

# SZSMF4L Series

## Automotive, Surface Mount 400 W in SOD-123FL



### Additional Information



Resources



Accessories



Samples

### Maximum Ratings & Thermal Characteristics

| Parameter                                                  | Symbol          | Value       | Unit                 |
|------------------------------------------------------------|-----------------|-------------|----------------------|
| Maximum $P_{PK}$ dissipation (PW=10/1000 $\mu$ s) (Note 1) | $P_{PK}$        | 400         | W                    |
| DC power dissipation @ $T_A = 25^\circ\text{C}$ (Note 2)   | $P_D$           | 385         | mW                   |
| derate Above $25^\circ\text{C}$                            |                 | 4.0         | mW/ $^\circ\text{C}$ |
| Thermal resistance from junction to ambient (Note 2)       | $R_{\theta JA}$ | 150         | $^\circ\text{C/W}$   |
| Thermal resistance from junction to lead (Note 3)          | $R_{\theta JL}$ | 26          | $^\circ\text{C/W}$   |
| Operating and storage temperature range                    | $T_J, T_{stg}$  | -55 to +175 | $^\circ\text{C}$     |

Stresses exceeding maximum ratings may damage the component. Maximum ratings are stress ratings only. Functional operation above the recommended operating conditions is not implied. Extended exposure to stresses above the recommended operating conditions may affect component reliability.

1. Non-repetitive current pulse at  $T_A = 25^\circ\text{C}$
2. Mounted with recommended minimum pad size, DC board FR-4.
3. 1/2 sine wave (or equivalent square wave), PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.

### Description

The SZSMF4L series is designed to protect sensitive systems or components from high voltage, high energy transients. It offers a fast response time, low zener impedance, high surge and excellent clamping capabilities. Because of its small size, it is ideal for use in automotive electronics applications

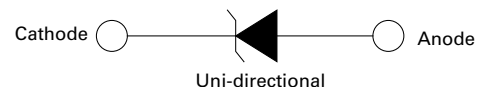
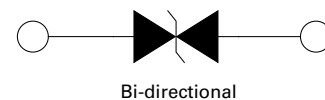
### Features & Benefits

- Zener transient overvoltage suppressors
- Working peak reverse voltage range 5 V to 78 V for uni-directional and 10 V to 78 V for bi-directional
- Peak power: 400 watts @ 1 ms
- Planar chip design with low leakage current performance
- Response time is typically < 1 ns
- ESD rating of class 3 (> 16 kV) per human body model
- IEC-61000-4-2 ESD 30 kV(Air), 30 kV (Contact)
- Lead orientation in tape: cathode lead to sprocket holes
- These components are Pb-free and are RoHS compliant
- SZ prefix for automotive and other applications requiring control change requirements; AEC-Q101 qualified and PPAP capable
- $VBR @ T_J = VBR @ 25^\circ\text{C} \times (1 + \alpha T_J \times (T_J - 25))$  ( $\alpha T$ : Temperature Coefficient)

### Applications

TVS components are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in Automotive applications.

