# DWPUB0513D1 ESD Protection Diode

## Feature

- Bi-directional ESD protection of one line
- 170Watts peak pulse power (tp=8/20μs)
- Working voltage: 5V
- Junction Capacitance: 25pF(Typ)
- Low clamping voltage
- IEC 61000-4-2 ±30kV contact ±30kV air
- IEC 61000-4-5 (Lightning) 17A (8/20μs)

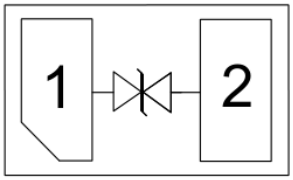
## Application

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players
- Keypads, Side Keys, LCD Displays

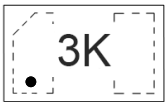
## Mechanical Data

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

## Circuit Diagram




## Ordering Information

| Part Number | Package | Marking | Packing | Reel Size |
|---|---|---|---|---|
| DWPUB0513D1 | DFN0603-2L |  | 10000 Tape & Reel | 7 inches |

## Absolute Maximum Ratings ($T_A$=25°C unless otherwise specified)

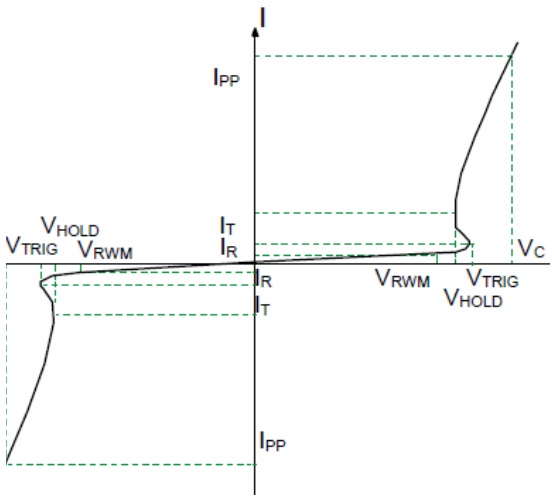
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power (8/20μs) | $P_{pk}$ | 170 | W |
| Peak Pulse Current (8/20μs) | $I_{PP}$ | 17 | A |
| ESD per IEC 61000−4−2 (Air)<br>ESD per IEC 61000−4−2 (Contact) | $V_{ESD}$ | ±30<br>±30 | kV |
| Operating Temperature Range | $T_J$ | −55 to +125 | °C |
| Storage Temperature Range | $T_{stg}$ | −55 to +150 | °C |

## Electrical Characteristics ($T_A$=25°C unless otherwise specified)

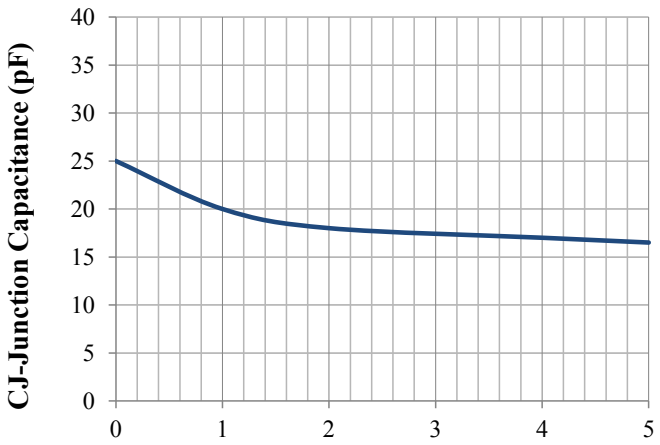
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Reverse Working Voltage | $V_{RWM}$ | | | | 5.0 | V |
| Breakdown Voltage | $V_{BR}$ | $I_T$ = 1mA | 5.8 | 6.8 | 8.0 | V |
| Reverse Leakage Current | $I_R$ | $V_{RWM}$ = 5.0V | | | 0.5 | μA |
| Clamping Voltage | $V_C$ | $I_{PP}$ = 10A (8 x 20μs pulse) | | 8.0 | 9.5 | V |
| Clamping Voltage | $V_C$ | $I_{PP}$ = 17A (8 x 20μs pulse) | | 10.5 | 11 | V |
| Dynamic Resistance | $R_{DYN}$ | TLP=0.2/100ns | | 0.1 | | Ω |
| Junction Capacitance | $C_J$ | $V_R$ = 0V, f = 1MHz | | 25 | 50 | pF |

