

SOD-123FL Plastic-Encapsulate ESD Protection Diodes

● Features

- Low leakage current
- Low clamping voltage
- IEC 61000-4-2 (ESD Air): $\pm 30\text{kV}$
- IEC 61000-4-2 (ESD Contact): $\pm 30\text{kV}$
- IEC 61000-4-5 (Lightning 8/20 μs): 190A

● Applications

- I/O Interface.
- AC/DC Power supply
- Notebooks and Handhelds
- Portable Instrumentation, Digital Cameras
- Peripherals, Audio Players, Industrial Equipment

● Function Diagram



Reverse Working Voltage
12.0V Max.
High capacitance
490pF(Typ.)



● Maximum Ratings (Ta=25°C Unless otherwise specified)

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|------------------|--------------------------------------|---------------------------------|-------------|------|
| V _{ESD} | Electrostatic Discharge Voltage | ESD per IEC 61000-4-2(Air) | ± 30 | KV |
| | | ESD per IEC 61000-4-2(Contact) | ± 30 | KV |
| P _{PP} | Peak Pulse Power | tp = 8/20 μs | 4200 | W |
| I _{PP} | Rated Peak Pulse Current | tp = 8/20 μs | 190 | A |
| T _J | Operating Junction Temperature Range | — | -55 to +150 | °C |
| T _{STG} | Operating Junction Temperature Range | — | -55 to +150 | °C |

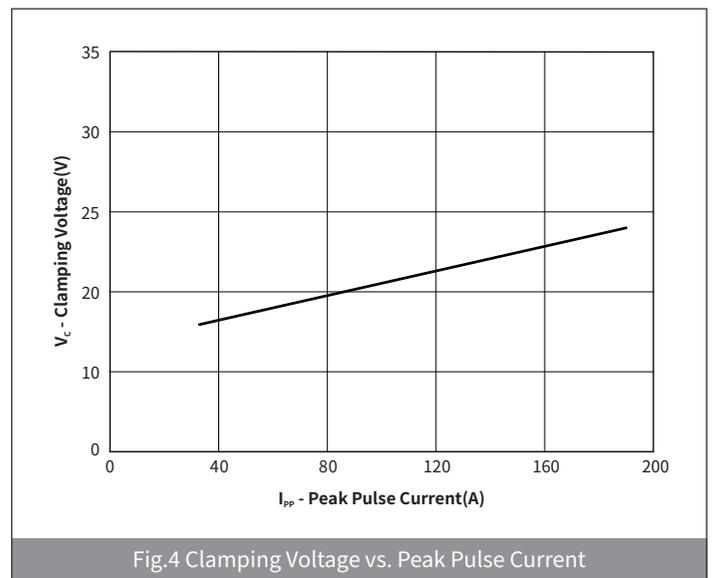
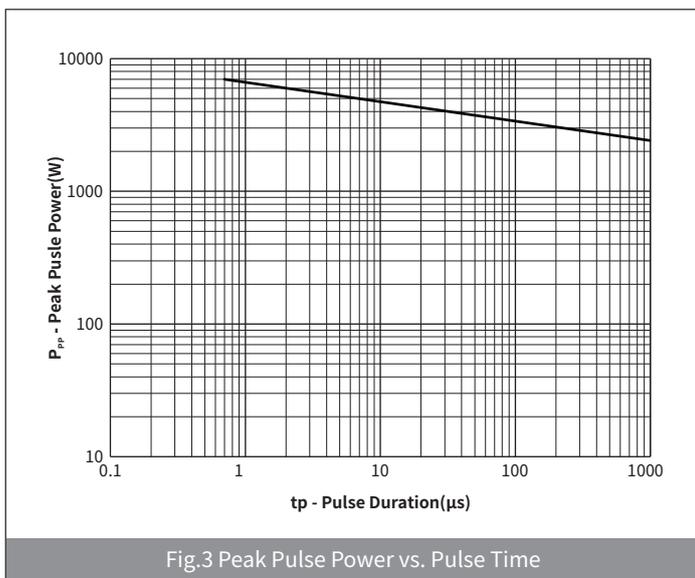
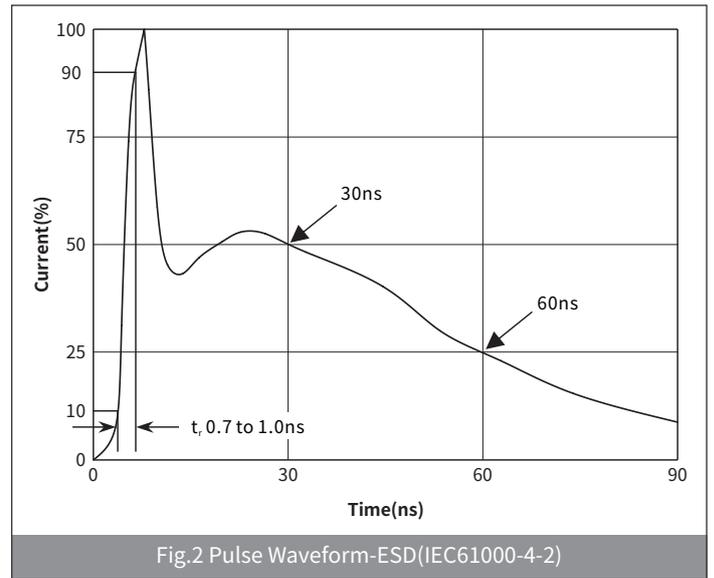
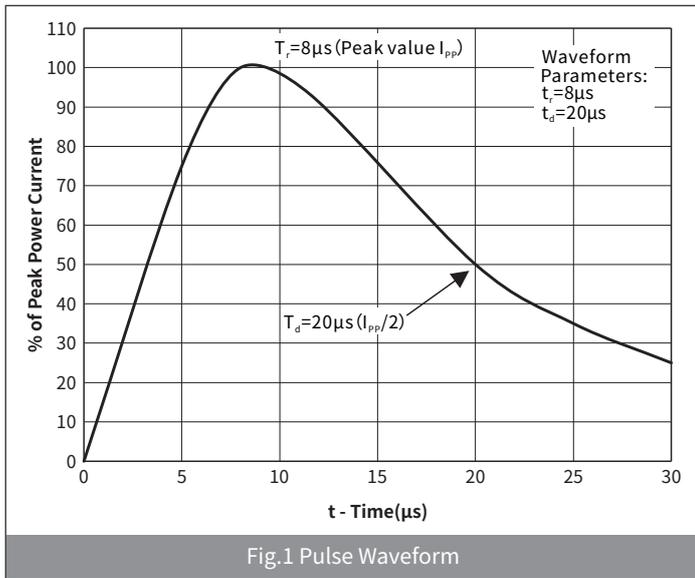
● Electrical Parameter

