

| | | |
|-----------|-----|---|
| V_{RWM} | 24 | V |
| P_{PP} | 200 | W |
| I_{PP} | 5.1 | A |

● Feature

- High reliability
- Small mold type

● Application

- Surge Protection

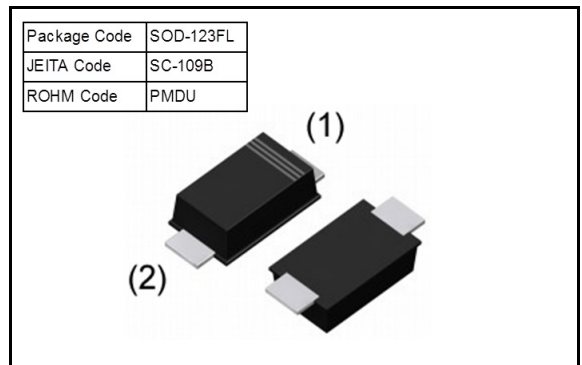
● Structure

- Silicon Epitaxial Planar

● Absolute Maximum Rating ($T_a = 25^\circ\text{C}$)

| Parameter | Symbol | Conditions | Min. | Max. | Unit | |
|----------------------|-----------|--------------------------|---------|------|------------------|----|
| Peak Pulse Power | P_{pp} | $t_p=10/1000\mu\text{s}$ | - | 200 | W | |
| Peak Pulse Current | I_{pp} | $t_p=10/1000\mu\text{s}$ | - | 5.1 | A | |
| Power dissipation | P_D | on Glass-epoxy substrate | - | 1 | W | |
| Junction temperature | T_j | - | - | 150 | $^\circ\text{C}$ | |
| Storage temperature | T_{stg} | - | -65 | 150 | $^\circ\text{C}$ | |
| ESD capability | V_{ESD} | IEC61000-4-2 | Air | - | 30 | kV |
| | | | Contact | - | 30 | kV |

● Outline



● Inner Circuit



● Packaging Specification

| Packing | Embossed Tape |
|------------------|---------------|
| Reel Size(mm) | 180 |
| Taping Width(mm) | 8 |
| Quantity(pcs) | 3000 |
| Taping Code | TR |
| Marking | TW |

● Characteristic (Ta = 25°C)

