## Features

- Power Dissipation: 200 watts
- RoHS compliant
- Response Time is < 1 ns
- Low Leakage
- Low Clamping Voltage

## Applications

- Cellular Handsets & Accessories
- Personal Digital Assistants (PDAs)
- Notebooks, Desktops, Servers
- Portable Instrumentation

# VP2SMFxxCA Series ----- SURFACE MOUNT TVS Diodes

## General Information

Vic offers Transient Voltage Suppressor Diodes for surge and ESD protection applications, in compact chip package SOD-123FL size format. The Transient Voltage Suppressor series offers a choice of Working Peak Reverse Voltage from 5 V up to 58 V and Breakdown Voltage up to 550 V. Typical fast response times are less than 1.0 picoseconds for unidirectional devices and less than 5.0 picoseconds for bidirectional devices from 0 V to Minimum Breakdown Voltage.

## Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak pulse power dissipation at 10/1000μs waveform | $P_{PK}$ | 200 | W |
| Peak pulse power dissipation at 8/20μs waveform | $P_{PK}$ | 1800 | W |
| Maximum Operating temperature | $T_{OPER}$ | -40 to +90 | ℃ |
| Maximum Storage temperature | $T_{STG}$ | -55 to +125 | ℃ |
| Maximum lead temperature for soldering during 10s | $T_L$ | 260 | ℃ |

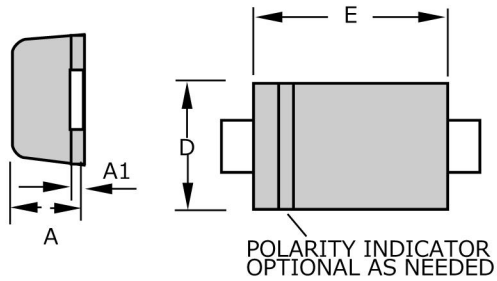
## Electrical Characteristics (@ $T_A$ = 25 °C Unless Otherwise Noted)

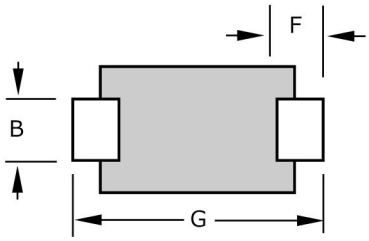
| Parameter | $V_{RWM}$ | $I_L$ | $V_{BR}$@$I_T$ | | $I_T$ | $V_C$ | $I_{PP}$ |
|---|---|---|---|---|---|---|---|
| Uni-Polar | V | μA | min(V) | max(V) | mA | max(V) | A |
| VP2SMF5.0CA | 5 | 150 | 6.4 | 7 | 10 | 9.2 | 21.7 |
| VP2SMF6.0CA | 6 | 100 | 6.67 | 7.37 | 10 | 10.3 | 19.4 |
| VP2SMF6.5CA | 6.5 | 100 | 7.22 | 7.98 | 10 | 11.2 | 17.9 |
| VP2SMF7.0CA | 7 | 50 | 7.78 | 8.6 | 10 | 12 | 16.7 |
| VP2SMF7.5CA | 7.5 | 50 | 8.33 | 9.21 | 1 | 12.9 | 15.5 |

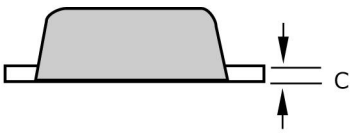
## Electrical Characteristics (@ $T_A$ = 25 °C Unless Otherwise Noted)

