

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## NSPM2051MUT5G-MS

Product specification

**Features**

- 2-pin lead-less package
- Junction capacitance (Max value: 1000pF)
- Peak Pulse Current (8/20μs) Max: 130A
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- Low clamping voltage
- Low leakage current
- Working voltages:5V
- RoHS Compliant


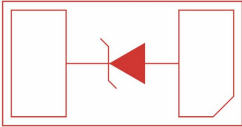

**Mechanical Characteristics**

- Package: DFN1610-2L
- Lead Finish:Matte Tin
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020

**Applications**

- Cellular Handsets and Accessories
- Display Ports
- MDDI Ports
- USB Ports

**Reference News**

| DFN1610-2L  | Graphic symbol  | Marking   |
|---|---|---|
|  |  |  |

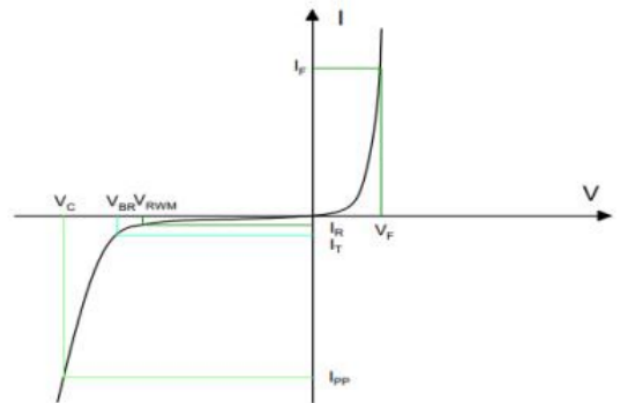
**Absolute Maximum Ratings (T=25°C, RH=45%-75%, unless otherwise noted)**

| Parameters   | Symbol           | Value       | Unit |
|--|------------------|-------------|------|
| Peak Pulse Power (tp=8/20μs waveform)                          | P <sub>PP</sub>  | 2600        | W    |
| Peak Pulse Current (8/20μs)                                    | I <sub>PP</sub>  | 130         | A    |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | V <sub>ESD</sub> | ±30<br>±30  | KV   |
| Operating Temperature Range                                    | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range                                      | T <sub>stg</sub> | -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 <sub>RWM</sub> |  |     |     | 5    | V    |
| Reverse Breakdown Voltage | V <sub>BR</sub>  | I <sub>R</sub> = 1mA                           | 6   |     | 9    | V    |
| Reverse Leakage Current   | I <sub>R</sub>   | V <sub>R</sub> = 5V                            |     |     | 1    | uA   |
| Clamping voltage          | V <sub>C</sub>   | I <sub>PP</sub> = 10A, T <sub>P</sub> =8/20us  |     |     | 8.5  | V    |
| Clamping voltage          | V <sub>C</sub>   | I <sub>PP</sub> = 130A, T <sub>P</sub> =8/20us |     | 18  | 20   | V    |
| Junction capacitance      | C <sub>J</sub>   | V <sub>R</sub> = 0V, f = 1MHz                  |     |     | 1000 | pF   |

| Symbol | Parameter                          |
|--------|------------------------------------|
| VRWM   | Peak Reverse Working Voltage       |
| IR     | Reverse Leakage Current @VRWM      |
| VBR    | Breakdown Voltage @IT              |
| IT     | Test Current                       |
| IPP    | Maximum Reverse Peak Pulse Current |
| VC     | Clamping Voltage @IPP              |
| PPP    | Peak Pulse Power                   |
| CJ     | Junction Capacitance               |
| IF     | Forward Current                    |
| VF     | Forward Voltage @IF                |



