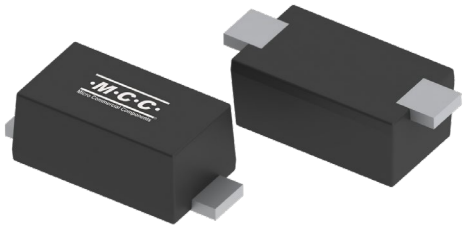
# 200W Transient Voltage Suppression Diode

## Features

- 200W peak pulse power capability at 10/1000μs waveform,
- Transient protection:
  - IEC 61000-4-2 (ESD) ±30kV (Air), ±30kV (Contact)
- Uni-directional TVS protection
- Reverse working voltage, $V_{RWM}$: 3.3V
- Excellent clamping capability
- Low leakage current



SOD-123FL

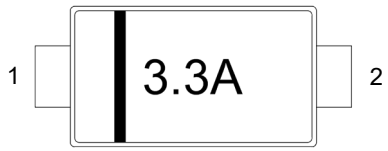
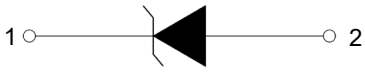
## Applications

- Hard drives
- Notebooks
- POS terminal
- SSDs

## Mechanical Data

- Package: SOD-123FL
- Moisture Sensitivity Level 1, per J-STD-020
- Halogen Free. “Green” Device (Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Body Marking and Pin Layout

| Marking Code | Simplified Outline | Internal Structure |
|---|---|---|
|   |   Transparent top view |   Uni-directional |

## Ordering Information

| Product Name | Reel Size | Packing Type | Qty/Reel |
|---|---|---|---|
| SMF3.3A-TP | 7’’ | Tape & Reel | 2,500 |

For packaging details, visit our website at https://www.mccsemi.com/Package/List

## Maximum Ratings ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Peak Pulse Power Surge Current with a 10/1000μs Waveform (Note 2) | $I_{PPM}$ | See Next Table | A |
| Peak Pulse Power Dissipation (Note 2) | $P_{PPM}$ | 200 | W |
| Power Dissipation on Infinite Heat Sink, $T_A$=25℃ | $P_D$ | 1 | W |
| Maximum instantaneous forward voltage at 1A | $V_F$ | 1.5 | V |
| Peak Forward Surge Current (Note3) | $I_{FSM}$ | 30 | A |
| Operating Junction Temperature Range | $T_J$ | -55 to 150 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -55 to 150 | ℃ |

Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and 1000ppm antimony compounds.
2. Non-repetitive current pulse per Fig.3 and derated above $T_A$= 25 °C per Fig.4.
3. Measured on 8.3ms single half sinewave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

## Thermal Characteristics ($T_A$=25°C unless otherwise specified)

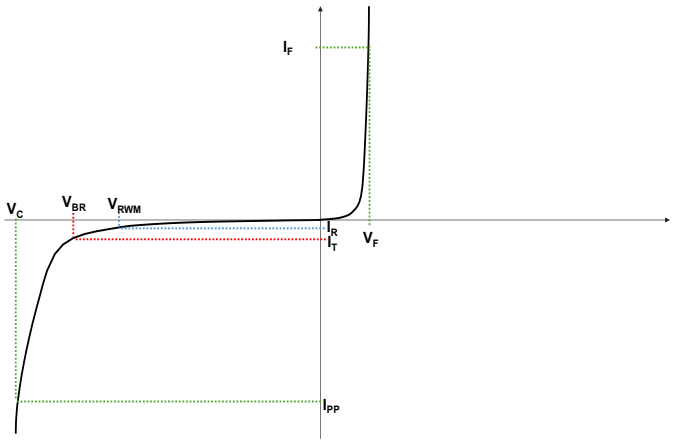
| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Thermal Resistance from Junction to Ambient (Note 4) | $R_{\theta JA}$ | 120 | ℃/W |
| Thermal Resistance from Junction to Lead | $R_{\theta JL}$ | 30 | ℃/W |

Note:

4. Mounted on 0.2x 0.2" (5.0x 5.0 mm) copper pads to each terminal.

## Parameter Definition

| Symbol | Parameter |
|---|---|
| $V_{RWM}$ | Peak Reverse Working Voltage |
| $I_R$ | Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$ | Breakdown Voltage @ $I_T$ |
| $I_T$ | Test Current |
| $I_{PP}$ | Maximum Reverse Peak Pulse Current |
| $V_C$ | Clamping Voltage @ $I_{PP}$ |
| $P_{PPM}$ | Peak Pulse Power Dissipation |
| $C_J$ | Junction Capacitance |
| $I_F$ | Forward Current |
| $V_F$ | Forward Voltage @ $I_F$ |




