

## Features

- Solid-state silicon technology
- Protects 4 I/O Lines
- Low Capacitance
- Low Clamping Voltage
- Low leakage current
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

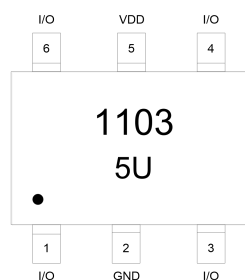
|   |                  |                 |
|---|------------------|-----------------|
| IEC61000-4-2(ESD)                               | Air              | ±25KV           |
|   | Contact          | ±25KV           |
| Peak Pulse Power (8/20μs)                       | P <sub>PK</sub>  | 54W             |
| Peak Pulse Current (8/20μs) <sup>(Note 2)</sup> | I <sub>PP</sub>  | 4.5A            |
| Operating Junction Temperature Range            | T <sub>J</sub>   | -40°C to +125°C |
| Storage Temperature Range                       | T <sub>STG</sub> | -55°C to +150°C |

Note:

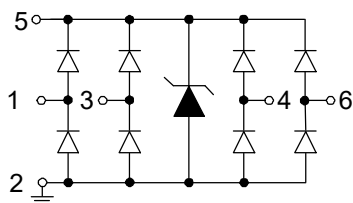
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

## Marking Information

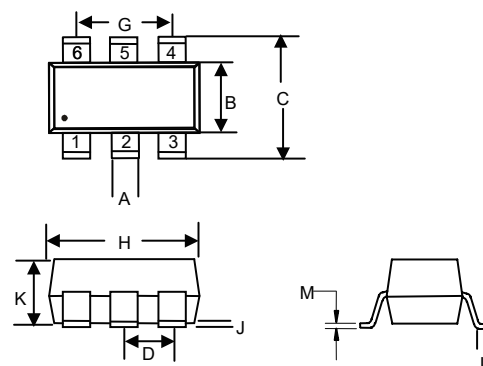


## Internal Structure



# ESD Protection Device

## SOT23-6L



| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | 0.012  | 0.020 | 0.30 | 0.50 |      |
| B   | 0.051  | 0.070 | 1.30 | 1.80 |      |
| C   | 0.087  | 0.126 | 2.20 | 3.20 |      |
| D   | 0.037  |       | 0.95 |      | TYP. |
| G   | 0.074  |       | 1.90 |      | TYP. |
| H   | 0.106  | 0.122 | 2.70 | 3.10 |      |
| J   | 0.002  | 0.006 | 0.05 | 0.15 |      |
| K   | 0.030  | 0.051 | 0.75 | 1.30 |      |
| L   | 0.012  | 0.024 | 0.30 | 0.60 |      |
| M   | 0.003  | 0.008 | 0.08 | 0.22 |      |

## Electrical Characteristics @ 25°C (Unless Otherwise Specified)

| Parameter                              | Symbol    | Conditions                                | Min. | Typ. | Max. | Units    |
|--|-----------|---|------|------|------|----------|
| <b>I/O Pins</b>                        |           |   |      |      |      |          |
| Reverse Working Voltage                | $V_{RWM}$ |   |      |      | 5    | V        |
| Reverse Breakdown Voltage              | $V_{BR}$  | $I_T=1mA$                                 | 7    |      | 9    | V        |
| Reverse Leakage Current                | $I_R$     | $V_{RWM}=5V$                              |      |      | 100  | nA       |
| Forward Voltage                        | $V_F$     | $I_T = 10mA$                              | 0.6  | 0.9  | 1.2  | V        |
| Clamping Voltage <sup>(Note 1)</sup>   | $V_C$     | $V_{ESD}=8KV$                             |      | 13   |      | V        |
| Clamping Voltage <sup>(Note 2)</sup>   | $V_C$     | $I_{PP}=1A, t_p=8/20\mu s$                |      | 7.8  | 9    | V        |
| Clamping Voltage <sup>(Note 2)</sup>   | $V_C$     | $I_{PP}=4.5A, t_p=8/20\mu s$              |      | 10   | 12   | V        |
| Junction Capacitance                   | $C_J$     | $V_R=0V, f=1MHz,$<br>Any I/O pin to GND   |      | 0.5  | 0.7  | pF       |
| Junction Capacitance                   | $C_J$     | $V_R=0V, f=1MHz,$<br>Between any I/O pins |      | 0.2  | 0.4  | pF       |
| Dynamic Resistance <sup>(Note 3)</sup> | $R_{DYN}$ | $t_p=100ns$                               |      | 0.31 |      | $\Omega$ |
| <b>VDD Pins</b>                        |           |   |      |      |      |          |
| Reverse Working Voltage                | $V_{RWM}$ |   |      |      | 5.5  | V        |
| Reverse Breakdown Voltage              | $V_{BR}$  | $I_{BR}=1mA$                              | 7    |      | 8.5  | V        |
| Reverse Leakage Current                | $I_R$     | $V_{RWM}=5.5V$                            |      |      | 100  | nA       |
| Forward Voltage                        | $V_F$     | $I_F = 10mA$                              | 0.6  | 0.9  | 1.2  | V        |
| Clamping Voltage <sup>(Note 1)</sup>   | $V_C$     | $V_{ESD}=8KV$                             |      | 10   |      | V        |
| Clamping Voltage <sup>(Note 2)</sup>   | $V_C$     | $I_{PP}=1A, t_p=8/20\mu s$                |      | 7.8  | 9    | V        |
| Clamping Voltage <sup>(Note 2)</sup>   | $V_C$     | $I_{PP}=15A, t_p=8/20\mu s$               |      | 11.2 | 13   | V        |
| Dynamic Resistance <sup>(Note 3)</sup> | $R_{DYN}$ | $t_p=100ns$                               |      | 0.20 |      | $\Omega$ |

