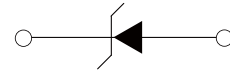


FEATURES

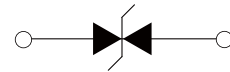
- | Low profile package
- | Ideal for automated placement
- | 400 Watt peak pulse power capability with a 10/1000µs waveform
- | For surface mounted applicatons to optimize board space
- | Excellent clamping capability
- | Very fast response time
- | Low incremental surge resistance



SOD-123FL



Uni-directionnal



Bi-directionnal

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} | 400 | Watts |
| Steady State Power Dissipation at T _L = 75°C | P _D | 2.8 | 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 |

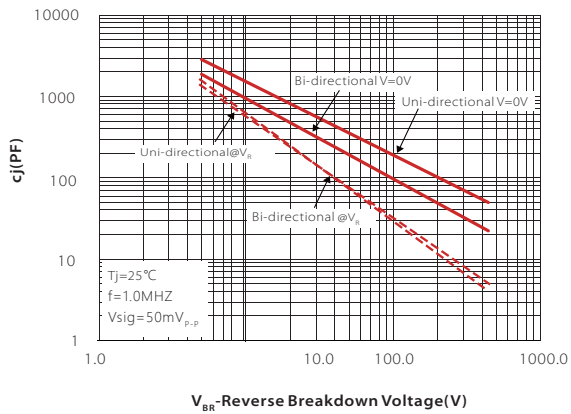
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

