



Description

The ESD56241D12-3/TR TVS diode is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebooks, and PDA's. It offers superior electrical characteristics such as low clamping voltage, low leakage current and high surge capability. It is designed to protect sensitive electronic components which are connected to power lines, from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lighting.

The ESD56241D12-3/TR is in a DFN2X2-3L package and will protect one unidirectional line. It may be used to provide ESD protection up to $\pm 30\text{kV}$ (Contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 180A (8/20 μs) according to IEC61000-4-5.

Features

- Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air)
 $\pm 30\text{kV}$ (Contact)
- Peak power dissipation: 6120W (8/20 μs)
- Working voltages : 12V
- Low leakage current
- Low clamping voltage
- Ultra-small package (2.0mmx2.0mmx0.5mm)
- Solid-state silicon-avalanche technology

Machanical Data

- DFN2X2-3L package
- Flammability Rating: UL 94V-0
- Packaging: Tape and Reel
- High temperature soldering guaranteed:
260 $^{\circ}\text{C}$ /10s
- Reel size: 7 inch

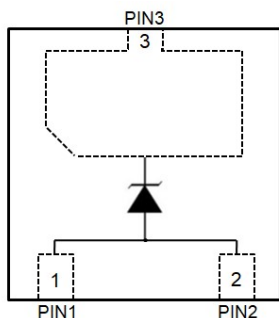
Ordering Information

- Device: ESD56241D12-3/TR
- Package: DFN2X2-3L
- Material: Halogen free and RoHS compliant
- Packing: Tape & Reel
- Quantity per reel: 3,000pcs

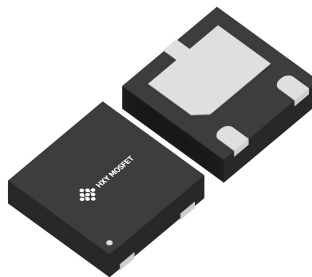
Applications

- Power lines
- Personal digital assistants (PDA's)
- Microprocessors based equipment
- Notebooks, Desktops, and Servers
- Cell phone Handsets and Accessories
- Portable Electronics
- Peripherals

Pin Configuration



Package Outline





Absolute Maximum Rating

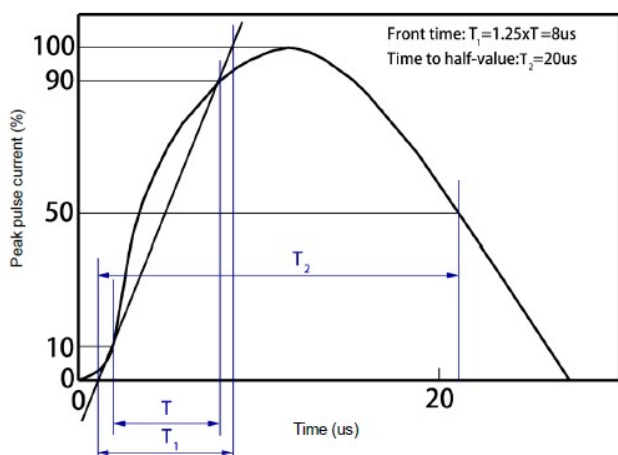
Symbol	Parameter	Value	Units
V _{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±30 ±30	kV
P _{PP}	Peak Pulse Power (8/20μs)	6120	W
T _{OPT}	Operating Temperature	-55~125	°C
T _{STG}	Storage Temperature	-55~150	°C
T _L	Lead Soldering Temperature	260(10sec)	°C

Electrical Characteristics (T_{amb}=25°C)

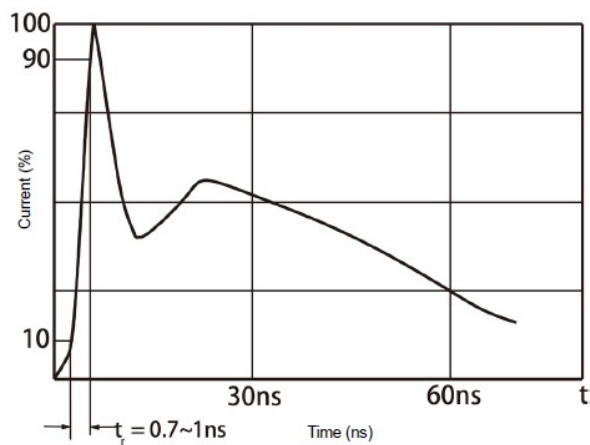
Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V _{RWM}	Reverse Working Voltage				12	V
V _{BR}	Reverse Breakdown Voltage	I _T = 1mA	13	14.5	16	V
I _R	Reverse Leakage Current	V _{RWM} = 12V			1	uA
I _{pp}	Peak Pulse Current	t _p = 8/20μs			180	A
V _C	Clamping Voltage	I _{PP} = 50A, t _p = 8/20μs			24	V
		I _{PP} = 100A, t _p = 8/20μs			27	V
		I _{PP} = 180A, t _p = 8/20μs			34	V
C _J	Junction Capacitance	V _R = 0V, f = 1MHz			1300	pF



Electrical Characteristics Curve



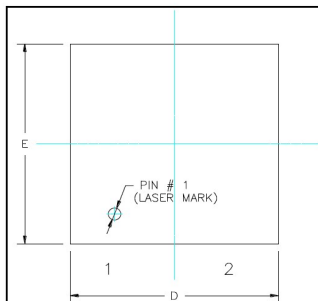
8/20 us waveform per IEC61000-4-5



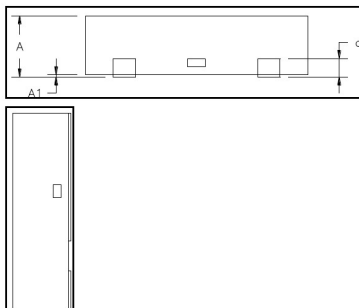
Contact discharge current waveform per IEC61000-4-2

Outline And Dimensions

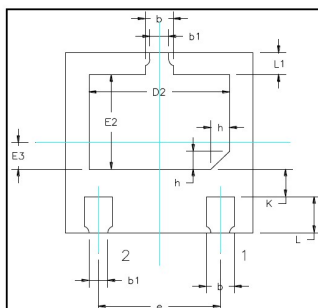
Top view



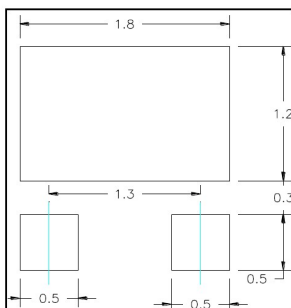
Side view



Back view



Soldering Pattern



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
b	0.25	0.30	0.35
b1	0.20 REF.		
c	0.152 REF.		
D	1.90	2.00	2.10
D2	1.40	1.50	1.60
e	1.30BSC		
E	1.90	2.00	2.10
E2	0.95	1.05	1.15
E3	0.20	0.30	0.40
L	0.35	0.40	0.45
L1	0.20	0.25	0.30
h	0.20 REF.		
K	0.20	0.30	0.40

Notice:

1. Lead plating: Pb free solder
2. Lead thickness includes solder plating
3. Lead frame: Copper A194
4. Other Tolerance: ± 0.05
5. Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions
6. Unit: mm



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