

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

MSESD223F5VPU

Product specification

Features

- 3-pin lead-less package
- Junction capacitance (Max ical value: 3000pF)
- Peak Pulse Current (8/20μs) MAX: 280A
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- Low clamping voltage
- Low leakage current
- Working voltages: 5V
- RoHS Compliant

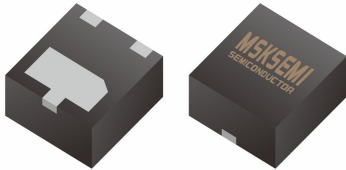
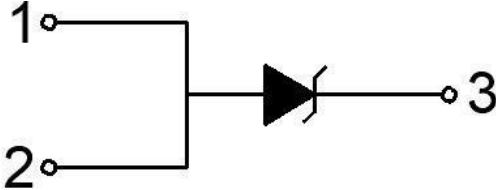
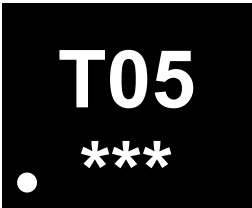
Mechanical Characteristics

- Package: DFN2020-3L
- Lead Finish:Matte Tin
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020

Applications

- Power Management
- Industrial Application
- Power Supply Protection

Reference News

| DFN2020-3L | Graphic symbol | Marking |
|---|--|---|
|  |  |  |

Absolute Maximum Ratings (T=25°C, RH=45%-75%, unless otherwise noted)

| Parameters | Symbol | Value | Unit |
|--|------------------|-------------|------|
| Peak Pulse Power (tp=8/20μs waveform) | P _{PP} | 5800 | W |
| Peak Pulse Current (8/20μs) | I _{PP} | 280 | A |
| ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact) | V _{ESD} | ±30 ±30 | KV |
| Operating Temperature Range | T _J | -55 to +125 | °C |
| Storage Temperature Range | T _{stg} | -55 to +150 | °C |

Electrical Characteristics (T=25°C, RH=45%-75%, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---------------------------|------------------|--|-----|-----|------|------|
| Reverse Working Voltage | V _{RWM} | | | | 5 | V |
| Reverse Breakdown Voltage | V _{BR} | I _R = 1mA | 6 | | 9 | V |
| Reverse Leakage Current | I _R | V _R = 5V | | | 2 | uA |
| Clamping Voltage | V _C | I _{PP} = 100A, T _P =8/20us | | | 13 | V |
| Clamping Voltage | V _C | I _{PP} = 200A, T _P =8/20us | | | 17 | V |
| Clamping Voltage | V _C | I _{PP} = 280A, T _P =8/20us | | | 21 | V |
| Junction capacitance | C _J | V _R = 0V, f = 1MHz | | | 3000 | pF |

