

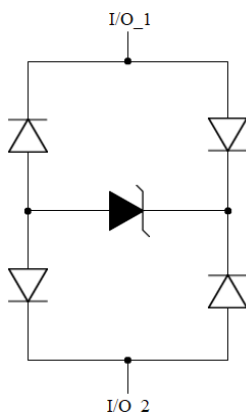
■ Description

HWET05211B is a low - capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.35pF only, HWET05211B 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. HWET05211B uses ultra - small uDFN-2L package. Each HWET05211B device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern. The combined features of low capacitance, ultra-small size and high ESD robustness make HWET05211B ideal for high-speed data port and high-frequency line (e.g., USB 2.0 & antenna line) applications, such as cellular phones and HD visual devices.

■ Mechanical Characteristics

- DFN1006 package
- Flammability Rating: UL 94V-0
- Marking: Part number
- Packaging: Tape and Reel

■ Circuit Diagram



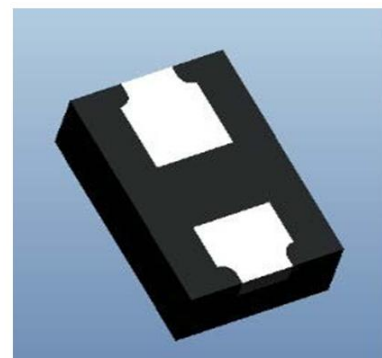
■ Features

- Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) $\pm 25\text{kV}$ (Air)
 $\pm 25\text{kV}$ (Contact)
IEC 61000-4-4 (EFT) 40A (5/50 ns)
- Cable Discharge Event (CDE)
- Package optimized for high-speed lines
- Ultra-small package(1.0mm*0.6mm*0.55mm)
- Protects one data, control or power line
- Low capacitance: 0.35pF (Typical)
- Low leakage current: 10nA @ V_{RWM} (Typ.)
- Low clamping voltage
- Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge
- ROHS compliant

■ Applications

- Serial ATA
- PCI Express
- Desktops, Servers and Notebooks
- Cellular Phones
- MDDI Ports
USB2.0/3.0 Power and Data Line Protection
- Display Ports
- Digital Visual Interfaces (DVI)
- HDMI 1.4/2.0

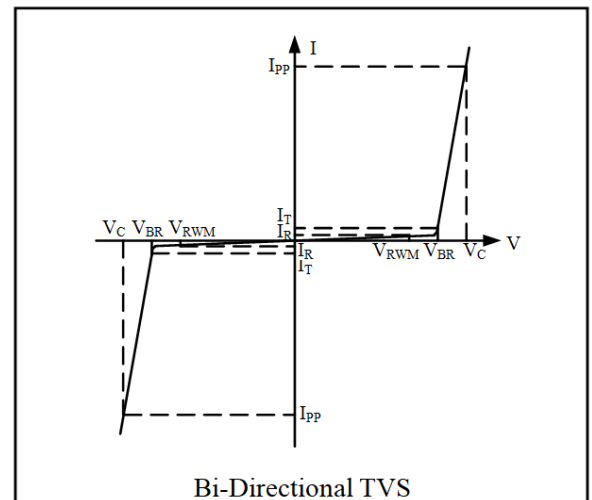
■ Pin Configuration



uDFN-2L

Electrical characteristics (Ta = 25 °C)

Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Reverse Breakdown Voltage @ I_T
I_T	Test Current for Reverse Breakdown
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal Frequency

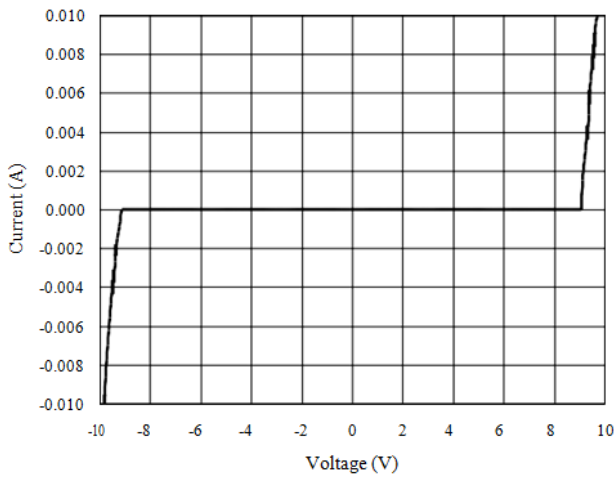


Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				5	V
I_R	$V_{RWM} = 5V, T = 25^{\circ}C$ Between I/O and I/O		0.01	1	μA
V_{BR}	$I_T = 1mA$ Between I/O and I/O	7	8.8	11	V
V_C	$I_{PP} = 1A, t_p = 8/20\mu s$ Between I/O and I/O			12	V
C_{ESD}	$V_R = 0V, f = 1MHz$ Between I/O and I/O		0.35	0.5	pF

