

RoHS Compliant Product

A suffix of "-C" specifies halogen-free and lead-free

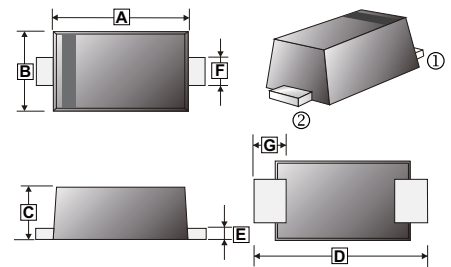
FEATURES

- Glass passivated chip
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast response time
- RoHS compliant
- 200 W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle):0.01 %

MECHANICAL DATA

- Epoxy : UL94V-0 rate flame retardant
- Case : SOD-123FL
- Lead: Solderable per MIL-STD-750,method 2026
- Polarity : Color band denotes cathode end except Bipolar
- Mounting Position : Any
- Weight : 0.0152 grams(approximate)

SOD-123FL



| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|------|
| | Min. | Max. | | Min. | Max. |
| A | 2.60 | 3.10 | E | 0.10 | 0.30 |
| B | 1.60 | 2.00 | F | 0.80 | 1.35 |
| C | 0.81 | 1.55 | G | 0.35 | 0.85 |
| D | 3.50 | 3.90 | | | |

PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|-----------|-----|-------------|
| SOD-123FL | 3K | 7 inch |

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

(Rating 25°C ambient temperature unless otherwise specified. Single phase half wave, 60Hz, resistive or inductive load.
For capacitive load, de-rate current by 20%.)

| Ratings | Symbol | Value | Units |
|---|-----------------------------------|----------------|-------|
| Peak power dissipation with a 10/1000 μ s waveform ¹ | P _{PP} | 200 | W |
| Peak pulse current with a 10/1000 μ s waveform ¹ | I _{PP} | See Next Table | A |
| Power dissipation on infinite heatsink at T _L = 70 °C | P _D | 0.4 | W |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ² | I _{FSM} | 20 | A |
| Maximum instantaneous forward voltage at 25 A for unidirectional only | V _F | 3.5 | V |
| Operating junction and storage temperature range | T _J , T _{STG} | -55 ~ 150 | °C |

Notes:

1. Non-repetitive current pulse per Fig.5 and derated above T_A= 25 °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.

ELECTRICAL CHARACTERISTICS (Rating TA=25°C unless otherwise specified)

