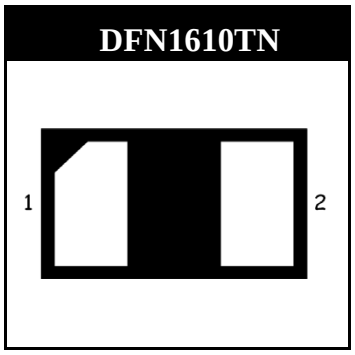
Transient Voltage Suppressors for ESD Protection

ESDXXV52D-HA Series

Description

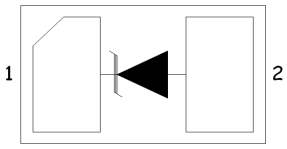
The ESDXXV52D-HA series is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium. Because of its small size, ultra-low capacitance values , it is very suitable for signal port and board space speed transmission is very small places, such as Ethernet, mobile phones , MP3 players, digital cameras and other portable.



Feature

- 1098 ~ 1980 Watts Peak Pulse Power per Line (tp=8/20μs)
- Protects one I/O line (Undirectional)
- Low clamping voltage
- Working voltages: 3.3V~48V
- Low leakage current
- IEC61000-4-5 (Lighting) 13.8~ 100A (8/20μs)
- IEC61000-4-4 (EFT) 40A (5/50ηs)
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)

Functional Diagram



Applicantions

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Peripherals
- Charger Protection

Mechanical Data

- DFN1610TN Package
- Molding Compound Flammability Rating : UL 94V-O
- Weight 3.5 Millgrams (Approximate)
- Quantity Per Reel : 3,000pcs
- Reel Size : 7 inch
- Lead Finish : Lead Free

Mechanical Characteristics

Symbol	Parameter	Value	Units
P_{pp}	Peak Pulse Power (tp=8/20μs waveform)--ESD03V52D-HA~ESD48V52D-HA	1098~1980	Watts
T_J	Operating Junction Temperature Range	-55 to +150	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C
T_L	Soldering Temperature	260	°C

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Electrical Characteristics(@25℃ Unless Otherwise Specifiled)

Part Number	Device Marking Code	Stand-Off Voltage V_{RMW} (V)	Breakdown Voltage V_{BR}	Test Current I_T (mA)	V_C		V_C		Maximum Reverse Leakage I_R @V_{RWM} (uA)
					(Max.)	(@A)	(Max.)	(@A)	
ESD03V52D-HA	UT3	3.3	4.0	1.0	17.8	70	19.8	100	40.0
ESD05V52D-HA	UT5	5.0	6.0	1.0	16.5	60	20	90	10.0
ESD08V52D-HA	UT8	8.0	8.0	1.0	19	50	23	74	10.0
ESD12V52D-HA	UTA	12.0	13.3	1.0	20	25	28.5	57	1.0
ESD15V52D-HA	UTC	15.0	16.5	1.0	25.5	20	34	45	1.0
ESD18V52D-HA	UTD	18.0	19.0	1.0	28	20	38	40	1.0
ESD24V52D-HA	UTE	24.0	26.2	1.0	38	15	45	28	1.0
ESD30V52D-HA	UTF	30.0	31.0	1.0	43.8	10	50.8	24.8	1.0
ESD33V52D-HA	UTH	33.0	35.0	1.0	49.7	10	61.4	20.4	1.0
ESD36V52D-HA	UTJ	36.0	40.0	1.0	60.8	10	70.5	17.7	1.0
ESD48V52D-HA	UTK	48.0	49.5	1.0	73.9	10	79.6	13.8	1.0

