



## DWPMB0531D1 ESD Protection Diode

### Feature

- Bi-directional ESD protection of three lines
- 60Watts peak pulse power ( $t_p=8/20\mu s$ )
- Working voltage: 5V
- Junction Capacitance: 0.18pF(Typ)
- Low clamping voltage
- Low leakage current
- IEC 61000-4-2  $\pm 12kV$  contact  $\pm 18kV$  air
- IEC 61000-4-5 (Lightning) 3A (8/20 $\mu s$ )

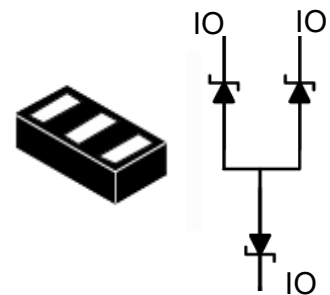
### Application

- Smart phones
- Display Ports
- MDDI Ports
- USB Ports
- Digital Video Interface (DVI) Audio Players
- PCI Express and Serial SATA Ports

### Mechanical Data

- Package: DFN0603-3L
- Molding compound flammability rating: UL 94V-0
- RoHS/WEEE Compliant

### Schematic & PIN Configuration



### Ordering Information

| Part Number | Package    | Marking                                                                             | Packing           | Reel Size |
|-------------|------------|-------------------------------------------------------------------------------------|-------------------|-----------|
| DWPMB0531D1 | DFN0603-3L |  | 10000 Tape & Reel | 7 inches  |

## Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

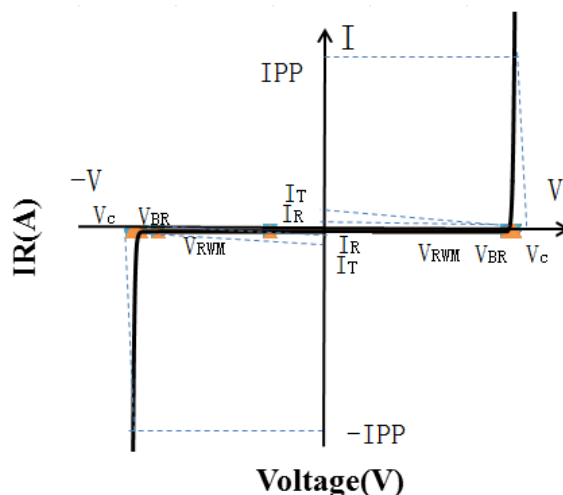
| Parameter                                                      | Symbol           | Value                | Unit               |
|----------------------------------------------------------------|------------------|----------------------|--------------------|
| Peak Pulse Power (8/20 $\mu\text{s}$ )                         | Ppk              | 60                   | W                  |
| Peak Pulse Current (8/20 $\mu\text{s}$ )                       | I <sub>PP</sub>  | 3                    | A                  |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | V <sub>ESD</sub> | $\pm 18$<br>$\pm 12$ | kV                 |
| Operating Temperature Range                                    | T <sub>J</sub>   | -55 to +125          | $^{\circ}\text{C}$ |
| Storage Temperature Range                                      | T <sub>stg</sub> | -55 to +150          | $^{\circ}\text{C}$ |

## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter               | Symbol           | Test Condition                                    | Min | Typ  | Max  | Unit          |
|-------------------------|------------------|---------------------------------------------------|-----|------|------|---------------|
| Reverse Working Voltage | V <sub>RWM</sub> |                                                   |     |      | 5    | V             |
| Breakdown Voltage       | V <sub>BR</sub>  | I <sub>T</sub> = 1mA(IO-IO)                       | 6.5 | 8.5  | 10   | V             |
| Reverse Leakage Current | I <sub>R</sub>   | V <sub>RWM</sub> = 5V                             |     |      | 0.2  | $\mu\text{A}$ |
| Clamping Voltage        | V <sub>C</sub>   | I <sub>PP</sub> = 1A (8 x 20 $\mu\text{s}$ pulse) |     | 10   | 12   | V             |
| Clamping Voltage        | V <sub>C</sub>   | I <sub>PP</sub> = 2A (8 x 20 $\mu\text{s}$ pulse) |     | 13   | 16   | V             |
| Clamping Voltage        | V <sub>C</sub>   | I <sub>PP</sub> = 3A (8 x 20 $\mu\text{s}$ pulse) |     | 18   | 21   | pF            |
| Junction Capacitance    | C <sub>J</sub>   | V <sub>R</sub> = 0V, f = 1MHz(IO-IO)              |     | 0.18 | 0.28 | pF            |

