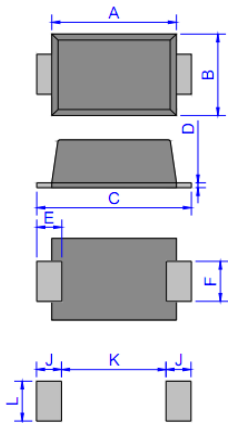


### SOD-123FL



| Ref. | Dimensions  |      |        |       |
|------|-------------|------|--------|-------|
|      | Millimeters |      | Inches |       |
|      | Min.        | Max. | Min.   | Max.  |
| A    | 2.60        | 3.00 | 0.102  | 0.118 |
| B    | 1.60        | 2.00 | 0.063  | 0.079 |
| C    | 3.45        | 3.95 | 0.136  | 0.156 |
| D    | 0.10        | 0.25 | 0.004  | 0.01  |
| E    | 0.3         | 0.9  | 0.012  | 0.035 |
| F    | 0.80        | 1.20 | 0.031  | 0.047 |
| G    | 0.95        | 1.35 | 0.037  | 0.053 |
| J    | 1.30        |      | 0.051  |       |
| K    |             | 1.70 |        | 0.067 |
| L    | 1.30        |      | 0.051  |       |

Unit: inch (mm)

### Features

- Glass passivated chip
- 400 W peak pulse power capability with a 10/1000 us waveform, repetitive rate (duty cycle):0.01 %
- Excellent clamping capability
- Low reverse leakage
- Very fast response time
- Lead and body according with RoHS standard
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)

### Mechanical Data

- Case: SOD-123FL Molded plastic
- Lead: Solderable per MIL-STD-750, method 2026
- Epoxy: UL 94V-0 rate flame retardant
- Polarity: Color band denotes cathode end except Bipolar
- Mounting position: Any

Maximum Ratings & Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                                                                                  | Symbols        | Value          | Unit |
|--------------------------------------------------------------------------------------------|----------------|----------------|------|
| Peak power dissipation with a 10/1000 us waveform <sup>(1)</sup>                           | $P_{PP}$       | 400            | W    |
| Peak pulse current with a 10/1000 us waveform <sup>(1)</sup>                               | $I_{PP}$       | See Next Table | A    |
| Power dissipation on infinite heatsink at $T_L = 75^\circ\text{C}$                         | $P_D$          | 3.0            | W    |
| Peak forward surge current, 8.3 ms single half sinewave unidirectional only <sup>(2)</sup> | $I_{FSM}$      | 40             | A    |
| Maximum instantaneous forward voltage at 15 A for unidirectional only <sup>(3)</sup>       | $V_F$          | 3.5/6.5        | V    |
| Operating junction and storage temperature range                                           | $T_J, T_{STG}$ | -55 to +150    | °C   |

Note:

1)Non-repetitive current pulse per Fig.5 and derated above  $T_A = 25^\circ\text{C}$  per Fig.1 ;

2)Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum ;

3) $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 6.5\text{V}$  for devices of  $V_{BR} > 201\text{V}$ .

