

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## SM4001PL THRU SM4007PL

Product specification

Surface Mount Glass Passivated Standard Rectifier  
Reverse Voltage 50~1000V Forward Current 0.8A

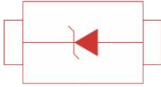
**FEATURES**

- Glass passivated Standard Rectifiers
- Very low profile - typical height of 1.0 mm
- Low forward voltage drop
- Low leakage current
- Moisture sensitivity: level 1, per J-STD-020
- AEC-Q101 qualified
- High temperature soldering guaranteed: 260°C/10 seconds
- Halogen-free according to IEC 61249-2-21 definition

**Typical Applications**

For use of general purpose rectification in lighting, cellular phone, portable device, power supplies and other consumer applications.

**Reference News**

| SOD-123FL                                                                          | Schematic Diagram                                                                   |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |

**PINNING**

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Cathode     |
| 2   | Anode       |

**Marking**

| SM4001PL                                                                            | SM4002PL                                                                            | SM4003PL                                                                             | SM4004PL                                                                              |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| SM4005PL                                                                            | SM4006PL                                                                            | SM4007PL                                                                             |                                                                                       |
|  |  |  |                                                                                       |

**Maximum Ratings** (TA = 25 °C unless otherwise noted)

| Parameter                                                                          | Symbol   | SM4001 PL     | SM4002 PL | SM4003 PL | SM4004 PL | SM4005 PL | SM4006 PL | SM4007 PL | Unit |
|------------------------------------------------------------------------------------|----------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|------|
| Maximum repetitive peak reverse voltage                                            | VRRM     | 50            | 100       | 200       | 400       | 600       | 800       | 1000      | V    |
| Maximum RMS voltage                                                                | VRMS     | 35            | 70        | 140       | 280       | 420       | 560       | 700       | V    |
| Maximum DC blocking voltage                                                        | VDC      | 50            | 100       | 200       | 400       | 600       | 800       | 1000      | V    |
| Maximum average forward rectified current                                          | IF(AV)   | 1.0           |           |           |           |           |           |           | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | IFSM     | 25            |           |           |           |           |           |           | A    |
| Operating junction and storage temperature range                                   | TJ, TSTG | - 55 to + 150 |           |           |           |           |           |           | °C   |

**Electrical Characteristics** (TA = 25 °C unless otherwise noted)

| Parameter                                               | Test Conditions                                                       | Symbol           | SM4001<br>PL | SM4002<br>PL | SM4003<br>PL | SM4004<br>PL | SM4005<br>PL | SM4006<br>PL | SM4007<br>PL | Unit |
|---------------------------------------------------------|-----------------------------------------------------------------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------|
| Maximum instantaneous forward voltage                   | 1.0A<br>Volts                                                         | V <sub>F</sub>   | 1.0          |              |              |              |              |              |              | V    |
| Maximum DC reverse current at rated DC blocking voltage | TA=25°C<br><br>TA=125°C                                               | I <sub>R</sub>   | 5<br><br>50  |              |              |              |              |              |              | µA   |
| Typical reverse recovery time                           | I <sub>F</sub> =0.5A, I <sub>R</sub> =1.0A,<br>I <sub>rr</sub> =0.25A | t <sub>rr</sub>  | 1.8          |              |              |              |              |              |              | uS   |
| Typical junction capacitance                            | 4.0 V, 1 MHz                                                          | C <sub>J</sub>   | 6            |              |              |              |              |              |              | pF   |
| Typical thermal resistance <sup>1)</sup>                | juntion to ambient                                                    | R <sub>θJA</sub> | 70           |              |              |              |              |              |              | °C/W |
|                                                         | juntion to case                                                       | R <sub>θJC</sub> | 40           |              |              |              |              |              |              |      |
|                                                         | juntion to mount                                                      | R <sub>θJM</sub> | 5            |              |              |              |              |              |              |      |

Note 1), The thermal resistance from junction to ambient, case or mount, mounted on P.C.B with 5×5mm copper pads, 2 OZ, FR4 PCB

## Package Outline Dimensions

(TA = 25°C unless otherwise noted)