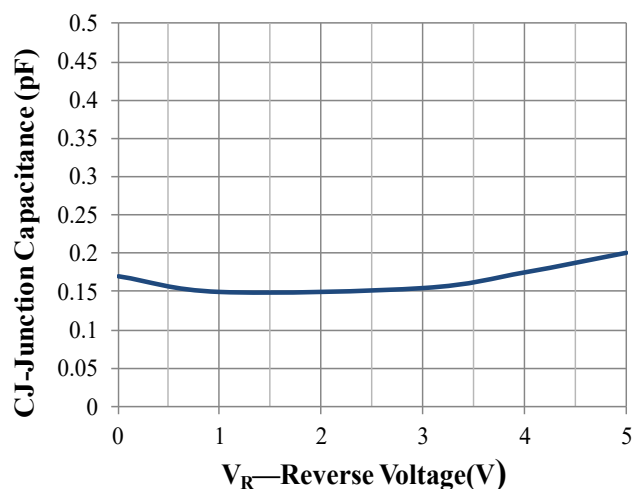
## Electrical Parameters

| Symbol          | Parameter                          |
|-----------------|------------------------------------|
| I <sub>T</sub>  | Test Current                       |
| I <sub>PP</sub> | Maximum Reverse Peak Pulse Current |
| V <sub>C</sub>  | Clamping Voltage @I <sub>C</sub>   |

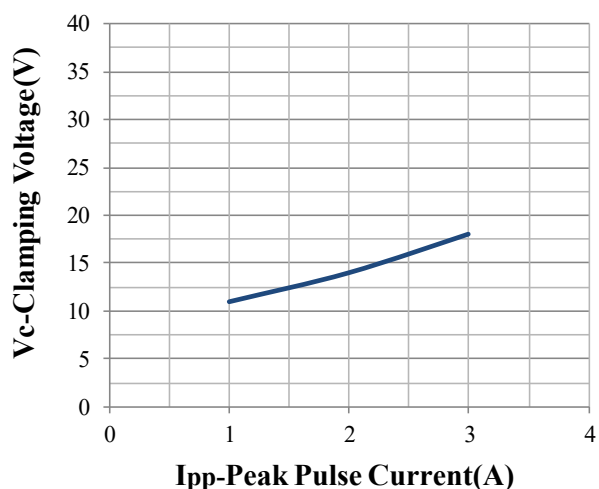




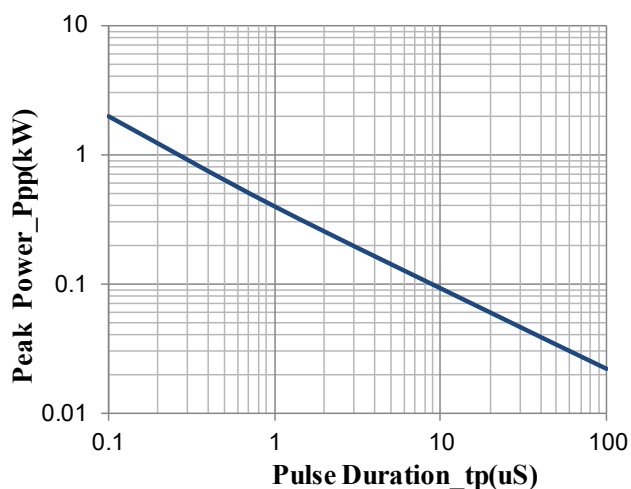
## Typical Characteristics



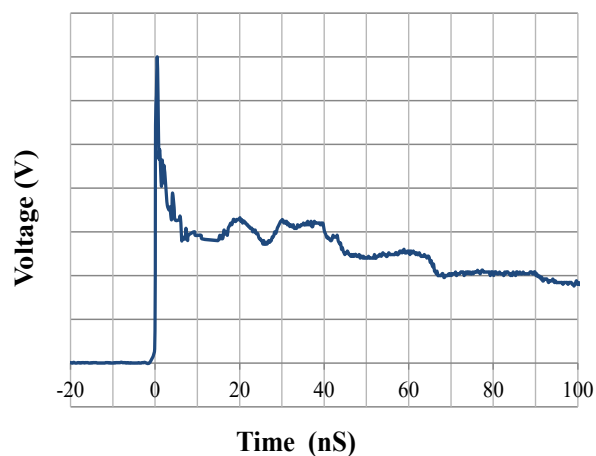
Junction Capacitance vs. Reverse Voltage