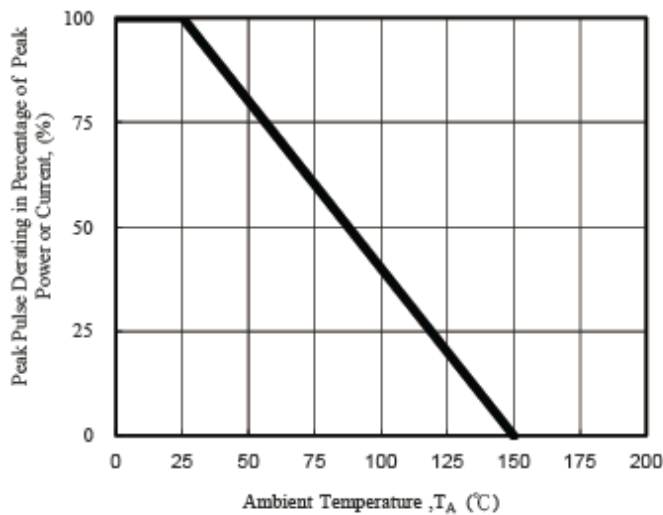
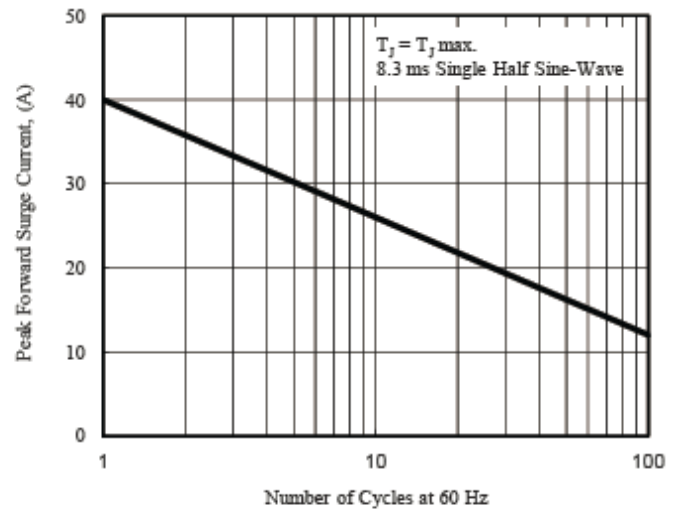
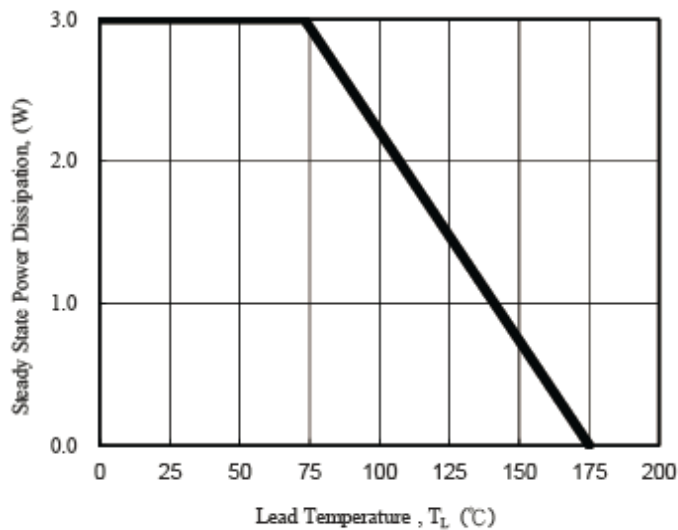