Note:

1. Contact Discharge Mode, According to IEC61000-4-2.
2. Non-repetitive Current Pulse, According to IEC61000-4-5.
3. TLP Parameter:  $Z_0=50\Omega$ ,  $t_p=100ns$ ,  $t_r=2ns$ , Averaging Window from 60ns to 80ns.  $R_{DYN}$  is Calculated from 4A to 16A.

## Curve Characteristics

Fig. 1 - 8 X 20 $\mu$ s Pulse Waveform

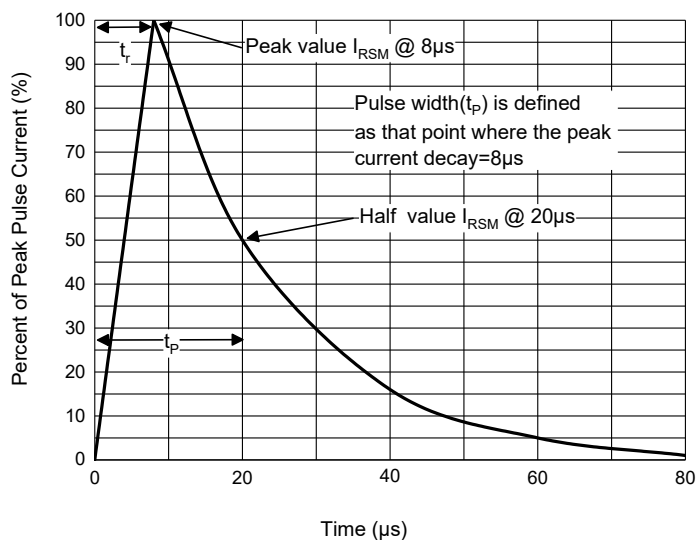


Fig. 2 - Non-Repetitive Peak Pulse Power

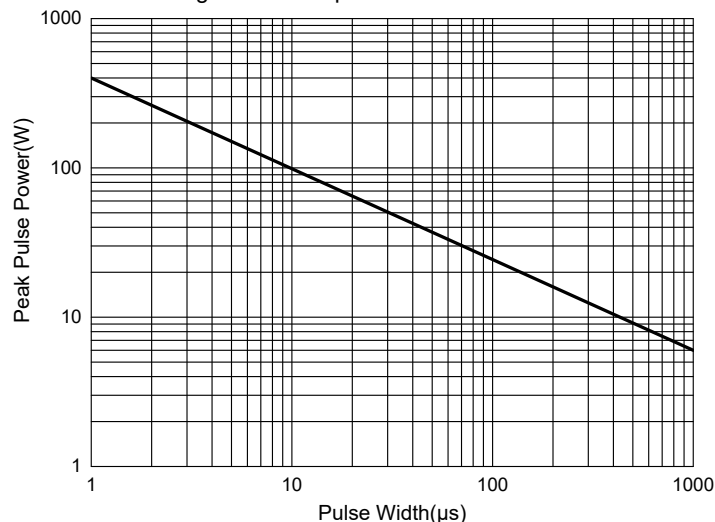


Fig. 3 - Capacitance Characteristics