| Parameter | $V_{RWM}$ | $I_L$ | $V_{BR}$@$I_T$ | | $I_T$ | $V_C$ | $I_{PP}$ |
|---|---|---|---|---|---|---|---|
| Uni-Polar | V | μA | min(V) | max(V) | mA | max(V) | A |
| VP2SMF8.0CA | 8 | 20 | 8.89 | 9.83 | 1 | 13.6 | 14.7 |
| VP2SMF9.0CA | 9 | 5 | 10 | 11.1 | 1 | 15.4 | 13 |
| VP2SMF10CA | 10 | 2 | 11.1 | 12.3 | 1 | 17 | 11.8 |
| VP2SMF11CA | 11 | 1 | 12.2 | 13.5 | 1 | 18.2 | 11 |
| VP2SMF12CA | 12 | 1 | 13.3 | 14.7 | 1 | 19.9 | 10.1 |
| VP2SMF13CA | 13 | 1 | 14.4 | 15.9 | 1 | 21.5 | 9.3 |
| VP2SMF14CA | 14 | 1 | 15.6 | 17.2 | 1 | 23.2 | 8.6 |
| VP2SMF15CA | 15 | 1 | 16.7 | 18.5 | 1 | 24.4 | 8.2 |
| VP2SMF18CA | 18 | 1 | 20 | 22.1 | 1 | 29.2 | 6.8 |
| VP2SMF20CA | 20 | 1 | 22.2 | 24.5 | 1 | 32.4 | 6.2 |
| VP2SMF22CA | 22 | 1 | 24.4 | 26.9 | 1 | 35.5 | 5.6 |
| VP2SMF24CA | 24 | 1 | 26.7 | 29.5 | 1 | 38.9 | 5.1 |
| VP2SMF26CA | 26 | 1 | 28.9 | 31.9 | 1 | 42.1 | 4.8 |
| VP2SMF28CA | 28 | 1 | 31.1 | 34.4 | 1 | 45.4 | 4.4 |
| VP2SMF30CA | 30 | 1 | 33.3 | 36.8 | 1 | 48.4 | 4.1 |
| VP2SMF33CA | 33 | 1 | 36.7 | 40.6 | 1 | 53.3 | 3.8 |
| VP2SMF36CA | 36 | 1 | 40 | 44.2 | 1 | 58.1 | 3.4 |
| VP2SMF48CA | 48 | 1 | 53.3 | 58.9 | 1 | 77.4 | 2.6 |
| VP2SMF51CA | 51 | 1 | 56.7 | 62.7 | 1 | 82.4 | 2.4 |
| VP2SMF58CA | 58 | 1 | 64.4 | 71.2 | 1 | 93.6 | 2.1 |

## Product Dimensions



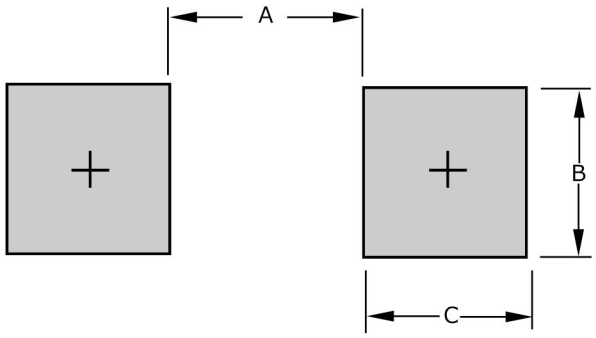




| Dimension | SOD-123FL |
|---|---|
| A | 0.90-1.00 (0.035-0.039) |
| A1 | 0.05-0.10 (0.002-0.004) |
| b | 0.70-1.10 (0.028-0.043) |
| C | 0.10-0.20 (0.004-0.008) |
| D | 1.50-1.80 (0.059-0.071) |
| E | 2.50-2.90 (0.098-0.114) |
| F | 0.55-0.95 (0.022-0.037) |
| G | 3.40-3.80 (0.134-0.150) |

DIMENSIONS: MM / (INCHES)