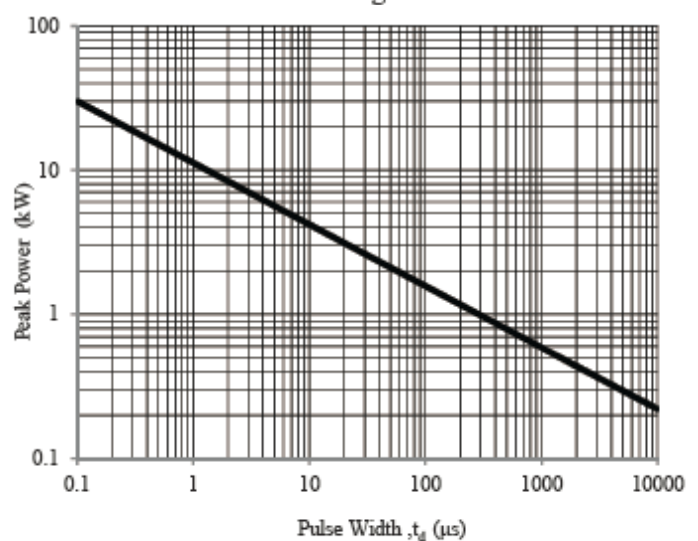
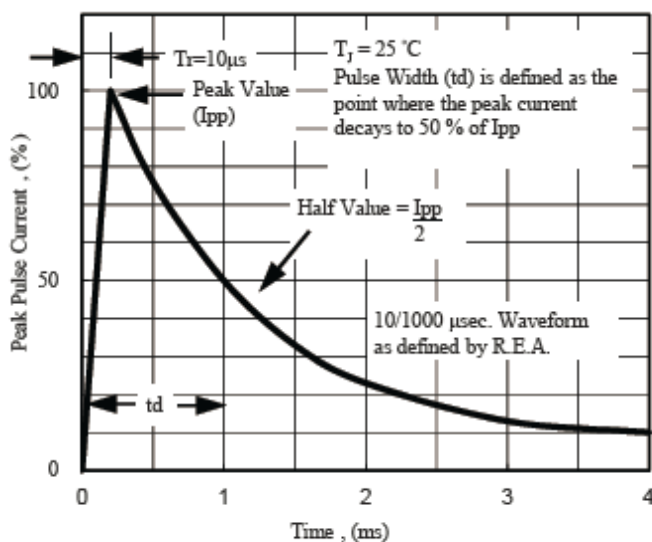
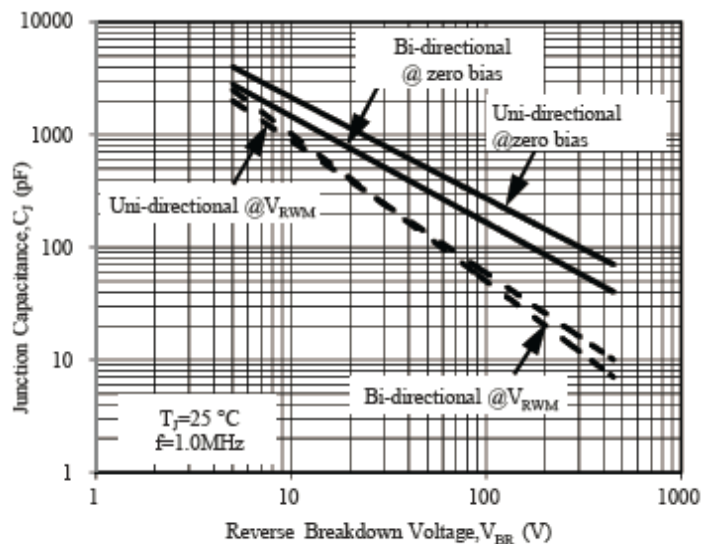
### Ordering Information