Typical Characteristics

FIG1: Power rating derating curve

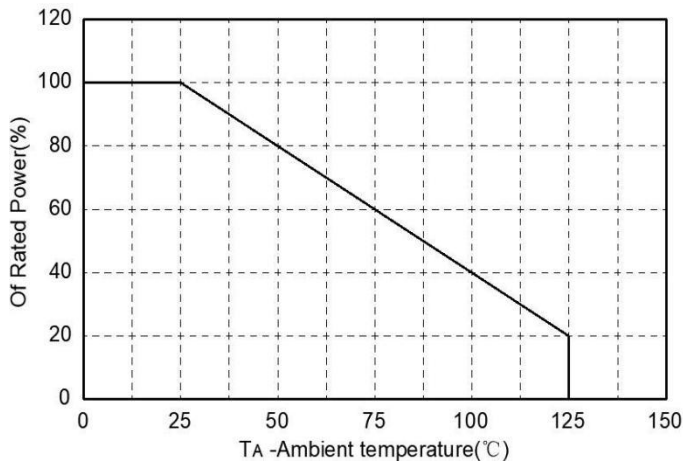


FIG2: pulse Waveform

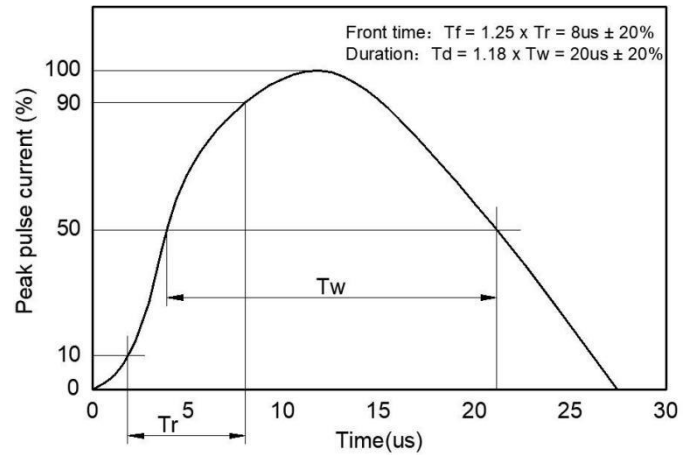


FIG3: Capacitance between terminals characteristics

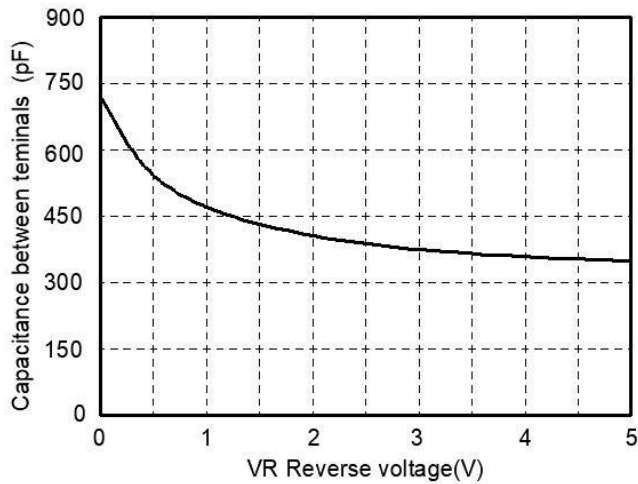
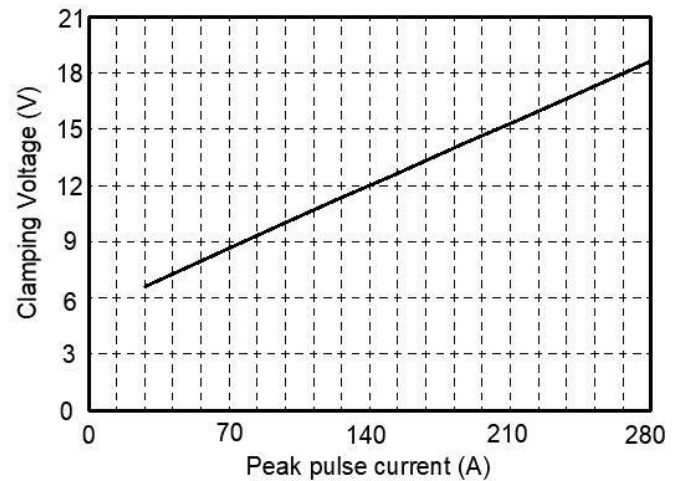
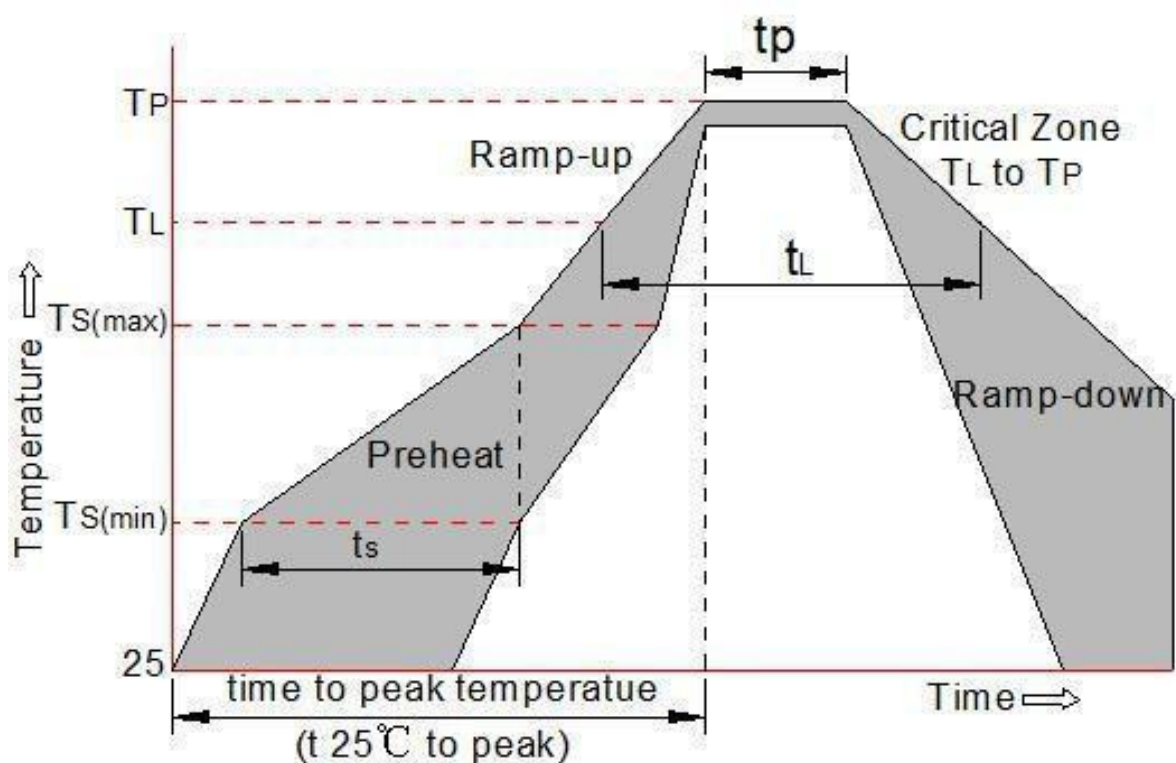