| Part Number | | Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage V _{BR} @ I _T | | Test Current | Maximum Clamping Voltage V _C @ I _{PP} | Peak Pulse Current | Reverse Leakage I _R @ V _{RWM} |
|-------------|------------|--------------|----|---------------------------|--|------|----------------|---|--------------------|---|
| | | | | | Min | Max | | | | |
| Directional | | Directional | | V _{RWM} | V _{BR} | | I _T | V _C | I _{PP} | I _R |
| Uni | Bi | Uni | Bi | V | V | V | mA | V | A | µA |
| S2FL5.0A | S2FL 5.0CA | FE | KE | 5.0 | 6.4 | 7 | 10 | 9.2 | 21.74 | 400 |
| S2FL 6.0A | S2FL6.0CA | FG | KG | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 19.42 | 400 |
| S2FL6.5A | S2FL6.5CA | FK | KK | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 17.86 | 250 |
| S2FL7.0A | S2FL7.0CA | FM | KM | 7.0 | 7.78 | 8.6 | 10 | 12 | 16.67 | 100 |
| S2FL7.5A | S2FL7.5CA | FP | KP | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 15.5 | 50 |
| S2FL8.0A | S2FL8.0CA | FR | KR | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 14.71 | 25 |
| S2FL8.5A | S2FL8.5CA | FT | KT | 8.5 | 9.44 | 10.4 | 1 | 14.4 | 13.89 | 10 |
| S2FL9.0A | S2FL9.0CA | FV | KV | 9.0 | 10 | 11.1 | 1 | 15.4 | 12.99 | 5 |
| S2FL10A | S2FL10CA | FX | KX | 10 | 11.1 | 12.3 | 1 | 17 | 11.76 | 2.5 |
| S2FL11A | S2FL11CA | FZ | KZ | 11 | 12.2 | 13.5 | 1 | 18.2 | 10.99 | 2.5 |
| S2FL12A | S2FL12CA | HE | LE | 12 | 13.3 | 14.7 | 1 | 19.9 | 10.05 | 2.5 |
| S2FL13A | S2FL13CA | HG | LG | 13 | 14.4 | 15.9 | 1 | 21.5 | 9.3 | 1 |
| S2FL14A | S2FL14CA | HK | LK | 14 | 15.6 | 17.2 | 1 | 23.2 | 8.62 | 1 |
| S2FL15A | S2FL15CA | HM | LM | 15 | 16.7 | 18.5 | 1 | 24.4 | 8.2 | 1 |
| S2FL16A | S2FL16CA | HP | LP | 16 | 17.8 | 19.7 | 1 | 26 | 7.69 | 1 |
| S2FL17A | S2FL17CA | HR | LR | 17 | 18.9 | 20.9 | 1 | 27.6 | 7.25 | 1 |
| S2FL18A | S2FL18CA | HT | LT | 18 | 20 | 22.1 | 1 | 29.2 | 6.85 | 1 |
| S2FL19A | S2FL19CA | HB | LB | 19 | 21.1 | 23.3 | 1 | 30.6 | 6.54 | 1 |
| S2FL20A | S2FL20CA | HV | LV | 20 | 22.2 | 24.5 | 1 | 32.4 | 6.17 | 1 |
| S2FL22A | S2FL22CA | HX | LX | 22 | 24.4 | 26.9 | 1 | 35.5 | 5.63 | 1 |
| S2FL24A | S2FL24CA | HZ | LZ | 24 | 26.7 | 29.5 | 1 | 38.9 | 5.14 | 1 |
| S2FL26A | S2FL26CA | JE | ME | 26 | 28.9 | 31.9 | 1 | 42.1 | 4.75 | 1 |
| S2FL28A | S2FL28CA | JG | MG | 28 | 31.1 | 34.4 | 1 | 45.4 | 4.41 | 1 |
| S2FL30A | S2FL30CA | JK | MK | 30 | 33.3 | 36.8 | 1 | 48.4 | 4.13 | 1 |
| S2FL33A | S2FL33CA | JM | MM | 33 | 36.7 | 40.6 | 1 | 53.3 | 3.75 | 1 |
| S2FL36A | S2FL36CA | JP | MP | 36 | 40 | 44.2 | 1 | 58.1 | 3.44 | 1 |
| S2FL40A | S2FL40CA | JR | MR | 40 | 44.4 | 49.1 | 1 | 64.5 | 3.1 | 1 |
| S2FL43A | S2FL43CA | JT | MT | 43 | 47.8 | 52.8 | 1 | 69.4 | 2.88 | 1 |
| S2FL45A | S2FL45CA | JV | MV | 45 | 50 | 55.3 | 1 | 72.7 | 2.75 | 1 |

ELECTRICAL CHARACTERISTICS (Rating TA=25°C unless otherwise specified)

