

DFN0603 Plastic-Encapsulate ESD Protection Diodes

DESCRIPTION

ESD05D6BU is a low-capacitance transient voltage Suppressor (TVS) designed to provide electrostatic events discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.25pF, ESD05D6BU 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.

ESD05D6BU uses ultra-small DFN0603 package. Each ESD05D6BU device can protect one high-speed 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 ESD05D6BU ideal for high-speed data port and high-frequency line applications, such as cellular phones and HD visual devices.

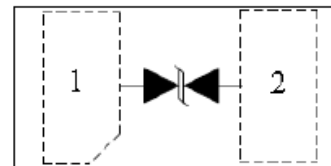
Features

- ◆ Peak Power Dissipation :100 W (8/20 μs)
- ◆ IEC61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact)
- ◆ IEC61000-4-4 (EFT) 40A (5/50ns)
Cable Discharge Event (CDE)
- ◆ Package optimized for high-speed lines
- ◆ Protects one data, control line
- ◆ Working voltages : 5V
- ◆ Low Capacitance: 0.25pF (Typical)
- ◆ Low leakage current
- ◆ Low clamping voltage

Applications

- ◆ Serial ATA
- ◆ Desktops, Servers and Notebooks
- ◆ Cellular Phones
- ◆ MDDI Ports
- ◆ USB Data Line Protection
- ◆ Display Ports
- ◆ Digital Visual Interfaces (DVI)

Pin Configuration



Circuit Diagram



Mechanical Characteristics

- ◆ Package: DFN0603
- ◆ Flammability Rating: UL 94V-0
- ◆ Terminals: Gold plated, solderable per MIL-STD-750, method 2026
- ◆ Packaging: Tape and Reel
- ◆ Marking: 5BU

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

Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2 (Air)	V _{ESD}	± 30	KV
ESD per IEC 61000-4-2 (Contact)		± 20	
Peak Pulse Power(8/20us)	P _{PP}	100	W
Operating Temperature	T _{OPT}	-55 to +125	$^\circ\text{C}$
Storage Temperature	T _{STG}	-55 to +150	$^\circ\text{C}$

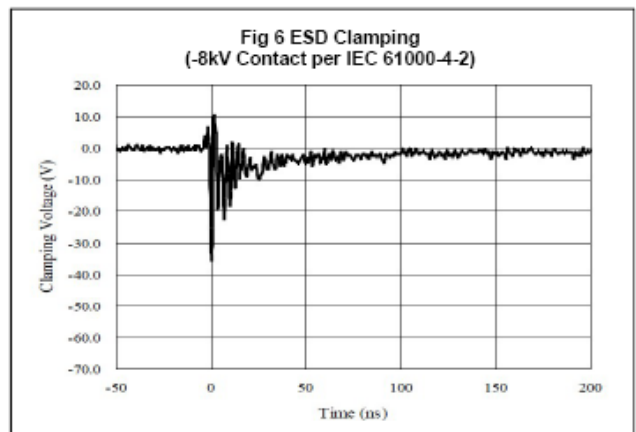
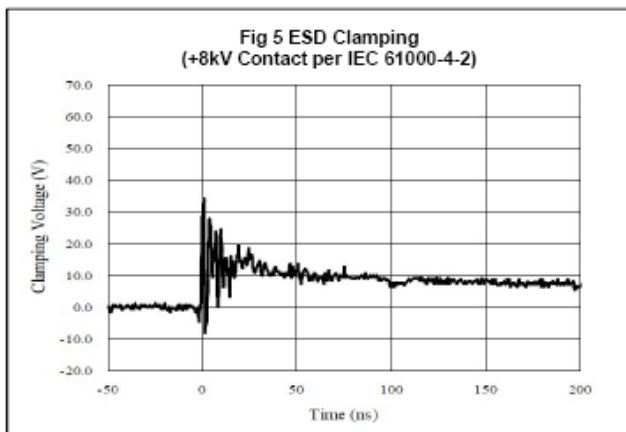
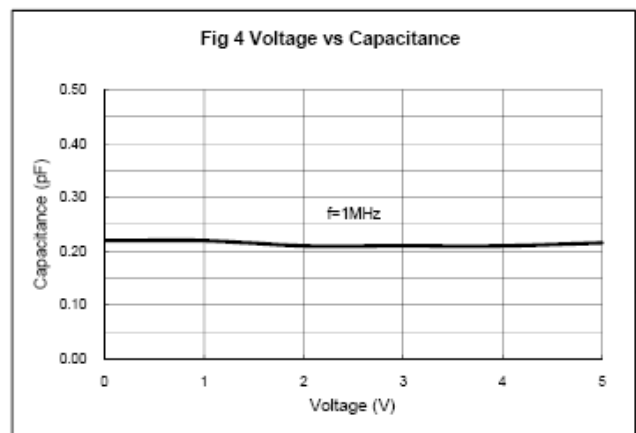
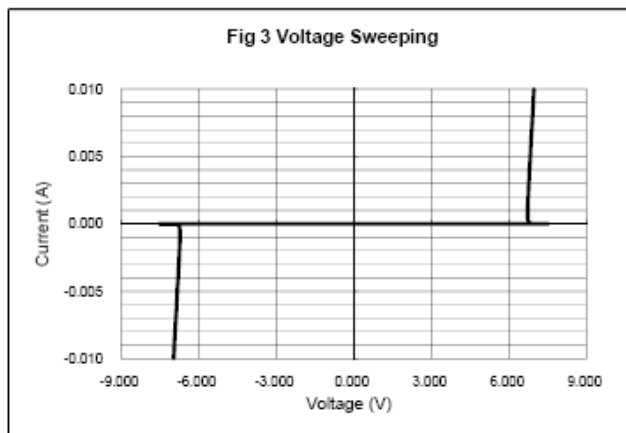
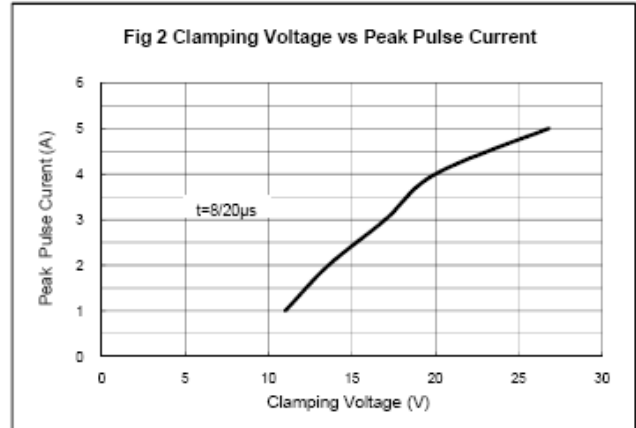
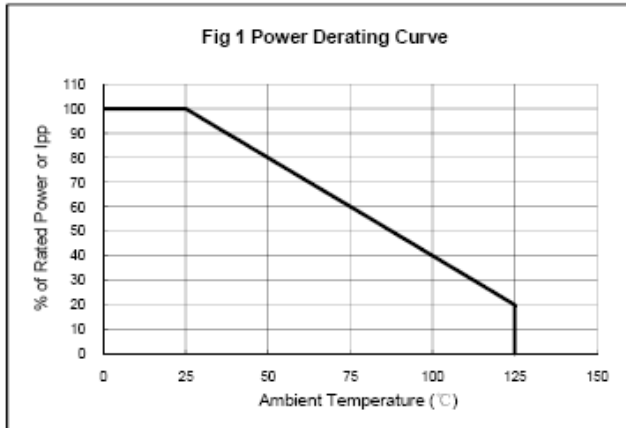
The above data are for reference only.