### Functional Diagram



# SZSMF4L Series

## Automotive, Surface Mount 400 W in SOD-123FL

### Electrical Characteristics

| Part Number (Uni) | Part Number (Bi) | Marking |     | Working Peak Reverse Voltage $V_{RWM}$ (V) (Note 4) | Breakdown Voltage $V_{BR}$ (V) @ $I_T$ (Note 5) |       | Test Current $I_T$ (mA) | Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V) | Maximum Peak Pulse Current $I_{PP}$ (A) | Maximum Reverse Leakage $I_R$ @ $V_R$ ( $\mu$ A) (Note 6) |
|-------------------|------------------|---------|-----|-----------------------------------------------------|-------------------------------------------------|-------|-------------------------|-----------------------------------------------|-----------------------------------------|-----------------------------------------------------------|
|                   |                  | Uni     | Bi  |                                                     | Min                                             | Max   |                         |                                               |                                         |                                                           |
| SZSMF4L5.0AT1G    | -                | QE      | -   | 5.0                                                 | 6.40                                            | 7.00  | 10                      | 9.2                                           | 43.5                                    | 50                                                        |
| SZSMF4L6.0AT1G    | -                | QG      | -   | 6.0                                                 | 6.67                                            | 7.37  | 10                      | 10.3                                          | 38.8                                    | 50                                                        |
| SZSMF4L6.5AT1G    | -                | QK      | -   | 6.5                                                 | 7.22                                            | 7.98  | 10                      | 11.2                                          | 35.7                                    | 40                                                        |
| SZSMF4L7.0AT1G    | -                | QL      | -   | 7.0                                                 | 7.78                                            | 8.60  | 10                      | 12.0                                          | 33.3                                    | 40                                                        |
| SZSMF4L7.5AT1G    | -                | QN      | -   | 7.5                                                 | 8.33                                            | 9.21  | 1                       | 12.9                                          | 31.0                                    | 30                                                        |
| SZSMF4L8.0AT1G    | -                | QR      | -   | 8.0                                                 | 8.89                                            | 9.83  | 1                       | 13.6                                          | 29.4                                    | 5                                                         |
| SZSMF4L8.5AT1G    | -                | QT      | -   | 8.5                                                 | 9.44                                            | 10.40 | 1                       | 14.4                                          | 27.8                                    | 5                                                         |
| SZSMF4L9.0AT1G    | -                | QV      | -   | 9.0                                                 | 10.00                                           | 11.10 | 1                       | 15.4                                          | 26.0                                    | 2                                                         |
| SZSMF4L10AT1G     | SZSMF4L10CAT1G   | QX      | QXC | 10                                                  | 11.10                                           | 12.30 | 1                       | 17.0                                          | 23.5                                    | 2                                                         |
| SZSMF4L11AT1G     | SZSMF4L11CAT1G   | QZ      | QZC | 11                                                  | 12.20                                           | 13.50 | 1                       | 18.2                                          | 22.0                                    | 2                                                         |
| SZSMF4L12AT1G     | SZSMF4L12CAT1G   | RE      | REC | 12                                                  | 13.30                                           | 14.70 | 1                       | 19.9                                          | 20.1                                    | 1                                                         |
| SZSMF4L13AT1G     | SZSMF4L13CAT1G   | RG      | RGC | 13                                                  | 14.40                                           | 15.90 | 1                       | 21.5                                          | 18.6                                    | 1                                                         |
| SZSMF4L14AT1G     | SZSMF4L14CAT1G   | RH      | RHC | 14                                                  | 15.60                                           | 17.20 | 1                       | 23.2                                          | 17.2                                    | 0.5                                                       |
| SZSMF4L15AT1G     | SZSMF4L15CAT1G   | RM      | RMC | 15                                                  | 16.70                                           | 18.50 | 1                       | 24.4                                          | 16.4                                    | 0.5                                                       |
| SZSMF4L16AT1G     | SZSMF4L16CAT1G   | RP      | RPC | 16                                                  | 17.80                                           | 19.70 | 1                       | 26.0                                          | 15.4                                    | 0.5                                                       |
| SZSMF4L17AT1G     | SZSMF4L17CAT1G   | RR      | RRC | 17                                                  | 18.90                                           | 20.90 | 1                       | 27.6                                          | 14.5                                    | 0.5                                                       |
| SZSMF4L18AT1G     | SZSMF4L18CAT1G   | RT      | RTC | 18                                                  | 20.00                                           | 22.10 | 1                       | 29.2                                          | 13.7                                    | 0.5                                                       |
