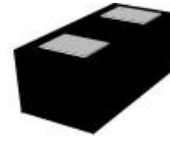


ESD0501BB

Low capacitance ESD/Surge protection Diode
HF and RoHS Device



Description

The ESD0501BB is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast re-sponse time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The ESD0501BB complies with the IEC 61000-4-2 (ESD) standard with $\pm 14\text{KV}$ air and $\pm 12\text{KV}$ contact discharge. It is assembled into an ultra-small 1.0x0.6mm lead-free DFN package. The small size and high ESD surge protection make ESD0501BB an ideal choice to protect cell phone, digital cameras, audio play-ers and many other portable applications.

Features

- Low capacitance:0.2pF
- Reverse stand-off voltage: 5V
- IEC 61000-4-2 (Air): $\pm 14\text{KV}$
- IEC 61000-4-2 (Contact): $\pm 12\text{KV}$
- IEC 61000-4-4 (EFT) : 40A(5/50ns)
- MSL: Level 1

Applications

- USB3.0 and USB 3.1
- Digital Cameras
- Touch panel
- Control Signal Lines Protection
- Mobile Phone

Ordering & Marking Information

Ordering Code	Marking	Net Weight	Delivery Form	Delivery Quantity
ESD0501BB	F Σ	0.6mg /1pcs	Mini T&R (7")	10,000 pcs/reel

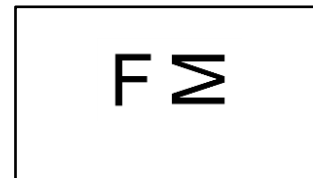
Mechanical Characteristics

- DFN-2L package
- Molding compound flammability rating: UL 94V-0
- Marking : Marking Code
- RoHS Compliant



DFN-2L

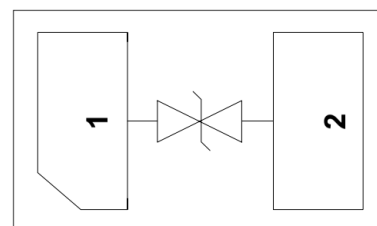
Marking Information



F=Specific Device Code

M=Month Code

Schematic Diagram



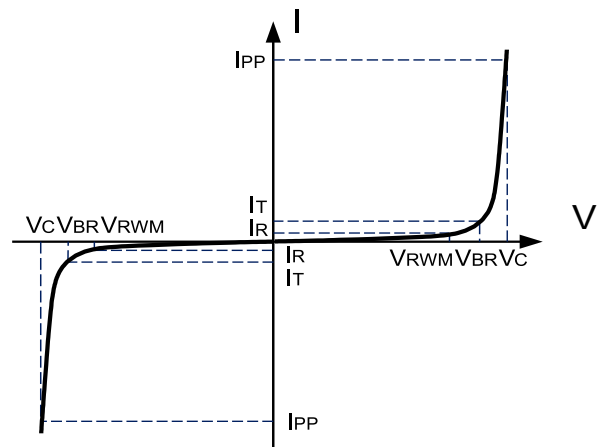
Limiting values (TA = 25 °C, unless otherwise specified)

Symbol	Parameter	Conditions	Min	Max	Unit
P _{PP}	Peak Pulse Power	T _p = 8/20 μs [1]		75	W
I _{PP}	Rated peak pulse current	T _p = 8/20 μs [1]		3	A
V _{ESD}	Electrostatic discharge voltage	IEC 61000-4-2; contact discharge		14	kV
		IEC 61000-4-2; air discharge		12	kV
T _A	Ambient temperature range		-55	125	°C
T _{stg}	Storage temperature range		-55	150	°C

Note: [1].According to IEC 61000-4-5

Electrical Parameters (T=25°C)

Symbol	Parameter
I _{PP}	Reverse Peak Pulse Current
V _C	Clamping Voltage @ I _{PP}
V _{RWM}	Reverse Stand-Off Voltage
I _R	Reverse Leakage Current @ V _{RWM}
V _{BR}	Breakdown Voltage @ I _T
I _T	Test Current



Electrical Characteristics (TA = 25 °C, unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V _{RWM}	Reverse working voltage	T _A = 25 °C			5	V
V _{BR}	Breakdown voltage	I _R = 1 mA; T _A = 25 °C	6			V
I _R	Reverse leakage current	V _{RWM} = 5V; T _A = 25 °C			200	nA
V _C	Clamping voltage	I _{PP} =1A, T _p =8/20μs		10	13	V
I _{PP}	Peak Pulse Current	t _p =8/20μs			3	A
R _{DYN}	Dynamic Resistance ^{1,2}	TLP=0.2/100ns		1.5		Ω
C _J	Junction capacitance	V _R = 0V, f = 1 MHz,			0.2	pF

Note : 1. TLP Setting : t_p=100ns, t_r=0.2ns, ITLP and VTLP sample window:t₁=70ns to t₂=90ns.

