ESDU...ADB
Transient Voltage Suppressor

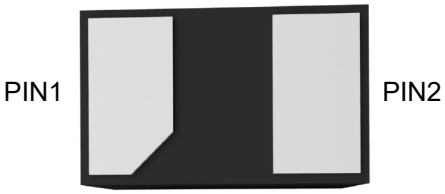
Descriptions

The ESDU...ADB series of TVS are designed to protect sensitive electronics from damage or latch-up due to ESD and other voltage-induced transient events. They are available with operating voltages of 3.3V, 5V, 12V . They are unidirectional device and may be used on lines where the signal polarities are above ground.

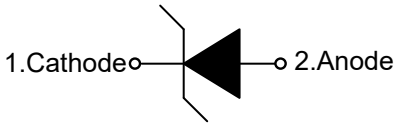
TVS diodes are solid-state devices designed specifically for transient suppression. They feature large cross-sectional area junctions for conducting high transient currents. They offer desirable characteristics for board level protection including fast response time, low operating and clamping voltage and no device degradation.

They are available in DFN1x0.6-2L package. Standard products are Pb-free and Halogen-free. They are particularly well-suited for cellular phones, portable device, digital cameras, power supplies and many other portable applications because of its small package and low weight.

DFN1x0.6-2L



Bottom View



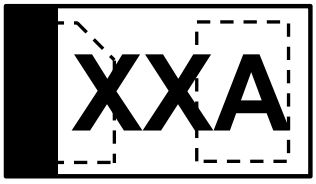
Features

- Uni-directional ESD Protection of one line
- Working voltage：3.3V, 5.0V, 12V
- Transient protection for each line according to IEC61000-4-2 (ESD): ±8kV (contact discharge)
- Low reverse clamping voltage
- Low leakage current

Applications

- Cell phone handsets and accessories
- Audio and video equipment
- Portable Electronics
- ther electronics equipments communication systems

Marking Code



Top View

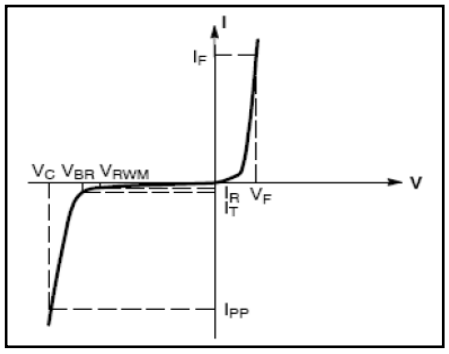
Device	ESDU3V3ADB	ESDU5V0ADB	ESDU12VADB
Marking Code	33A	50A	12A

Absolute Maximum Ratings (T_A=25℃)

Parameter		Symbols	Value	Unit
IEC61000-4-2 ESD Voltage	Air Model	V_{ESD}	±15	KV
	Contact Model		±8	
Junction Temperature		T_J	125	℃
Storage Temperature Range		T_{STG}	-45 to +125	℃

Electrical Parameter

Symbol	Parameter
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_R	Reverse Leakage Current @ V_{RWM}
V_{RWM}	Reverse Standoff Voltage
V_F	Forward Voltage@ I_F
I_F	Forward Current



V-I characteristics for a uni-directional TVS

Electrical Characteristics (T_A=25℃)