| SZSMF4L20AT1G     | SZSMF4L20CAT1G   | RV      | RVC | 20                                                  | 22.20                                           | 24.50 | 1                       | 32.4                                          | 12.3                                    | 0.5                                                       |
| SZSMF4L22AT1G     | SZSMF4L22CAT1G   | RX      | RXC | 22                                                  | 24.40                                           | 26.90 | 1                       | 35.5                                          | 11.3                                    | 0.5                                                       |
| SZSMF4L24AT1G     | SZSMF4L24CAT1G   | RZ      | RZC | 24                                                  | 26.70                                           | 29.50 | 1                       | 38.9                                          | 10.3                                    | 0.5                                                       |
| SZSMF4L26AT1G     | SZSMF4L26CAT1G   | SE      | SEC | 26                                                  | 28.90                                           | 31.90 | 1                       | 42.1                                          | 9.5                                     | 0.5                                                       |
| SZSMF4L28AT1G     | SZSMF4L28CAT1G   | SG      | SGC | 28                                                  | 31.10                                           | 34.40 | 1                       | 45.4                                          | 8.8                                     | 0.5                                                       |
| SZSMF4L30AT1G     | SZSMF4L30CAT1G   | SK      | SKC | 30                                                  | 33.30                                           | 36.80 | 1                       | 48.4                                          | 8.3                                     | 0.5                                                       |
| SZSMF4L33AT1G     | SZSMF4L33CAT1G   | SM      | SMC | 33                                                  | 36.70                                           | 40.60 | 1                       | 53.3                                          | 7.5                                     | 0.5                                                       |
| SZSMF4L36AT1G     | SZSMF4L36CAT1G   | SP      | SPC | 36                                                  | 40.00                                           | 44.20 | 1                       | 58.1                                          | 6.9                                     | 0.5                                                       |
| SZSMF4L40AT1G     | SZSMF4L40CAT1G   | SR      | SRC | 40                                                  | 44.40                                           | 49.10 | 1                       | 64.5                                          | 6.2                                     | 0.5                                                       |
| SZSMF4L43AT1G     | SZSMF4L43CAT1G   | ST      | STC | 43                                                  | 47.80                                           | 52.80 | 1                       | 69.4                                          | 5.8                                     | 0.5                                                       |
| SZSMF4L45AT1G     | SZSMF4L45CAT1G   | SV      | SVC | 45                                                  | 50.00                                           | 55.30 | 1                       | 72.7                                          | 5.5                                     | 0.5                                                       |
| SZSMF4L48AT1G     | SZSMF4L48CAT1G   | SX      | SXC | 48                                                  | 53.30                                           | 58.90 | 1                       | 77.4                                          | 5.2                                     | 0.5                                                       |
| SZSMF4L51AT1G     | SZSMF4L51CAT1G   | SZ      | SZC | 51                                                  | 56.70                                           | 62.70 | 1                       | 82.4                                          | 4.9                                     | 0.5                                                       |
| SZSMF4L54AT1G     | SZSMF4L54CAT1G   | TE      | TEC | 54                                                  | 60.00                                           | 66.30 | 1                       | 87.1                                          | 4.6                                     | 0.5                                                       |
| SZSMF4L58AT1G     | SZSMF4L58CAT1G   | TG      | TGC | 58                                                  | 64.40                                           | 71.20 | 1                       | 93.6                                          | 4.3                                     | 0.5                                                       |
| SZSMF4L60AT1G     | SZSMF4L60CAT1G   | TI      | TIC | 60                                                  | 66.70                                           | 73.70 | 1                       | 96.8                                          | 4.1                                     | 0.5                                                       |
| SZSMF4L64AT1G     | SZSMF4L64CAT1G   | TM      | TMC | 64                                                  | 71.10                                           | 78.60 | 1                       | 103.0                                         | 3.9                                     | 0.5                                                       |
| SZSMF4L70AT1G     | SZSMF4L70CAT1G   | TP      | TPC | 70                                                  | 77.80                                           | 86.00 | 1                       | 113.0                                         | 3.5                                     | 0.5                                                       |
| SZSMF4L75AT1G     | SZSMF4L75CAT1G   | TR      | TRC | 75                                                  | 83.30                                           | 92.10 | 1                       | 121.0                                         | 3.3                                     | 0.5                                                       |
| SZSMF4L78AT1G     | SZSMF4L78CAT1G   | TT      | TTC | 78                                                  | 86.70                                           | 95.80 | 1                       | 126.0                                         | 3.2                                     | 0.5                                                       |

