ESDUL5V0BDB

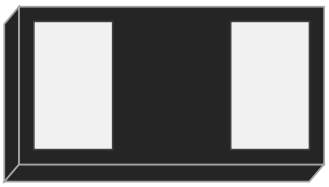
Description

ESDUL5V0BDB is an ultra-low capacitance TVS designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD .

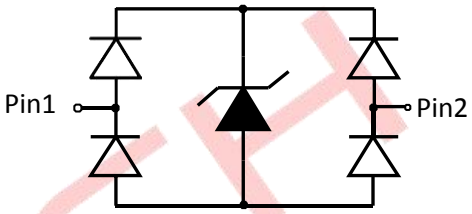
ESDUL5V0BDB may be used to provide ESD protection up to ±15KV (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 4A (8/20μs) according to IEC61000-4-5.

ESDUL5V0BDB is available in DFN1006-2L package. Standard products are Pb-free and Halogen-free.

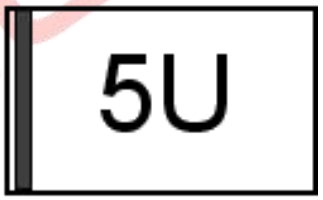
DFN1006-2L



Pin configuration



Marking



Features

- Stand-off voltage: 5V Max.
- Transient protection for each line according to
  IEC61000-4-2(ESD): ±15kV (contact)
  IEC61000-4-5(surge): 4A (8/20 μ s)
- Ultra-low capacitance: C_J = 0.35pF typ.
- Ultra-low leakage current: I_R < 1nA typ.
- Low clamping voltage: V_{CL} =14.0V typ. @ I_{PP} = 16A (TLP)
- Solid-state silicon technology

Applications

- USB 2.0 and USB 3.0
- HDMI 1.3, HDMI 1.4 and HDMI 2.0
- SATA and eSATA interface
- DVI
- IEEE 1394
- Portable Electronics and Notebooks

Order information

Device	Package	Shipping
ESDUL5V0BDB	DFN1006-2L	10000/Tape&Reel

Absolute Maximum Ratings

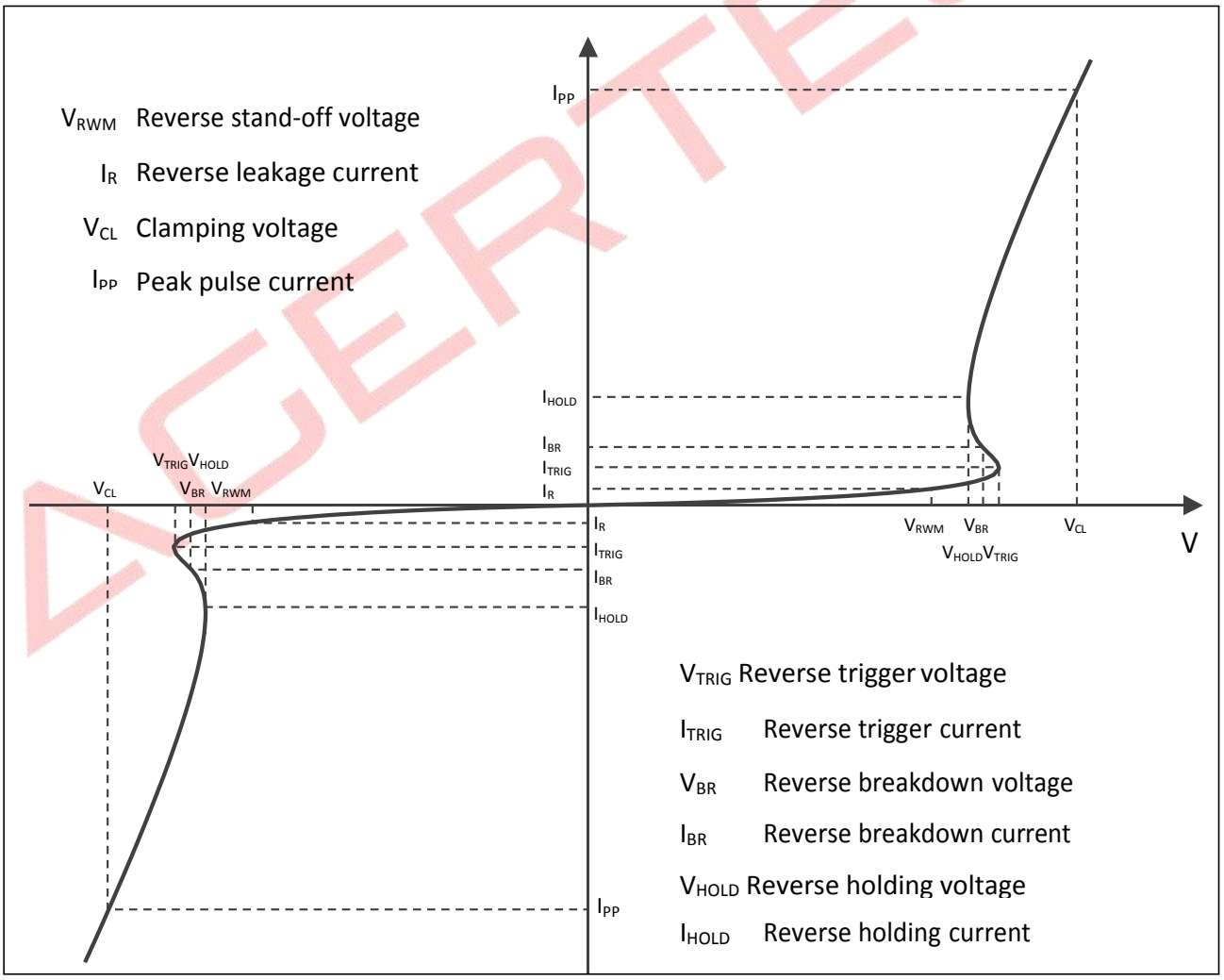
Parameter	Symbol	Value	Units
Peak pulse power (tp = 8/20us)	P_{PK}	44	W
Peak pulse current (tp = 8/20us)	I_{PP}	4	A
IEC61000-4-2 (Contact)	V_{ESD}	±15	kV
IEC61000-4-2 (Air)	V_{ESD}	±15	kV
Lead Temperature	T_L	260	℃
Operating temperature	T_{OP}	-40 to 85	℃
Junction Temperature	T_J	125	℃
Storage Temperature Range	T_{STG}	-55 to 150	℃