## Typical Characteristics

FIG1: Power rating derating curve

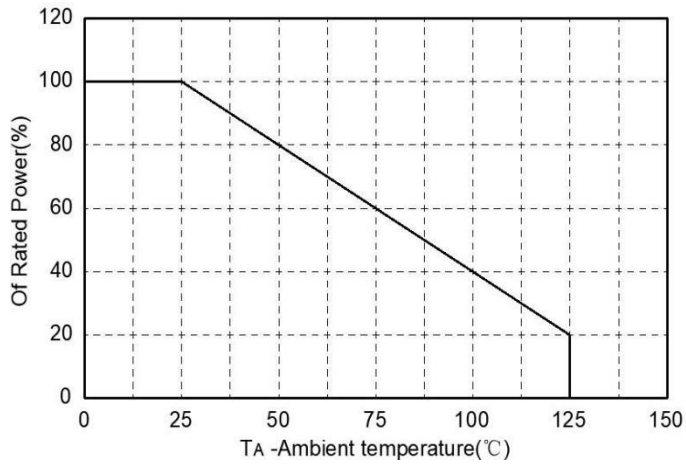


FIG2: pulse Waveform

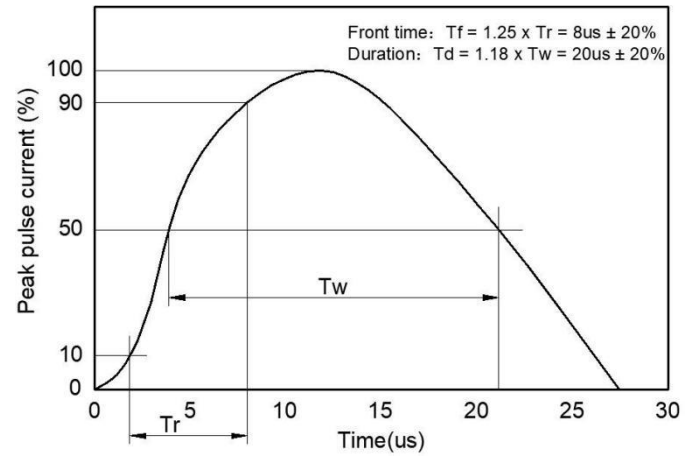