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### Electrical Characteristics

| Part Number (Uni) | Part Number (Bi) | Marking |     | Working Peak Reverse Voltage $V_{RWM}$ (V) (Note 4) | Breakdown Voltage $V_{BR}$ (V) @ $I_T$ (Note 5) |       | Test Current $I_T$ (mA) | Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V) | Maximum Peak Pulse Current $I_{PP}$ (A) | Maximum Reverse Leakage $I_R$ @ $V_R$ ( $\mu$ A) (Note 6) |
|-------------------|------------------|---------|-----|-----------------------------------------------------|-------------------------------------------------|-------|-------------------------|-----------------------------------------------|-----------------------------------------|-----------------------------------------------------------|
|                   |                  | Uni     | Bi  |                                                     | Min                                             | Max   |                         |                                               |                                         |                                                           |
| SZSMF4L5.0AT3G    | -                | QE      | -   | 5.0                                                 | 6.40                                            | 7.00  | 10                      | 9.2                                           | 43.5                                    | 50                                                        |
| SZSMF4L6.0AT3G    | -                | QG      | -   | 6.0                                                 | 6.67                                            | 7.37  | 10                      | 10.3                                          | 38.8                                    | 50                                                        |
| SZSMF4L6.5AT3G    | -                | QK      | -   | 6.5                                                 | 7.22                                            | 7.98  | 10                      | 11.2                                          | 35.7                                    | 40                                                        |
| SZSMF4L7.0AT3G    | -                | QL      | -   | 7.0                                                 | 7.78                                            | 8.60  | 10                      | 12.0                                          | 33.3                                    | 40                                                        |
| SZSMF4L7.5AT3G    | -                | QN      | -   | 7.5                                                 | 8.33                                            | 9.21  | 1                       | 12.9                                          | 31.0                                    | 30                                                        |
| SZSMF4L8.0AT3G    | -                | QR      | -   | 8.0                                                 | 8.89                                            | 9.83  | 1                       | 13.6                                          | 29.4                                    | 5                                                         |
| SZSMF4L8.5AT3G    | -                | QT      | -   | 8.5                                                 | 9.44                                            | 10.40 | 1                       | 14.4                                          | 27.8                                    | 5                                                         |
| SZSMF4L9.0AT3G    | -                | QV      | -   | 9.0                                                 | 10.00                                           | 11.10 | 1                       | 15.4                                          | 26.0                                    | 2                                                         |
| SZSMF4L10AT3G     | SZSMF4L10CAT3G   | QX      | QXC | 10                                                  | 11.10                                           | 12.30 | 1                       | 17.0                                          | 23.5                                    | 2                                                         |
| SZSMF4L11AT3G     | SZSMF4L11CAT3G   | QZ      | QZC | 11                                                  | 12.20                                           | 13.50 | 1                       | 18.2                                          | 22.0                                    | 2                                                         |
| SZSMF4L12AT3G     | SZSMF4L12CAT3G   | RE      | REC | 12                                                  | 13.30                                           | 14.70 | 1                       | 19.9                                          | 20.1                                    | 1                                                         |
| SZSMF4L13AT3G     | SZSMF4L13CAT3G   | RG      | RGC | 13                                                  | 14.40                                           | 15.90 | 1                       | 21.5                                          | 18.6                                    | 1                                                         |
| SZSMF4L14AT3G     | SZSMF4L14CAT3G   | RH      | RHC | 14                                                  | 15.60                                           | 17.20 | 1                       | 23.2                                          | 17.2                                    | 0.5                                                       |
| SZSMF4L15AT3G     | SZSMF4L15CAT3G   | RM      | RMC | 15                                                  | 16.70                                           | 18.50 | 1                       | 24.4                                          | 16.4                                    | 0.5                                                       |
| SZSMF4L16AT3G     | SZSMF4L16CAT3G   | RP      | RPC | 16                                                  | 17.80                                           | 19.70 | 1                       | 26.0                                          | 15.4                                    | 0.5                                                       |
| SZSMF4L17AT3G     | SZSMF4L17CAT3G   | RR      | RRC | 17                                                  | 18.90                                           | 20.90 | 1                       | 27.6                                          | 14.5                                    | 0.5                                                       |
| SZSMF4L18AT3G     | SZSMF4L18CAT3G   | RT      | RTC | 18                                                  | 20.00                                           | 22.10 | 1                       | 29.2                                          | 13.7                                    | 0.5                                                       |
| SZSMF4L20AT3G     | SZSMF4L20CAT3G   | RV      | RVC | 20                                                  | 22.20                                           | 24.50 | 1                       | 32.4                                          | 12.3                                    | 0.5                                                       |
| SZSMF4L22AT3G     | SZSMF4L22CAT3G   | RX      | RXC | 22                                                  | 24.40                                           | 26.90 | 1                       | 35.5                                          | 11.3                                    | 0.5                                                       |
| SZSMF4L24AT3G     | SZSMF4L24CAT3G   | RZ      | RZC | 24                                                  | 26.70                                           | 29.50 | 1                       | 38.9                                          | 10.3                                    | 0.5                                                       |
| SZSMF4L26AT3G     | SZSMF4L26CAT3G   | SE      | SEC | 26                                                  | 28.90                                           | 31.90 | 1                       | 42.1                                          | 9.5                                     | 0.5                                                       |
| SZSMF4L28AT3G     | SZSMF4L28CAT3G   | SG      | SGC | 28                                                  | 31.10                                           | 34.40 | 1                       | 45.4                                          | 8.8                                     | 0.5                                                       |
| SZSMF4L30AT3G     | SZSMF4L30CAT3G   | SK      | SKC | 30                                                  | 33.30                                           | 36.80 | 1                       | 48.4                                          | 8.3                                     | 0.5                                                       |
| SZSMF4L33AT3G     | SZSMF4L33CAT3G   | SM      | SMC | 33                                                  | 36.70                                           | 40.60 | 1                       | 53.3                                          | 7.5                                     | 0.5                                                       |
| SZSMF4L36AT3G     | SZSMF4L36CAT3G   | SP      | SPC | 36                                                  | 40.00                                           | 44.20 | 1                       | 58.1                                          | 6.9                                     | 0.5                                                       |
| SZSMF4L40AT3G     | SZSMF4L40CAT3G   | SR      | SRC | 40                                                  | 44.40                                           | 49.10 | 1                       | 64.5                                          | 6.2                                     | 0.5                                                       |
| SZSMF4L43AT3G     | SZSMF4L43CAT3G   | ST      | STC | 43                                                  | 47.80                                           | 52.80 | 1                       | 69.4                                          | 5.8                                     | 0.5                                                       |
| SZSMF4L45AT3G     | SZSMF4L45CAT3G   | SV      | SVC | 45                                                  | 50.00                                           | 55.30 | 1                       | 72.7                                          | 5.5                                     | 0.5                                                       |
| SZSMF4L48AT3G     | SZSMF4L48CAT3G   | SX      | SXC | 48                                                  | 53.30                                           | 58.90 | 1                       | 77.4                                          | 5.2                                     | 0.5                                                       |
| SZSMF4L51AT3G     | SZSMF4L51CAT3G   | SZ      | SZC | 51                                                  | 56.70                                           | 62.70 | 1                       | 82.4                                          | 4.9                                     | 0.5                                                       |
| SZSMF4L54AT3G     | SZSMF4L54CAT3G   | TE      | TEC | 54                                                  | 60.00                                           | 66.30 | 1                       | 87.1                                          | 4.6                                     | 0.5                                                       |
| SZSMF4L58AT3G     | SZSMF4L58CAT3G   | TG      | TGC | 58                                                  | 64.40                                           | 71.20 | 1                       | 93.6                                          | 4.3                                     | 0.5                                                       |
| SZSMF4L60AT3G     | SZSMF4L60CAT3G   | TI      | TIC | 60                                                  | 66.70                                           | 73.70 | 1                       | 96.8                                          | 4.1                                     | 0.5                                                       |
| SZSMF4L64AT3G     | SZSMF4L64CAT3G   | TM      | TMC | 64                                                  | 71.10                                           | 78.60 | 1                       | 103.0                                         | 3.9                                     | 0.5                                                       |
| SZSMF4L70AT3G     | SZSMF4L70CAT3G   | TP      | TPC | 70                                                  | 77.80                                           | 86.00 | 1                       | 113.0                                         | 3.5                                     | 0.5                                                       |
| SZSMF4L75AT3G     | SZSMF4L75CAT3G   | TR      | TRC | 75                                                  | 83.30                                           | 92.10 | 1                       | 121.0                                         | 3.3                                     | 0.5                                                       |
| SZSMF4L78AT3G     | SZSMF4L78CAT3G   | TT      | TTC | 78                                                  | 86.70                                           | 95.80 | 1                       | 126.0                                         | 3.2                                     | 0.5                                                       |