| Part Number | | Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage V_{BR} @ I_T | | Test Current | Maximum Clamping Voltage V_C @ I_{PP} | Peak Pulse Current | Reverse Leakage I_R @ V_{RWM} |
|-------------|-----------|--------------|----|---------------------------|------------------------------------|------|--------------|---|--------------------|-----------------------------------|
| | | | | | Min | Max | | | | |
| Directional | | Directional | | V_{RWM} | V_{BR} | | I_T | V_C | I_{PP} | I_R |
| Uni | Bi | Uni | Bi | V | V | V | mA | V | A | μA |
| S2FL48A | S2FL48CA | JX | MX | 48 | 53.3 | 58.9 | 1 | 77.4 | 2.58 | 1 |
| S2FL51A | S2FL51CA | JZ | MZ | 51 | 56.7 | 62.7 | 1 | 82.4 | 2.43 | 1 |
| S2FL54A | S2FL54CA | XE | NE | 54 | 60 | 66.3 | 1 | 87.1 | 2.3 | 1 |
| S2FL58A | S2FL58CA | XG | NG | 58 | 64.4 | 71.2 | 1 | 93.6 | 2.14 | 1 |
| S2FL60A | S2FL60CA | XK | NK | 60 | 66.7 | 73.7 | 1 | 96.8 | 2.07 | 1 |
| S2FL64A | S2FL64CA | XM | NM | 64 | 71.1 | 78.6 | 1 | 103 | 1.94 | 1 |
| S2FL70A | S2FL70CA | XP | NP | 70 | 77.8 | 86 | 1 | 113 | 1.77 | 1 |
| S2FL75A | S2FL75CA | XR | NR | 75 | 83.3 | 92.1 | 1 | 121 | 1.65 | 1 |
| S2FL78A | S2FL78CA | XT | NT | 78 | 86.7 | 95.8 | 1 | 126 | 1.59 | 1 |
| S2FL80A | S2FL80CA | XB | NB | 80 | 88.8 | 97.6 | 1 | 129 | 1.55 | 1 |
| S2FL85A | S2FL85CA | XV | NV | 85 | 94.4 | 104 | 1 | 137 | 1.46 | 1 |
| S2FL90A | S2FL90CA | XX | NX | 90 | 100 | 111 | 1 | 146 | 1.37 | 1 |
| S2FL100A | S2FL100CA | XZ | NZ | 100 | 111 | 123 | 1 | 162 | 1.23 | 1 |
| S2FL110A | S2FL110CA | TE | PE | 110 | 122 | 135 | 1 | 177 | 1.13 | 1 |
| S2FL120A | S2FL120CA | TG | PG | 120 | 133 | 147 | 1 | 193 | 1.04 | 1 |
| S2FL130A | S2FL130CA | TK | PK | 130 | 144 | 159 | 1 | 209 | 0.96 | 1 |
| S2FL140A | S2FL140CA | TB | PB | 140 | 155 | 171 | 1 | 224 | 0.89 | 1 |
| S2FL150A | S2FL150CA | TM | PM | 150 | 167 | 185 | 1 | 243 | 0.82 | 1 |
| S2FL160A | S2FL160CA | TP | PP | 160 | 178 | 197 | 1 | 259 | 0.77 | 1 |
| S2FL170A | S2FL170CA | TR | PR | 170 | 189 | 209 | 1 | 275 | 0.73 | 1 |
| S2FL180A | S2FL180CA | TT | PT | 180 | 200 | 220 | 1 | 292 | 0.68 | 1 |
| S2FL190A | S2FL190CA | TV | PV | 190 | 211 | 232 | 1 | 308 | 0.65 | 1 |
| S2FL200A | S2FL200CA | TX | PX | 200 | 224 | 247 | 1 | 324 | 0.62 | 1 |
| S2FL220A | S2FL220CA | TZ | PZ | 220 | 246 | 272 | 1 | 356 | 0.56 | 1 |

Note:

1. The available parts are 'A' type only, the parts without A (V_{BR} is $\pm 10\%$) is not available.
2. Add suffix 'CA' after part number to specify Bi-directional devices.
3. For Bi-Directional devices having V_R of 10 volts and under, the I_R limit is double.