## Electrical Characteristics ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Reverse Working Voltage | $V_{RWM}$ | | | | 3.3 | V |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_T$ =10mA | 5.2 | | 6.5 | V |
| Reverse Leakage Current | $I_R$ | $V_{RWM}$=3.3V | | | 150 | μA |
| Forward Voltage | $V_F$ | $I_F$=1mA | | | 1.2 | V |
| Clamping Voltage (Note3) | $V_C$ | $I_{PP}$=27.4A, $t_P$=10/1000μs | | | 8 | V |
| Junction Capacitance | $C_J$ | $V_R$=0V, f=1MHz | | 2.3 | 3.0 | nF |

## Curve Characteristics

Fig.1-Peak Pulse Power Rating Curve

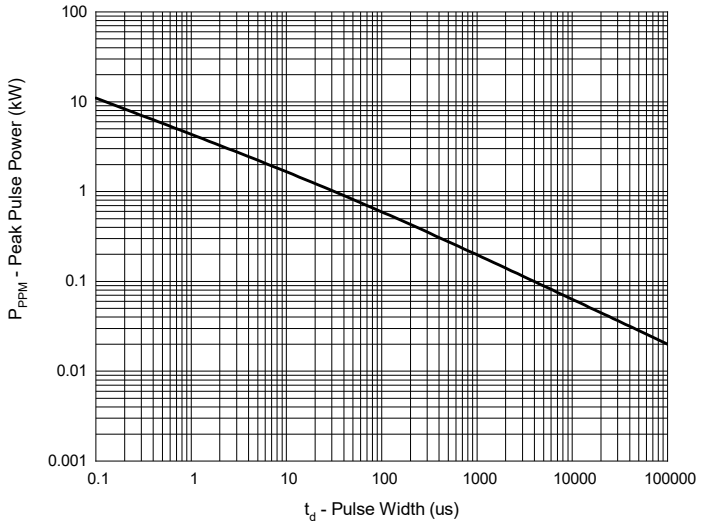



Fig. 2 - Typical Junction Capacitance

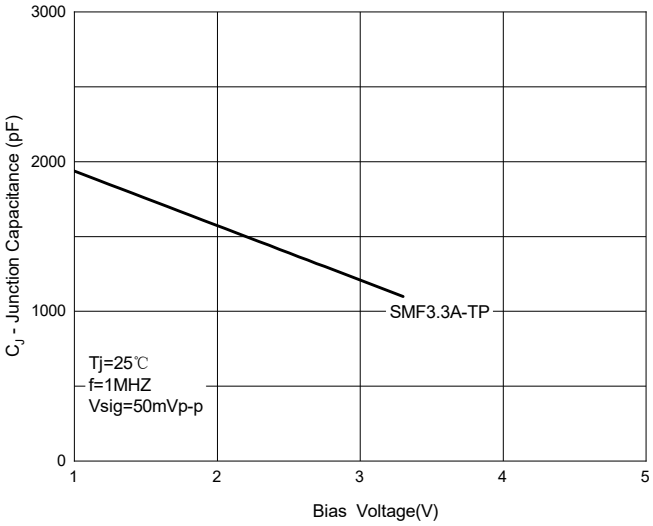



Fig. 3 - Pulse Waveform

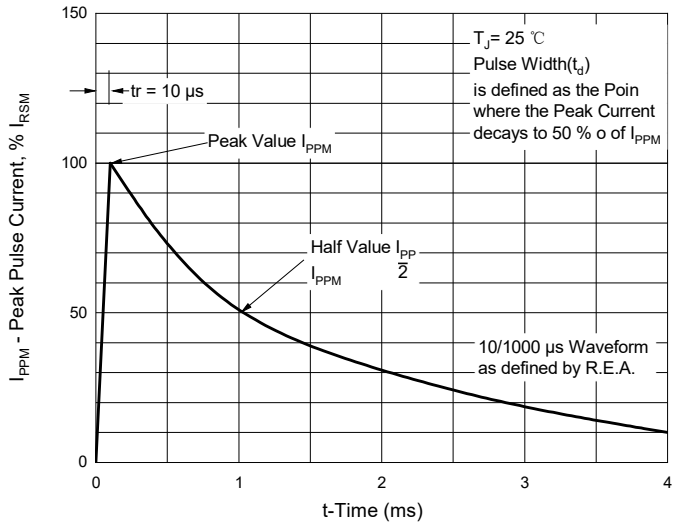
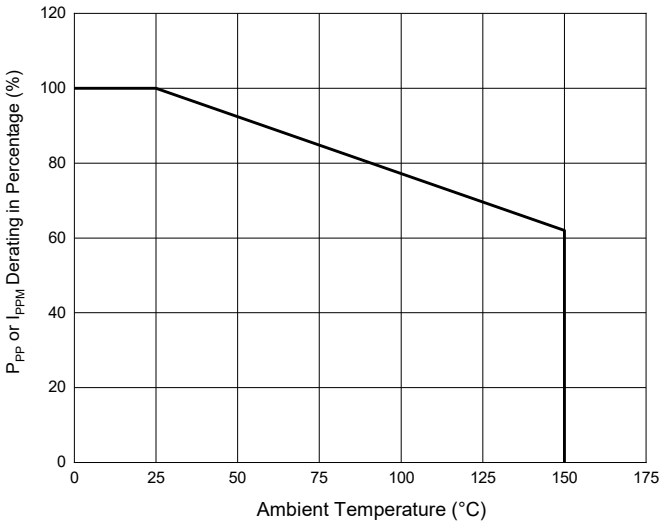
