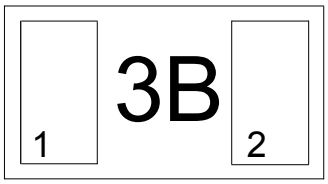
1. Description

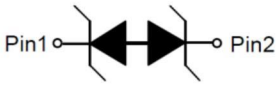
Designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

Pin Configuration



DFN1006 (Top View)
Marking：3B

Circuit Diagram



2. Features

- IEC 61000-4-2 Level 4 ESD Protection
  - ±20kV Contact Discharge
  - ±20kV Air Discharge
- 60W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 3.3V
- Low leakage current
- RoHS compliant
- Protecting one Bi-directional lines
- Capacitance: 0.22pF Typ.

3. Applications

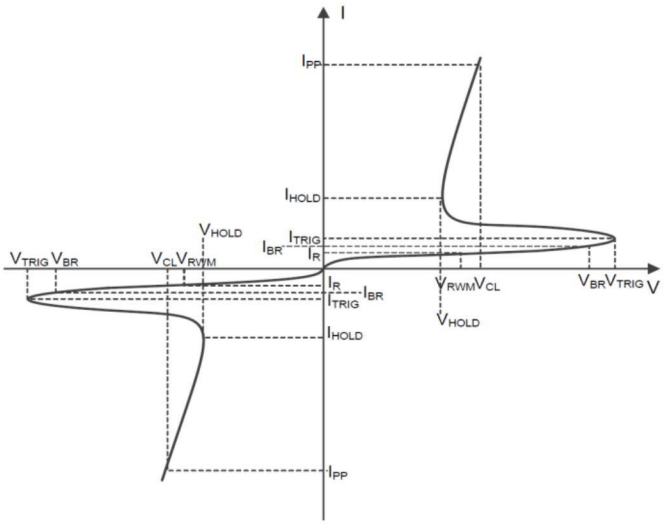
- USB3.2/4.0
- Thunderbolt
- HDMI 1.4 and HDMI 2.1
- Cellular handsets

4. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)	P_{pk}	-	60	W
Peak pulse current (tp=8/20us)	I_{PP}		8	A
ESD (IEC61000-4-2 air discharge)	V_{ESD}	-	±20	kV
ESD (IEC61000-4-2 contact discharge)	V_{ESD}	-	±20	kV
Junction temperature	T_J	-	125	℃
Operating temperature	T_{OP}	-40	85	℃
Storage temperature	T_{STG}	-55	150	℃
Lead temperature	T_L	-	260	℃

Symbol	Parameters
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{TRIG}	Reverse trigger voltage
I_{TRIG}	Reverse trigger current
V_{HOLD}	Reverse holding voltage
I_{HOLD}	Reverse holding current

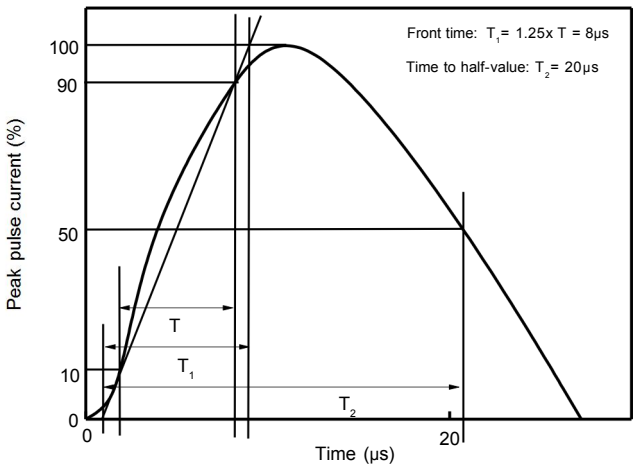


5. Electrical Characteristics

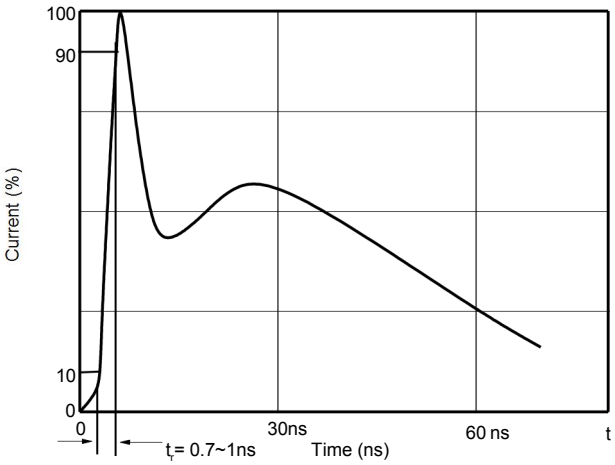
At T_A = 25℃ unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				3.3	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	4.5		7	V
Reverse Leakage Current	I_R	V_{RWM}=3.3V			0.1	uA
Clamping Voltage	V_C	I_{PP}=1A; tp=8/20us		3.5	4.5	V
		I_{PP}=8A; tp=8/20us		6.5	7.5	V
Junction Capacitance	C_J	V_R=0V; f=1MHz		0.22	0.3	pF