2. Dynamic resistance calculated from I_{PP}=4A to I_{PP}=16A using "Best Fit"

Typical Characteristics

Figure 1: Peak Pulse Power Vs Pulse Time

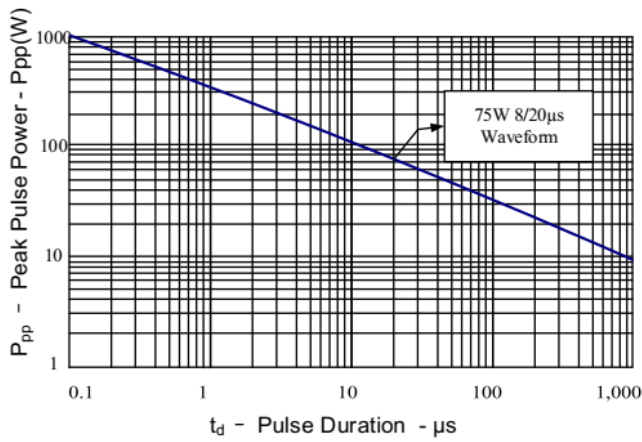


Figure 2: Power Derating Curve

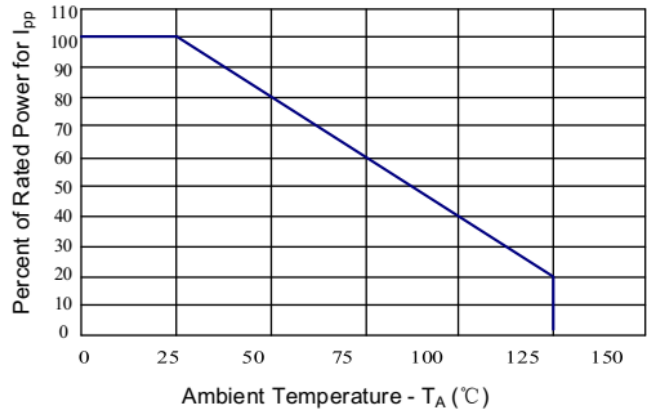


Figure 3: 8/20μs Pulse Waveform

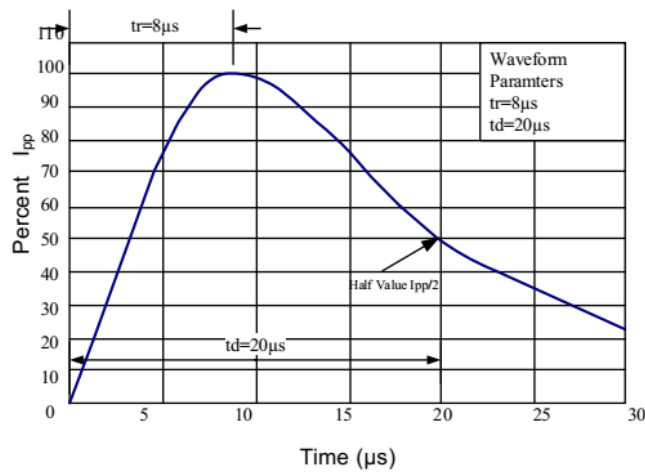


Figure 4: Clamping Voltage vs. Peak Pulse Current

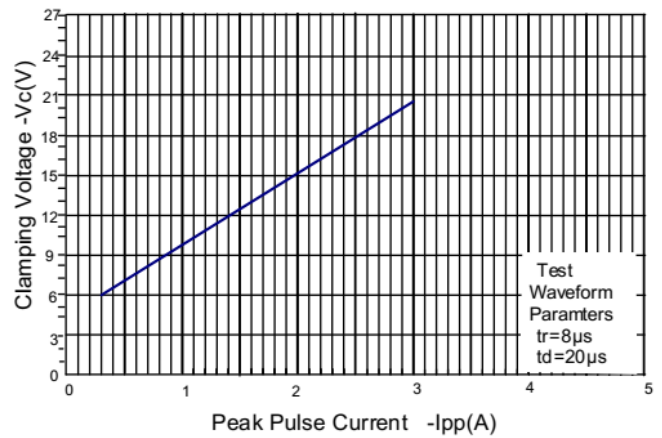


Figure 5: Capacitance vs. Reverse Voltage