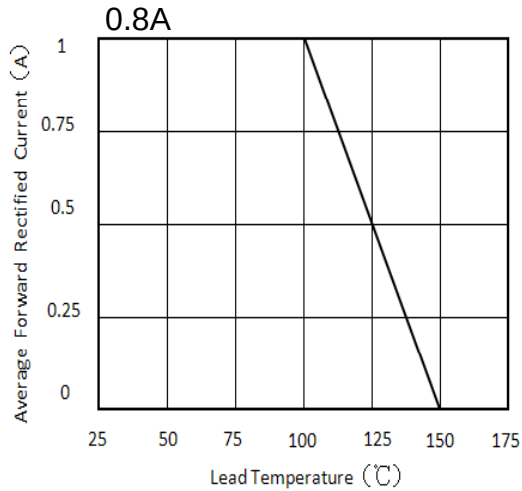


Figure 1. Forward Current Derating Curve

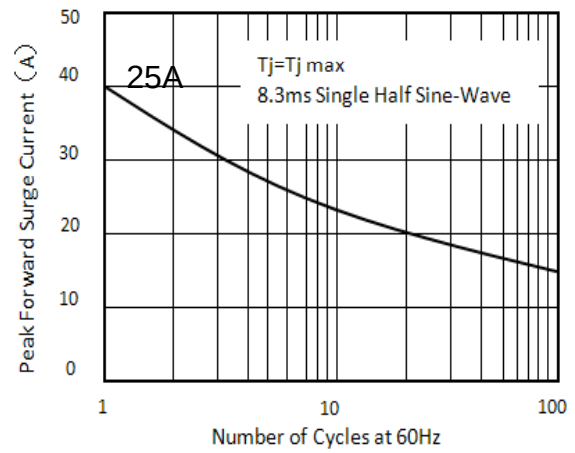


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

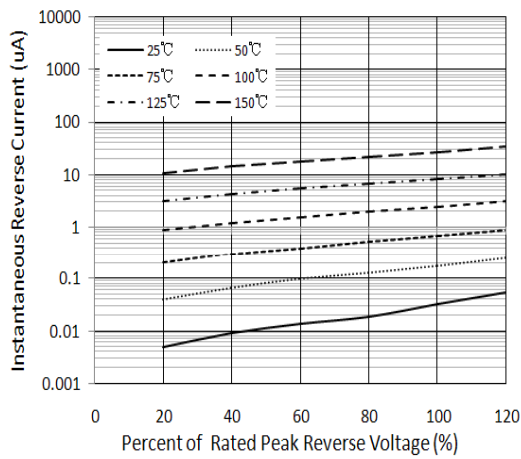


Figure 3. Typical Reverse Characteristics

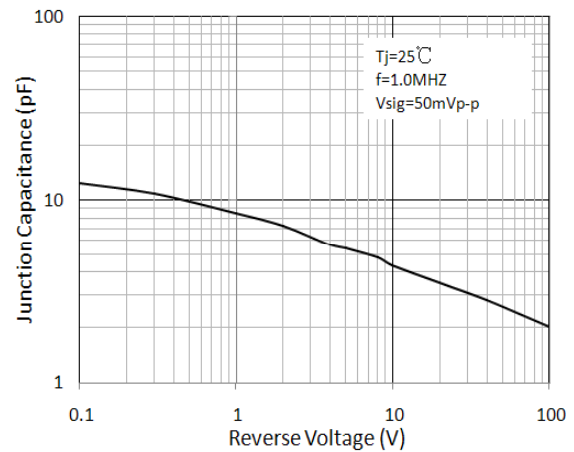


Figure 4. Typical Junction Capacitance

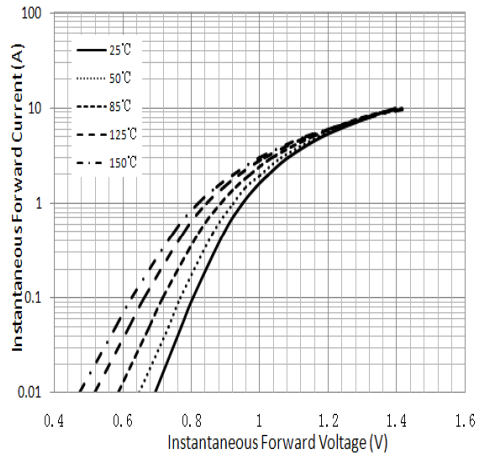
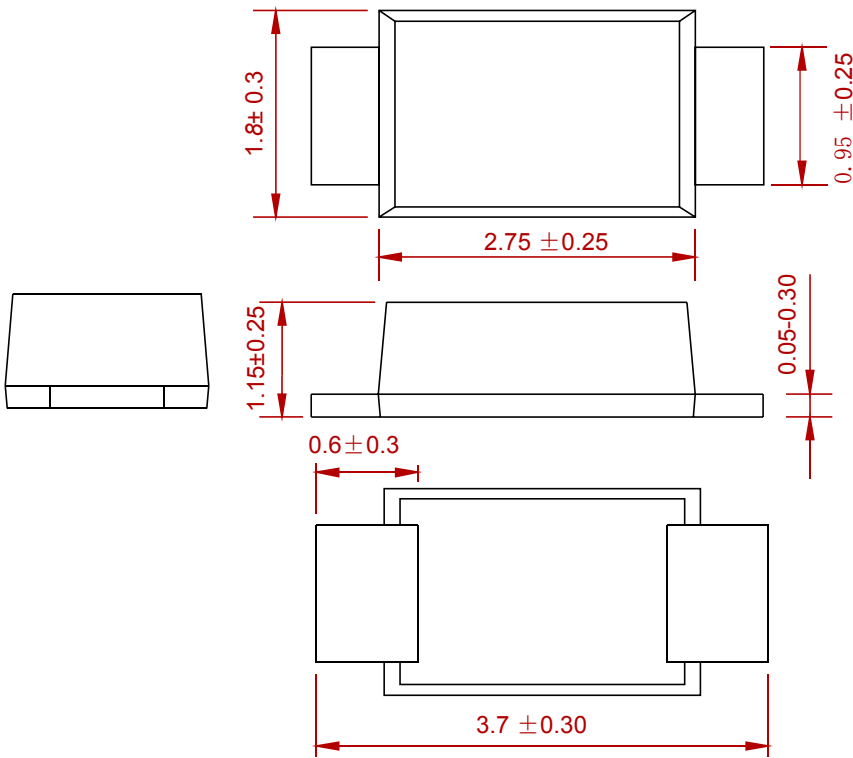


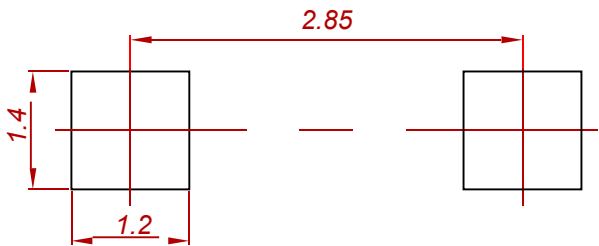
Figure 5. Typical Instantaneous Forward Characteristics

**PACKAGE MECHANICAL DATA**



Dimensions in millimeters

**Suggested Pad Layout**



Note:  
1. Controlling dimension: in millimeters.  
2. General tolerance:  $\pm 0.05$  mm.  
3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

| P/N                    | PKG       | QTY  |
|------------------------|-----------|------|
| SM4001PL THRU SM4007PL | SOD-123FL | 3000 |

## **Attention**

■ Any and all MSKSEMI Semiconductor products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your MSKSEMI Semiconductor representative nearest you before using any MSKSEMI Semiconductor products described or contained herein in such applications.

■ MSKSEMI Semiconductor assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specification of any and all MSKSEMI Semiconductor products described or contained herein.

■ Specifications of any and all MSKSEMI Semiconductor products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

■ MSKSEMI Semiconductor strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

■ In the event that any or all MSKSEMI Semiconductor products (including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

■ No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of MSKSEMI Semiconductor.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. MSKSEMI Semiconductor believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringement of intellectual property rights or other rights of third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the MSKSEMI Semiconductor product that you intend to use.