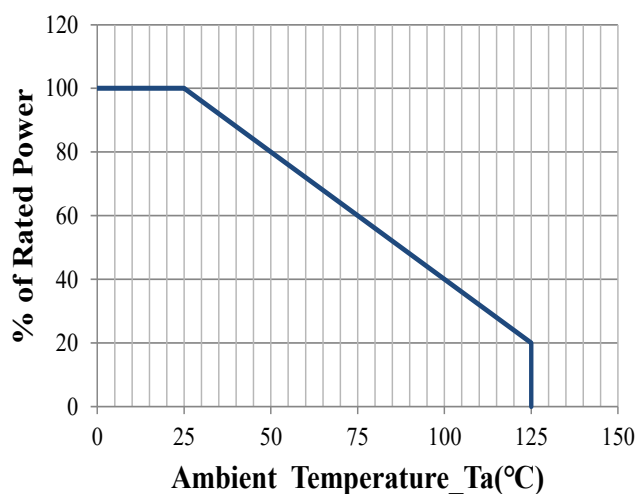
Clamping Voltage vs. Peak Pulse Current



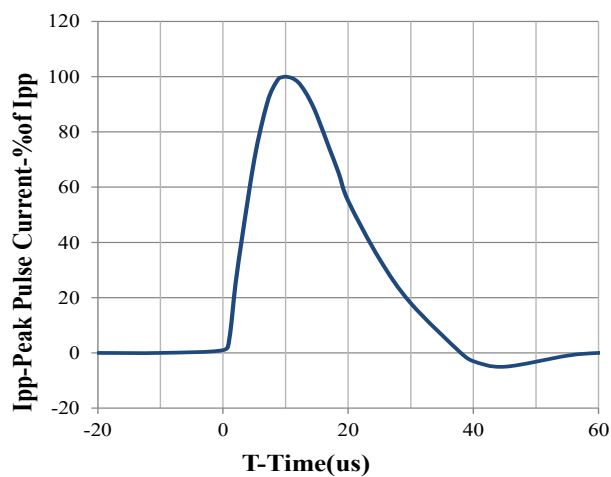
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



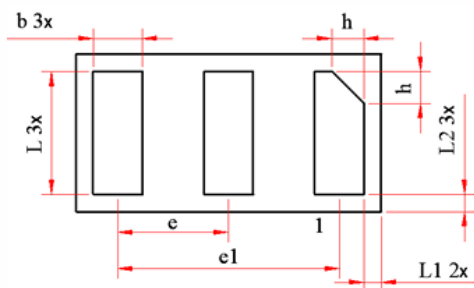
Power Derating Curve



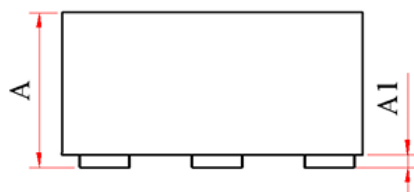
8 X 20us Pulse Waveform



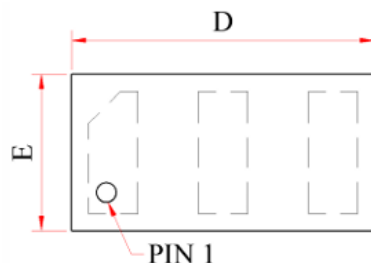
## DFN0603-3L Outline Drawing



Bottom View



Side View



| Symbol | Dimension In Millimeters |       |       | Dimension In Inches |       |       |
|--------|--------------------------|-------|-------|---------------------|-------|-------|
|        | Normal                   | Min   | Max   | Normal              | Min   | Max   |
| A      | --                       | 0.280 | 0.340 | --                  | 0.011 | 0.013 |
| A1     | --                       | --    | 0.050 | --                  | --    | 0.002 |
| D      | 0.620                    | 0.590 | 0.640 | 0.024               | 0.023 | 0.025 |
| E      | 0.320                    | 0.290 | 0.340 | 0.013               | 0.011 | 0.013 |
| b      | 0.100                    | 0.080 | 0.120 | 0.004               | 0.003 | 0.005 |
| L      | 0.250                    | 0.230 | 0.270 | 0.010               | 0.009 | 0.011 |
| h      | 0.065 REF                |       |       | 0.003 REF           |       |       |
| L1     | 0.035 REF                |       |       | 0.001 REF           |       |       |
| L2     | 0.035 REF                |       |       | 0.001 REF           |       |       |
| e      | 0.225 BSC                |       |       | 0.009 BSC           |       |       |
| e1     | 0.450 BSC                |       |       | 0.018 BSC           |       |       |