4. A transient suppressor is normally selected according to the working peak reverse voltage ( $V_{RWM}$ ), which should be equal to or greater than the DC or continuous peak operating voltage level.

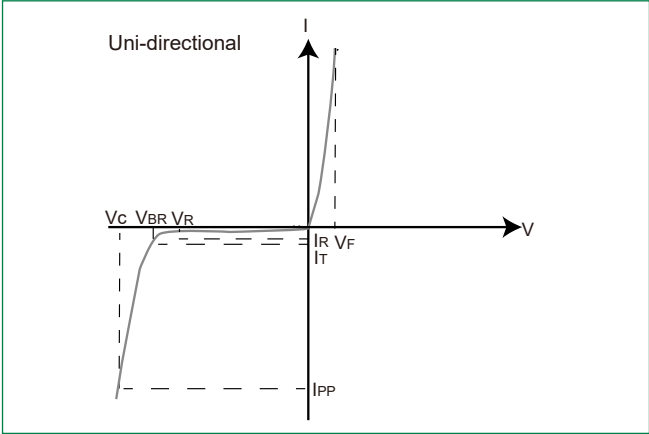
5.  $V_{BR}$  measured at pulse test current  $I_T$  at an ambient temperature of 25 °C.

6. For bidirectional type having  $V_R$  of 10 volts and less, the  $I_R$  limit is double.

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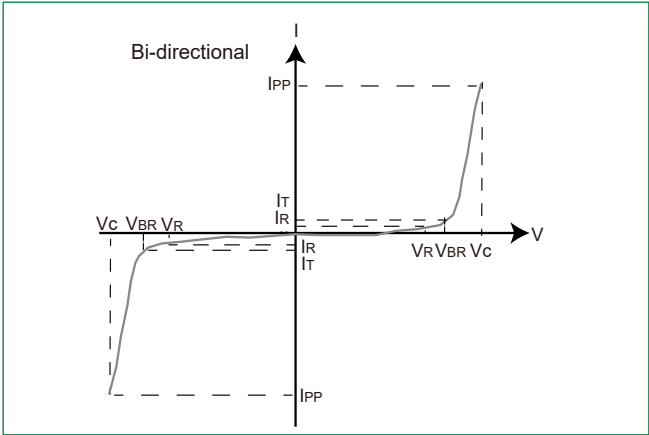
**I-V Curve Characteristics ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted,  $V_F = 3.5\text{ V Max. @ }I_F = 30\text{ A}$ )\* For Uni-directional**



| Symbol    | Parameter                                   |
|-----------|---------------------------------------------|
| $I_{PP}$  | Maximum Reverse Peak Pulse Current          |
| $V_C$     | Clamping Voltage @ $I_{PP}$                 |
| $V_{RWM}$ | Working Peak Reverse Voltage                |
| $I_R$     | Maximum Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$  | Breakdown Voltage @ $I_T$                   |
| $I_T$     | Breakdown Current Current                   |
| $V_F$     | Forward Voltage @ $I_F$                     |
| $I_F$     | Forward Current                             |