| SYMBOL | PARAMETER |
|------------------|---|
| V _C | Clamping Voltage @ I _{PP} |
| V _{BR} | Breakdown Voltage @ I _T |
| I _{PP} | Peak Pulse Current |
| I _T | Test Current |
| I _R | Reverse Leakage Current @ VRWM |
| V _{RWM} | Peak Reverse Working Voltage |
| P _{PP} | Peak Pulse Power Dissipation |
| C _J | Junction Capacitance @ V _R =0V, f=1MHz |
| I _F | Forward Current |
| V _F | Forward Voltage @ I _F |

● **Electrical Characteristics** (Ta=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | CONDITION | Min | Typ | Max | UNIT |
|------------------------------|-----------|--|------|-----|------|---------------|
| Peak Reverse Working Voltage | V_{RWM} | $T_a=25^\circ\text{C}$ | — | — | 12.0 | V |
| Breakdown Voltage | V_{BR} | $I_T=1.0\text{mA}, T_a=25^\circ\text{C}$ | 13.3 | — | 14.7 | V |
| Reverse Leakage Current | I_R | $V_{RWM}=12.0\text{V}, T_a=25^\circ\text{C}$ | — | — | 1.0 | μA |
| Clamping Voltage | V_C | $I_{PP}=190\text{A}, t_p=8/20\mu\text{s}$ | — | — | 24.0 | V |
| Junction Capacitance | C_J | $V_{RWM}=0\text{V}, f=1\text{MHz}$ | — | 490 | — | pF |

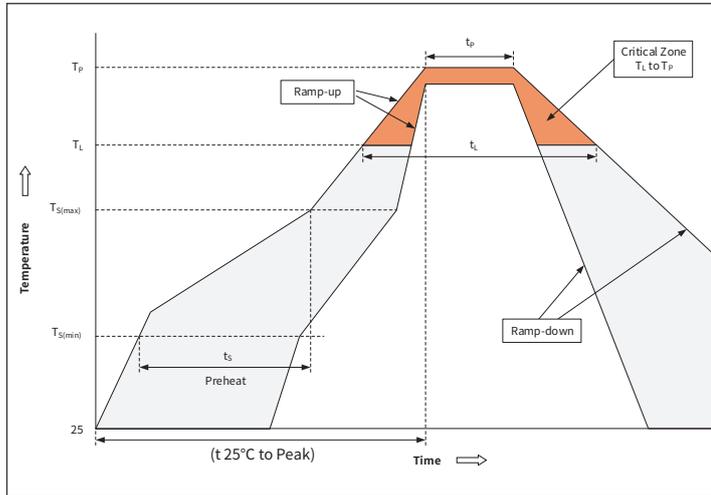
● **Ratings And Characteristics Curves** (Ta=25°C Unless otherwise specified)