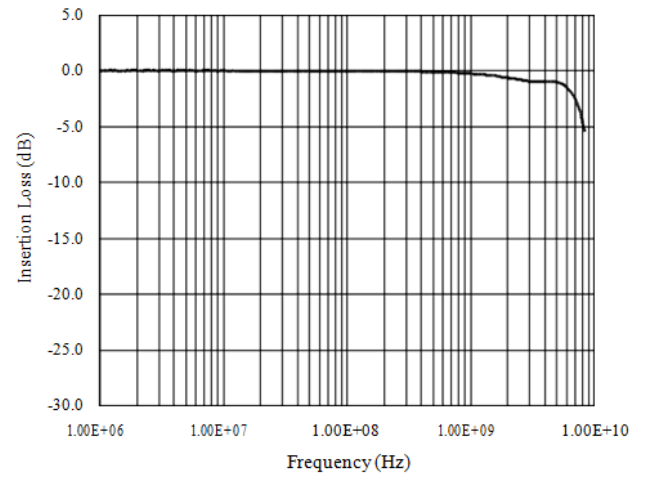
Absolute Maximum Rating

Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Air)	± 25	kV
	ESD per IEC 61000-4-2 (Contact)	± 20	
T_{OPT}	Operating Temperature	-55/+125	$^{\circ}C$
T_{STG}	Storage Temperature	-55/+125	$^{\circ}C$

Voltage Sweeping of I/O to I/O

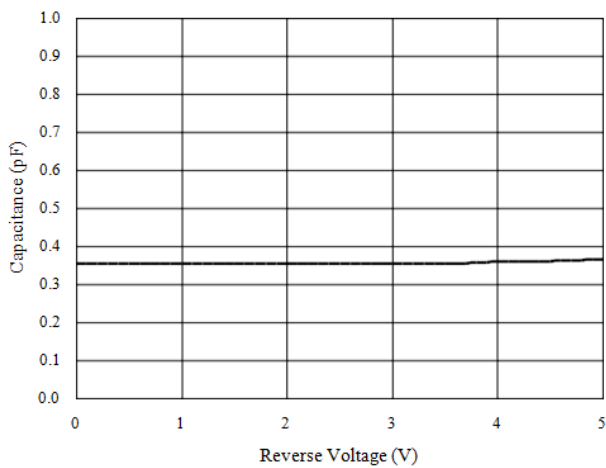


Insertion Loss S21 of I/O to I/O

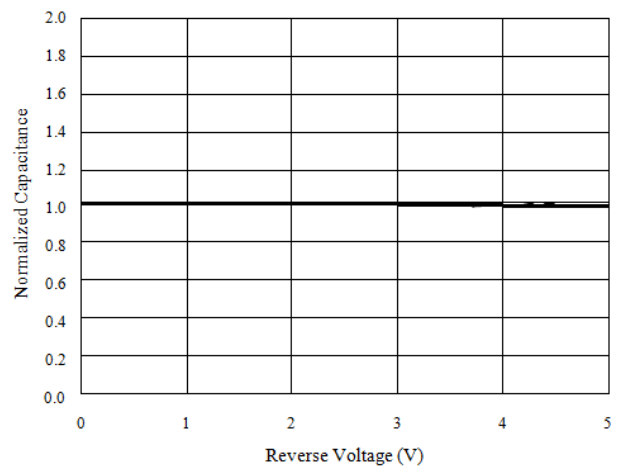


Capacitance vs. Voltage of I/O to I/O (f = 1MHz)

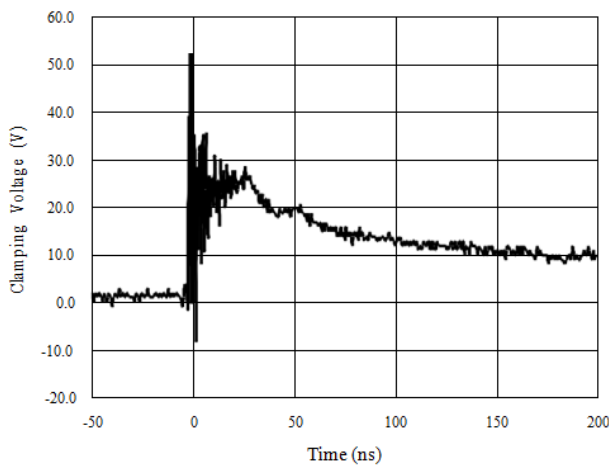
Capacitance vs. Reverse Voltage



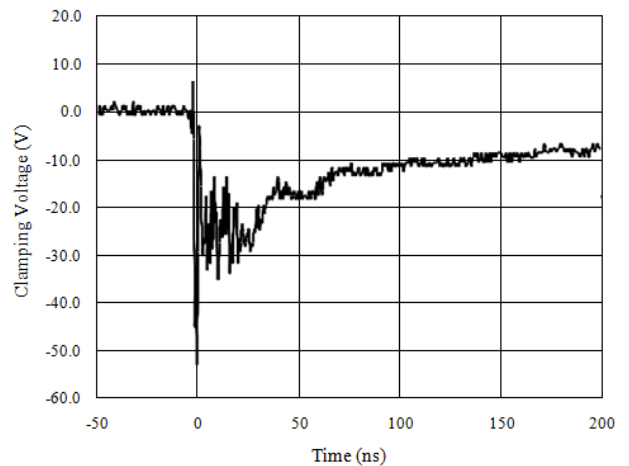
Normalized Capacitance vs. Reverse Voltage