\*1/2 sine wave (or equivalent square wave), PW = 8.3 ms, non-repetitive duty cycle.

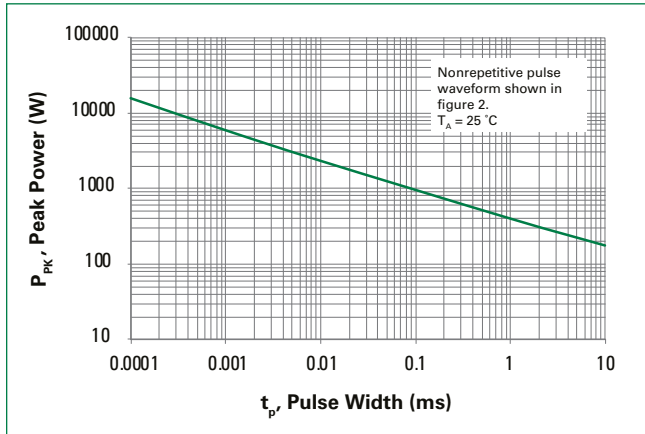
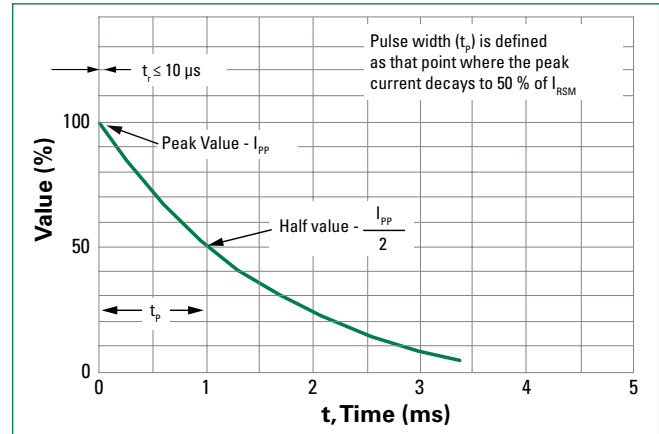
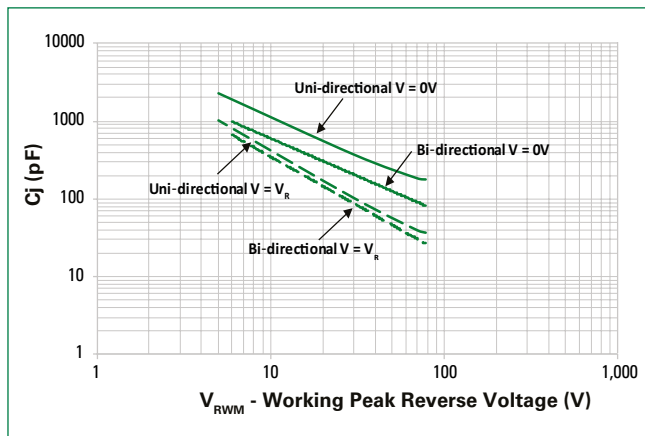
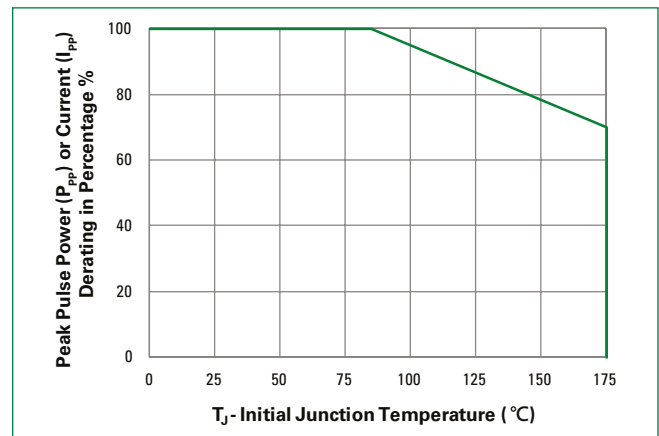
**I-V Curve Characteristics ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted) For Bi-directional**



| Symbol    | Parameter                                   |
|-----------|---------------------------------------------|
| $I_{PP}$  | Maximum Reverse Peak Pulse Current          |
| $V_C$     | Clamping Voltage @ $I_{PP}$                 |
| $V_{RWM}$ | Working Peak Reverse Voltage                |
| $I_R$     | Maximum Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$  | Breakdown Voltage @ $I_T$                   |
| $I_T$     | Breakdown Current Current                   |