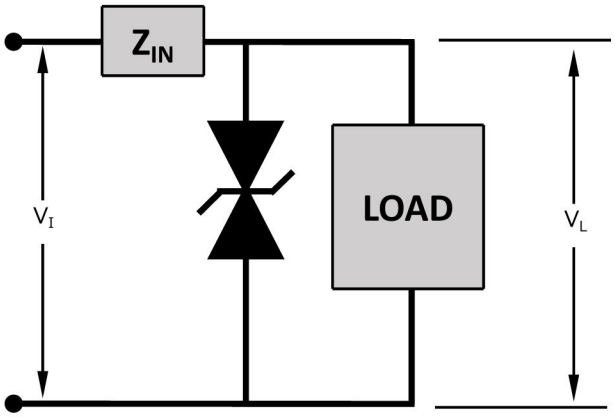
## Recommended PCB Footprint



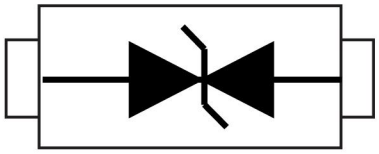

| Dimension | SOD-123FL |
|---|---|
| A | 2.36 (0.093) |
| B | 1.12 (0.048) |
| C | 0.91 (0.036) |

DIMENSIONS: MM / (INCHES)

