



## DWPMB0511D1-Q ESD Protection Diode

### Feature

- Bi-directional ESD protection of one line
- 60Watts peak pulse power ( $t_p=8/20\mu s$ )
- Working voltage: 5V
- Junction Capacitance: 0.18pF(Typ)
- Low clamping voltage
- Low leakage current
- AEC-Q101 qualified
- IEC 61000-4-2  $\pm 12kV$  contact  $\pm 18kV$  air
- IEC 61000-4-5 (Lightning) 3A (8/20 $\mu s$ )

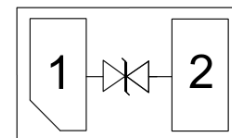
### Application

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

### Mechanical Data

- Package: DFN0603-2L
- Molding compound flammability rating: UL 94V-0
- RoHS/WEEE Compliant

### Schematic & PIN Configuration



### Ordering Information

| Part Number   | Package    | Marking | Packing           | Reel Size |
|---------------|------------|---------|-------------------|-----------|
| DWPMB0511D1-Q | DFN0603-2L |         | 10000 Tape & Reel | 7 inches  |



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

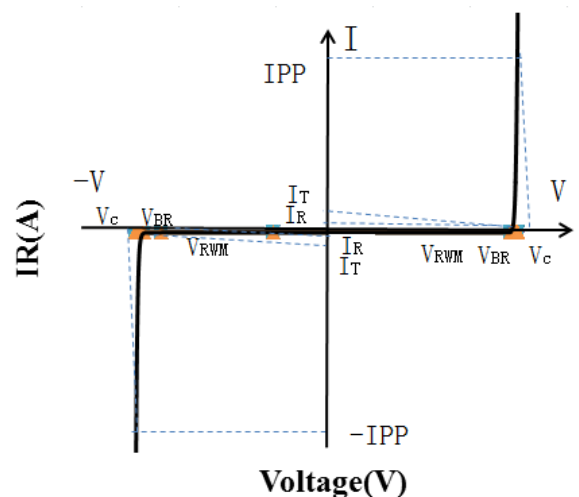
| Parameter                                                      | Symbol           | Value                | Unit               |
|----------------------------------------------------------------|------------------|----------------------|--------------------|
| Peak Pulse Power (8/20 $\mu\text{s}$ )                         | 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                              | 6.0 | 7.5  | 9.0  | V             |
| Reverse Leakage Current | I <sub>R</sub>   | V <sub>RWM</sub> = 5V                             |     |      | 0.5  | $\mu\text{A}$ |
| Clamping Voltage        | V <sub>C</sub>   | I <sub>PP</sub> = 1A (8 x 20 $\mu\text{s}$ pulse) |     |      | 12   | V             |
| Clamping Voltage        | V <sub>C</sub>   | I <sub>PP</sub> = 3A (8 x 20 $\mu\text{s}$ pulse) |     | 18   | 20   | V             |
| Junction Capacitance    | C <sub>J</sub>   | V <sub>R</sub> = 0V, f = 1MHz                     |     | 0.18 | 0.25 | pF            |