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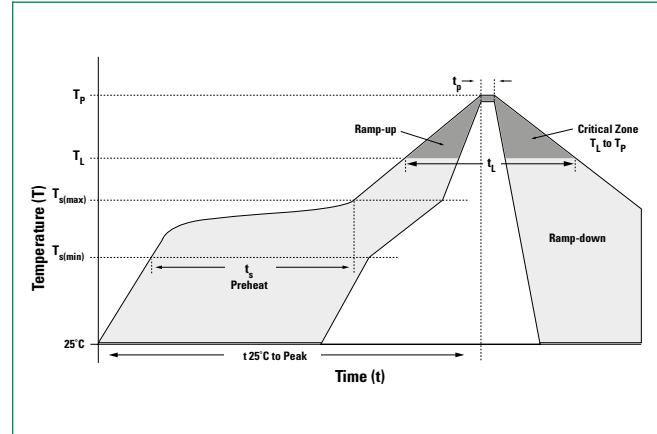
**Figure 1. Pulse Rating Curve****Figure 2. 10/1000  $\mu\text{s}$  Pulse Waveform****Figure 3. Typical Junction Capacitance vs. Bias Voltage****Figure 4. Surge Derating Curve**

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## Soldering Parameters

|                                                                       |                                    |                         |
|-----------------------------------------------------------------------|------------------------------------|-------------------------|
| <b>Reflow Condition</b>                                               |                                    | Lead-free assembly      |
| <b>Pre Heat</b>                                                       | - Temperature Min ( $T_{s(min)}$ ) | 150 °C                  |
|                                                                       | - Temperature Max ( $T_{s(max)}$ ) | 200 °C                  |
|                                                                       | - Time (min to max) ( $t_s$ )      | 60 – 120 seconds        |
| <b>Average Ramp Up Rate (Liquidus Temp (<math>T_L</math>) to Peak</b> |                                    | 3 °C/second max         |
| <b><math>T_{s(max)}</math> to <math>T_L</math> - Ramp-up Rate</b>     |                                    | 3 °C/second max         |
| <b>Reflow</b>                                                         | - Temperature ( $T_L$ ) (Liquidus) | 217 °C                  |
|                                                                       | - Time (min to max) ( $t_s$ )      | 60 – 150 seconds        |
| <b>Peak Temperature (<math>T_p</math>)</b>                            |                                    | 260 <sup>+0/-5</sup> °C |
| <b>Time within 5 °C of Actual Peak Temperature (<math>t_p</math>)</b> |                                    | 30 seconds max          |
| <b>Ramp-down Rate</b>                                                 |                                    | 6 °C/second max         |
| <b>Time 25 °C to Peak Temperature (<math>T_p</math>)</b>              |                                    | 8 minutes max           |
| <b>Do Not Exceed</b>                                                  |                                    | 260 °C                  |



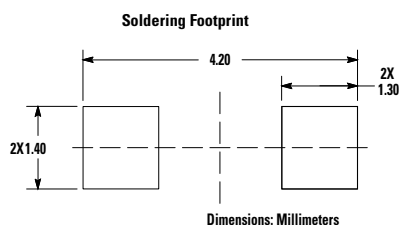
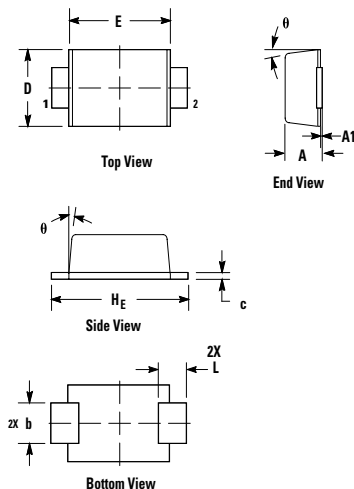
## Physical Specifications

|                 |                                                          |
|-----------------|----------------------------------------------------------|
| <b>Weight</b>   | 0.006 ounce, 0.0171 grams                                |
| <b>Case</b>     | JEDEC SOD-123FL                                          |
| <b>Polarity</b> | Color band denotes cathode for unidirectional components |
| <b>Terminal</b> | Matte Tin-plated leads, solderable per JESD22-B102       |

