ESD0502BN

Low Capacitance Transient Voltage Suppressors for ESD protection

DESCRIPTION

ESD0502BN 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 18pF, ESD0502BN 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 (±15kV air, ±8kV 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.

ESD0502BN uses ultra-small DFN1006-3L package. Each ESD0502BN device can protect two data lines. It offers system designers flexibility to protect single data line where space is a premium concern.

FEATURES

- ✧Transient protection for high-speed data lines
  IEC 61000-4-2 (ESD) ±30kV (Contact)
  ±30kV (Air)
  IEC 61000-4-4 (EFT) 40A (5/50 ns)
- ✧Peak power dissipation: 72W (8/20μs)
- ✧Working voltages :5V
- ✧Ultra-small package (1.0mm×0.6mm×0.5mm)
- ✧Protects two I/O lines
- ✧Low clamping voltage
- ✧Low leakage current

MACHANICAL DATA

- ✧DFN1006-3L package
- ✧Flammability Rating: UL 94V-0
- ✧High temperature soldering guaranteed: 260℃/10s
- ✧Packaging: Tape and Reel
- ✧Reel size: 7 inch

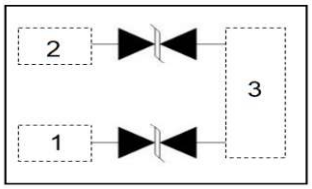
ORDERING INFORMATION

- ✧Device: ESD0502BN
- ✧Package: DFN1006-3L
- ✧Marking: 52BN
- ✧Material: Halogen free
- ✧Packing: Tape & Reel
- ✧Quantity per reel: 10,000pcs

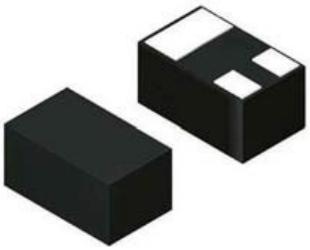
APPLICATIONS

- ✧Personal digital assistants (PDA's)
- ✧Notebooks, Desktops, and Servers
- ✧Cell phone Handsets and Accessories
- ✧Portable Electronics
- ✧IoT Terminal Equipment/Device
- ✧Smart Wearable Device

PIN CONFIGURATION



CIRCUIT DIAGRAM



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ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Contact) ESD per IEC 61000-4-2 (Air)	±30 ±30	kV
P_{PP}	Peak Pulse Power (8/20μs)	72	W
T_{OPT}	Operating Temperature	-55~125	°C
T_{STG}	Storage Temperature	-55~150	°C

ELECTRICAL CHARACTERISTICS (Tamb=25°C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	Pin 1 or 2 to Pin3			5.0	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA Pin 1 or 2 to Pin3	5.6			V
I_R	Reverse Leakage Current	V_{RWM} = 5V Pin 1 or 2 to Pin3			1.0	μA
V_C	Clamping Voltage	I_{PP} = 1A, t_p = 8/20μs Pin 1 or 2 to Pin3		6.5	8.0	V
		I_{PP} = 6A, t_p = 8/20μs Pin 1 or 2 to Pin3		9.0	12.0	V
V_{CTLP}	TLP Clamping Voltage	I_{PP} = 16A IEC61000-4-2 Level 4 equivalent (±8kV Contact, ±15kV Air) Pin 1 or 2 to Pin3		9.5		V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz Pin 1 or 2 to Pin3		14.0	18.0	pF