RATINGS AND CHARACTERISTIC CURVES

Fig. 1 - Pulse Derating Curve

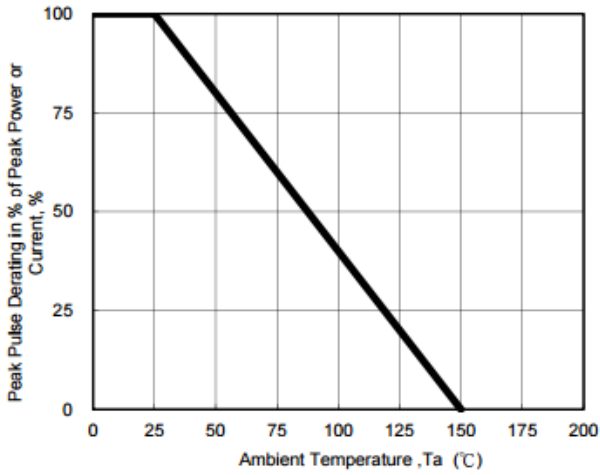


Fig. 2 - Maximum Non-Repetitive Surge Current

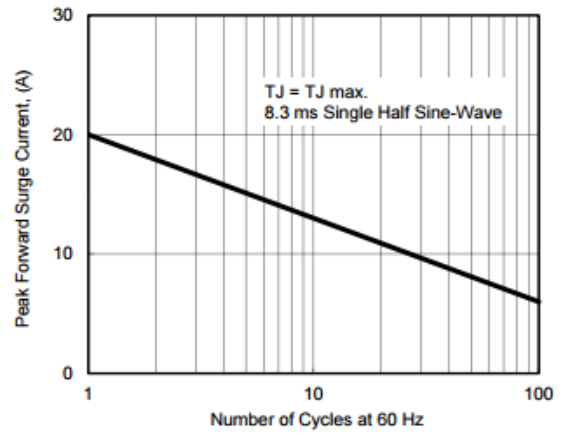


Fig. 3 - Steady State Power Derating Curve

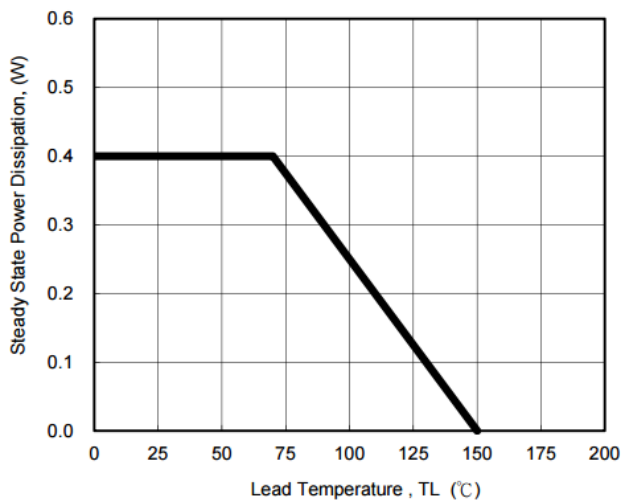


Fig. 4 - Peak Pulse Power Rating Curve

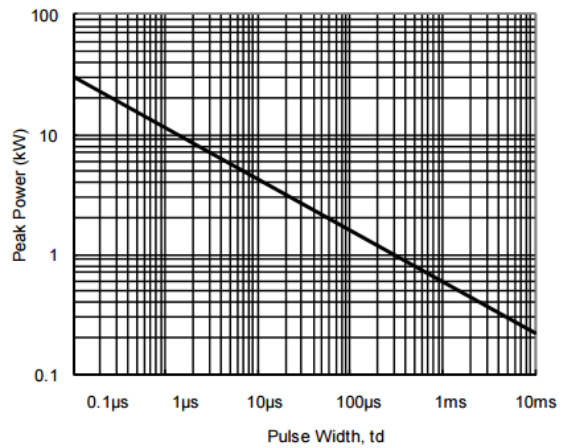


Fig. 5 - Pulse Waveform

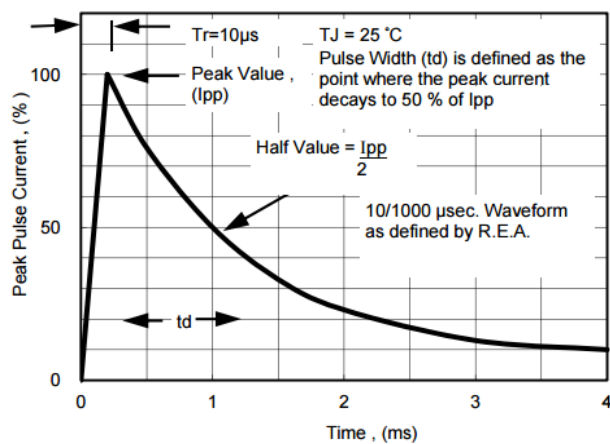


Fig. 6 - Typical Junction Capacitance