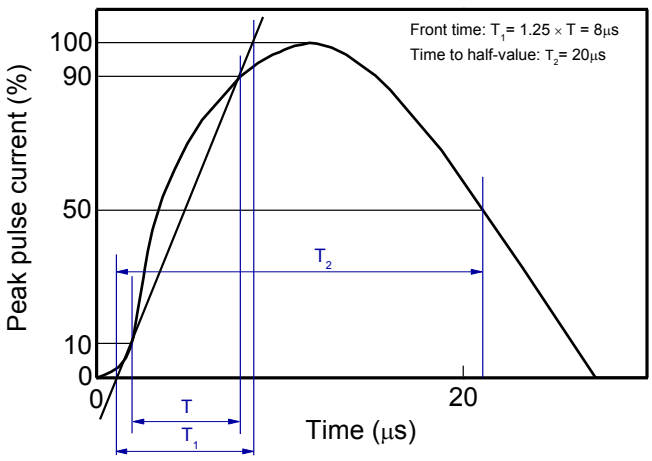
ESDU3V3ADB

Parameter	Symbols	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}	--	--	3.3	V
Reverse Leakage Current at V_{RWM} = 3.3 V	I_R	--	--	0.5	μA
Forward Voltage at I_F =10 mA	V_F	--	0.79	1.1	V
Breakdown Voltage at I_T = 1 mA	$V_{R(BR)}$	5	--	6.2	V
Peak Pulse Power Dissipation tp = 8/20μs	P_{PP}	--	--	240	W
Peak Pulse Current tp = 8/20μs	I_{PP}	--	--	12	A
Clampimg Voltage at I_{PP} =3 A, tp=8/20μs at I_{PP} =12 A, tp=8/20μs	V_C	-- --	7 15	10 20	V
Junction Capacitance at V_R = 0 V, f = 1 MHz	C_J	--	120	--	pF

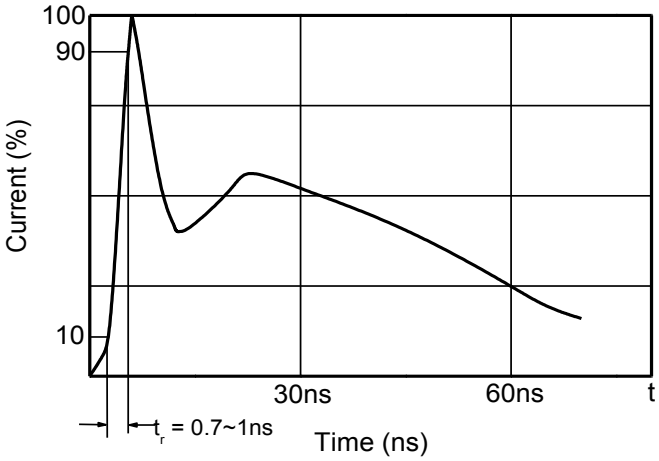
ESDU5V0ADB					
Parameter	**Symbols**	**Min.**	**Typ.**	**Max.**	**Unit**
Reverse stand-off voltage	V_{RWM}	--	--	5	V
Reverse Leakage Current at V_{RWM} = 5 V	I_R	--	--	0.5	μA
Forward Voltage at I_F =10 mA	V_F	--	0.79	1.1	V
Breakdown Voltage at I_T = 5 mA	$V_{R(BR)}$	6	--	7.5	V
Peak Pulse Power Dissipation tp = 8/20μs	P_{PP}	--	--	250	W
Peak Pulse Current tp = 8/20μs	I_{PP}	--	--	10	A
Clampimg Voltage at I_{PP} =3 A, tp=8/20μs at I_{PP} =10 A, tp=8/20μs	V_C	-- --	8.8 17	12 25	V
Junction Capacitance at V_R = 0 V, f = 1 MHz	C_J	--	100	150	pF

ESDU12VADB					
Parameter	**Symbols**	**Min.**	**Typ.**	**Max.**	**Unit**
Reverse stand-off voltage	V_{RWM}	--	--	12	V
Reverse Leakage Current at V_{RWM} = 12 V	I_R	--	--	0.1	μA
Forward Voltage at I_F =10 mA	V_F	--	0.79	1.1	V
Breakdown Voltage at I_T = 1 mA	$V_{R(BR)}$	13.5	--	16.5	V
Peak Pulse Power Dissipation tp = 8/20μs	P_{PP}	--	--	500	W
Peak Pulse Current tp = 8/20μs	I_{PP}	--	--	10	A
Clampimg Voltage at I_{PP} =3 A, tp=8/20μs at I_{PP} =10 A, tp=8/20μs	V_C	-- --	17 45	20 50	V
Junction Capacitance at V_R = 0 V, f = 1 MHz	C_J	--	45	--	pF