Electrical Characteristics (T =25℃)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off voltage	V_{RWM}				5	V
Reverse Breakdown voltage	V_{BR}	It=1mA	6.0	8.0		V
Reverse Leakage Current	I_R	V_{RWM}=5V			50	nA
Clamping voltage 1)	V_{CL}	I_{PP}=16A, tp=100ns		14		V
Dynamic resistance 1)	R_{DYN}			0.55		Ω
Clamping voltage 2)	V_{CL}	V_{ESD}= 8kV		14.0		V
Clamping voltage 3)	V_{CL}	I_{PP}=1A, tp=8/20us		8.3		V
		I_{PP}=4A, tp=8/20us		10		V
Junction Capacitance	C_J	V_R=0V, f=1MHz		0.35	0.5	pF

Notes:
1)TLP parameter: Z0 = 50Ω, tp = 100ns, tr = 2ns, averaging window from 60ns to 80ns. RDYN is calculated from 4A to 16A.
2)Contact discharge mode, according to IEC61000-4-2.
3)Non-repetitive current pulse, according to IEC61000-4-5.

Electrical Characteristics



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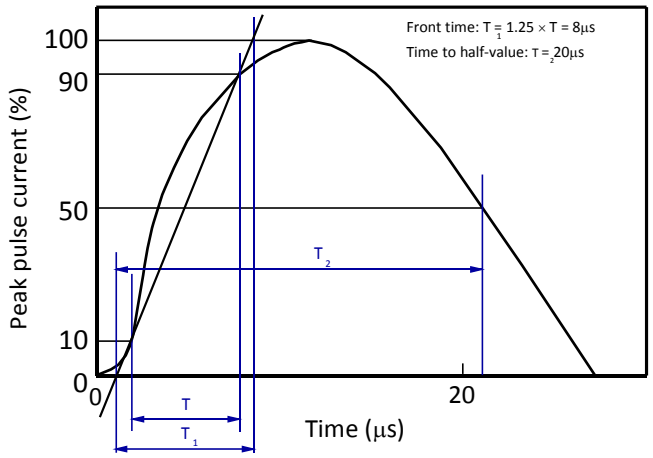
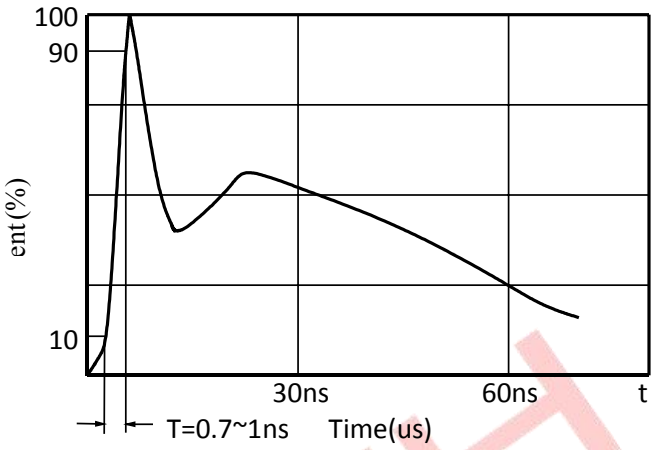
Typical characteristics(TA=25℃,unless otherwise noted)