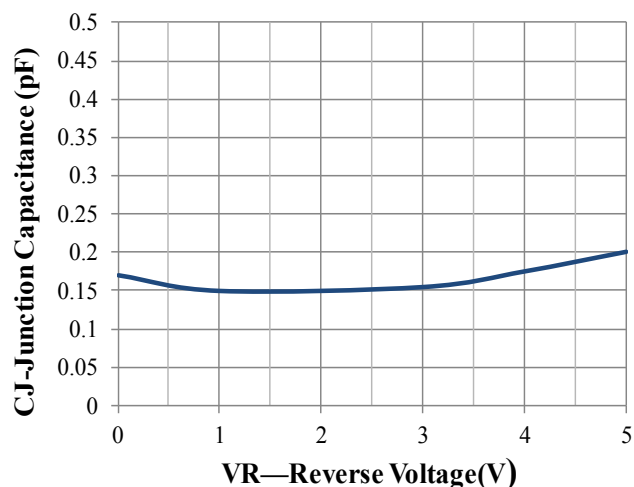
## Electrical Parameters

| 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>   |

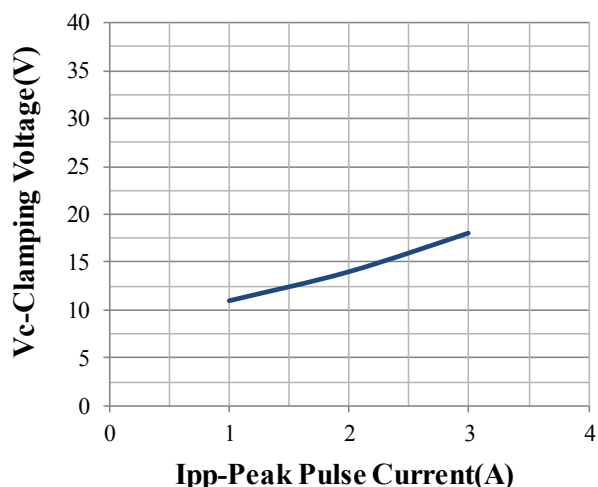




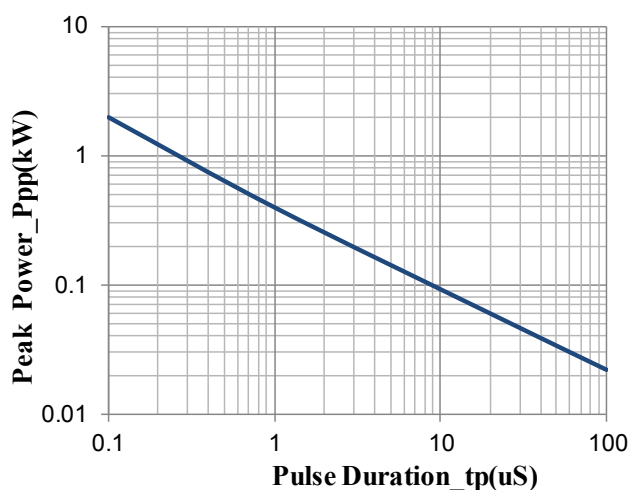
## Typical Characteristics



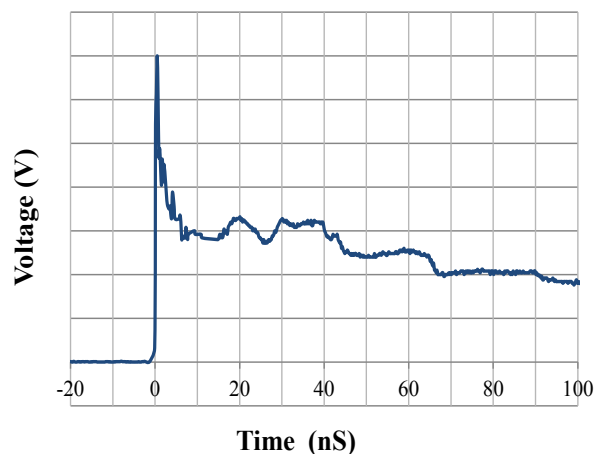
Junction Capacitance vs. Reverse Voltage



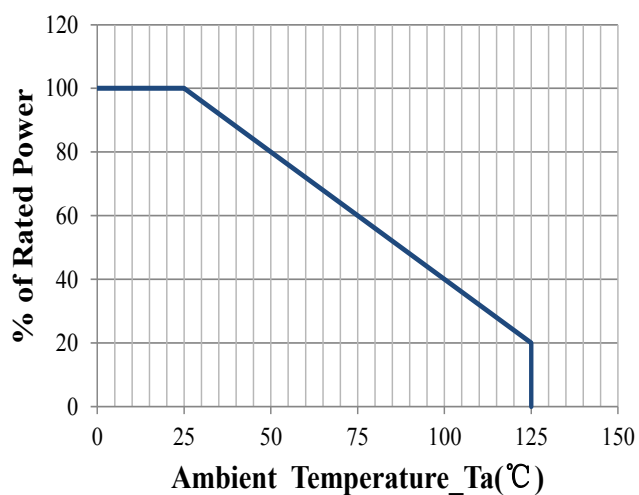
Clamping Voltage vs. Peak Pulse Current



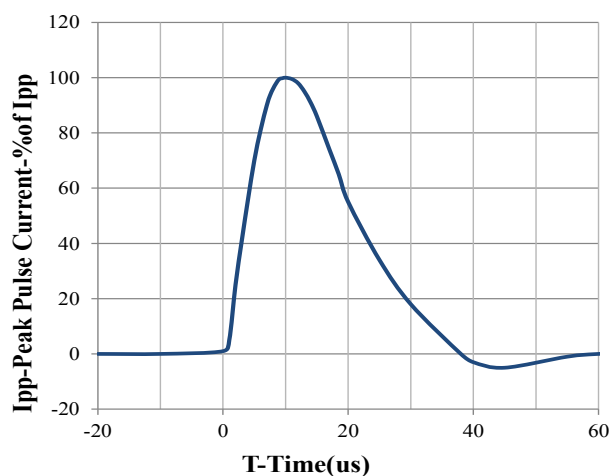
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



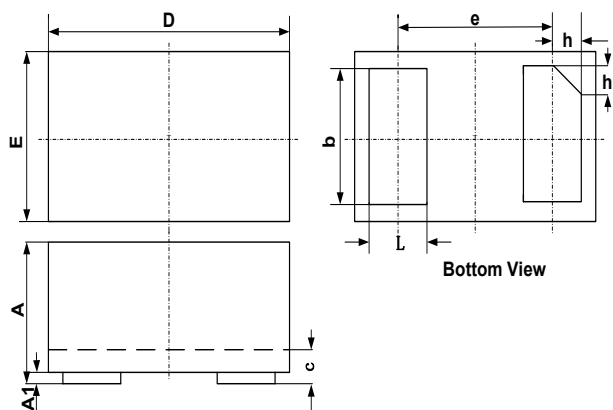
Power Derating Curve



8 X 20us Pulse Waveform



## DFN0603-2L Outline Drawing



| SYM | DIMENSIONS  |       |       |
|-----|-------------|-------|-------|
|     | MILLIMETERS |       |       |
|     | MIN         | NOM   | MAX   |
| A   | 0.230       |       | 0.330 |
| A1  | 0.000       | 0.020 | 0.050 |
| b   | 0.215       | 0.245 | 0.275 |
| c   | 0.120       | 0.150 | 0.180 |
| D   | 0.550       | 0.600 | 0.650 |
| e   | 0.355 BSC   |       |       |
| E   | 0.250       | 0.300 | 0.350 |
| L   | 0.160       | 0.190 | 0.220 |
| h   | 0.079 BSC   |       |       |