Typical Characteristic Curves

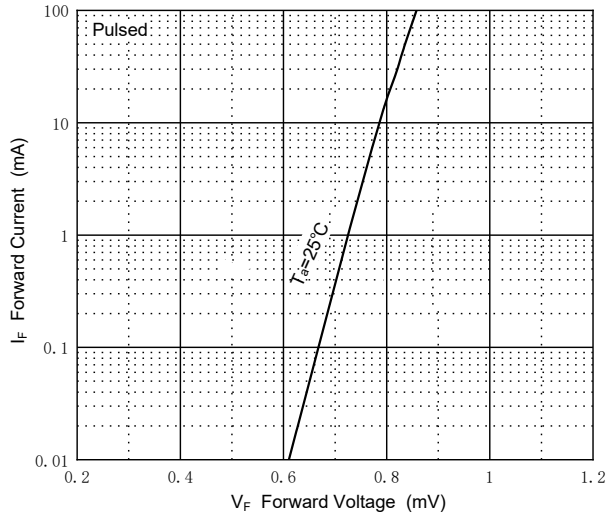


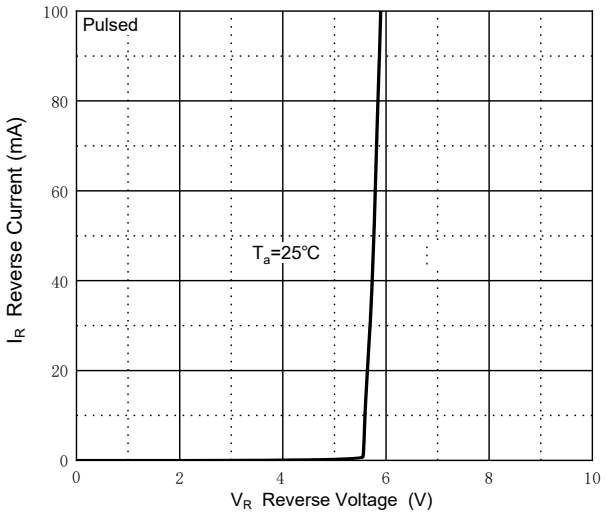
8/20μs waveform per IEC61000-4-5

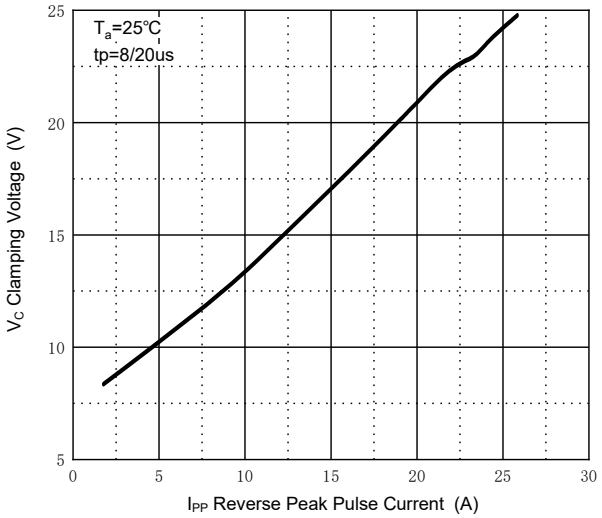


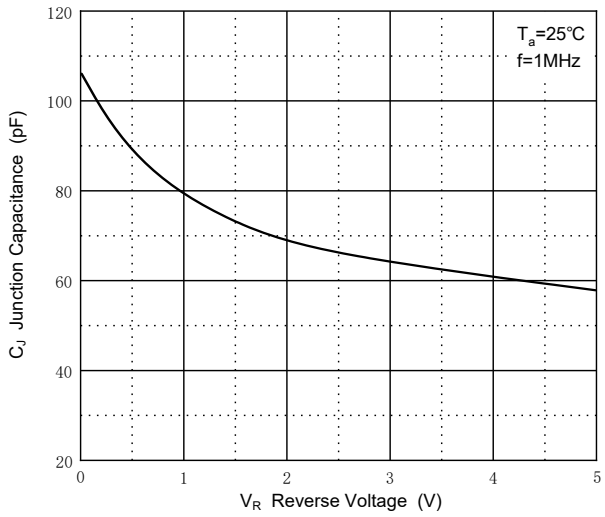
Contact discharge current waveform per IEC61000-4-2

