DFN1006 Plastic-Encapsulate TVS/ESD Protection Diodes

DESCRIPTION

The ESD0501CM is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium. Because of its small size, it is suited for use in cellular phones, portable devices, digital cameras, power supplies and many other portable applications where board space comes at a premium. Also because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed, VGA, DVI, SDI and other high speed line applications.

This device has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD (electrostatic discharge), and EFT (electrical fast transients).

Features

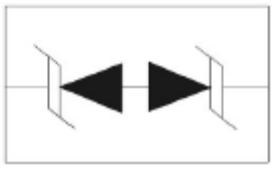
- Peak Power Dissipation : 400W (8/20μs)
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Protects one directional I/O line
- Low clamping voltage
- Working voltages : 5V
- Low leakage current
- Low capacitancet
- Meets MSL 3 Requirementst

Pin Configuration

RoHS COMPLIANT



Circuit Diagram



Applications

- High Speed Line :USB1.0/2.0, VGA, DVI, SDI,
- Serial and Parallel Ports
- Notebooks, Desktops, Servers
- Projection TV
- Cellular handsets and accessories
- Portable instrumentation
- Peripherals

Mechanical Characteristics

- Package: DFN1006
- Flammability Rating: UL 94V-0
- Packaging: Tape and Reel
- Terminals: Gold plated, solderable per MIL-STD-750, method 2026
- Marking: H

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

Parameter	Symbol	Value	Unit
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	± 30 ± 30	KV
Peak Pulse Power(tp=8/20us waveform)	P_{PP}	400	W
Operating Temperature	T_{OPT}	−55 to +150	°C
Storage Temperature Range	T_{STG}	−55 to +150	°C
Lead Solder Temperature – Maximum (10 Second Duration)	T_L	260(10 sec.)	°C

The above data are for reference only.

Electrical Characteristics (T_A=25°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 = 1mA	5.8		9.0	V
I_R	Reverse Leakage Current	V_{RWM} = 5V			1.0	uA
V_C	Clamping Voltage	I_{PP} = 1A, t_p = 8/20μs			9.8	V
		I_{PP} = 20A, t_p = 8/20μs		15	20	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz		33	40	pF

The above data are for reference only.

