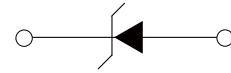


FEATURES

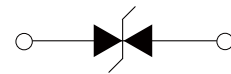
- | Low profile package
- | Ideal for automated placement
- | 200 Watt peak pulse power capability with a 10/1000µs waveform
- | For surface mounted applications to optimize board space
- | Excellent clamping capability
- | Very fast response time
- | Low incremental surge resistance



SOD-123FL



Uni-directional



Bi-directional

APPLICATIONS

- | Power supply protection
- | Automotive application
- | Industrial application
- | Power management

APPROVALS

| | |
|-------------|------------------------------------|
| RoHS | Compliance with 2011/65/EU |
| HF | Compliance with IEC61249-2-21:2003 |

MAXIMUM RATINGS (T_A=25°C)

| Parameter | Symbo | Value | Unit |
|--|------------------|-------|-------|
| Peak Pulse Power Dissipation on 10/1000us waveform (Note1) | P _{PPM} | 200 | Watts |
| Steady State Power Dissipation at T _L =75°C | P _D | 0.4 | Watts |

Notes : 1.Non-repetitive current pulse,T_A=25°C.
 2.8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum

THERMAL CONSIDERATIONS

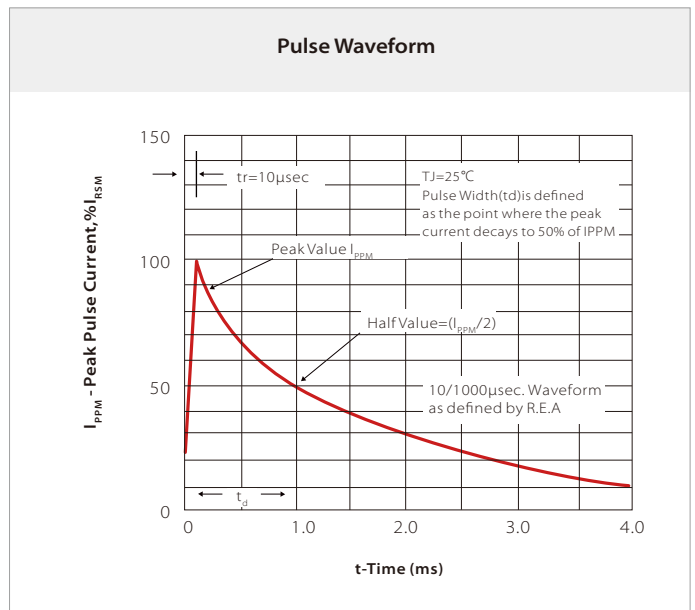
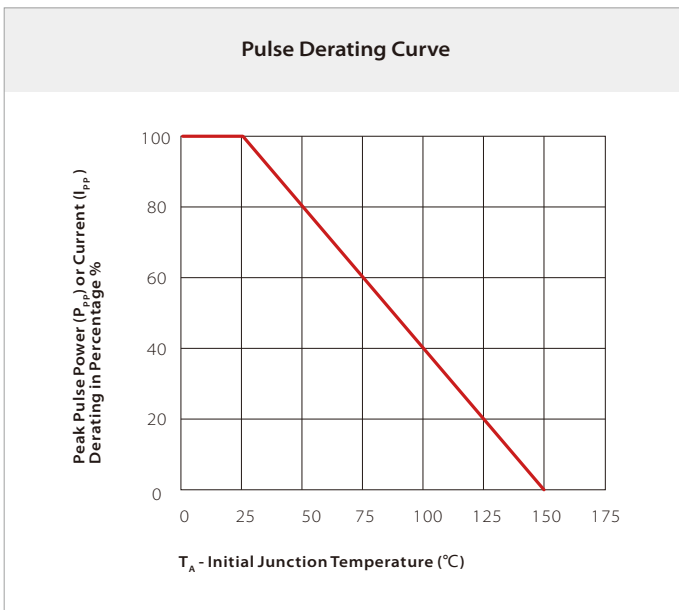
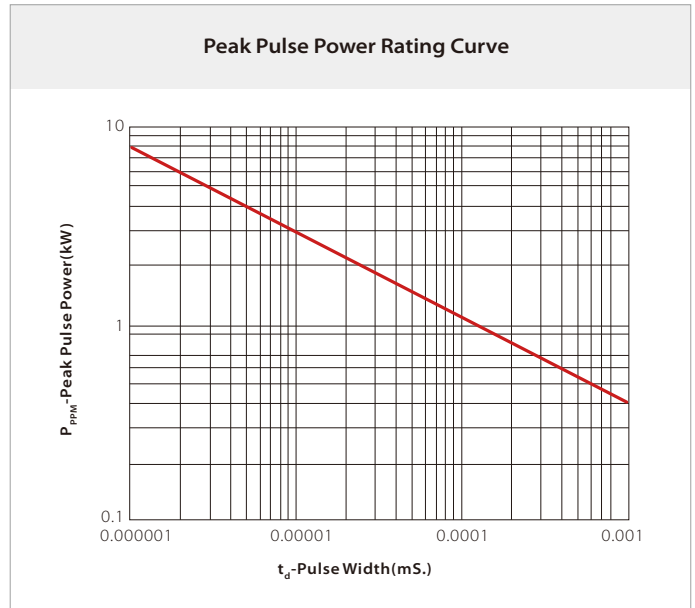
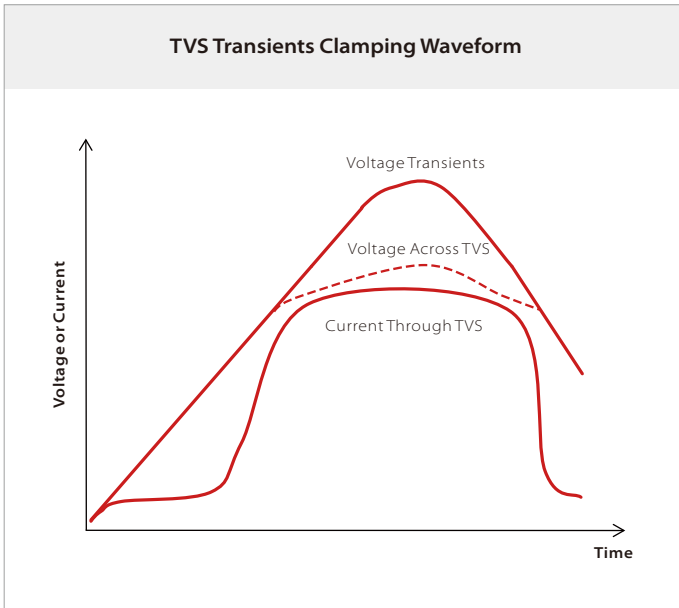
| Parameter | Symbol | Value | Unit |
|--|------------------|-------------|------|
| Operating Junction Temperature | T _J | -55 to +150 | °C |
| Storage Temperature Range | T _{STG} | -55 to +150 | °C |
| Junction to Ambient on printed circuit | R _{θJA} | 220 | °C/W |