Characteristics Curves

Fig1. 8/20μs Pulse Waveform

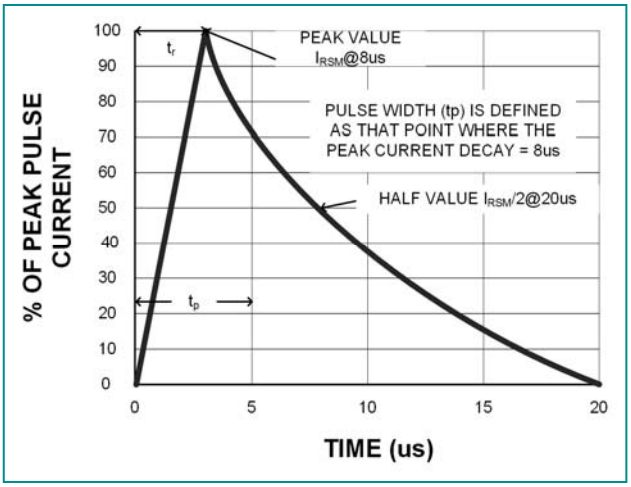


Fig2. Power Derating Curve

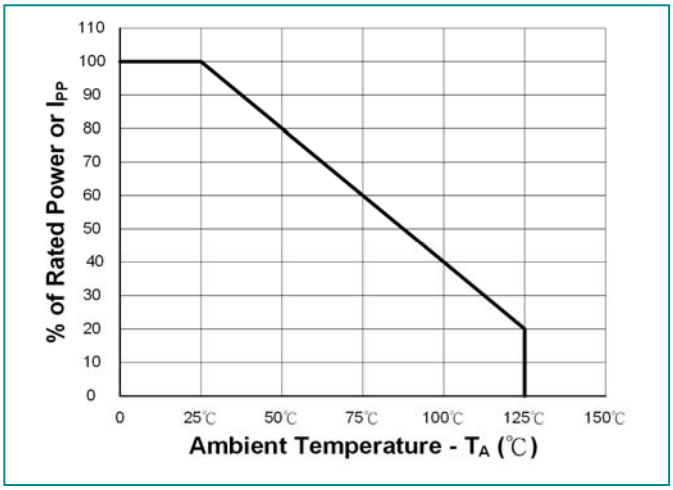


Figure 3. Clamping Voltage vs. Peak Pulse Current (tp=8/20us)

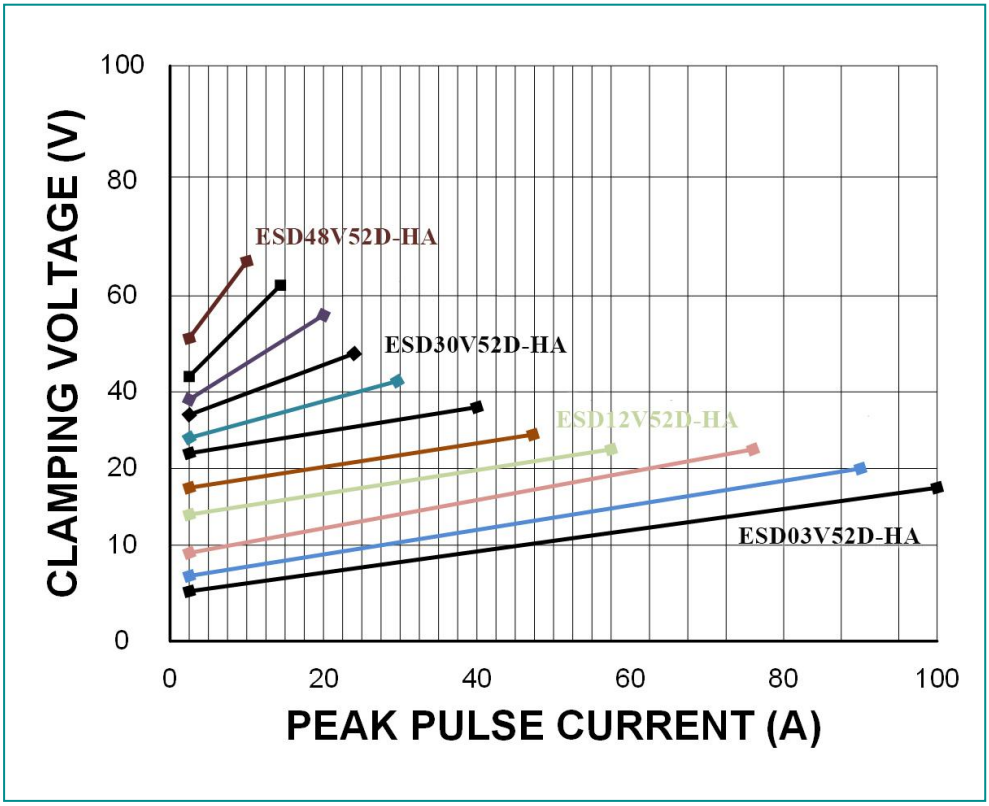
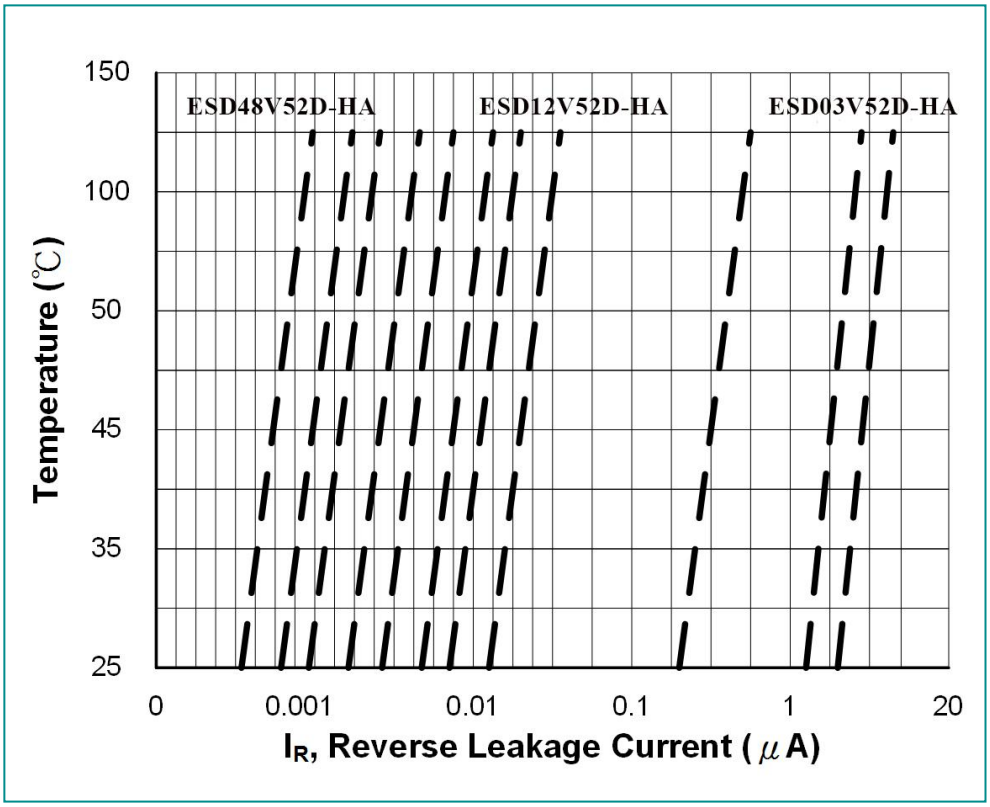
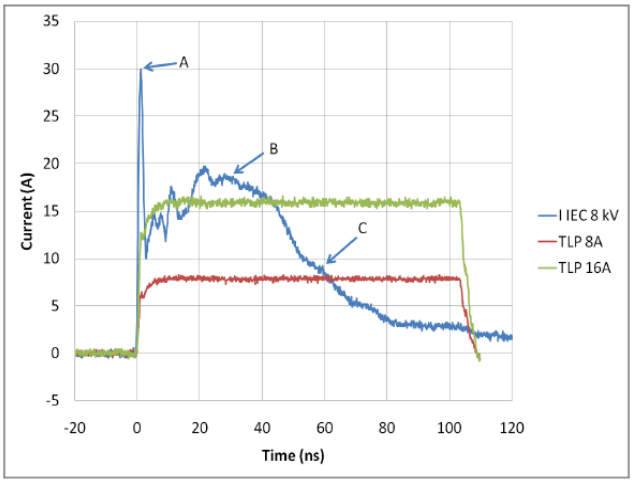