| Device      | Qty per Reel | Reel Size |
|-------------|--------------|-----------|
| S4MF xx(C)A | 3000         | 7 Inch    |

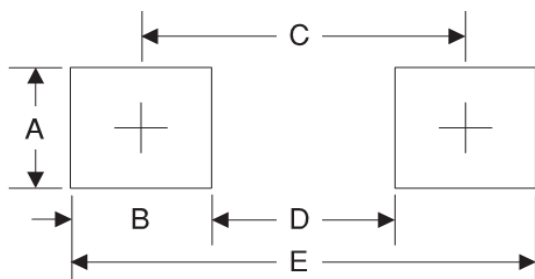
"xx" = Working Peak Reverse Voltage



| Part Number |           | Device Marking Code |    | Reverse Stand-off Voltage | Breakdown Voltage $V_{BR}$ @ $I_T$ |         | Test Current | Max. Clamping Voltage @ $I_{PP}$ | Max. Peak Pulse Current | Max. Reverse Leakage @ $V_{RWM}$ |
|-------------|-----------|---------------------|----|---------------------------|------------------------------------|---------|--------------|----------------------------------|-------------------------|----------------------------------|
| UNI-POLAR   | BI-POLAR  | UNI                 | BI | $V_{RWM}(V)$              | Min.(V)                            | Max.(V) | $I_T(mA)$    | $V_{C MAX.}(V)$                  | $I_{PP}(A)$             | $I_R(\mu A)$                     |
| S4MF5.0A    | S4MF5.0CA | AE                  | WE | 5.0                       | 6.40                               | 7.00    | 10           | 9.2                              | 43.5                    | 800                              |
| S4MF6.0A    | S4MF6.0CA | AG                  | WG | 6.0                       | 6.67                               | 7.37    | 10           | 10.3                             | 38.8                    | 800                              |
| S4MF6.5A    | S4MF6.5CA | AK                  | WK | 6.5                       | 7.22                               | 7.98    | 10           | 11.2                             | 35.7                    | 500                              |
| S4MF7.0A    | S4MF7.0CA | AM                  | WM | 7.0                       | 7.78                               | 8.60    | 10           | 12.0                             | 33.3                    | 200                              |
| S4MF7.5A    | S4MF7.5CA | AP                  | WP | 7.5                       | 8.33                               | 9.21    | 1            | 12.9                             | 31.0                    | 100                              |
| S4MF8.0A    | S4MF8.0CA | AR                  | WR | 8.0                       | 8.89                               | 9.83    | 1            | 13.6                             | 29.4                    | 50                               |
| S4MF8.5A    | S4MF8.5CA | AT                  | WT | 8.5                       | 9.44                               | 10.40   | 1            | 14.4                             | 27.8                    | 20                               |
| S4MF9.0A    | S4MF9.0CA | AV                  | WV | 9.0                       | 10.00                              | 11.10   | 1            | 15.4                             | 26.0                    | 10                               |
| S4MF10A     | S4MF10CA  | AX                  | WX | 10.0                      | 11.10                              | 12.30   | 1            | 17.0                             | 23.5                    | 5                                |
| S4MF11A     | S4MF11CA  | AZ                  | WZ | 11.0                      | 12.20                              | 13.50   | 1            | 18.2                             | 22.0                    | 5                                |
| S4MF12A     | S4MF12CA  | BE                  | XE | 12.0                      | 13.30                              | 14.70   | 1            | 19.9                             | 20.1                    | 5                                |
| S4MF13A     | S4MF13CA  | BG                  | XG | 13.0                      | 14.40                              | 15.90   | 1            | 21.5                             | 18.6                    | 5                                |
| S4MF14A     | S4MF14CA  | BK                  | XK | 14.0                      | 15.60                              | 17.20   | 1            | 23.2                             | 17.2                    | 5                                |
| S4MF15A     | S4MF15CAX | BM                  | XM | 15.0                      | 16.70                              | 18.50   | 1            | 24.4                             | 16.4                    | 5                                |
| S4MF16A     | S4MF16CA  | BP                  | XP | 16.0                      | 17.80                              | 19.70   | 1            | 26.0                             | 15.4                    | 5                                |
| S4MF17A     | S4MF17CA  | BR                  | XR | 17.0                      | 18.90                              | 20.90   | 1            | 27.6                             | 14.5                    | 5                                |
| S4MF18A     | S4MF18CA  | BT                  | XT | 18.0                      | 20.00                              | 22.10   | 1            | 29.2                             | 13.7                    | 5                                |
| S4MF20A     | S4MF20CA  | BV                  | XV | 20.0                      | 22.20                              | 24.50   | 1            | 32.4                             | 12.3                    | 5                                |
| S4MF22A     | S4MF22CA  | BX                  | XX | 22.0                      | 24.40                              | 26.90   | 1            | 35.5                             | 11.3                    | 5                                |
| S4MF24A     | S4MF24CA  | BZ                  | XZ | 24.0                      | 26.70                              | 29.50   | 1            | 38.9                             | 10.3                    | 5                                |
| S4MF26A     | S4MF26CA  | CE                  | YE | 26.0                      | 28.90                              | 31.90   | 1            | 42.1                             | 9.5                     | 5                                |
| S4MF28A     | S4MF28CA  | CG                  | YG | 28.0                      | 31.10                              | 34.40   | 1            | 45.4                             | 8.8                     | 5                                |
| S4MF30A     | S4MF30CA  | CK                  | YK | 30.0                      | 33.50                              | 36.80   | 1            | 48.4                             | 8.3                     | 5                                |
| S4MF33A     | S4MF33CA  | CM                  | YM | 33.0                      | 36.70                              | 40.60   | 1            | 53.3                             | 7.5                     | 5                                |
| S4MF36A     | S4MF36CA  | CP                  | YP | 36.0                      | 40.00                              | 44.20   | 1            | 58.1                             | 6.9                     | 5                                |