ELECTRICAL CHARACTERISTICS CURVE

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

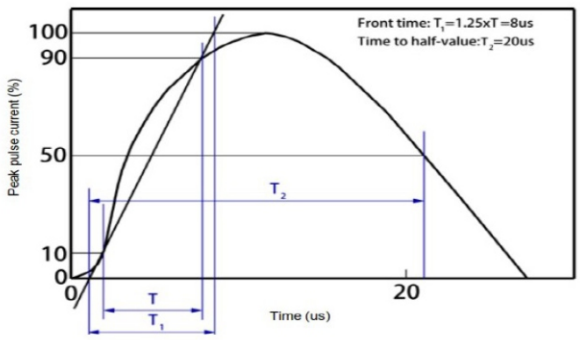


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

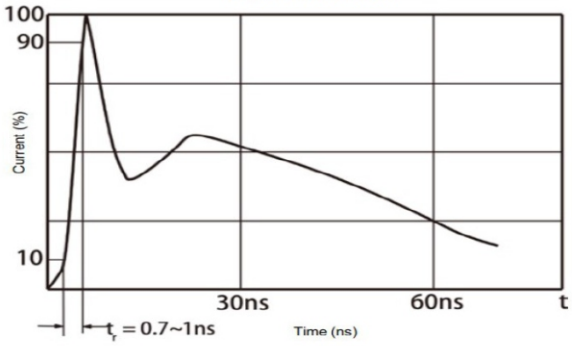


Fig 3 Power Derating Curve

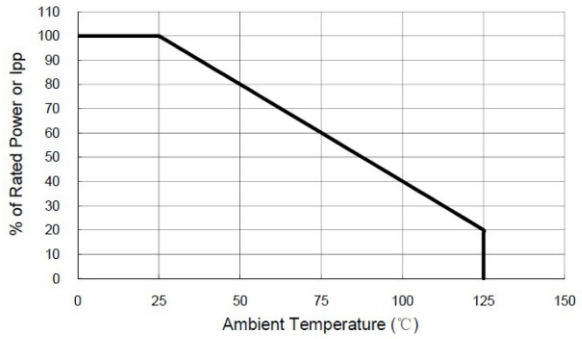


Fig 4 Voltage vs Capacitance

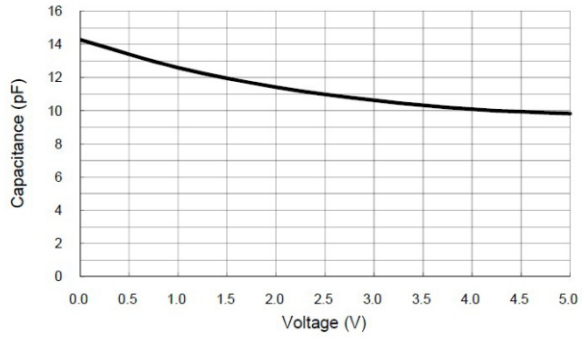


Fig 5 Transmission Line Pulsing (TLP) Measurement

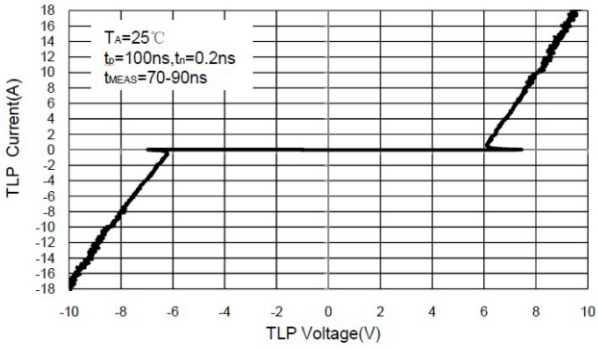
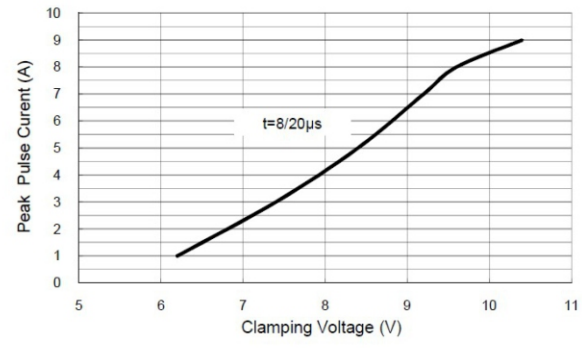
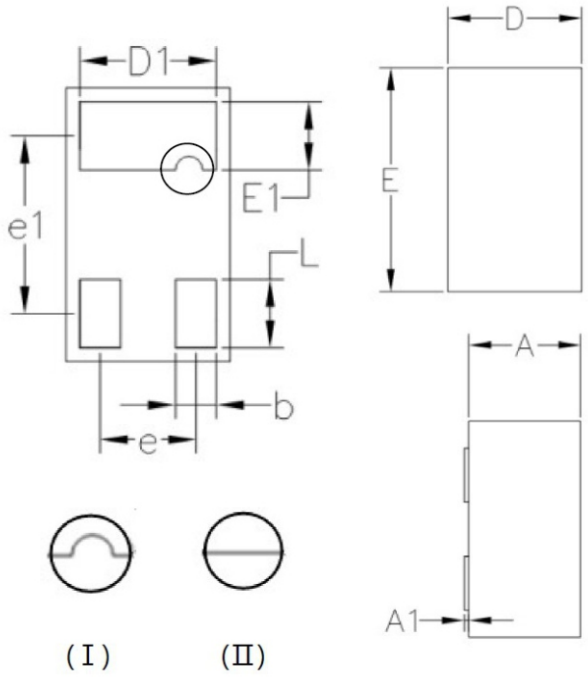


Fig 6 Clamping Voltage vs Peak Pulse Current



DFN1006-3L PACKAGE OUTLINE DIMENSIONS



SYMBOL	DIMENSIONS IN MM		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	--	0.05
D	0.55	0.60	0.65
E	0.95	1.00	1.05
D1	0.45	0.50	0.55
E1	0.20	0.25	0.30
L	0.20	0.25	0.30
b	0.10	0.15	0.20
e	0.35BSC		
e1	0.65BSC		