## Environmental Specifications

|                                 |                          |
|---------------------------------|--------------------------|
| <b>High temperature storage</b> | JESD22-A103              |
| <b>HTRB</b>                     | JESD22-A108              |
| <b>Temperature cycling</b>      | JESD22-A104              |
| <b>MSL</b>                      | JEDEC-J-STD-020, Level 1 |
| <b>H3TRB</b>                    | JESD22-A101              |
| <b>RSH</b>                      | JESD22-A111              |

## Dimensions



Dimensions: Millimeters

| Dim | Millimeters |      |      | Inches |       |       |
|-----|-------------|------|------|--------|-------|-------|
|     | Min         | Nom  | Max  | Min    | Nom   | Max   |
| A   | 1.20        | 1.30 | 1.40 | 0.047  | 0.051 | 0.055 |
| A1  | 0.00        | 0.05 | 0.10 | 0      | 0.002 | 0.004 |
| b   | 1.10        | 1.20 | 1.30 | 0.043  | 0.047 | 0.051 |
| c   | 0.10        | 0.17 | 0.25 | 0.004  | 0.007 | 0.01  |
| D   | 2.25        | 2.35 | 2.45 | 0.089  | 0.093 | 0.096 |
| E   | 3.25        | 3.35 | 3.45 | 0.128  | 0.132 | 0.136 |
| L   | 0.35        | 0.47 | 0.60 | 0.014  | 0.019 | 0.024 |
| HE  | 3.75        | 3.85 | 3.95 | 0.148  | 0.152 | 0.156 |
| Θ   | 2°          | —    | 8°   | 2°     | —     | 8°    |

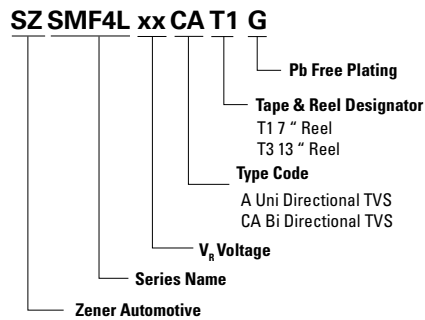
## Packaging Options

| Device        | Package             | Packaging Option                    | Quantity |
|---------------|---------------------|-------------------------------------|----------|
| SZSMF4LxxXT1G | SOD-123FL (Pb-Free) | Tape & Reel - 12 mm tape / 7" reel  | 1,500    |
| SZSMF4LxxXT3G | SOD-123FL (Pb-Free) | Tape & Reel - 12 mm tape / 13" reel | 5,000    |

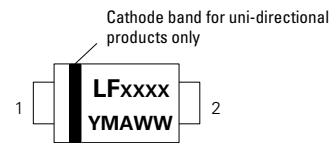
# SZSMF4L Series

Automotive, Surface Mount 400 W in SOD-123FL

## Part Numbering System

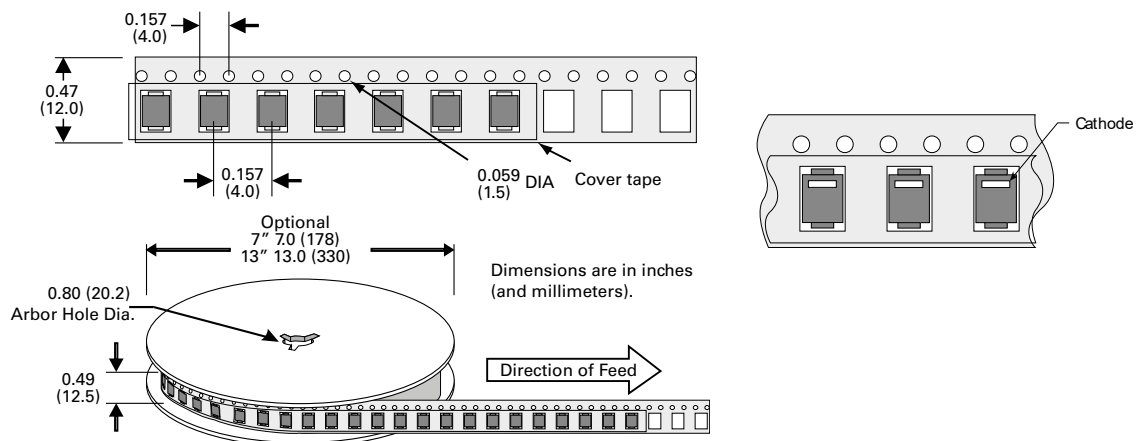


## Part Marking System



**XXX** = Device Code  
**Y** = Year  
**M** = Month  
**A** = Assembly Location  
**WW** = Lot Code

## Tape and Reel Specification



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