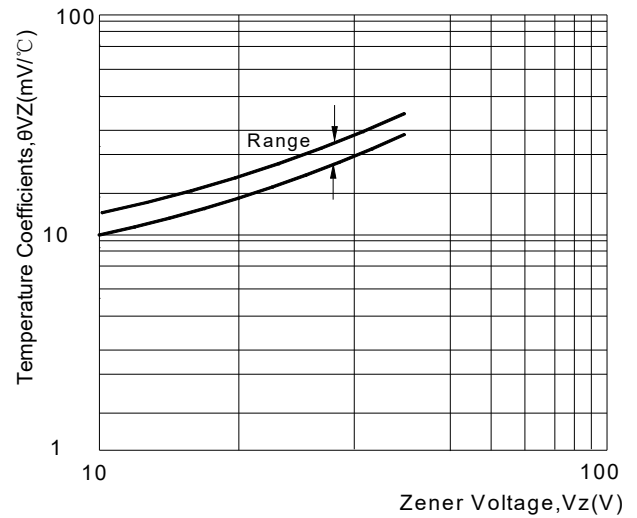
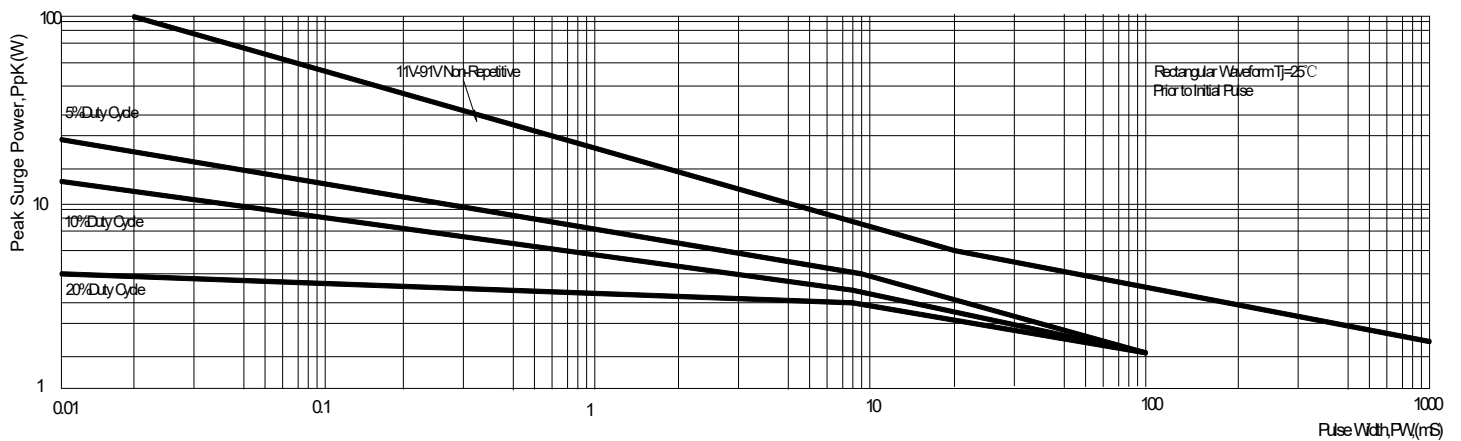


FIG5: Maximum Surge Power



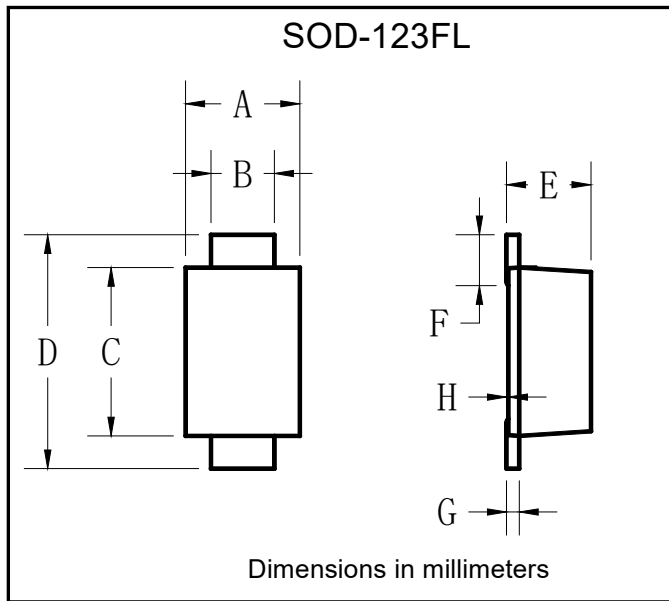
### ■ Ordering Information (Example)

| PREFERRED P/N  | PACKAGE CODE | UNIT WEIGHT(g)     | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|----------------|--------------|--------------------|----------------------|-------------------------|----------------------------|---------------|
| SMFZXXB SERIES | F1           | Approximate 0.0169 | 3000                 | 30000                   | 120000                     | 7" reel       |



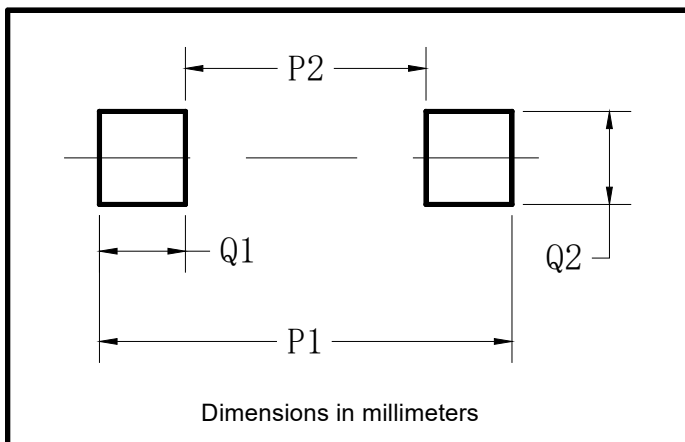
## SMFZXXB SERIES

### ■ Outline Dimensions



| SOD-123FL |      |      |
|-----------|------|------|
| Dim       | Min  | Max  |
| A         | 1.60 | 1.90 |
| B         | 0.90 | 1.10 |
| C         | 2.55 | 2.85 |
| D         | 3.60 | 3.90 |
| E         | 1.00 | 1.20 |
| F         | 0.40 | 0.90 |
| G         | 0.10 | 0.25 |
| H         | 0.02 | 0.05 |

### ■ Suggested Pad Layout



| SOD-123FL |             |
|-----------|-------------|
| Dim       | Millimeters |
| P1        | 3.90        |
| P2        | 1.90        |
| Q1        | 1.00        |
| Q2        | 1.50        |



## SMFZXXB SERIES

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