Figure 4. Typic Reverse Leakage vs. Temperature



Transimission Line Pulse (TLP)

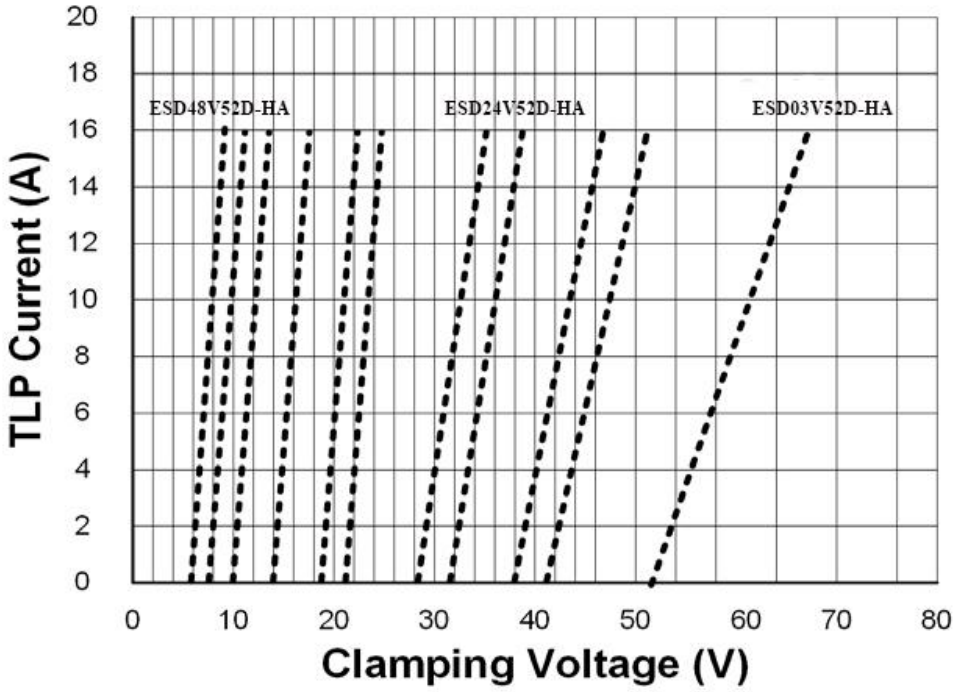
Transmission Line Pulse (TLP) is a measurement technique used in the Electrostatic Discharge (ESD) arena to characterize performance attributes of devices under ESD stresses. TLP is able to obtain current versus voltage (I−V) curves in which each data point is obtained with a 100 ns long pulse, with currents up to 40 A. TLP was first used in the ESD field to study human body model (HBM) in integrated circuits, but it is an equally valid tool in the field of system level ESD. The applicability of TLP to system level ESD is illustrated in Figure 1, which compares an 8 kV IEC 61000−4−2 current waveform with TLP current pulses of 8 a d 16 A. The current levels and time duration for the pulses are similar and the initial rise time for the TLP pulse is comparable to the rise time of the IEC 61000−4−2's initial current spike. This application note will give a basic introduction to TLP measurements and explain the datasheet parameters extracted from TLP for SDI Technology's protection products.



