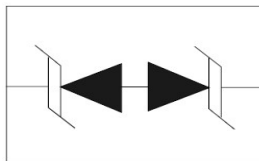


## TVS/ESD Protection Diode

**DFN1006**  
**WESD5V01CLY**



### Description

WESD5V01CLY is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for data, control or power lines. With maximum capacitance of 15pF, WESD5V01CLY is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 ( $\pm 15\text{kV}$  air,  $\pm 8\text{kV}$  contact discharge), IEC 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

WESD5V01CLY uses ultra-small DFN1006 package. Each WESD5V01CLY device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern.

| Features                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Applications                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Transient protection for high-speed data lines IEC 61000-4-2 (ESD) <math>\pm 30\text{kV}</math> (Contact) <math>\pm 30\text{kV}</math> (Air)</li> <li>IEC 61000-4-4 (EFT) 40A (5/50 ns)</li> <li>Cable Discharge Event (CDE)</li> <li>Package optimized for high-speed lines</li> <li>Ultra-small package (1.0mm*0.6mm*0.4mm)</li> <li>Protects one data, control or power line</li> <li>Low capacitance</li> <li>Low leakage current</li> <li>Low clamping voltage</li> <li>Each I/O pin can withstand over 1000 ESD strikes for <math>\pm 8\text{kV}</math> contact discharge</li> </ul> | <ul style="list-style-type: none"> <li>Portable Electronics</li> <li>Desktops, Servers and Notebooks</li> <li>Cellular Phones</li> <li>MP3 Ports</li> <li>Digital Ports</li> <li>Subscriber Identity Module (SIM) card</li> </ul> |
| Mechanical Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                   |
| <ul style="list-style-type: none"> <li>DFN1006 package</li> <li>Flammability Rating: UL 94V-0</li> <li>High temperature soldering guaranteed: 260 °C/10s</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                   |

## ABSOLUTE MAXIMUM RATING

| Symbol    | Parameter                         | Value    | Units        |
|-----------|-----------------------------------|----------|--------------|
| $V_{ESD}$ | ESD per IEC 61000-4-2 (Contact)   | $\pm 30$ | KV           |
|           | ESD per IEC 61000-4-2 (Air)       | $\pm 30$ |              |
| $P_{PP}$  | Peak Pulse Power (8/20 $\mu$ s)   | 60       | W            |
| $I_{PP}$  | Peak Pulse Current (8/20 $\mu$ s) | 5        | A            |
| $T_j$     | Operating Temperature             | -55/+125 | $^{\circ}$ C |
| $T_{STG}$ | Storage Temperature               | -55/+150 | $^{\circ}$ C |

## ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^{\circ}$ C)

| Symbol     | Parameter                 | Test Condition                                                                            | Min | Typ | Max       | Units   |
|------------|---------------------------|-------------------------------------------------------------------------------------------|-----|-----|-----------|---------|
| $V_{RWM}$  | Reverse Stand-Off Voltage |                                                                                           |     |     | 5.0       | V       |
| $V_{BR}$   | Reverse Breakdown voltage | $I_T=1mA$                                                                                 | 5.6 |     |           | V       |
| $I_R$      | Reverse leakage current.  | $V_{RWM}=5V$                                                                              |     |     | 1         | $\mu$ A |
| $V_C$      | Clamping Voltage          | $I_{PP}=1A, t_p=8/20\mu s$<br>$I_{PP}=5A, t_p=8/20\mu s$                                  |     |     | 9.5<br>12 | V       |
| $V_{CTLP}$ | TLP Clamping Voltage      | $I_{PP} = 16A$<br>IEC61000-4-2 Level 4 equivalent<br>( $\pm 8kV$ Contact, $\pm 15kV$ Air) |     | 9.5 |           | V       |
| $C_J$      | Junction Capacitance      | $V_R=0V, f=1MHz$                                                                          |     |     | 15        | pF      |

