



## DWC0525BH-Q ESD Protection Diode

### Feature

- Bi-directional ESD protection of one line
- Working voltage: 5V
- Junction Capacitance: 0.3pF(Typ)
- Low clamping voltage
- Low leakage current
- AEC-Q101 qualified
- IEC 61000-4-2  $\pm 25\text{kV}$  contact  $\pm 25\text{kV}$  air
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 9A (8/20 $\mu\text{s}$ )

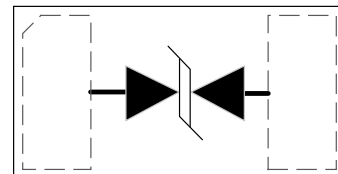
### Application

- USB 3.0 and USB3.1
- Ultra-high-speed data lines
- Very sensitive interface lines
- Notebooks, Desktops, and Servers
- Portable Instrumentation

### Mechanical Data

- Package: DFN1006-2L
- Molding compound flammability rating: UL 94V-0
- RoHS/WEEE compliant

### Schematic & PIN Configuration



### Ordering Information

| Part Number | Package    | Marking                                                                             | QTY per Reel | Reel Size |
|-------------|------------|-------------------------------------------------------------------------------------|--------------|-----------|
| DWC0525BH-Q | DFN1006-2L |  | 10000 pcs    | 7 inches  |

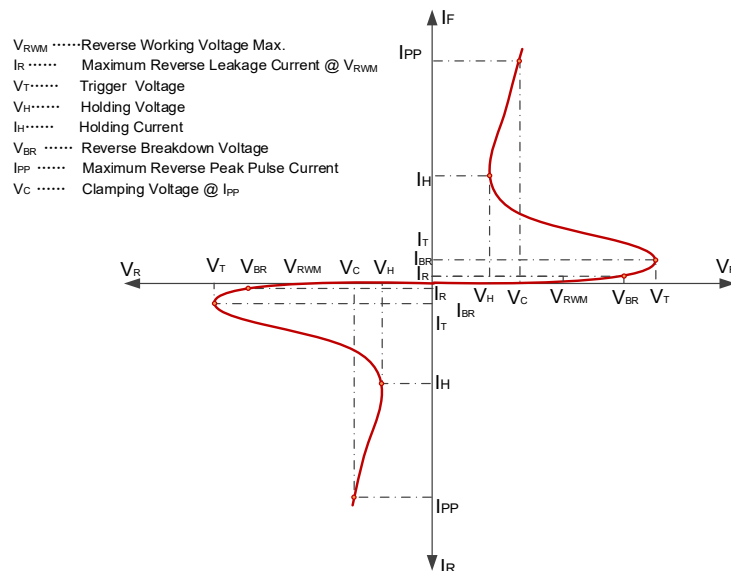
## Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise specified)

| Parameter                                                      | Symbol    | Value                | Unit             |
|----------------------------------------------------------------|-----------|----------------------|------------------|
| Peak Pulse Current ( $t_p=8/20\mu\text{s}$ ) (Note1)           | $I_{PP}$  | 9                    | A                |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$ | $\pm 25$<br>$\pm 25$ | kV               |
| Lead Soldering Temperature                                     | $T_L$     | 260 (10seconds)      | $^\circ\text{C}$ |
| Junction Temperature                                           | $T_J$     | -55 to + 125         | $^\circ\text{C}$ |
| Storage Temperature                                            | $T_{stg}$ | -55 to + 125         | $^\circ\text{C}$ |

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

| Parameter                 | Symbol    | Test Conditions                            | Min | Typical | Max  | Unit          |
|---------------------------|-----------|--------------------------------------------|-----|---------|------|---------------|
| Reverse Stand-Off Voltage | $V_{RWM}$ |                                            |     |         | 5.0  | V             |
| Reverse Breakdown Voltage | $V_{BR}$  | $I_T=1\text{mA}$                           | 6.0 | 7.0     |      |               |
| Holding Voltage           | $V_H$     |                                            | 2.0 |         | 3.5  | V             |
| Reverse Leakage Current   | $I_R$     | $V_{RWM}=5.0\text{V}, T=25^\circ\text{C}$  |     |         | 0.5  | $\mu\text{A}$ |
| Clamping Voltage          | $V_C$     | $I_{PP}=9\text{A}, t_p=8/20\mu\text{s}$    |     | 7       | 8    | V             |
| ESD Clamping Voltage      | $V_{CL}$  | $I_{TLP}=4\text{A}, t_p=0.2/100\text{ns}$  |     | 3.7     |      | V             |
| ESD Clamping Voltage      | $V_{CL}$  | $I_{TLP}=16\text{A}, t_p=0.2/100\text{ns}$ |     | 8       |      | V             |
| ESD Dynamic Resistance    | $R_{DYN}$ | $T_{LP}=0.2/100\text{ns}$                  |     | 0.35    |      | $\Omega$      |
| Junction Capacitance      | $C_j$     | $V_R = 0\text{V}, f = 1\text{MHz}$         |     | 0.30    | 0.40 | pF            |

## Electrical Parameters



Note1: 8/20 $\mu\text{s}$  pulse waveform.