Comparison of a Current Waveform of IEC 61000−4−2 with TLP Pulses at 8 and 16 A.

The IEC 61000−4−2 ESD waveforms is true to the Standard and is shown here as captured on an oscilloscope. The points A, B, and C show the points on the waveforms specified in IEC 61000−4−2.

Figure 5. TLP Characteristic



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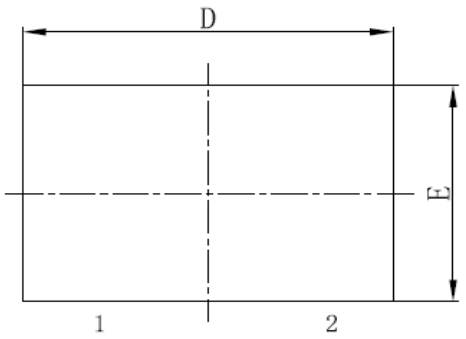
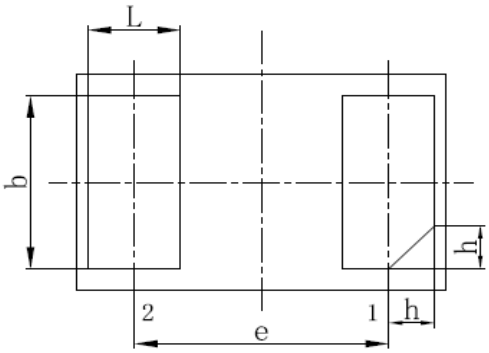
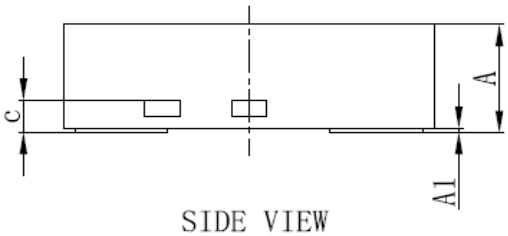
DFN1610TN **Package Outline &Dimensions**



TOP VIEW

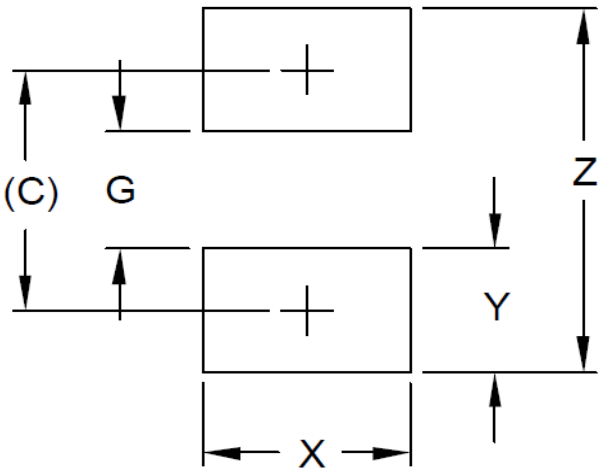


BOTTOM VIEW



SIDE VIEW

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	——	0.02	0.05
b	0.75	0.80	0.85
c	0.10	0.15	0.20
D	1.55	1.60	1.65
e	1.10BSC		
E	0.95	1.00	1.05
L	0.35	0.40	0.45
h	0.15	0.20	0.25
载体尺寸 (Mil)	34X35		



DIMENSIONS	
DIM	MILLIMETERS
C	(1.225)
G	0.60
X	1.00
Y	0.625
Z	1.85