ESDU3V3ADB

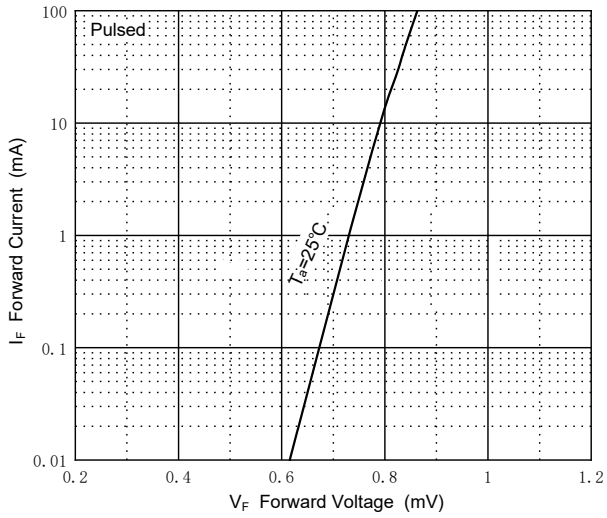


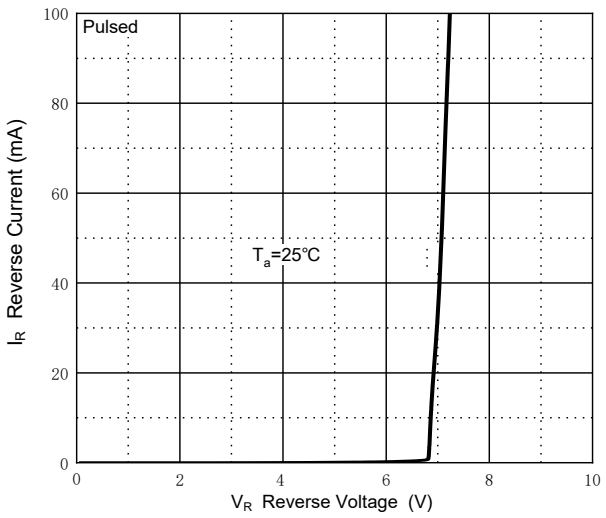


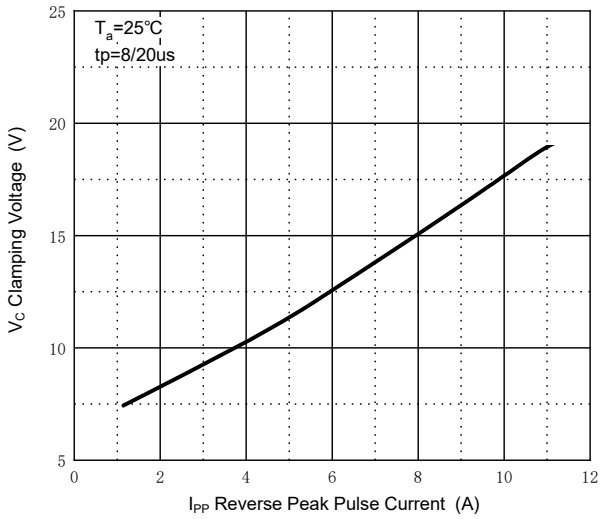


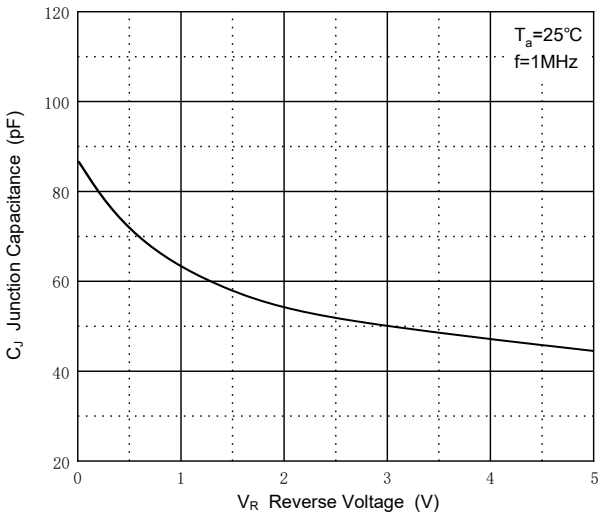


ESDU5V0ADB

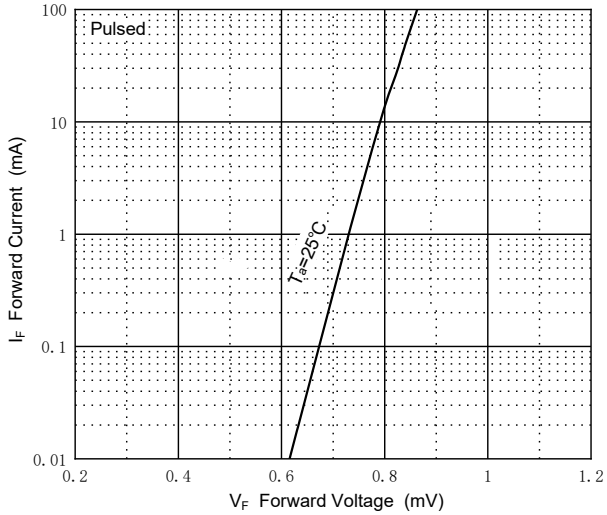

Pulsed
T_a=25℃
I_F Forward Current (mA)
V_F Forward Voltage (mV)
100
10
1
0.1
0.01
0.2
0.4
0.6
0.8
1
1.2

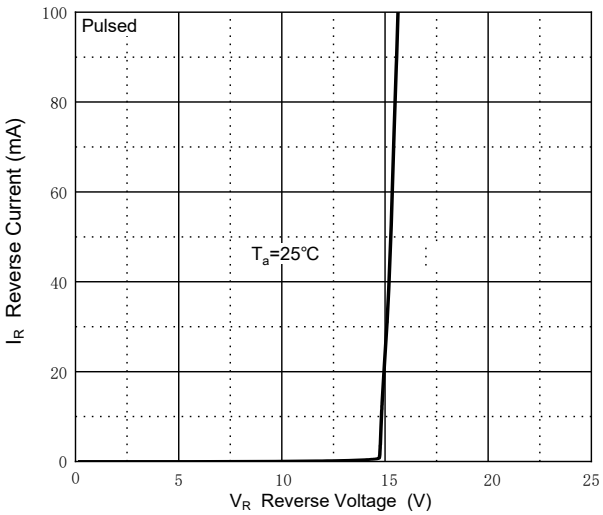

Pulsed