ESD Clamping of I/O to I/O (+8kV Contact per IEC 61000-4-2)

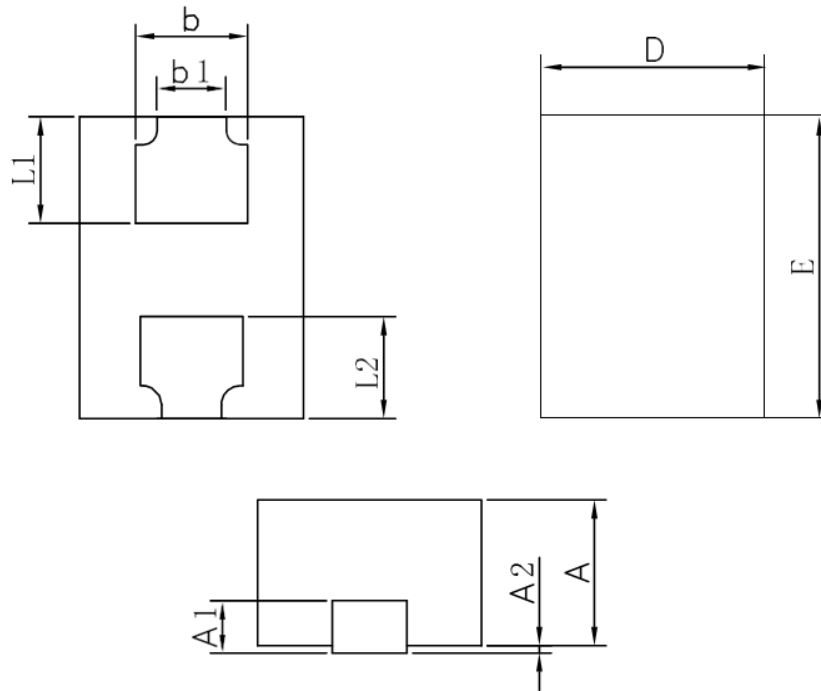


ESD Clamping of I/O to I/O (-8kV Contact per IEC 61000-4-2)



Package Outline

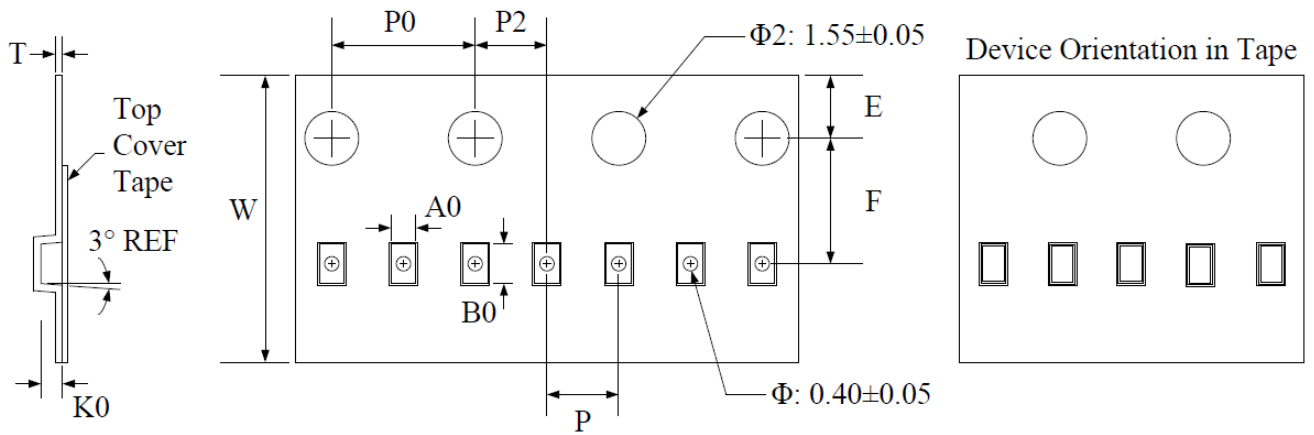
- uDFN-2L package
- 2 leads, very small package
- MSL-1



Package Dimensions (Controlling dimensions are in millimeters)

	MIN	NOM	MAX
D	0.55	0.60	0.65
E	0.95	1.00	1.05
L1	0.30	0.35	0.40
L2	0.25	0.30	0.35
A	0.45	0.50	0.55
A1	0.15REF		
A2	0.00		0.05
b	0.25	0.30	0.35
b1	0.15	0.20	0.25

Tape and Reel Specification



Symbol	W	A0	B0	K0	E	F	P	P0	P2	T
Dimensions (mm)	8.00±0.1	0.7±0.05	1.15±0.05	0.55±0.05	1.75±0.1	3.5±0.05	2.0±0.1	4.0±0.1	2.0±0.05	0.2±0.05