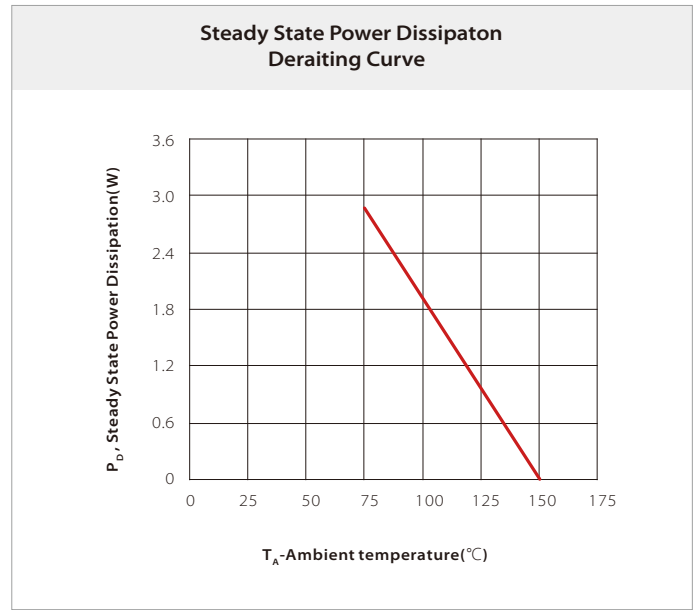
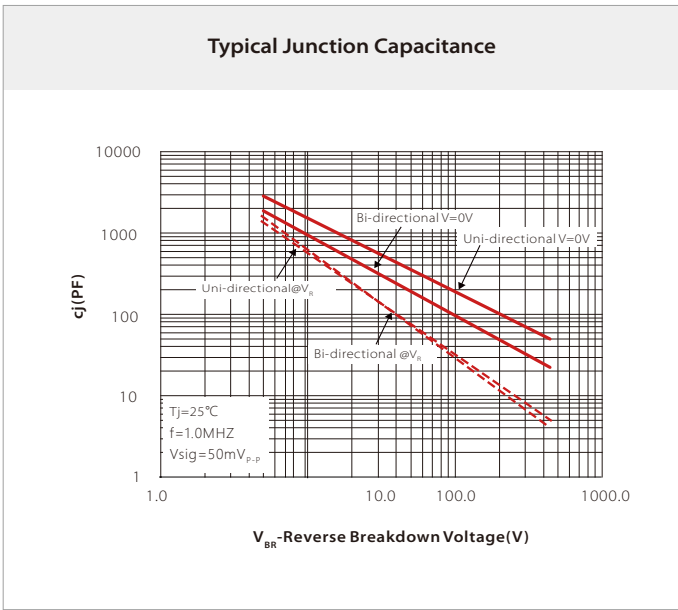
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