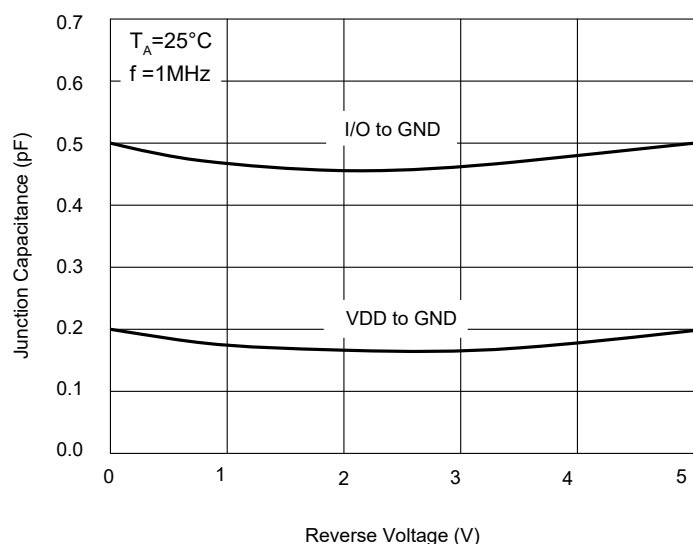


Fig. 4 - Clamping Voltage Characteristics

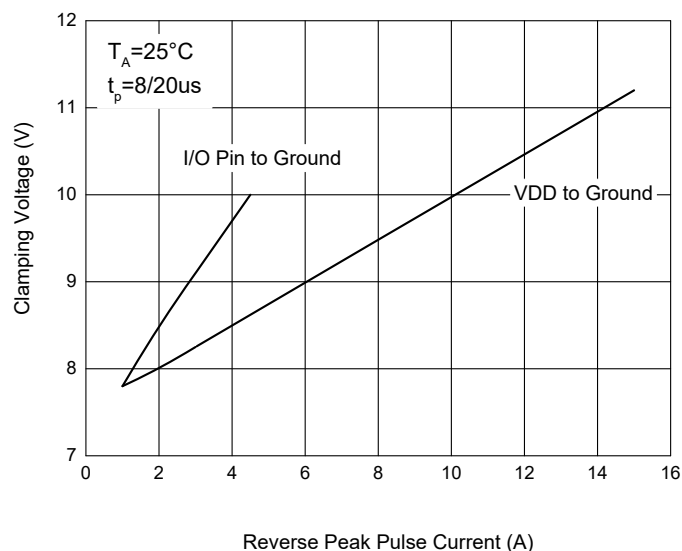


Fig. 5 - TLP Measurement -I/O to GND

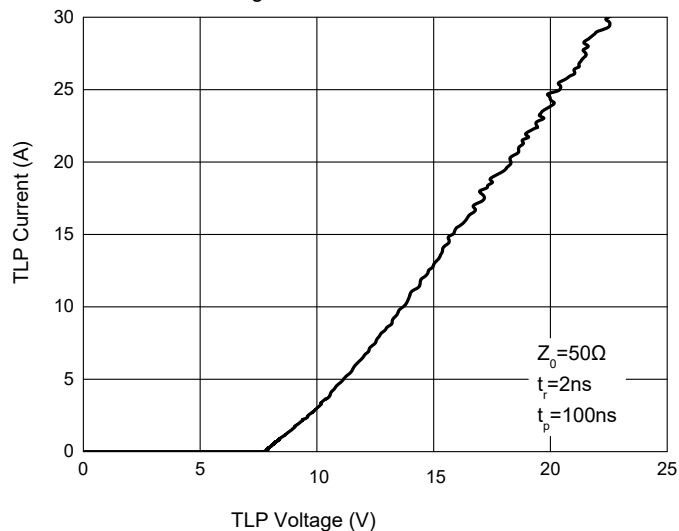
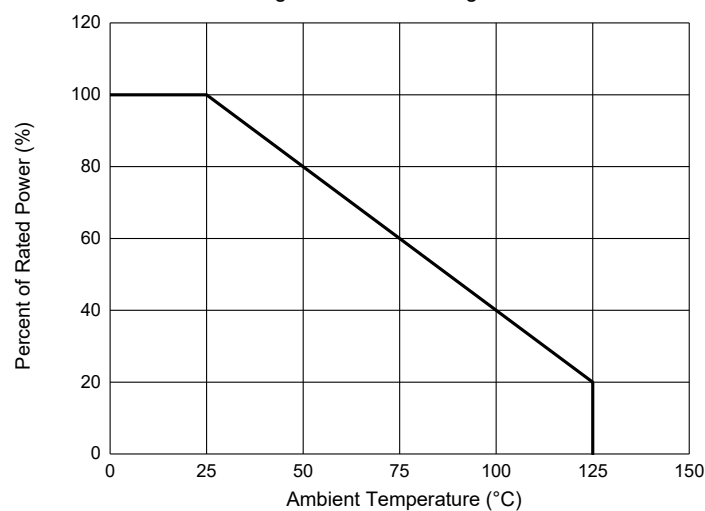


Fig. 6 - Pulse Derating Curve



## Ordering Information

| Device         | Packing               |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel: 3Kpcs/Reel |

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