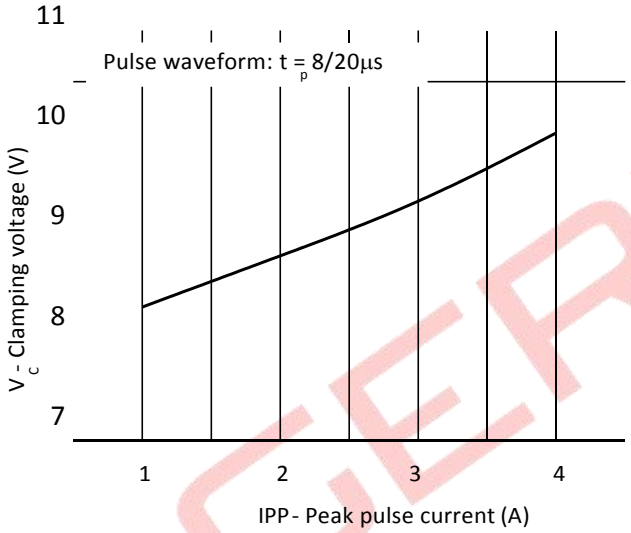


8/20μs waveform per IEC61000-4-5

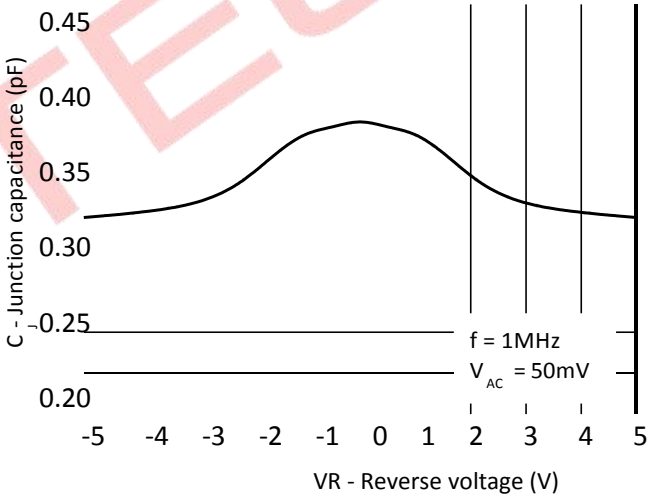


Contact discharge current waveform per IEC61000-4-2

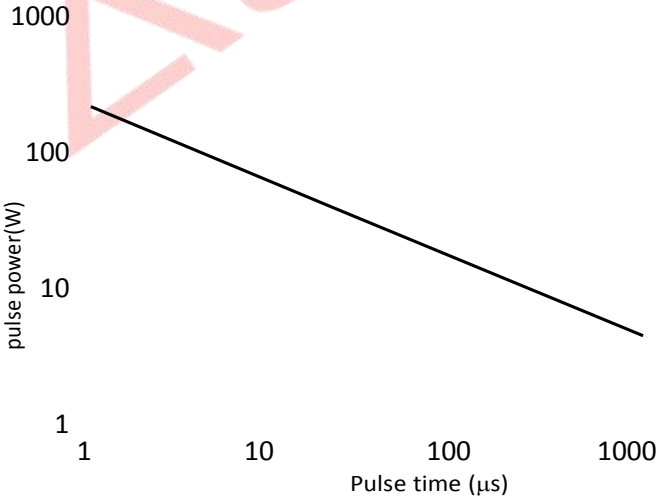
Capacitance vs. Reverse voltage



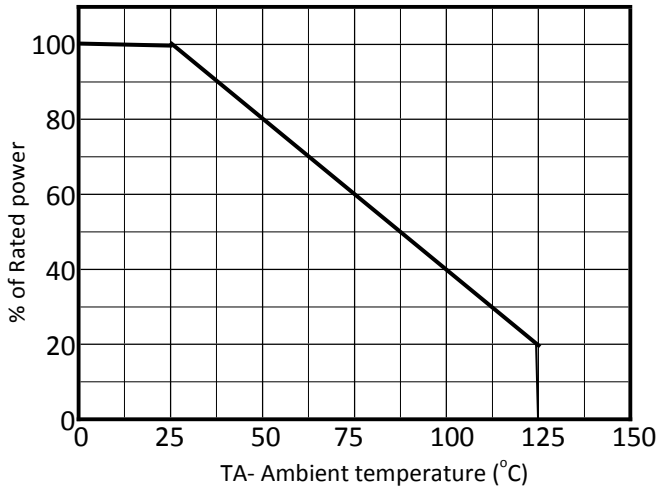
Clamping voltage vs. Peak pulse current



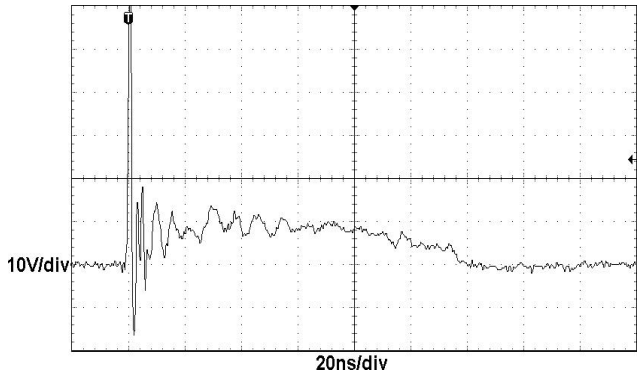
Capacitance vs. Reverse voltage



Non-repetitive peak pulse power vs. Pulse time

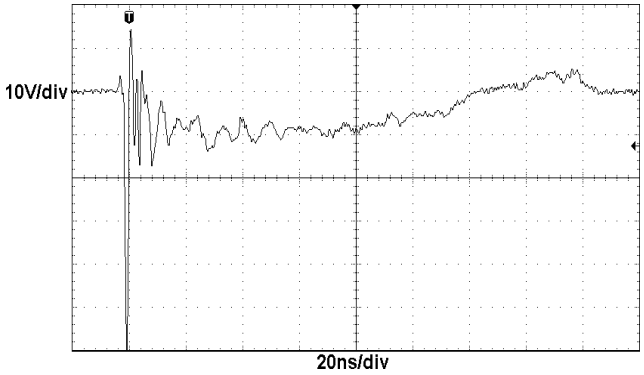


Power derating vs. Ambient temperature



ESD clamping