| 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) |
| SMF4L5.0A | SMF4L5.0CA | KE | WE | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 43.5 | 800 |
| SMF4L6.0A | SMF4L6.0CA | KG | WG | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 38.8 | 800 |
| SMF4L6.5A | SMF4L6.5CA | KK | WK | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 35.7 | 500 |
| SMF4L7.0A | SMF4L7.0CA | KM | WM | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 33.3 | 200 |
| SMF4L7.5A | SMF4L7.5CA | KP | WP | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 31.0 | 100 |
| SMF4L8.0A | SMF4L8.0CA | KR | WR | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 29.4 | 50 |
| SMF4L8.5A | SMF4L8.5CA | KT | WT | 8.5 | 9.44 | 10.40 | 1 | 14.4 | 27.8 | 20 |
| SMF4L9.0A | SMF4L9.0CA | KV | WV | 9.0 | 10.00 | 11.10 | 1 | 15.4 | 26.0 | 10 |
| SMF4L10A | SMF4L10CA | KX | WX | 10.0 | 11.10 | 12.30 | 1 | 17.0 | 23.5 | 5 |
| SMF4L11A | SMF4L11CA | KZ | WZ | 11.0 | 12.20 | 13.50 | 1 | 18.2 | 22.0 | 1 |
| SMF4L12A | SMF4L12CA | LE | XE | 12.0 | 13.30 | 14.70 | 1 | 19.9 | 20.1 | 1 |
| SMF4L13A | SMF4L13CA | LG | XG | 13.0 | 14.40 | 15.90 | 1 | 21.5 | 18.6 | 1 |
| SMF4L14A | SMF4L14CA | LK | XK | 14.0 | 15.60 | 17.20 | 1 | 23.2 | 17.2 | 1 |
| SMF4L15A | SMF4L15CA | LM | XM | 15.0 | 16.70 | 18.50 | 1 | 24.4 | 16.4 | 1 |
| SMF4L16A | SMF4L16CA | LP | XP | 16.0 | 17.80 | 19.70 | 1 | 26.0 | 15.4 | 1 |
| SMF4L17A | SMF4L17CA | LR | XR | 17.0 | 18.90 | 20.90 | 1 | 27.6 | 14.5 | 1 |
| SMF4L18A | SMF4L18CA | LT | XT | 18.0 | 20.00 | 22.10 | 1 | 29.2 | 13.7 | 1 |
| SMF4L20A | SMF4L20CA | LV | XV | 20.0 | 22.20 | 24.50 | 1 | 32.4 | 12.3 | 1 |
| SMF4L22A | SMF4L22CA | LX | XX | 22.0 | 24.40 | 26.90 | 1 | 35.5 | 11.3 | 1 |
| SMF4L24A | SMF4L24CA | LZ | XZ | 24.0 | 26.70 | 29.50 | 1 | 38.9 | 10.3 | 1 |
| SMF4L26A | SMF4L26CA | ME | YE | 26.0 | 28.90 | 31.90 | 1 | 42.1 | 9.5 | 1 |
| SMF4L28A | SMF4L28CA | MG | YG | 28.0 | 31.10 | 34.40 | 1 | 45.4 | 8.8 | 1 |
| SMF4L30A | SMF4L30CA | MK | YK | 30.0 | 33.30 | 36.80 | 1 | 48.4 | 8.3 | 1 |
| SMF4L33A | SMF4L33CA | MM | YM | 33.0 | 36.70 | 40.60 | 1 | 53.3 | 7.5 | 1 |
| SMF4L36A | SMF4L36CA | MP | YP | 36.0 | 40.00 | 44.20 | 1 | 58.1 | 6.9 | 1 |
| SMF4L40A | SMF4L40CA | MR | YR | 40.0 | 44.40 | 49.10 | 1 | 64.5 | 6.2 | 1 |
| SMF4L43A | SMF4L43CA | MT | YT | 43.0 | 47.80 | 52.80 | 1 | 69.4 | 5.8 | 1 |
| SMF4L45A | SMF4L45CA | MV | YV | 45.0 | 50.00 | 55.30 | 1 | 72.7 | 5.5 | 1 |
| SMF4L48A | SMF4L48CA | MX | YX | 48.0 | 53.30 | 58.90 | 1 | 77.4 | 5.2 | 1 |
| SMF4L51A | SMF4L51CA | MZ | YZ | 51.0 | 56.70 | 62.70 | 1 | 82.4 | 4.9 | 1 |
| SMF4L54A | SMF4L54CA | NE | ZE | 54.0 | 60.00 | 66.30 | 1 | 87.1 | 4.6 | 1 |
| SMF4L58A | SMF4L58CA | NG | ZG | 58.0 | 64.40 | 71.20 | 1 | 93.6 | 4.3 | 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 (uA) |
| SMF4L60A | SMF4L60CA | NK | ZK | 60.0 | 66.70 | 73.70 | 1 | 96.8 | 4.1 | 1 |
| SMF4L64A | SMF4L64CA | NK | ZK | 60.0 | 66.70 | 73.70 | 1 | 96.8 | 4.1 | 1 |
| SMF4L70A | SMF4L70CA | NP | ZP | 70.0 | 77.80 | 86.00 | 1 | 113.0 | 3.5 | 1 |
| SMF4L75A | SMF4L75CA | NR | ZR | 75.0 | 83.30 | 92.10 | 1 | 121.0 | 3.3 | 1 |
| SMF4L78A | SMF4L78CA | NT | ZT | 78.0 | 86.70 | 95.80 | 1 | 126.0 | 3.2 | 1 |
| SMF4L85A | SMF4L85CA | NV | ZV | 85.0 | 94.40 | 104.00 | 1 | 137.0 | 2.9 | 1 |
| SMF4L90A | SMF4L90CA | NX | ZX | 90.0 | 100.00 | 111.00 | 1 | 146.0 | 2.7 | 1 |
| SMF4L100A | SMF4L100CA | NZ | ZZ | 100.0 | 111.00 | 123.00 | 1 | 162.0 | 2.5 | 1 |
| SMF4L110A | SMF4L110CA | PE | VE | 110.0 | 122.00 | 135.00 | 1 | 177.0 | 2.3 | 1 |
| SMF4L120A | SMF4L120CA | PG | VG | 120.0 | 133.00 | 147.00 | 1 | 193.0 | 2.1 | 1 |
| SMF4L130A | SMF4L130CA | PK | VK | 130.0 | 144.00 | 159.00 | 1 | 209.0 | 1.9 | 1 |
| SMF4L150A | SMF4L150CA | PM | VM | 150.0 | 167.00 | 185.00 | 1 | 243.0 | 1.6 | 1 |
| SMF4L160A | SMF4L160CA | PP | VP | 160.0 | 178.00 | 197.00 | 1 | 259.0 | 1.5 | 1 |
| SMF4L170A | SMF4L170CA | PR | VR | 170.0 | 189.00 | 209.00 | 1 | 275.0 | 1.5 | 1 |