## Typical Protection Circuit



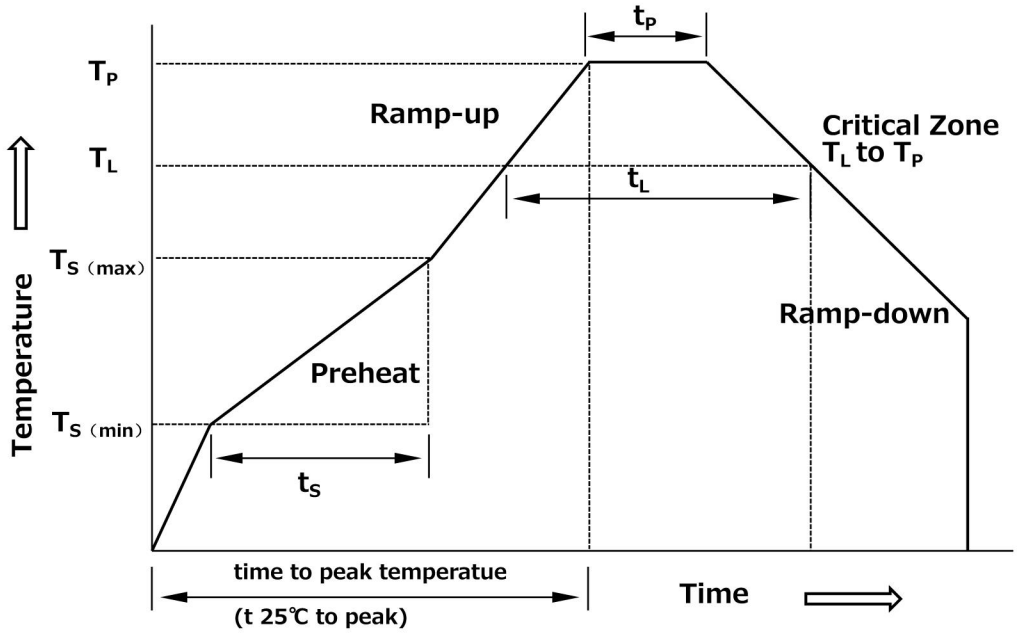

## Block Diagram



Bi-directional

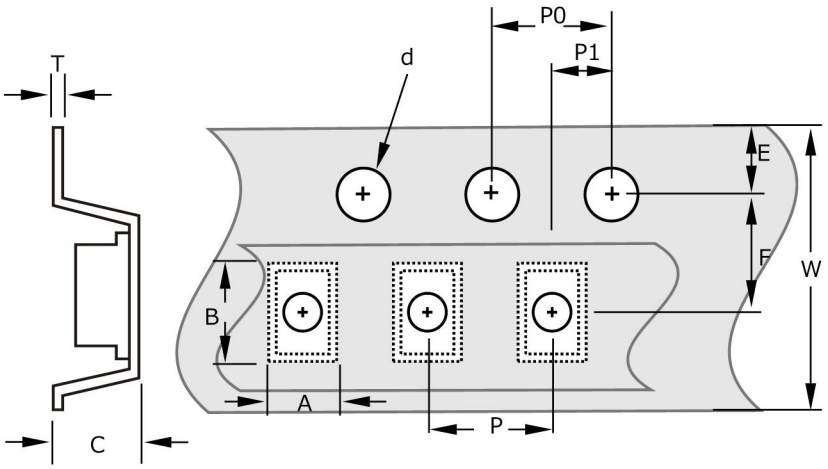
## Recommendable reflow soldering

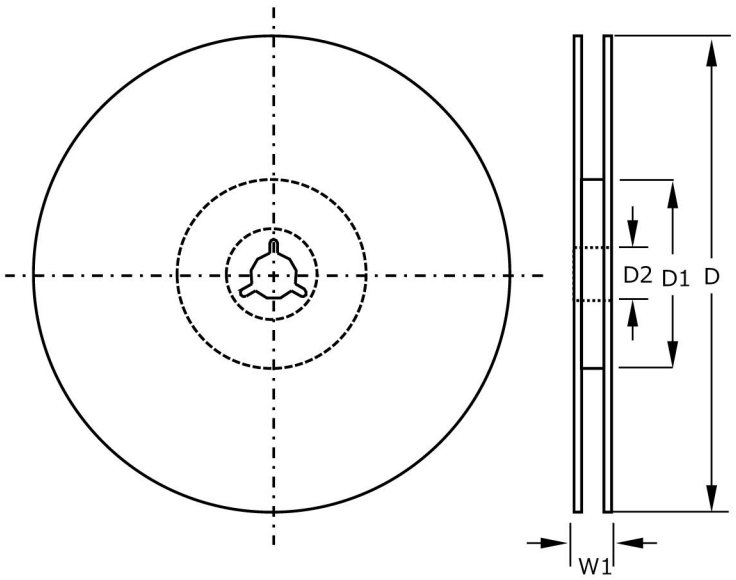
| Profile Feature | Pb-Free Assembly |
|---|---|
| Average Ramp-UP Rate (Tsmax to Tp) | 3 ℃/secondmax. |
| Preheat<br>-Temperature Min(Tsmin)<br>-Temperature Max(Tsmax)<br>-Time(Tsmin to Tsmax) | <br>150 ℃<br>200 ℃<br>60-180seconds |
| Time maintained above:<br>-Temperature(TL)<br>-Time(tL) | <br>217 ℃<br>60-150 seconds |
| Peak/Classification Temperature(Tp) | 260℃ |
| Time within 5℃ofactualPeak Temperature(tp) | 20-40 seconds |
| Ramp-Down Rate | 6℃/secondmax. |
| Time 25℃toPeakTemperature | 8 minutes max. |



## Packaging Information

| Symbol | SOD-123FL |
|---|---|
| A | 2.00±0.05 (0.079±0.002) |
| B | 4.00±0.05 (0.157±0.002) |
| C | 0.75±0.05 (0.029±0.002) |
| d | 1.55±0.05 (0.061±0.002) |
| D | 180.00±2.00 (7.087±0.079) |
| D1 | 60.0±1.00 (2.362±0.039) |
| D2 | 13.0±0.20 (0.516±0.008) |
| E | 1.75±0.10 (0.069±0.004) |
| F | 3.50±0.05 (0.138±0.002) |
| P | 4.00±0.10 (0.157±0.004) |
| P0 | 4.00±0.10 (0.157±0.004) |
| P1 | 2.00±0.05 (0.079±0.002) |
| T | 0.20±0.05 (0.008±0.002) |
| W | 8.00±0.10 (0.315±0.004) |
| W1 | 11.6±1.00 (0.457±0.039) |




DIMENSIONS: MM / (INCHES)

**Quantity of products in the taping package**

(1) Standard quantity : 3000pcs/Reel for the Series.

(2) Shipping quantity is a multiple of standard quantity.

(3) For more information, please contact our local agents.