| S4MF40A     | S4MF40CA  | CR                  | YR | 40.0                      | 44.40                              | 49.10   | 1            | 64.5                             | 6.2                     | 5                                |
| S4MF43A     | S4MF43CA  | CT                  | YT | 43.0                      | 47.80                              | 52.80   | 1            | 69.4                             | 5.8                     | 5                                |
| S4MF45A     | S4MF45CA  | CV                  | YV | 45.0                      | 50.00                              | 55.30   | 1            | 72.7                             | 5.5                     | 5                                |
| S4MF48A     | S4MF48CA  | CX                  | YX | 48.0                      | 53.30                              | 58.90   | 1            | 77.4                             | 5.2                     | 5                                |
| S4MF51A     | S4MF51CA  | CZ                  | YZ | 51.0                      | 56.70                              | 62.70   | 1            | 82.4                             | 4.9                     | 5                                |
| S4MF54A     | S4MF54CA  | RE                  | ZE | 54.0                      | 60.00                              | 66.30   | 1            | 87.1                             | 4.6                     | 5                                |
| S4MF58A     | S4MF58CA  | RG                  | ZG | 58.0                      | 64.40                              | 71.20   | 1            | 93.6                             | 4.3                     | 5                                |
| S4MF60A     | S4MF60CA  | RK                  | ZK | 60.0                      | 66.70                              | 73.70   | 1            | 96.8                             | 4.1                     | 5                                |
| S4MF64A     | S4MF64CA  | RM                  | ZM | 64.0                      | 71.10                              | 78.60   | 1            | 103.0                            | 3.9                     | 5                                |
| S4MF70A     | S4MF70CA  | RP                  | ZP | 70.0                      | 77.80                              | 86.00   | 1            | 113.0                            | 3.5                     | 5                                |
| S4MF75A     | S4MF75CA  | RR                  | ZR | 75.0                      | 83.30                              | 92.10   | 1            | 121.0                            | 3.3                     | 5                                |
| S4MF78A     | S4MF78CA  | RT                  | ZT | 78.0                      | 86.70                              | 95.80   | 1            | 126.0                            | 3.2                     | 5                                |
| S4MF85A     | S4MF85CA  | RV                  | ZV | 85.0                      | 94.4                               | 104.0   | 1            | 137.0                            | 2.9                     | 5                                |
| S4MF90A     | S4MF90CA  | RX                  | ZX | 90.0                      | 100.0                              | 111.0   | 1            | 146.0                            | 2.7                     | 5                                |
| S4MF100A    | S4MF100CA | RZ                  | ZZ | 100.0                     | 111.0                              | 123.0   | 1            | 162.0                            | 2.5                     | 5                                |
| S4MF110A    | S4MF110CA | SE                  | VE | 110.0                     | 122.0                              | 135.0   | 1            | 177.0                            | 2.3                     | 5                                |
| S4MF120A    | S4MF120CA | SG                  | VG | 120.0                     | 133.0                              | 147.0   | 1            | 193.0                            | 2.1                     | 5                                |
| S4MF130A    | S4MF130CA | SK                  | VK | 130.0                     | 144.0                              | 159.0   | 1            | 209.0                            | 1.9                     | 5                                |
| S4MF150A    | S4MF150CA | SM                  | VM | 150.0                     | 167.0                              | 185.0   | 1            | 243.0                            | 1.6                     | 5                                |
| S4MF160A    | S4MF160CA | SP                  | VP | 160.0                     | 178.0                              | 197.0   | 1            | 259.0                            | 1.5                     | 5                                |
| S4MF170A    | S4MF170CA | SR                  | VR | 170.0                     | 189.0                              | 209.0   | 1            | 275.0                            | 1.5                     | 5                                |
| S4MF180A    |           | ST                  |    | 180.0                     | 201.0                              | 222.0   | 1            | 292.0                            | 1.4                     | 5                                |
| S4MF190A    |           | SU                  |    | 190.0                     | 209.0                              | 243.0   | 1            | 308.0                            | 1.3                     | 5                                |
| S4MF200A    |           | SV                  |    | 200.0                     | 224.0                              | 247.0   | 1            | 324.0                            | 1.2                     | 5                                |
| S4MF210A    |           | SW                  |    | 210.0                     | 231.0                              | 268.0   | 1            | 340.0                            | 1.2                     | 5                                |
| S4MF220A    |           | GX                  |    | 220.0                     | 246.0                              | 272.0   | 1            | 356.0                            | 1.1                     | 5                                |

**Ratings and Characteristics Curves (TA=25°C unless otherwise noted)**

**Fig. 1 - Pulse Derating Curve**

**Fig. 2 - Maximum Non-Repetitive Surge Current**

**Fig. 3 - Steady State Power Derating Curve**

**Fig. 4 - Peak Pulse Power Rating Curve**

**Fig. 5 - Pulse Waveform**

**Fig. 6 - Typical Junction Capacitance**

## Suggested Pad Layout



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.2       | 0.048       |
| B      | 1.15      | 0.045       |
| C      | 3.10      | 0.122       |
| D      | 1.95      | 0.077       |
| E      | 4.25      | 0.167       |