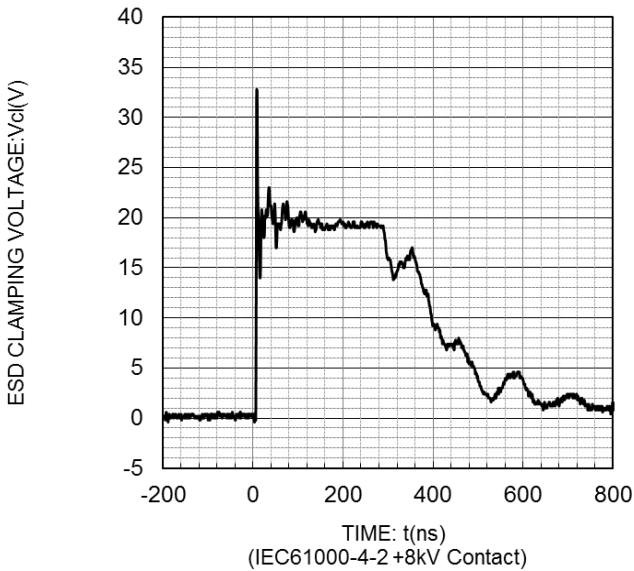
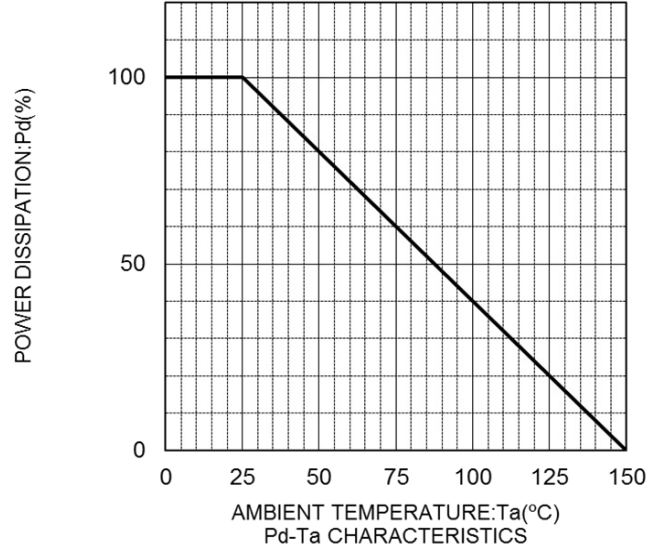
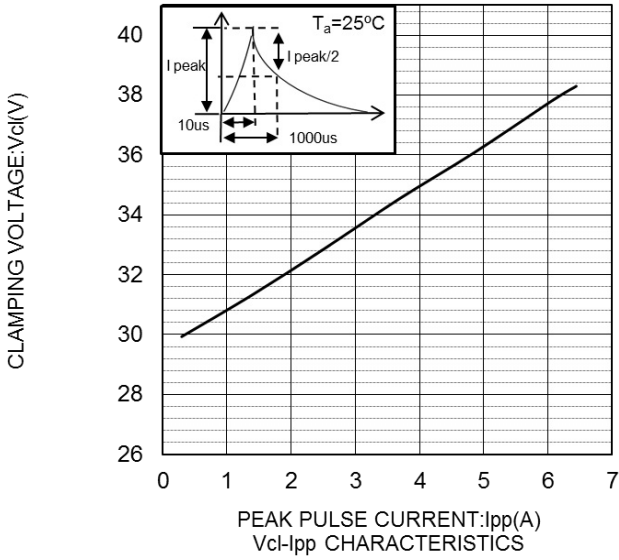
| V _Z Rank(V) | Symbol | | | | | | |
|------------------------|---|---------------------|--|--------------------|---|---------------------|---|
| | Breakdown voltage V _{BR} (V) ⁽¹⁾ | | Reverse Current I _R (μA) | | Clamping voltage V _{CL} (V) | | Reverse Stand-off voltage V _{RWM} (V) |
| | MIN | I _T (mA) | MAX | V _R (V) | MAX | I _{PP} (A) | MAX |
| 5.0 | 6.40 | 40 | 5.0 | 5.0 | 9.2 | 21.7 | 5.0 |
| 6.0 | 6.67 | 40 | 26 | 6.0 | 10.3 | 19.4 | 6.0 |
| 6.5 | 7.72 | 40 | 20 | 6.5 | 11.2 | 17.9 | 6.5 |
| 7.0 | 7.78 | 40 | 3.0 | 7.0 | 12.0 | 16.7 | 7.0 |
| 7.5 | 8.33 | 40 | 0.1 | 7.5 | 12.9 | 15.5 | 7.5 |
| 8.0 | 8.89 | 40 | 0.1 | 8.0 | 13.6 | 14.7 | 8.0 |
| 9.0 | 10.0 | 40 | 0.1 | 9.0 | 15.4 | 13.0 | 9.0 |
| 10.0 | 11.1 | 20 | 0.1 | 10 | 17.0 | 11.8 | 10 |
| 11.0 | 12.2 | 20 | 0.1 | 11 | 18.2 | 11.0 | 11 |
| 12.0 | 13.3 | 20 | 0.1 | 12 | 19.9 | 10.1 | 12 |
| 13.0 | 14.4 | 20 | 0.1 | 13 | 21.5 | 9.3 | 13 |
| 14.0 | 15.6 | 20 | 0.1 | 14 | 23.2 | 8.6 | 14 |
| 15.0 | 16.7 | 20 | 0.1 | 15 | 24.4 | 8.2 | 15 |
| 16.0 | 17.2 | 20 | 0.1 | 16 | 26.0 | 7.7 | 16 |
| 17.0 | 18.9 | 20 | 0.1 | 17 | 27.6 | 7.2 | 17 |
| 18.0 | 20.0 | 20 | 0.1 | 18 | 29.2 | 6.8 | 18 |
| 20.0 | 22.2 | 10 | 0.1 | 20 | 32.4 | 6.2 | 20 |
| 22.0 | 24.4 | 10 | 0.1 | 22 | 35.5 | 5.6 | 22 |
| 24.0 | 26.7 | 10 | 0.1 | 24 | 38.9 | 5.1 | 24 |
| 26.0 | 28.9 | 10 | 0.1 | 26 | 42.1 | 4.8 | 26 |
| 28.0 | 31.1 | 10 | 0.1 | 28 | 45.4 | 4.4 | 28 |
| 30.0 | 33.3 | 10 | 0.1 | 30 | 48.4 | 4.1 | 30 |
| 33.0 | 36.7 | 10 | 0.1 | 33 | 53.3 | 3.8 | 33 |

Note(1) V_{BR} test time is 40ms.