## Typical Characteristics

Fig1: Capacitance vs. Reverse Voltage

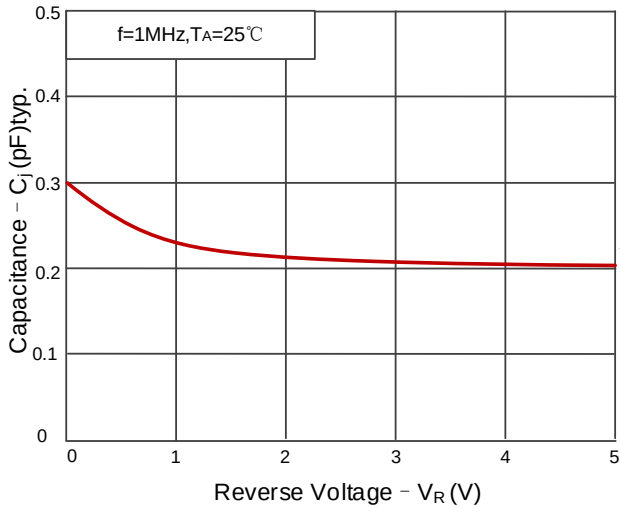


Fig2: Power Derating Curve

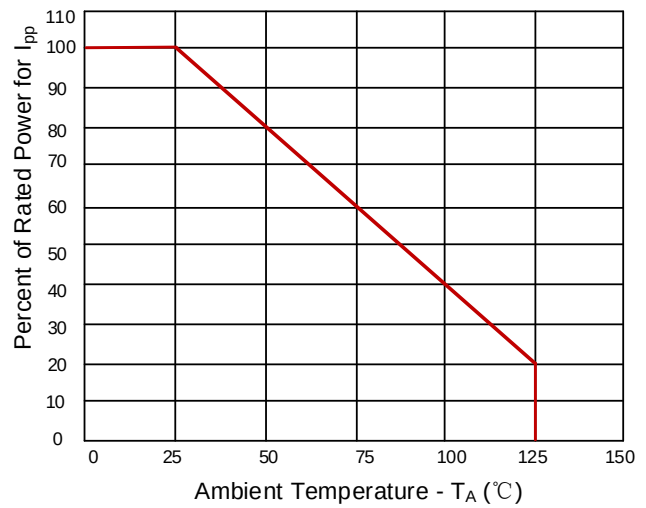


Fig3: TLP I-V Curve

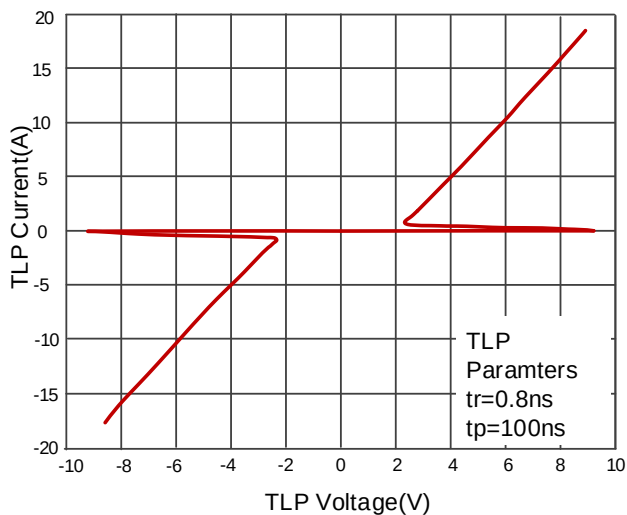


Fig4: Reverse Clamping Voltage vs. Peak Pulse Current

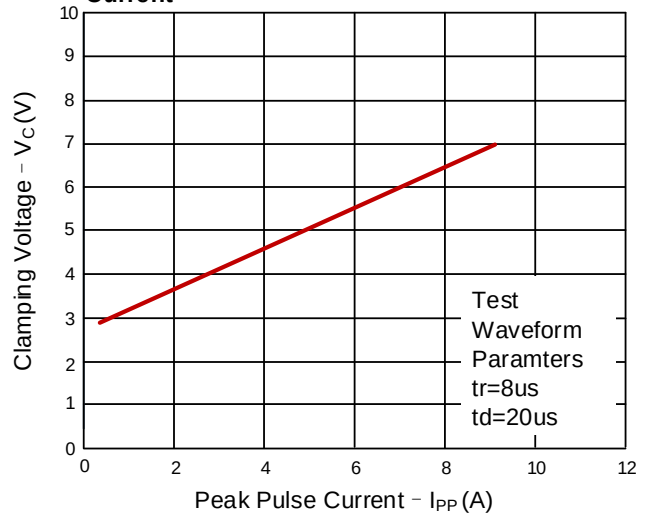


Figure5: IEC61000-4-2 +8 kV Contact ESD Clamping Voltage

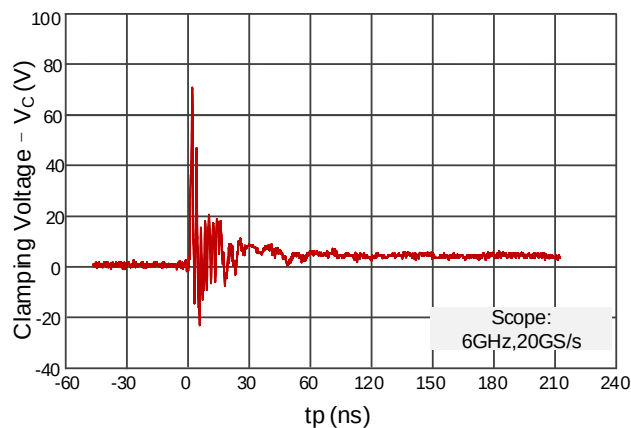
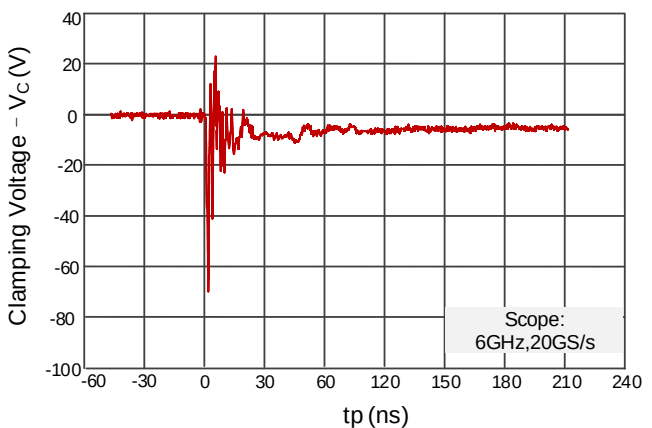
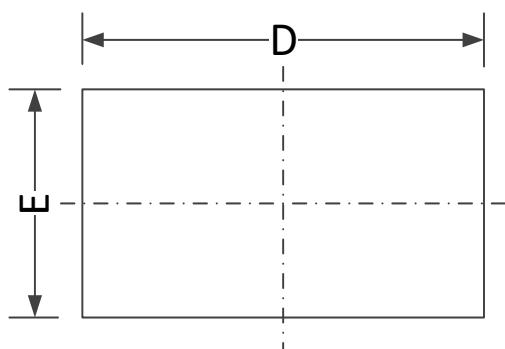


Figure6: IEC61000-4-2 -8 kV Contact ESD Clamping Voltage

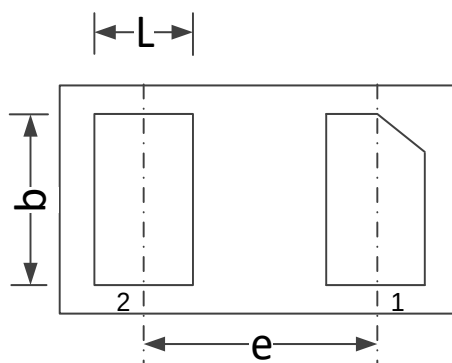




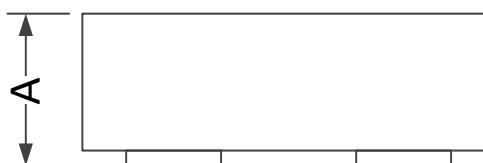
## DFN1006-2L Outline Drawing



TOP VIEW



BOTTOM VIEW



SIDE VIEW

| COMMON DIMENSION (MM) |         |      |      |
|-----------------------|---------|------|------|
| PKG                   | DFN1006 |      |      |
| REF.                  | MIN.    | NOM. | MAX. |
| A                     | 0.40    |      | 0.55 |
| b                     | 0.45    | 0.50 | 0.55 |
| D                     | 0.95    | 1.00 | 1.05 |
| e                     | 0.65BSC |      |      |
| E                     | 0.55    | 0.60 | 0.65 |
| L                     | 0.20    | 0.25 | 0.30 |