## ELECTRICAL CHARACTERISTICS CURVE

Fig 1 8/20 $\mu$ s Waveform per IEC61000-4-5

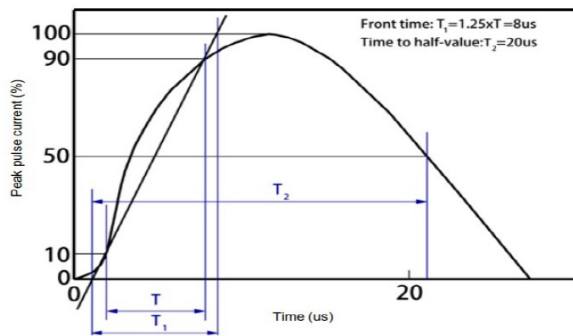


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

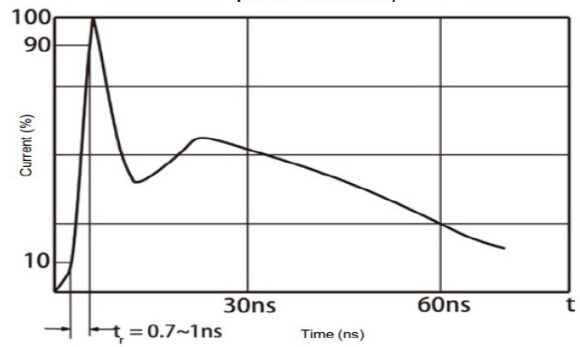


Fig 3 Power Derating Curve

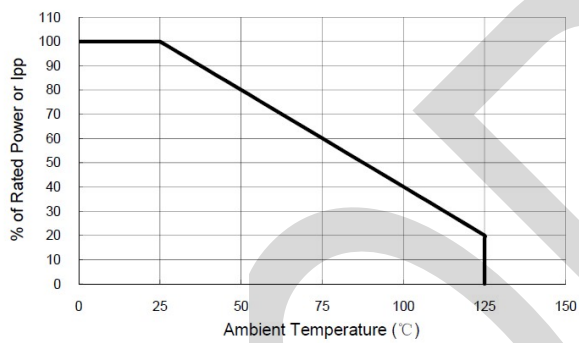


Fig 4 Voltage vs Capacitance

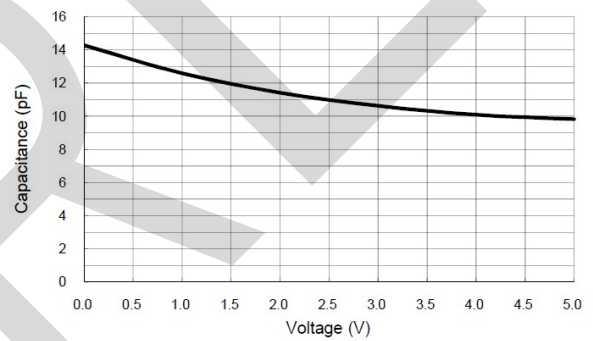


Fig 5 Transmission Line Pulsing (TLP) Measurement

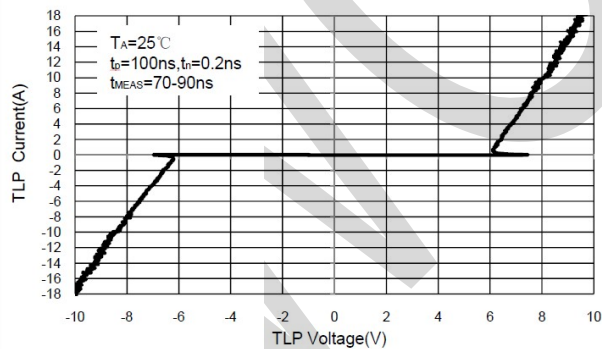
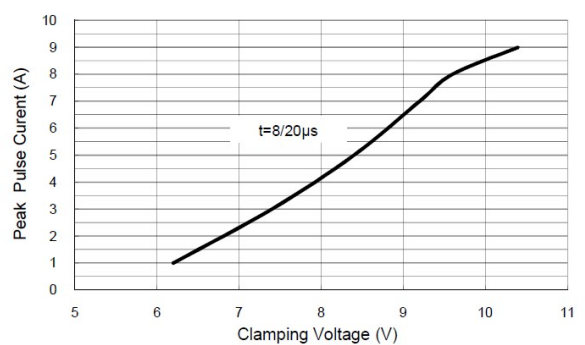
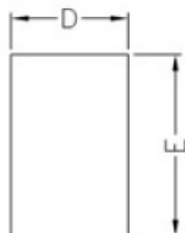
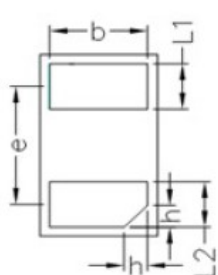


Fig 6 Clamping Voltage vs Peak Pulse Current



## DFN1006 PACKAGE OUTLINE DIMENSIONS

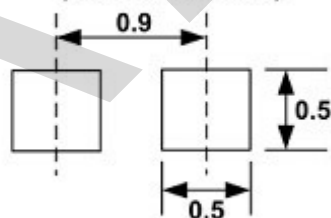
DFN1006



Unit: mm

|    | MIN     | NOM  | MAX  |
|----|---------|------|------|
| D  | 0.55    | 0.60 | 0.65 |
| E  | 0.95    | 1.00 | 1.05 |
| L1 | 0.20    | 0.25 | 0.30 |
| L2 | 0.20    | 0.25 | 0.30 |
| b  | 0.45    | 0.50 | 0.55 |
| e  | 0.65BSC |      |      |
| A  | 0.45    | 0.50 | 0.55 |
| h  | 0.07    | 0.12 | 0.17 |

Dimension: Millimeter  
( Stencil thickness: 0.1 )



Soldering Footprint

## Description of model and identification

|               |     |         |   |         |   |         |
|---------------|-----|---------|---|---------|---|---------|
| W             | ESD | 5V0     | 1 | C       | L | Y       |
| Company code  |     | Voltage |   | Bothway |   | Package |
| Product class |     | Route   |   | pF      |   |         |