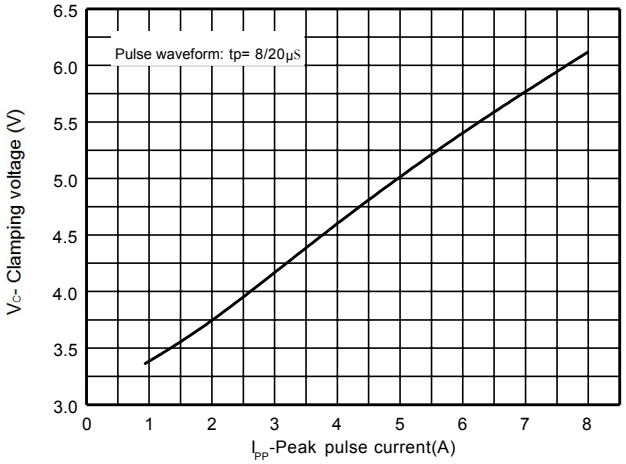
6. Typical Characteristic



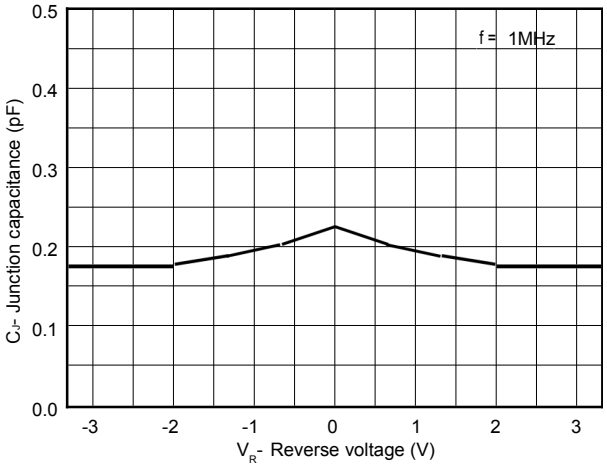
8/20μs waveform per IEC61000-4-5



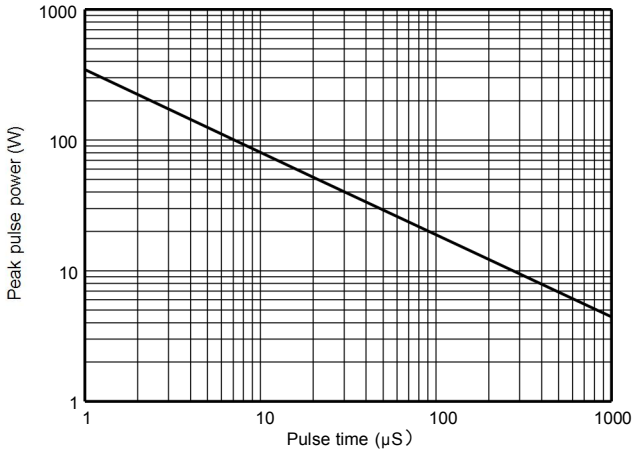
Contact discharge current waveform per IEC61000-4-2



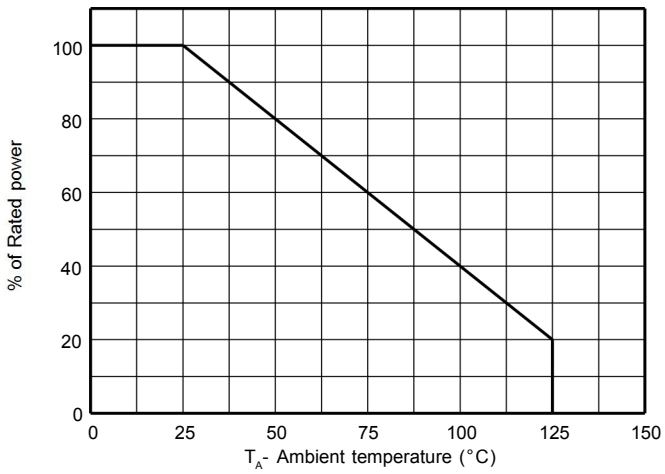
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

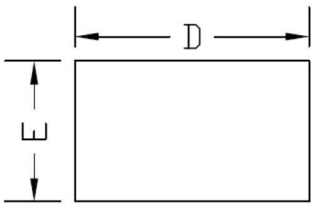


Non-repetitive peak pulse power vs. Pulse time

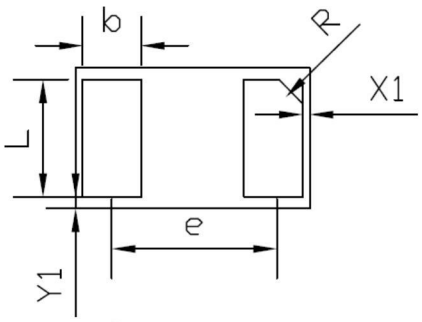


Power derating vs. Ambient temperature

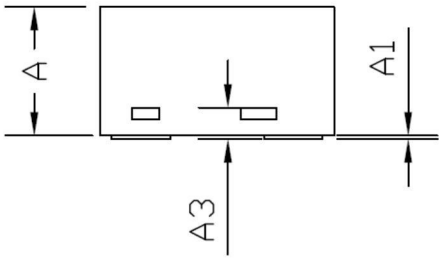
7. Dimension (DFN1006)



TOP VIEW



BOTTOM VIEW



SIDE VIEW

COMMON DIMENSION (MM)			
PKG	DFN1006-2L		
REF.	MIN.	NOM.	MAX
A	0.45	0.50	0.55
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b	0.20	0.25	0.30
L	0.45	0.50	0.55
e		0.650	
R	0.07	0.10	0.13
X1	**0.025**	**---**	**0.065**
Y1	**0.025**	**---**	**0.065**
A1	0	---	0.015
A3	0.119	---	0.15