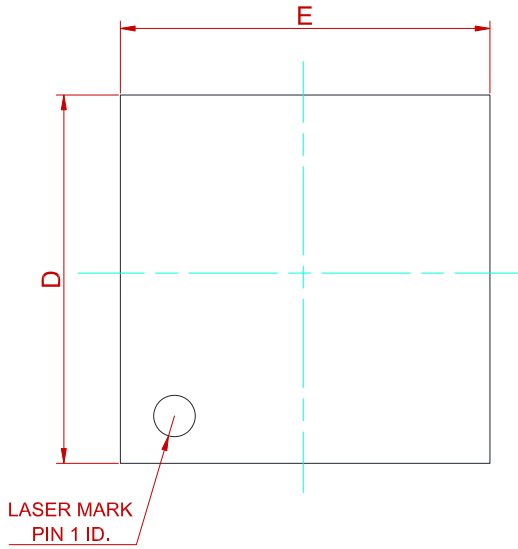
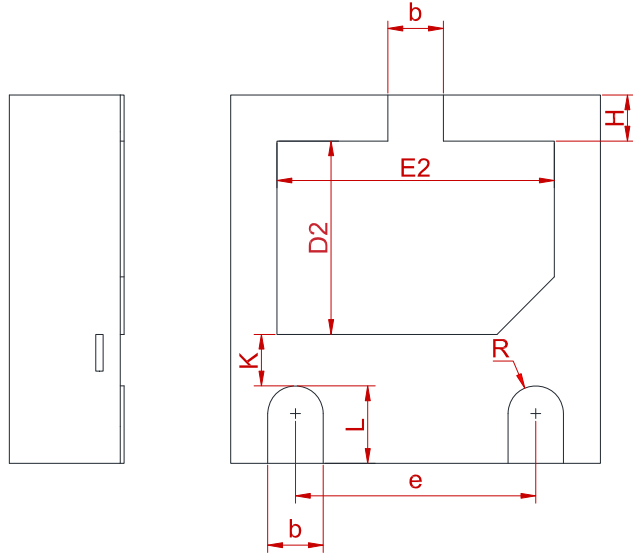
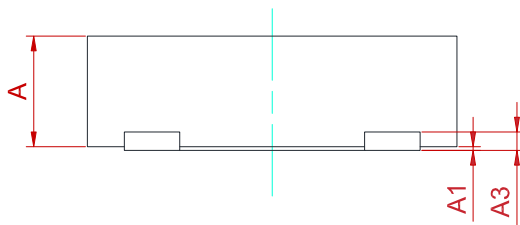
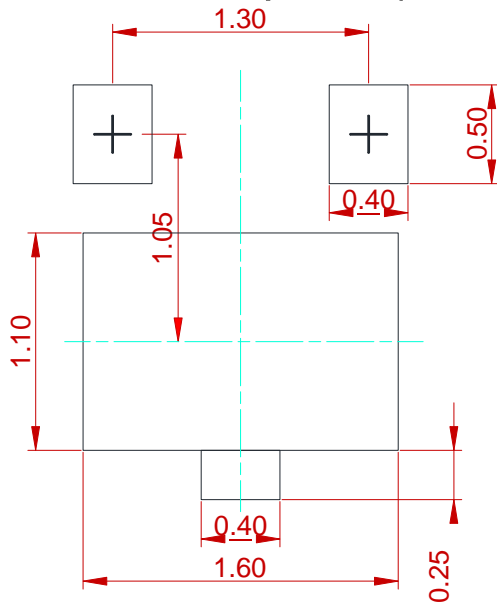
FIG4: Clamping Voltage vs. Peak Pulse Current



Soldering Parameters

| Reflow Condition | | Pb-Free assembly (see as bellow) |
|---|-----------------------------------|-------------------------------------|
| 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) | | 30 secs. Max |
| Ramp-down Rate | | 6°C/sec. Max |
| Time 25°C to Peak Temp (T_p) | | 8 min. Max |
| Do not exceed | | +260°C |



PACKAGE MECHANICAL DATA

Top View

Bottom View

Side View
Recommended land pattern (Unit: mm)


| Symbol | Dimensions In Millimeters | | |
|--------|---------------------------|------|------|
| | Min. | Typ. | Max. |
| A | 0.50 | 0.58 | 0.60 |
| A1 | 0.00 | 0.02 | 0.05 |
| A3 | 0.10 REF. | | |
| b | 0.25 | 0.30 | 0.35 |
| D | 1.90 | 2.00 | 2.10 |
| E | 1.90 | 2.00 | 2.10 |
| D2 | 0.95 | 1.05 | 1.15 |
| E2 | 1.40 | 1.50 | 1.60 |
| e | 1.20 | 1.30 | 1.40 |
| H | 0.20 | 0.25 | 0.30 |
| K | 0.20 | 0.30 | 0.40 |
| L | 0.33 | 0.39 | 0.45 |
| R | 0.13 | - | - |

Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

REEL SPECIFICATION

| P/N | PKG | QTY |
|---------------|------------|------|
| MSESD223F5VPU | DFN2020-3L | 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.