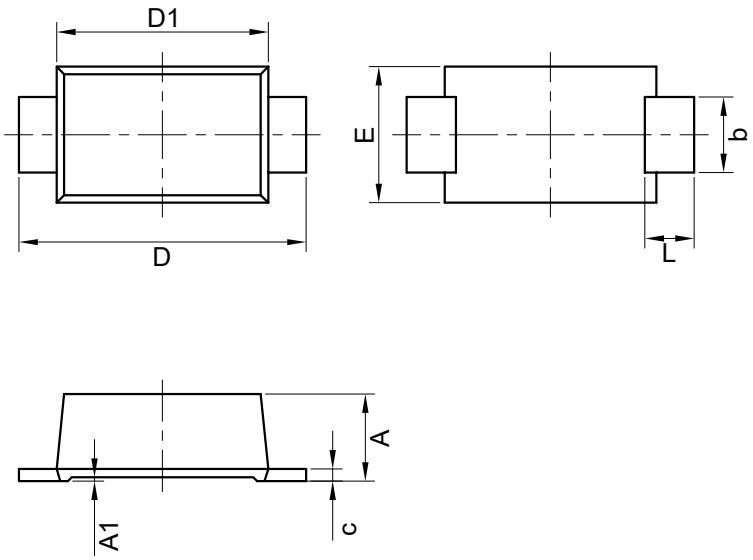



Fig. 4 - Pulse Derating Curve

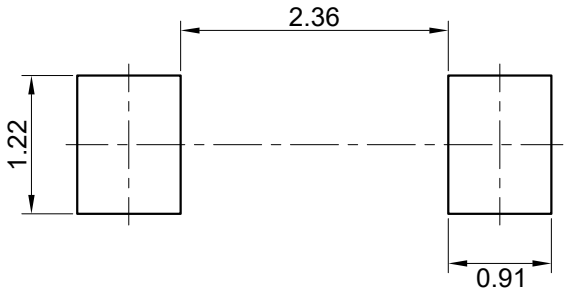


## Package Outline




| DIM | INCH | | MM | | NOTE |
|---|---|---|---|---|---|
| | MIN | MAX | MIN | MAX | |
| A | 0.035 | 0.047 | 0.90 | 1.20 | |
| A1 | 0.000 | 0.004 | 0.00 | 0.10 | |
| b | 0.032 | 0.047 | 0.80 | 1.20 | |
| c | 0.004 | 0.010 | 0.10 | 0.25 | |
| D | 0.138 | 0.154 | 3.50 | 3.90 | |
| D1 | 0.100 | 0.114 | 2.55 | 2.90 | |
| E | 0.063 | 0.075 | 1.60 | 1.90 | |
| L | 0.016 | 0.035 | 0.40 | 0.90 | |

## Suggested Pad Layout (Unit:mm)




Notes:

1. The suggested land pattern dimensions have been provided for reference only.
2. For further information, please refer to document IPC-7351.

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