ELECTRICAL CHARACTERISTICS CURVE

Fig 1 8/20μs Waveform per IEC61000-4-5

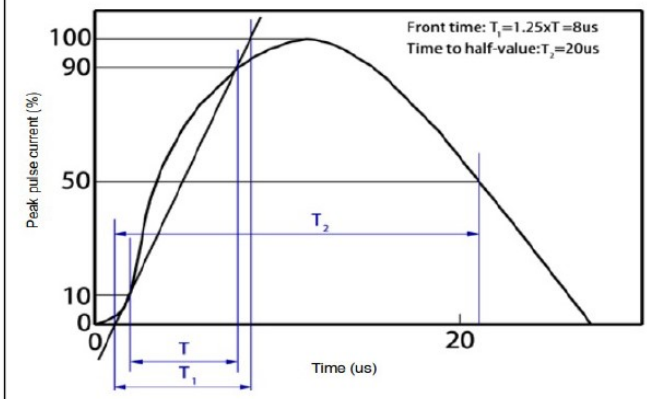


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

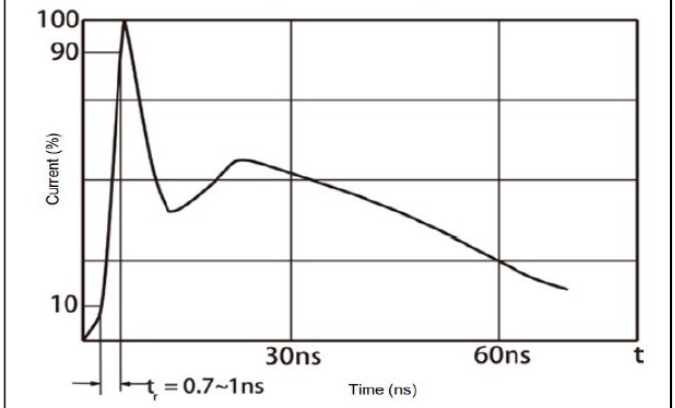


Fig 3 Voltage vs Capacitance

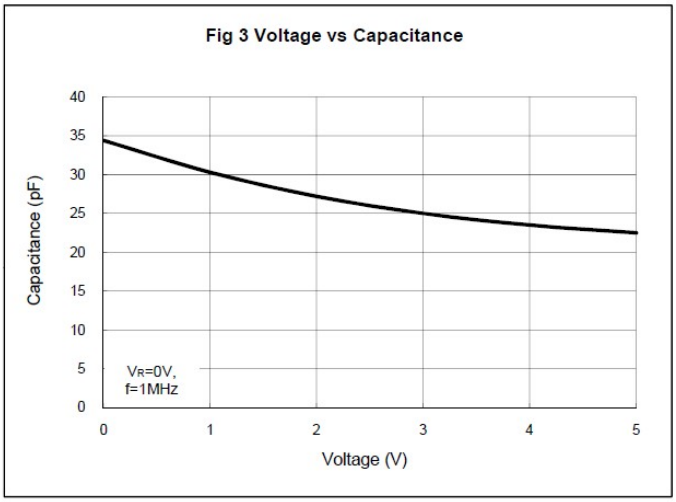
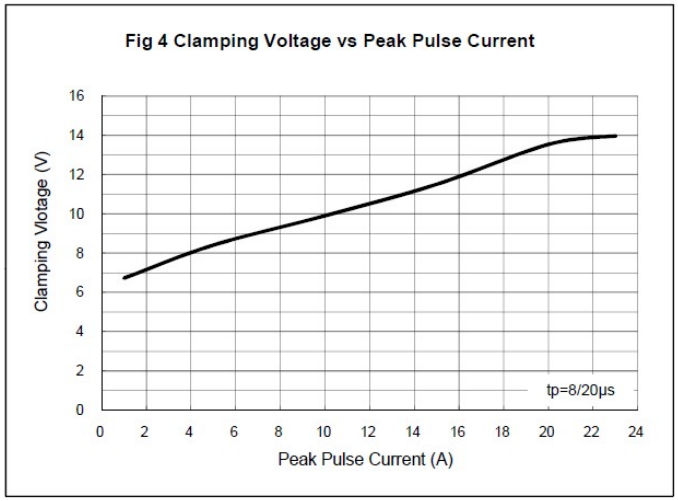


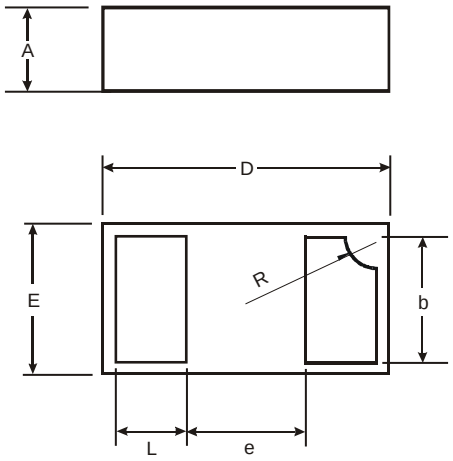
Fig 4 Clamping Voltage vs Peak Pulse Current



The curve above is for reference only.

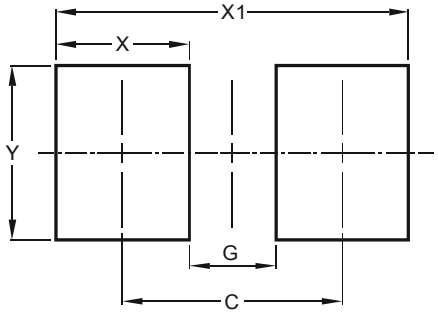
Outlitne Drawing

DFN1006 Package Outline Dimensions



DFN1006			
Dim	**Min**	**Max**	**Typ**
A	0.45	0.55	0.50
b	0.45	0.55	0.50
D	0.95	1.05	1.00
E	0.55	0.65	0.60
e	-	-	0.40
L	0.20	0.30	0.25
R	0.07	0.17	0.12
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	0.90
G	0.40
X	0.50
X1	1.10
Y	0.50

Note:
1.Controlling dimension:in/millimeters.
2.General tolerance: ±0.05mm.
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)
DFN1006	7'	178	10,000	210×210×205	150,000	445×445×230	600,000