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

Symbol	Param	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage				5.0	V
V_{BR}	Reverse Breakdown Voltage	$I_T = 1\text{mA}$	6.0			V
I_R	Reverse Leakage Current	$V_{RWM} = 5\text{V}$			100	nA
V_C	Clamping Voltage	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$			13	V
		$I_{PP} = 4\text{A}, t_p = 8/20\mu\text{s}$			25	V
C_J	Junction Capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$		0.25		pF

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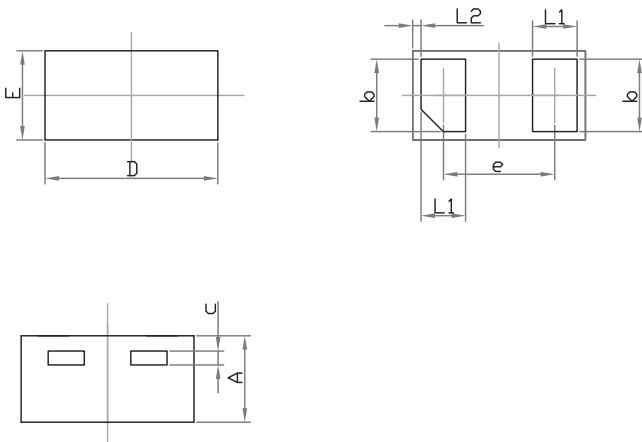
ELECTRICAL CHARACTERISTICS CURVE



The curve above is for reference only.

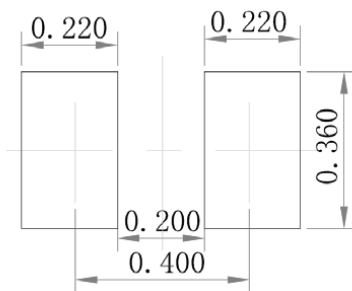
Outlitne Drawing

DFN0603 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.275	340	0.011	0.013
D	0.570	670	0.022	0.026
E	0.270	370	0.011	0.015
b	0.225	295	0.009	0.012
c	0.050 REF.		0.002 REF.	
e	0.365	435	0.014	0.017
L1	0.125	195	0.005	0.008
L2	0.030 REF.		0.001 REF.	

Suggested Pad Layout



Note:

1. Controlling dimension: in/millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

PACKAGE SPECIFICATIONS

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	Q'TY/Carton (pcs)
DFN0603	7'	178	10,000	210×210×205	100,000	445×445×230	400,000