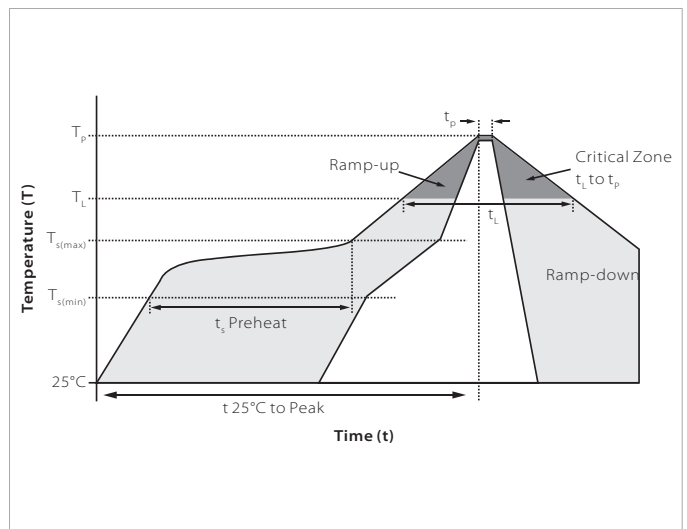
CHARACTERISTIC CURVES



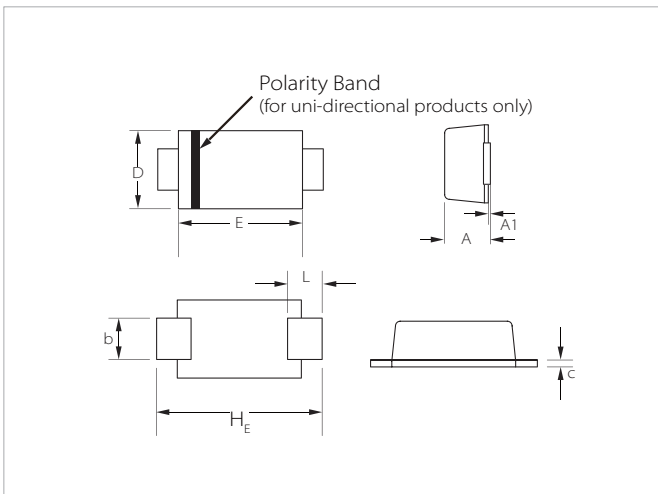
Typical Junction Capacitance

Steady State Power Dissipation Derating Curve


SOLDERING PARAMETERS

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

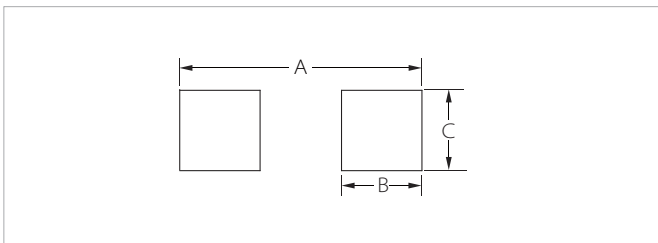


SOD-123FL PACKAGE INFORMATION



| 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 |
|-------------|-------------------|----------|-----------|
| SMF4Lxx(C)A | SOD-123FL | 3000PCS | 7" |

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