Ordering Information

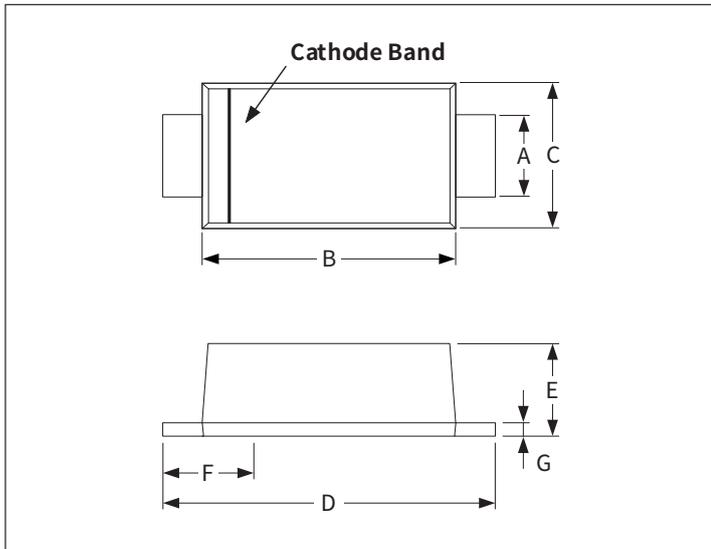
| PACKAGE | PACKAGE CODE | UNIT WEIGHT(g) | REEL(pcs) | BOX(pcs) | CARTON(pcs) | DELIVERY MODE |
|-----------|--------------|----------------|-----------|----------|-------------|---------------|
| SOD-123FL | R1 | 0.0169 | 3000 | 45000 | 180000 | 7" |

Recommended Soldering Conditions



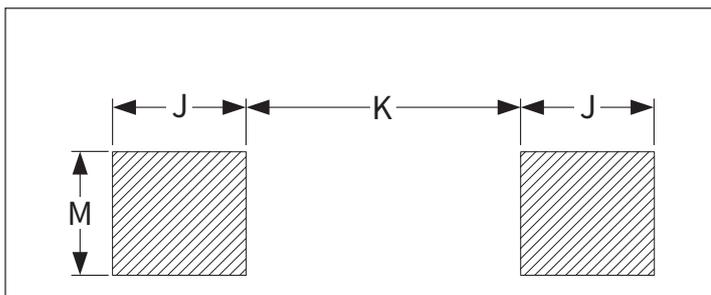
| Profile Feature | | Pb-Free Assembly |
|---|-----------------------------------|------------------|
| Pre-heat | Temperature Min ($T_{S(min)}$) | +150°C |
| | Temperature Max ($T_{S(max)}$) | +200°C |
| | Time (Min to Max) (t_s) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp (T_l) to peak) | | 3°C/sec. Max |
| $T_{S(max)}$ to T_L - Ramp-up Rate | | 3°C/sec. Max |
| Reflow | Temperature (T_l) (Liquid us) | +217°C |
| | Temperature (t_l) | 60-150 secs. |
| Peak Temp (T_p) | | +260(+0/-5)°C |
| Time within 5°C of actual Peak Temp (t_p) | | 20-40secs |
| Ramp-down Rate | | 6°C/sec. Max |
| Time 25°C to Peak Temp (T_p) | | 8 min. Max |
| Do not exceed | | +260°C |

Package Outline Dimensions (SOD -123FL)



| Symbol | Dimensions | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 0.90 | 1.10 | 0.035 | 0.430 |
| B | 2.55 | 2.85 | 0.100 | 0.111 |
| C | 1.60 | 1.90 | 0.063 | 0.074 |
| D | 3.60 | 3.90 | 0.031 | 0.043 |
| E | 1.00 | 1.20 | 0.031 | 0.035 |
| F | 0.40 | 0.90 | 0.047 | 0.055 |
| G | 0.10 | 0.25 | 0.003 | 0.007 |

Suggested Pad Layout



| Symbol | Dimensions | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| J | 1.00 | - | 0.040 | - |
| K | - | 1.90 | - | 0.074 |
| M | 1.50 | - | 0.059 | - |