FIG3: Capacitance between terminals characteristics

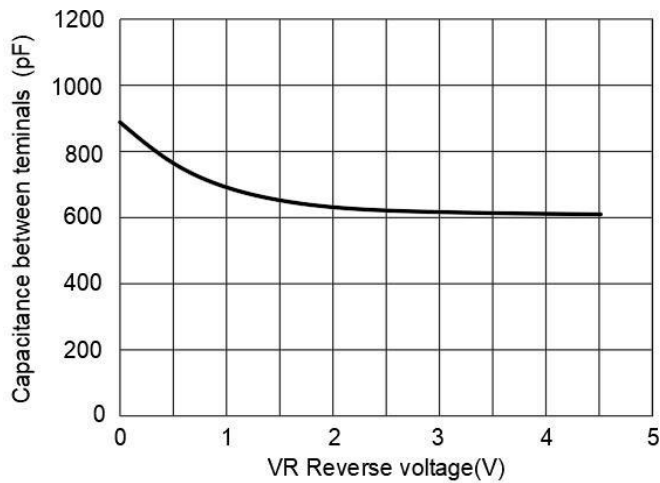
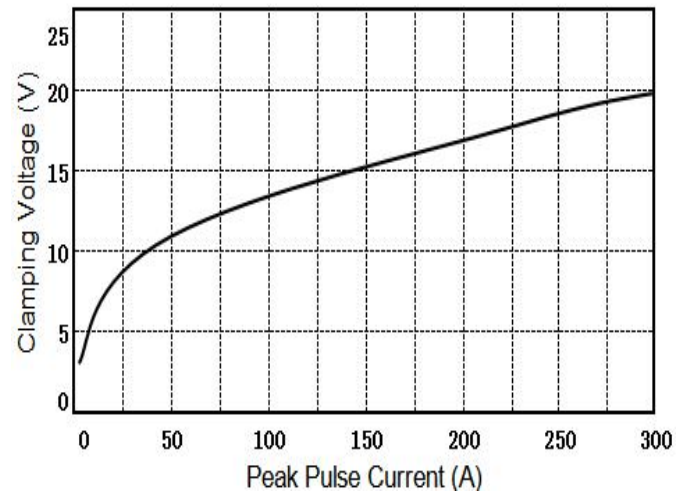
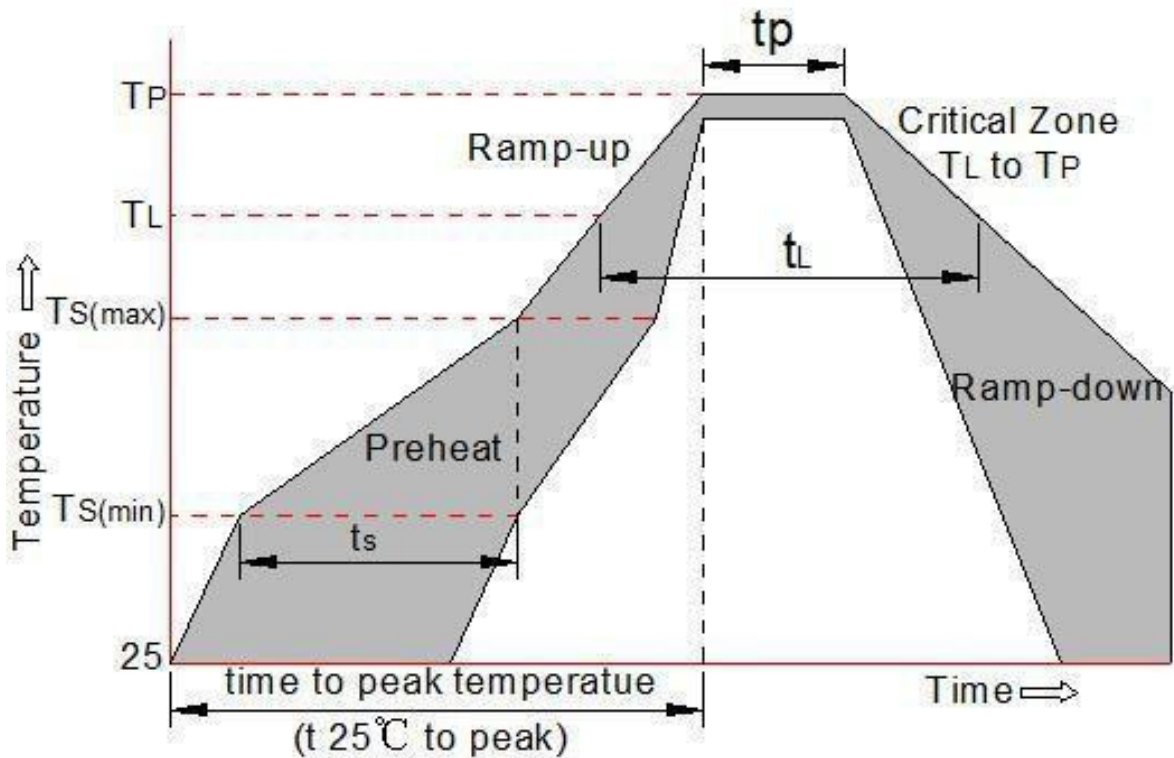