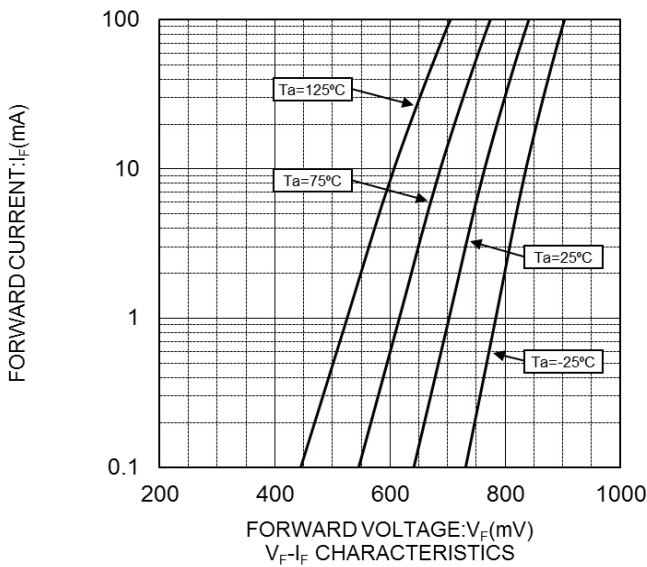
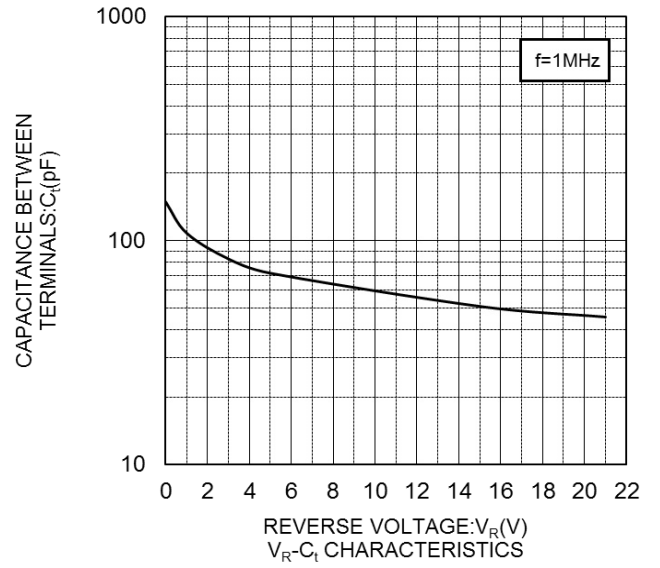
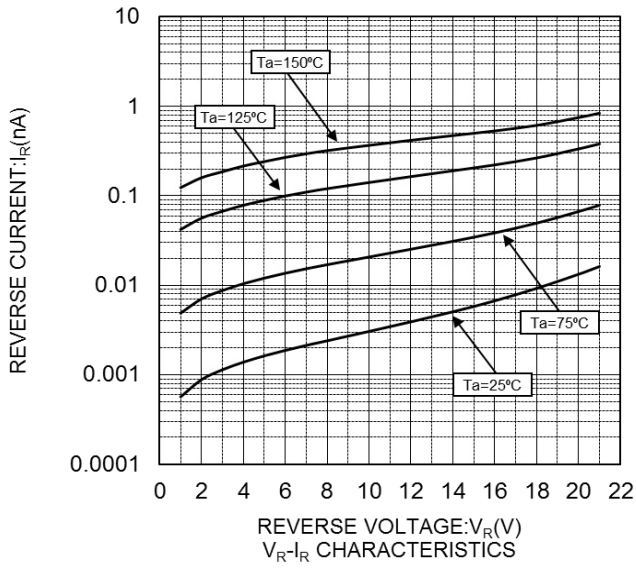
● Marking

| V _Z Rank(V) | Marking | V _Z Rank(V) | Marking |
|------------------------|---------|------------------------|---------|
| 5.0 | AW | 15.0 | NW |
| 6.0 | BW | 16.0 | PW |
| 6.5 | CW | 17.0 | YW |
| 7.0 | DW | 18.0 | QW |
| 7.5 | EW | 20.0 | RW |
| 8.0 | FW | 22.0 | SW |
| 9.0 | GW | 24.0 | TW |
| 10.0 | HW | 26.0 | UW |
| 11.0 | JW | 28.0 | VW |
| 12.0 | KW | 30.0 | VW |
| 13.0 | LW | 33.0 | XW |
| 14.0 | MW | | |