T_a=25℃
I_R Reverse Current (mA)
V_R Reverse Voltage (V)
100
80
60
40
20
0
0
2
4
6
8
10

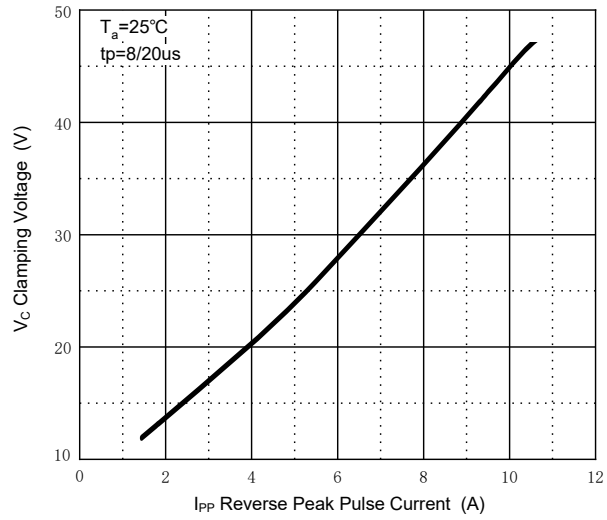

T_a=25℃
tp=8/20us
V_C Clamping Voltage (V)
I_{PP} Reverse Peak Pulse Current (A)
25
20
15
10
5
0
2
4
6
8
10
12

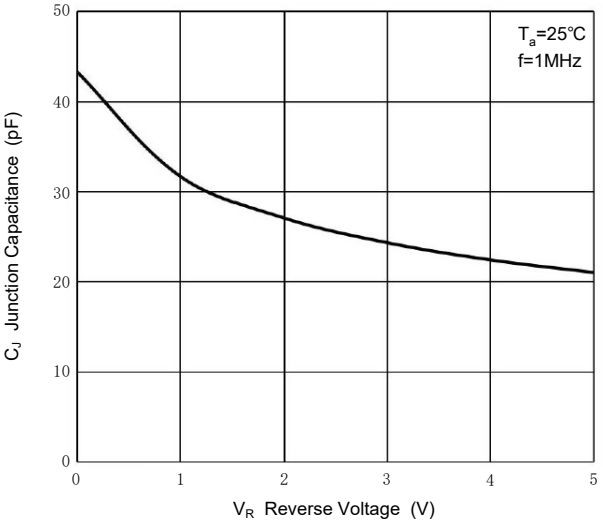

T_a=25℃
f=1MHz
C_J Junction Capacitance (pF)
V_R Reverse Voltage (V)
120
100
80
60
40
20
0
1
2
3
4
5