(+8kV contact discharge per IEC61000-4-2)



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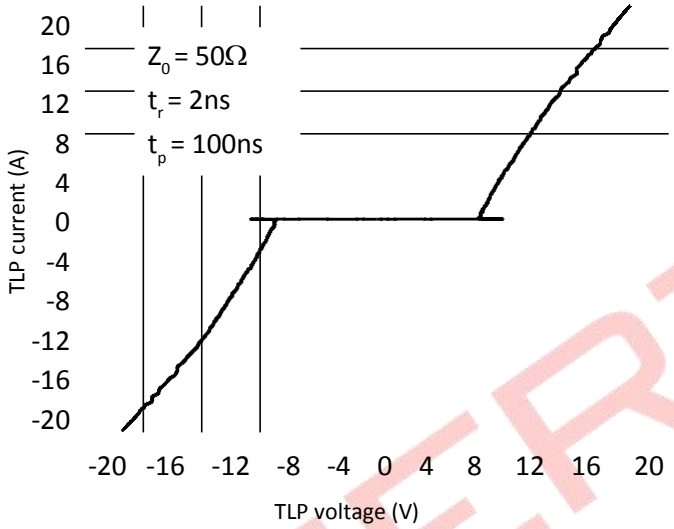
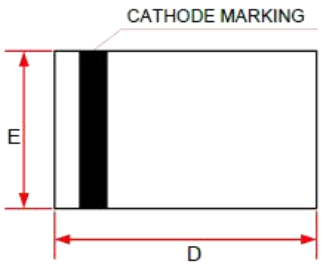


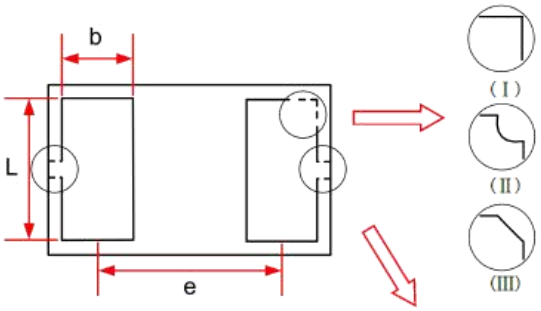
TLP Measurement

Package Outline

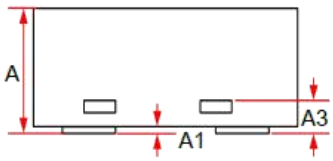
DFN1006-2L



Top View



Bottom View



Side View

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.340	0.450	0.530
A1	0.000	0.020	0.050
A3		0.125 Ref.	
D	0.950	1.000	1.075
E	0.550	0.600	0.675
b	0.200	0.250	0.300
L	0.450	0.500	0.550
e		0.650 BSC	

Recommended PCB Layout