| Part Number | | Device Marking Code | | Reverse Stand-off Voltage | Breakdown Voltage Min.@I _T | Breakdown Voltage Max.@I _T | Test Current | Maximum Clamping Voltage @I _{PP} | Peak Pulse Current | Reverse Leakage @V _{RWM} |
|-------------|----------|---------------------|----|---------------------------|---------------------------------------|---------------------------------------|---------------------|---|---------------------|-----------------------------------|
| Uni-Polar | Bi-Polar | Uni | Bi | V _{RWM} (V) | V _{BR} (V) | V _{BR} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (uA) |
| SMF3.3A | SMF3.3CA | HZ | GZ | 3.3 | 5.2 | 6.00 | 10 | 8.0 | 25.0 | 800 |
| SMF5.0A | SMF5.0CA | AE | FE | 5.0 | 6.4 | 7.00 | 10 | 9.2 | 21.7 | 800 |
| SMF6.0A | SMF6.0CA | AG | FG | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 19.4 | 800 |
| SMF6.5A | SMF6.5CA | AK | FK | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 17.9 | 500 |
| SMF7.0A | SMF7.0CA | AM | FM | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 16.7 | 200 |
| SMF7.5A | SMF7.5CA | AP | FP | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 15.5 | 100 |
| SMF8.0A | SMF8.0CA | AR | FR | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 14.7 | 50 |
| SMF8.5A | SMF8.5CA | AT | FT | 8.5 | 9.44 | 10.4 | 1 | 14.4 | 13.9 | 20 |
| SMF9.0A | SMF9.0CA | AV | FV | 9.0 | 10.0 | 11.1 | 1 | 15.4 | 13.0 | 10 |
| SMF10A | SMF10CA | AX | FX | 10.0 | 11.1 | 12.3 | 1 | 17.0 | 11.8 | 5 |
| SMF11A | SMF11CA | AZ | FZ | 11.0 | 12.2 | 13.5 | 1 | 18.2 | 11.0 | 1 |
| SMF12A | SMF12CA | BE | GE | 12.0 | 13.3 | 14.7 | 1 | 19.9 | 10.1 | 1 |
| SMF13A | SMF13CA | BG | GG | 13.0 | 14.4 | 15.9 | 1 | 21.5 | 9.3 | 1 |
| SMF14A | SMF14CA | BK | GK | 14.0 | 15.6 | 17.2 | 1 | 23.2 | 8.6 | 1 |
| SMF15A | SMF15CA | BM | GM | 15.0 | 16.7 | 18.5 | 1 | 24.4 | 8.2 | 1 |
| SMF16A | SMF16CA | BP | GP | 16.0 | 17.8 | 19.7 | 1 | 26.0 | 7.7 | 1 |
| SMF17A | SMF17CA | BR | GR | 17.0 | 18.9 | 20.9 | 1 | 27.6 | 7.2 | 1 |
| SMF18A | SMF18CA | BT | GT | 18.0 | 20.0 | 22.1 | 1 | 29.2 | 6.8 | 1 |
| SMF20A | SMF20CA | BV | GV | 20.0 | 22.2 | 24.5 | 1 | 32.4 | 6.2 | 1 |
| SMF22A | SMF22CA | BX | GX | 22.0 | 24.4 | 26.9 | 1 | 35.5 | 5.6 | 1 |
| SMF24A | SMF24CA | BZ | GZ | 24.0 | 26.7 | 29.5 | 1 | 38.9 | 5.1 | 1 |
| SMF26A | SMF26CA | CE | HE | 26.0 | 28.9 | 31.9 | 1 | 42.1 | 4.8 | 1 |
| SMF28A | SMF28CA | CG | HG | 28.0 | 31.1 | 34.4 | 1 | 45.4 | 4.4 | 1 |
| SMF30A | SMF30CA | CK | HK | 30.0 | 33.3 | 36.8 | 1 | 48.4 | 4.1 | 1 |
| SMF33A | SMF33CA | CM | HM | 33.0 | 36.7 | 40.6 | 1 | 53.3 | 3.8 | 1 |
| SMF36A | SMF36CA | CP | HP | 36.0 | 40.0 | 44.2 | 1 | 58.1 | 3.4 | 1 |
| SMF40A | SMF40CA | CR | HR | 40.0 | 44.4 | 49.1 | 1 | 64.5 | 3.1 | 1 |
| SMF43A | SMF43CA | CT | HT | 43.0 | 47.8 | 52.8 | 1 | 69.4 | 2.9 | 1 |
| SMF45A | SMF45CA | CV | HV | 45.0 | 50.0 | 55.3 | 1 | 72.7 | 2.8 | 1 |
| SMF48A | SMF48CA | CX | HX | 48.0 | 53.3 | 58.9 | 1 | 77.4 | 2.6 | 1 |
| SMF51A | SMF51CA | CZ | HZ | 51.0 | 56.7 | 62.7 | 1 | 82.4 | 2.4 | 1 |
| SMF54A | SMF54CA | DE | IE | 54.0 | 60.0 | 66.3 | 1 | 87.1 | 2.3 | 1 |
| SMF58A | SMF58CA | DG | IG | 58.0 | 64.4 | 71.2 | 1 | 93.6 | 2.1 | 1 |