ESDU12VADB


Pulsed
T_a=25℃
I_F Forward Current (mA)
V_F Forward Voltage (mV)
100
10
1
0.1
0.01
0.2
0.4
0.6
0.8
1
1.2


Pulsed
T_a=25℃
I_R Reverse Current (mA)
V_R Reverse Voltage (V)
100
80
60
40
20
0
5
10
15
20
25

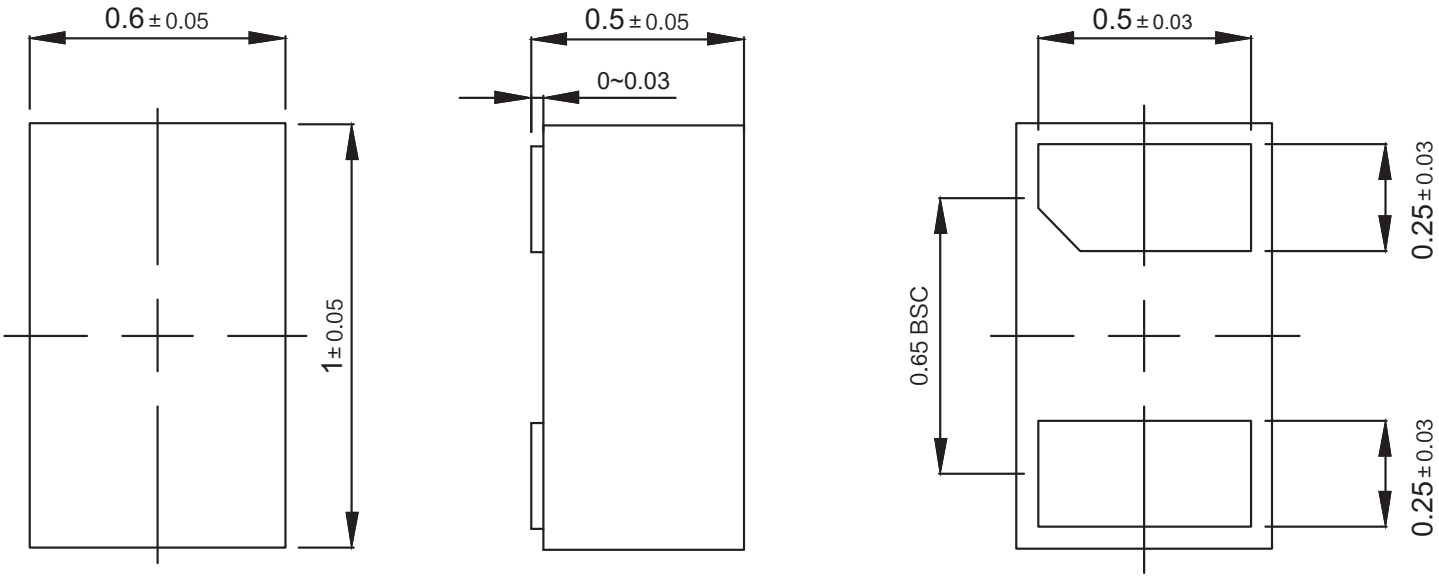

T_a=25℃
tp=8/20us
V_C Clamping Voltage (V)
I_{PP} Reverse Peak Pulse Current (A)
50
40
30
20
10
0
2
4
6
8
10
12


T_a=25℃
f=1MHz
C_J Junction Capacitance (pF)
V_R Reverse Voltage (V)
50
40
30
20
10
0
1
2
3
4
5

Package Outline

DFN1x0.6-2L-0011

Dimensions in mm



TOP VIEW SIDE VIEW BOTTOM VIEW

Ordering Information

Device	Package	Shipping
ESDU...ADB	DFN1x0.6-2L	10,000PCS/Reel&7inches