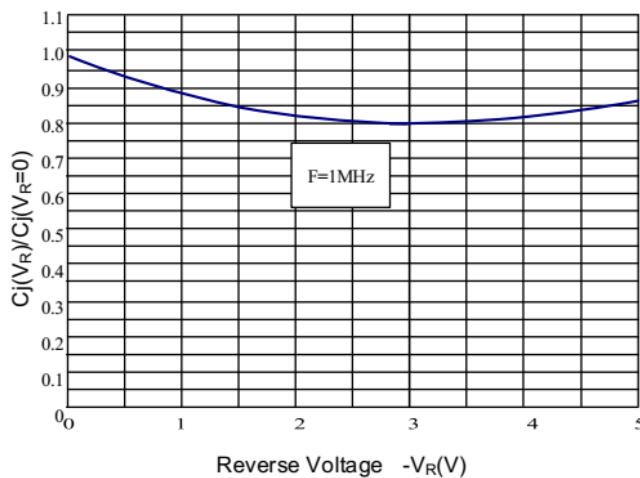


Figure 6: TLP I-V Curve

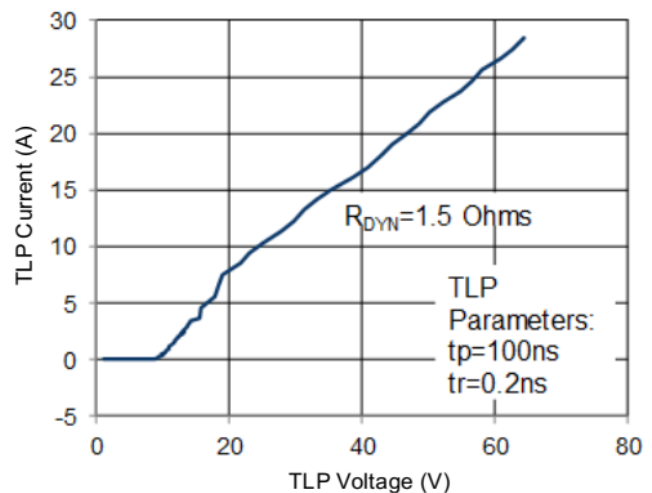
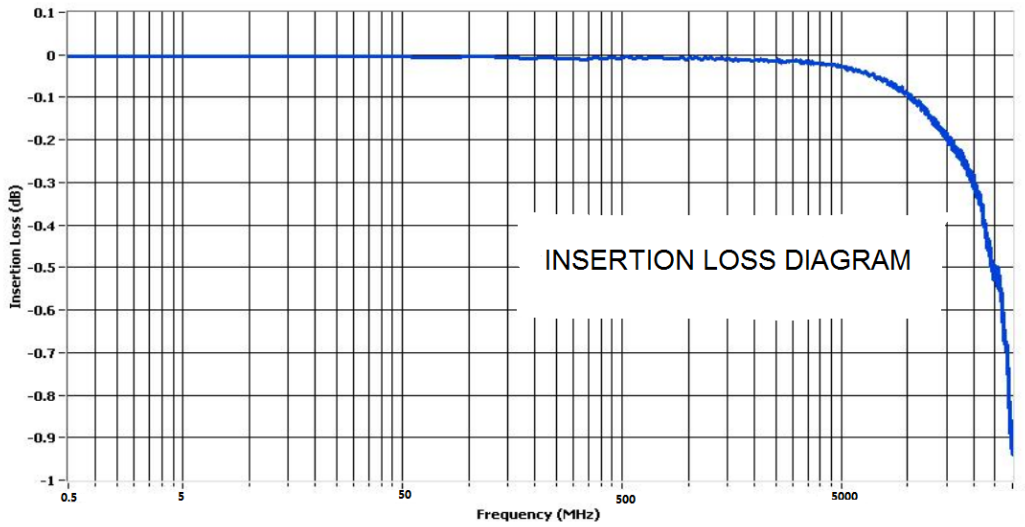


Figure 7: Insertion Loss Diagram (TYPICAL SAMPLE)



Package Outline Dimensions

PACKAGE OUTLINE

BOTTOM VIEW

DFN-2L

SYMBOL	MILIMETER		
	MIN	NOM	MA
A	0.45	0.50	0.55
A1	0	0.02	0.05
b	0.45	0.50	0.55
C	0.12	0.15	0.18
D	0.95	1.00	1.05
e	0.65BSC		
E	0.55	0.60	0.65
L	0.20	0.25	0.30
L1	0.05REF		
h	0.07	0.12	0.17

Land Pattern