| Part Number | | Device Marking Code | | Reverse Stand-off Voltage | Breakdown Voltage Min.@I _T | Breakdown Voltage Max.@I _T | Test Current | Maximum Clamping Voltage @I _{PP} | Peak Pulse Current | Reverse Leakage @V _{RWM} |
|-------------|----------|---------------------|----|---------------------------|---------------------------------------|---------------------------------------|---------------------|---|---------------------|-----------------------------------|
| Uni-Polar | Bi-Polar | Uni | Bi | V _{RWM} (V) | V _{BR} (V) | V _{BR} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (μA) |
| SMF60A | SMF60CA | DK | IK | 60.0 | 66.7 | 73.7 | 1 | 96.8 | 1.86 | 1 |
| SMF64A | SMF64CA | DM | IM | 64.0 | 71.1 | 78.6 | 1 | 103.0 | 1.75 | 1 |
| SMF70A | SMF70CA | DP | IP | 70.0 | 77.8 | 86.0 | 1 | 113.0 | 1.59 | 1 |
| SMF75A | SMF75CA | DR | IR | 75.0 | 83.3 | 92.1 | 1 | 121.0 | 1.49 | 1 |
| SMF78A | SMF78CA | DT | IT | 78.0 | 86.7 | 95.8 | 1 | 126.0 | 1.43 | 1 |
| SMF85A | SMF85CA | DV | IV | 85.0 | 94.4 | 104.0 | 1 | 137.0 | 1.31 | 1 |
| SMF90A | SMF90CA | DX | IX | 90.0 | 100.0 | 111.0 | 1 | 146.0 | 1.23 | 1 |
| SMF100A | SMF100CA | EZ | JZ | 100.0 | 111.0 | 123.0 | 1 | 162.0 | 1.11 | 1 |
| SMF110A | SMF110CA | EE | JE | 110.0 | 122.0 | 135.0 | 1 | 177.0 | 1.02 | 1 |
| SMF120A | SMF120CA | EG | JG | 120.0 | 133.0 | 147.0 | 1 | 193.0 | 0.93 | 1 |
| SMF130A | SMF130CA | EK | JK | 130.0 | 144.0 | 159.0 | 1 | 209.0 | 0.86 | 1 |
| SMF150A | SMF150CA | EM | JM | 150.0 | 167.0 | 185.0 | 1 | 243.0 | 0.74 | 1 |
| SMF160A | SMF160CA | EP | JP | 160.0 | 178.0 | 197.0 | 1 | 259.0 | 0.69 | 1 |
| SMF170A | SMF170CA | ER | JR | 170.0 | 189.0 | 209.0 | 1 | 275.0 | 0.65 | 1 |
| SMF180A | SMF180CA | ET | JT | 180.0 | 201.0 | 222.0 | 1 | 292.0 | 0.66 | 1 |
| SMF190A | SMF190CA | EU | JU | 190.0 | 209.0 | 243.0 | 1 | 308.0 | 0.63 | 1 |
| SMF200A | SMF200CA | EV | JV | 200.0 | 224.0 | 247.0 | 1 | 324.0 | 0.59 | 1 |
| SMF210A | SMF210CA | EW | JW | 210.0 | 231.0 | 269.0 | 1 | 340.0 | 0.57 | 1 |
| SMF220A | SMF220CA | EY | JY | 220.0 | 246.0 | 272.0 | 1 | 356.0 | 0.54 | 1 |

