

General description

The ESD0502U is an uni-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The ESD0502U has an ultra-low capacitance with a typical value at 0.35pF, and complies with the IEC 61000- 4-2 (ESD) standard with $\pm 15\text{kV}$ air and $\pm 8\text{kV}$ contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make ESD0502U an ideal choice to protect cell phone, digital video interfaces and other high speed ports.

Features and benefits

- 2 Unidirectional transil functions
- Ultra small package: 1.0x0.6x0.5mm
- Ultra Low Capacitance 0.35pF (I/O--GND)
- Reverse stand-off voltage: 5V Max
- Low leakage current: nA Level
- Low clamping voltage
- 3-pin leadless package
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: $\pm 15\text{kV}$
Contact discharge: $\pm 8\text{kV}$
 - IEC61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5 (Lightning) 3A (8/20 μs)
- RoHS Compliant
- Lead Finish: NiPdAu



DFN1006-3L

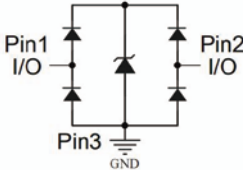
Application information

- Cellular Handsets and Accessories
- Display Ports
- MDDI Ports
- USB 2.0 and 3.0 Ports
- HDMI 1.3 and 1.4
- Digital Video Interface (DVI)
- PCI Express and Serial SATA Ports
- Notebook Computer
- IEEE 1394

Ordering information

Device	Package	Reel Size	Qty(PCS)
ESD0502U	DFN1006-3L	7 Inch	10000

Ordering information

Marking	Naming rule	Graphic symbol
L3	ESD0502U 产品名称 product name	

Maximum Ratings (TA = 25 °C, unless otherwise specified)

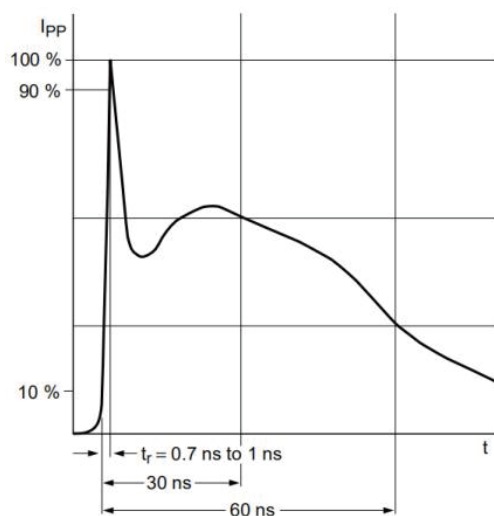
Parameter	Symbol	Value	Unit
Peak Pulse Power (tp = 8/20μs)	P _{PPM}	60	W
Peak Pulse Current(tp = 8/20μs)	I _{PPM}	3	A
Maximum lead temperature for soldering during 10s	T _L	260	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C
Operating Temperature Range	T _{OP}	-40 to +125	°C
ESD voltage IEC 61000-4-2 (air discharge)	V _{ESD}	15	kV
ESD voltage IEC 61000-4-2 (contact discharge)	V _{ESD}	8	kV

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

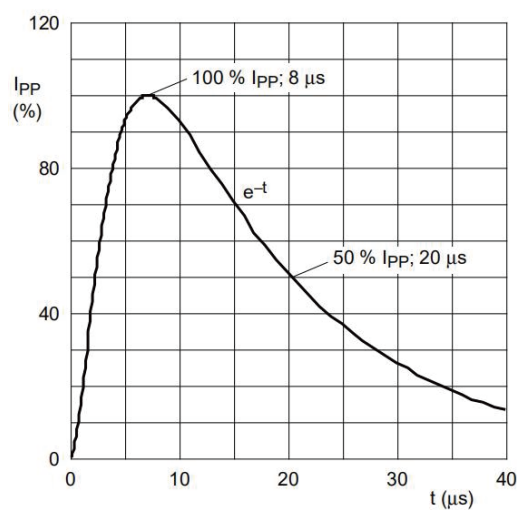
Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	V _{RWM}	--	--	5.0	V	
Breakdown Voltage	V _{BR}	6.5	--	9.0	V	I _T =1mA
Leakage Current I _{Leak}	I _R	--	--	500	nA	V _{RWM} =5V
Clamping Voltage	V _C	--	--	21.0	V	I _{PP} =3A, T _p =8/20μs
Junction Capacitance	C _j	--	0.35	0.45	pF	V _R =0V, f=1MHz, I/O to GND
Junction Capacitance	C _j	--	0.20	0.30	pF	V _R =0V, f=1MHz, I/O to I/O



Typical Characteristics



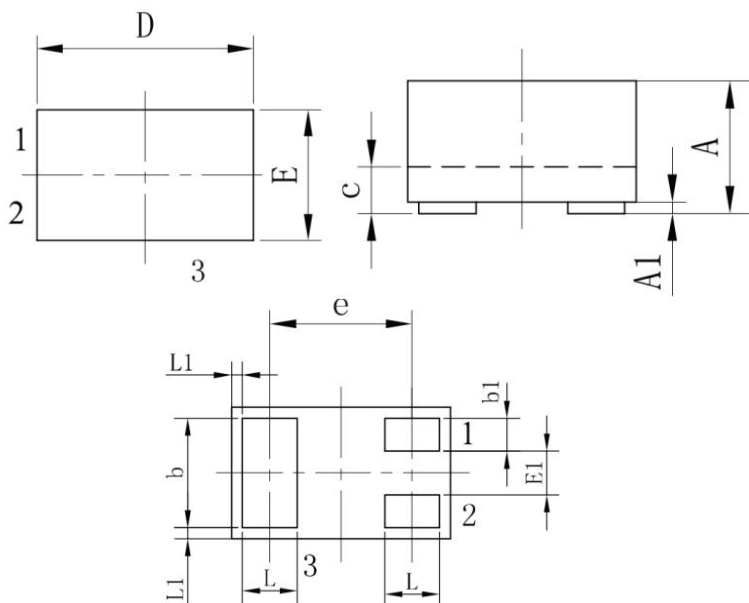
IEC61000-4-2 Waveform



IEC 61000-4-5 Waveform(8/20μs pulse)

Package Outline Dimensions

DFN1006-3L



SYMBOL	Dimensions (mm)	
	Min	Max
A	0.45	0.55
A1	0.00	0.05
b	0.45	0.55
b1	0.10	0.20
c	0.12	0.18
D	0.95	1.05
e	0.65BSC	
E	0.55	0.65
E1	0.15	0.25
L	0.20	0.30
L1	0.05REF	