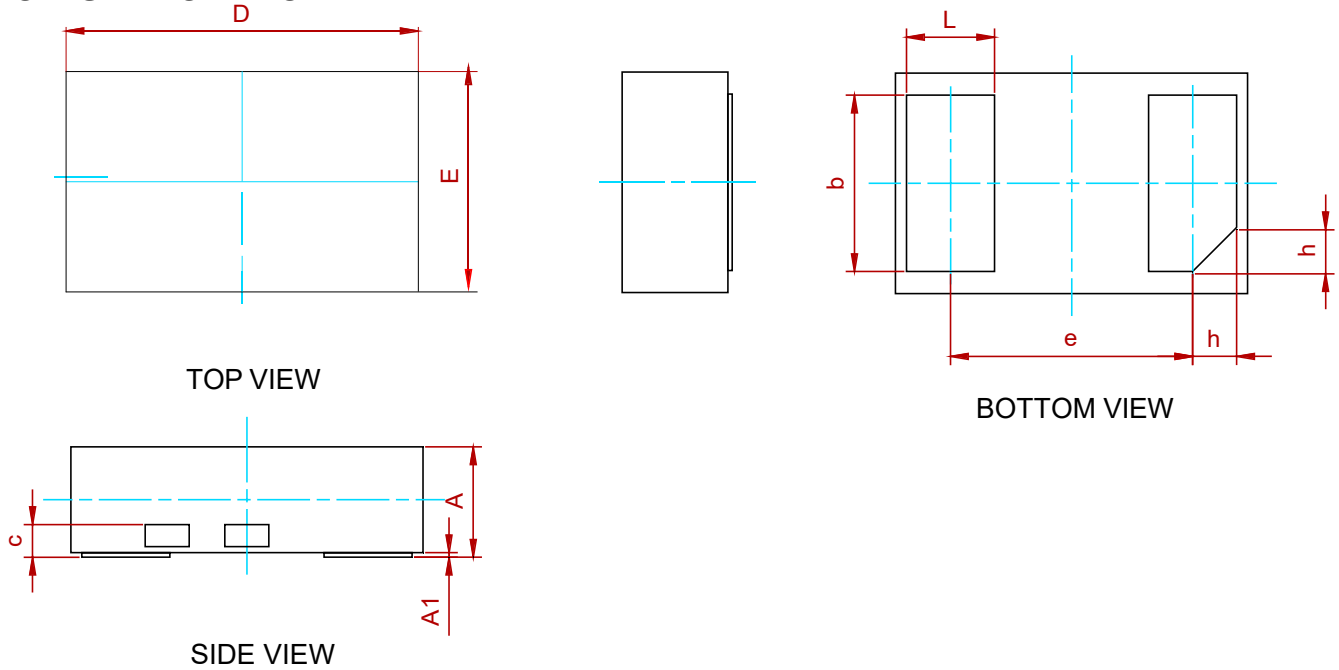
FIG4: Clamping Voltage vs. Peak Pulse Current



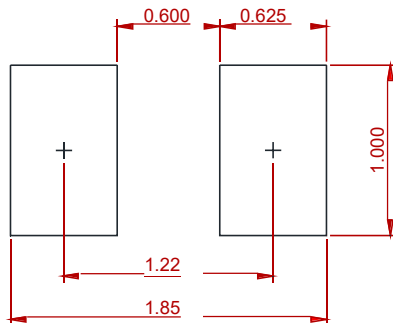
## Soldering Parameters

| Reflow Condition  |                                   | Pb-Free assembly<br>(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**


| Symbol | Dimensions in Millimeters |      |      |
|--------|---------------------------|------|------|
|        | Min.                      | Typ. | Max. |
| A      | 0.45                      | 0.50 | 0.60 |
| A1     | 0.00                      | 0.02 | 0.05 |
| c      | 0.15 Ref.                 |      |      |
| b      | 0.75                      | 0.80 | 0.95 |
| L      | 0.35                      | 0.40 | 0.45 |
| D      | 1.55                      | 1.60 | 1.70 |
| E      | 0.95                      | 1.00 | 1.10 |
| e      | 1.10 BSC                  |      |      |
| h      | 0.20 Ref.                 |      |      |

**Recommend PCB Layout (Unit: mm)**

**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  |
|------------------|------------|------|
| NSPM2051MUT5G-MS | DFN1610-2L | 3000 |

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