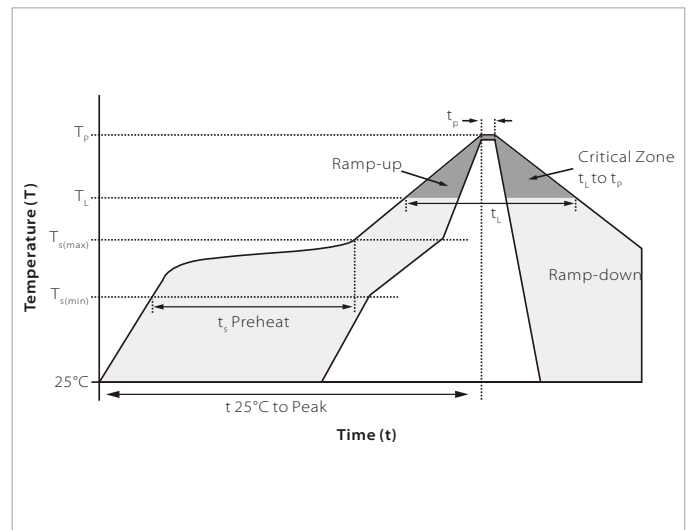
CHARACTERISTIC CURVES



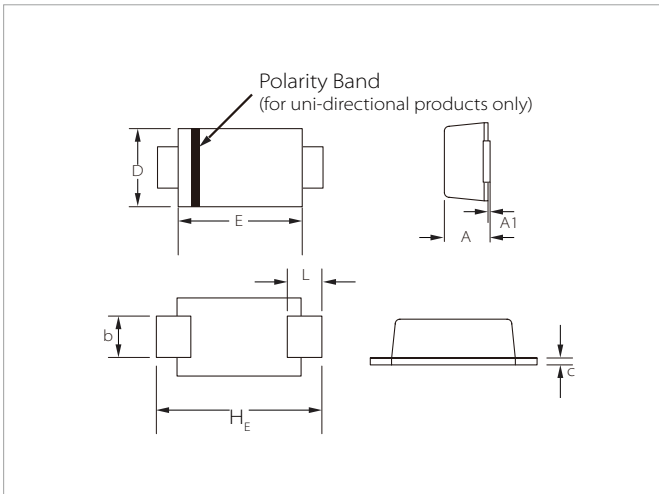


SOLDERING PARAMETERS

| Reflow Condition | | Lead-free assembly |
|---|----------------------------------|--------------------------------------|
| Pre Heat | Temperature Max ($T_{s(min)}$) | 150 $^\circ\text{C}$ |
| | Temperature Max ($T_{s(max)}$) | 200 $^\circ\text{C}$ |
| | Time (min to max) (t_s) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3 $^\circ\text{C}/\text{second}$ max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3 $^\circ\text{C}/\text{second}$ max |
| Reflow | Temperature (T_L) (Liquidus) | 217 $^\circ\text{C}$ |
| | Time (min to max) (t_r) | 60 – 150 seconds |
| Peak Temperature (T_p) | | 260 $^\circ\text{C}$ |
| Time within 5 $^\circ\text{C}$ of actual peak Temperature (t_p) | | 20 – 40 seconds |
| Ramp-down Rate | | 6 $^\circ\text{C}/\text{second}$ max |
| Time 25 $^\circ\text{C}$ to peak Temperature (T_p) | | 8 minutes max. |
| Do not exceed | | 260 $^\circ\text{C}$ |

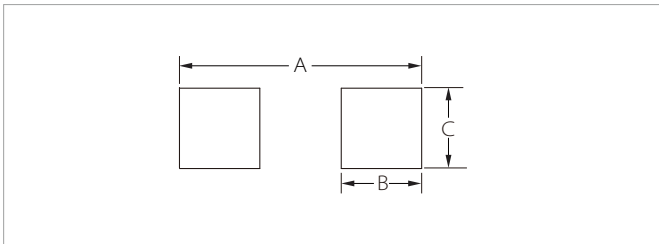


SOD-123FL PACKAGE INFORMATION



| Ref. | Millimeters | | Inches | |
|----------------|-------------|------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.95 | 1.45 | 0.037 | 0.057 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| b | 0.70 | 1.20 | 0.028 | 0.047 |
| c | 0.05 | 0.30 | 0.002 | 0.012 |
| D | 1.50 | 2.00 | 0.059 | 0.079 |
| E | 2.50 | 2.90 | 0.098 | 0.114 |
| L | 0.35 | 0.90 | 0.014 | 0.035 |
| H _E | 3.40 | 3.90 | 0.134 | 0.154 |

RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters | Inches |
|------|-------------|--------|
| A | 4.20 | 0.165 |
| B | 1.50 | 0.059 |
| C | 1.20 | 0.047 |

ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|-------------|-------------------|----------|-----------|
| SMFxx(C)A | SOD-123FL | 3000PCS | 7" |

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