● Characteristic Curves



● Characteristic Curves



● Appended figure

Procedure to obtain ESD Clamping Voltage
IEC61000-4-2 Spec

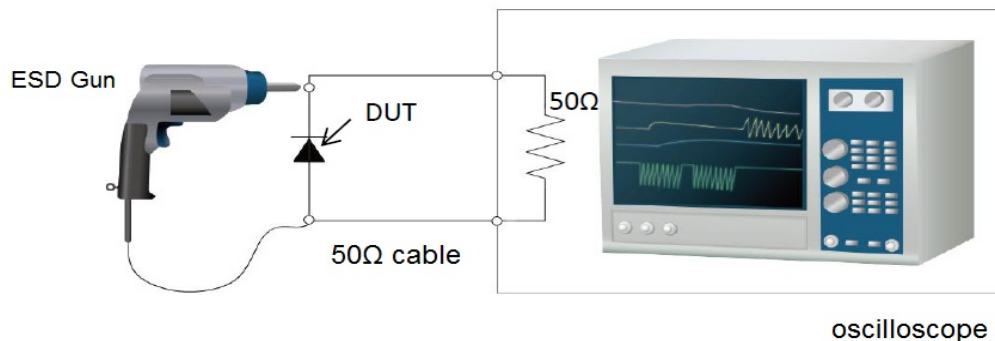
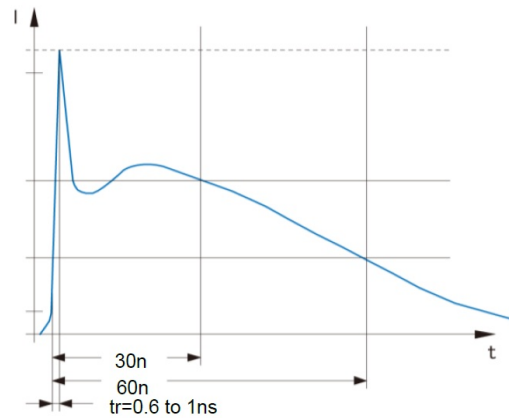
| Level | Test Voltage (kV) | First Peak Current (A) | Current at 30ns (A) | Current at 60ns (A) |
|-------|-------------------|------------------------|---------------------|---------------------|
| 1 | 2 | 7.5 | 4 | 2 |
| 2 | 4 | 15 | 8 | 4 |
| 3 | 6 | 22.5 | 12 | 6 |
| 4 | 8 | 30 | 16 | 8 |



$C_S: 150\text{pF}$ $R_d: 330\Omega$

simplified diagram in ESD machine

IEC61000-4-2 Waveform



1 Set up ESD Tester at IEC61000-4-2 condition.
(IEC61000-4-2 : C=150pF, R=330Ω)

2 Mount a sample on the high frequency test board with the SMA connector.

3 Connect the SMA connector to the oscilloscope by 50Ω cable.
Then, add the 10X-attenuator between test board and the cable to protect the oscilloscope.

4 Discharge ESD in contact discharge mode at any voltage.
(normally 8kV Max.)

● Dimension

SOD-123FL, [SC-109B], (PMDU)



| DIM | Millimeters | | | Inches | | |
|-----|-------------|---------|------|--------|---------|-------|
| | Min. | Average | Max. | Min. | Average | Max. |
| A | 0.70 | 0.80 | 0.90 | 0.028 | 0.031 | 0.035 |
| b | 0.80 | 0.90 | 1.00 | 0.031 | 0.035 | 0.039 |
| c | 0.05 | 0.10 | 0.20 | 0.002 | 0.004 | 0.008 |
| D | 1.50 | 1.60 | 1.70 | 0.059 | 0.063 | 0.067 |
| E | 2.50 | 2.60 | 2.70 | 0.098 | 0.102 | 0.106 |
| HE | 3.38 | 3.50 | 3.62 | 0.133 | 0.138 | 0.143 |
| l1 | - | 0.85 | - | - | 0.033 | - |
| b3 | - | 1.20 | - | - | 0.047 | - |
| e1 | - | 3.05 | - | - | 0.120 | - |

(1) The marking bar indicates the cathode.
 (2) The direction indicates the anode.

● Taping (Unit:mm)



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(Note1) Medical Equipment Classification of the Specific Applications

| JAPAN | USA | EU | CHINA |
|-----------|-----------|------------|-----------|
| CLASS III | CLASS III | CLASS II b | CLASS III |
| CLASS IV | | CLASS III | |

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 - Use of our Products in places where the Products are exposed to sea wind or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
 - Use of our Products in places where the Products are exposed to static electricity or electromagnetic waves
 - Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
 - Sealing or coating our Products with resin or other coating materials
 - Use of our Products without cleaning residue of flux (Exclude cases where no-clean type fluxes is used. However, recommend sufficiently about the residue.) ; or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering
 - Use of the Products in places subject to dew condensation
- The Products are not subject to radiation-proof design.
- Please verify and confirm characteristics of the final or mounted products in using the Products.
- In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse, is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
- De-rate Power Dissipation depending on ambient temperature. When used in sealed area, confirm that it is the use in the range that does not exceed the maximum junction temperature.
- Confirm that operation temperature is within the specified range described in the product specification.
- ROHM shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

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- When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.
- In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

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 - [c] the Products are exposed to direct sunshine or condensation
 - [d] the Products are exposed to high Electrostatic
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smf24v - Web Page

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| | |
|-----------------------------|---------|
| Part Number | smf24v |
| Package | PMDU |
| Unit Quantity | 3000 |
| Minimum Package Quantity | 3000 |
| Packing Type | Taping |
| Constitution Materials List | inquiry |
| RoHS | Yes |