## Electrical Parameters

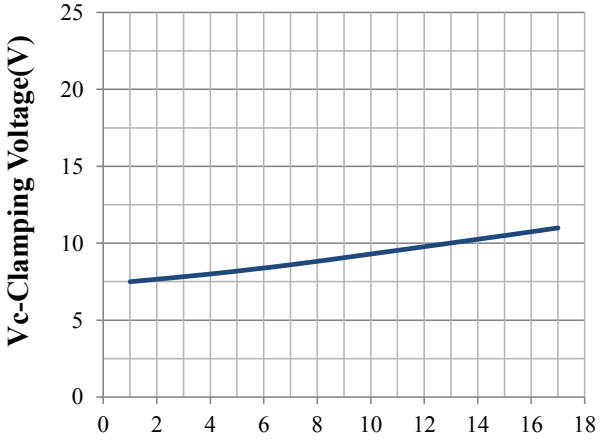
| Symbol | Parameter |
|---|---|
| $I_T$ | Test Current |
| $I_{PP}$ | Maximum Reverse Peak Pulse Current |
| $V_C$ | Clamping Voltage @Ic |



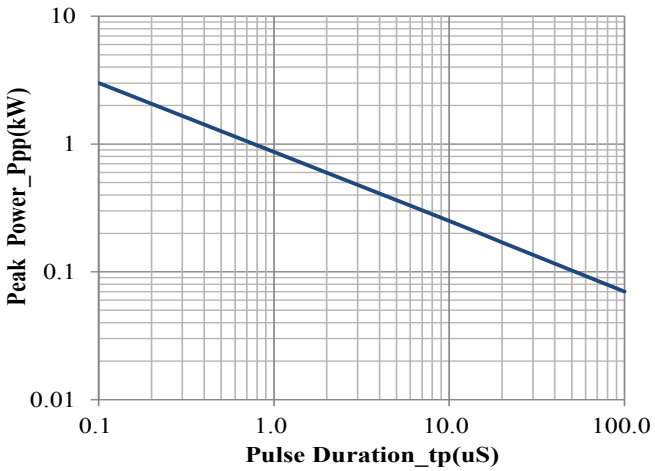
## Typical Characteristics



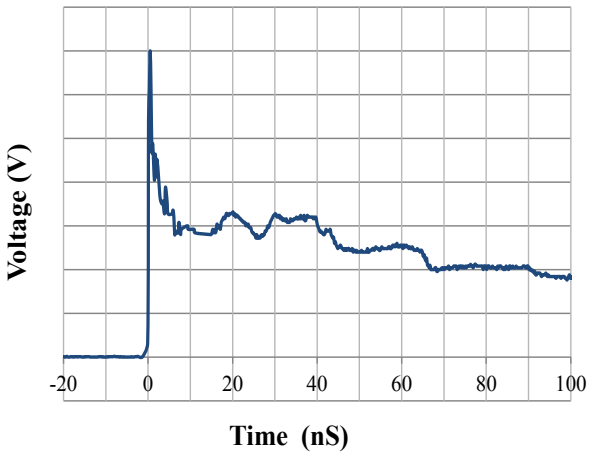

Junction Capacitance vs. Reverse Voltage




Clamping Voltage vs. Peak Pulse Current

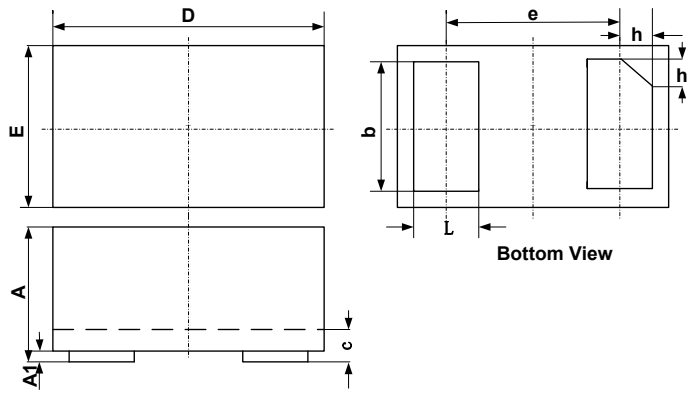



Peak Pulse Power vs. Pulse Time



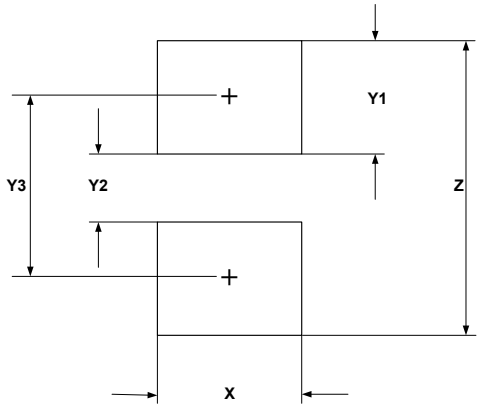

IEC61000-4-2 Pulse Waveform

## DFN0603-2L Package Outline Drawing




| Sym | Dimensions | | |
|---|---|---|---|
| | Millimeters | | |
| | Min | Nom | Max |
| A | 0.230 | 0.300 | 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 | | |

## Suggested Land Pattern




| Sym | Dimensions | |
|---|---|---|
| | Millimeters | Inches |
| X | 0.30 | 0.012 |
| Y1 | 0.25 | 0.010 |
| Y2 | 0.15 | 0.006 |
| Y3 | 0.40 | 0.016 |
| Z | 0.65 | 0.026 |