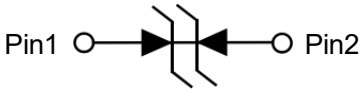
Transient Voltage Suppressors for ESD Protection

Description

The SXESDNC2XD12VB protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. They feature large cross-sectional area junctions for conducting high transient currents, offer desirable electrical characteristics for board level protection, such as fast response time, low operating voltage.

DFN0603-2L



Feature

130W peak pulse power per line (t_P = 8/20μs)
DFN0603-2L package
Response time is typically < 1 ns
Bidirectional configurations
Low clamping voltage
RoHS compliant
Transient protection for data lines to
IEC 61000-4-2(ESD) ±30kV(air), ± 30kV(contact);
IEC 61000-4-5 (Lightning) 5A (8/20us)

Mechanical Characteristics

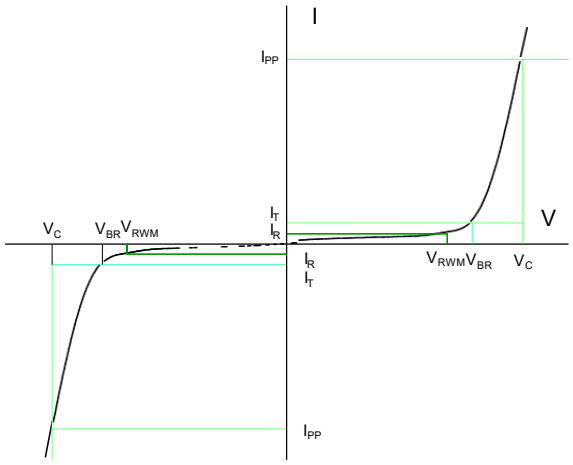
Mounting position: Any
Qualified max reflow temperature:260℃
Device meets MSL 1 requirements
DFN0603-2L without plating

Applications

Cell phone handsets and accessories
Personal digital assistants (PDA's)
Notebooks, desktops, and servers
Portable instrumentation
Cordless phones
Digital cameras
Peripherals

Electronics Parameter

Symbol	Parameter
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}
P_{PP}	Peak Pulse Power
C_J	Junction Capacitance
I_F	Forward Current
V_F	Forward Voltage @ I_F



Electrical characteristics per line@25℃ (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	V_{RWM}	-	-	-	12	V
Breakdown Voltage	V_{BR}	I_t = 1mA	13	15	17	V
Reverse Leakage Current	I_R	V_{RWM} = 12V	-	-	1.0	μA
Clamping Voltage[1)]	V_C	TLP = 16A, t_p = 100ns	-	22.5	-	V
Dynamic resistance[1)]	R_{DYN}	-	-	0.35	-	Ω
Clamping Voltage[2)]	V_C	I_{PP} = 1A,t_P = 8/20μs	-	18	20	V
		I_{PP} = 5A,t_P = 8/20μs	-	25	27	V
Junction Capacitance	C_J	V_R = 0V,f = 1MHz	-	12	18	pF

Notes:
1.TLP parameter: Z_0=50Ω, t_p=100ns, t_r=2ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.
2. Non-repetitive current pulse, according to IEC61000-4-5.

Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Peak Pulse Power (t_P = 8/20μs)	P_{PP}	130	W
Peak Pulse Current (t_P = 8/20μs)	I_{PP}	5	A
Lead Soldering Temperature	T_L	260 (10 sec)	℃
Junction and Storage Temperature Range	T_J,T_{STG}	-55~+150	℃
ESD Protection-Contact Discharge	V_{ESD}	±30	kV
ESD Protection-Air Discharge	V_{ESD}	±30	kV

Typical Characteristics

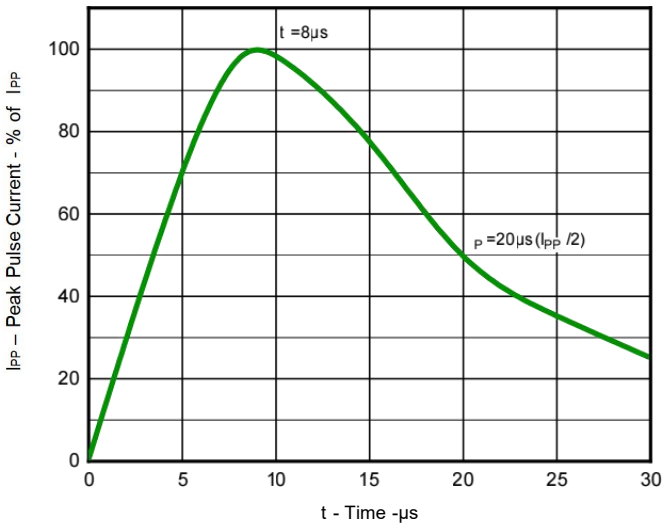


Fig 1.Pulse Waveform(8/20μs)

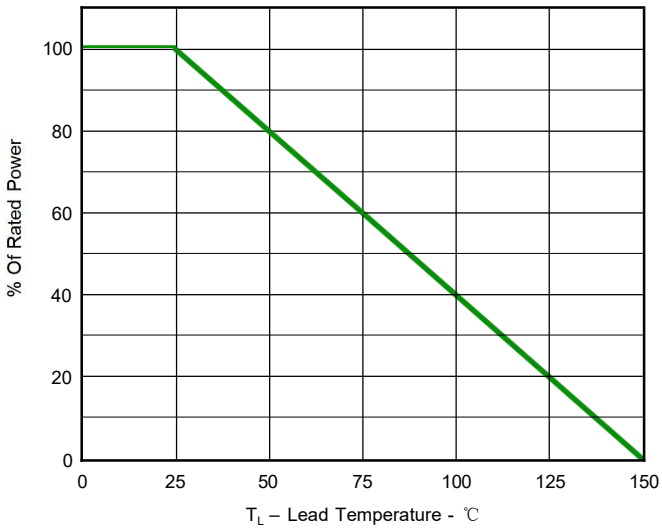


Fig 2.Power Derating Curve

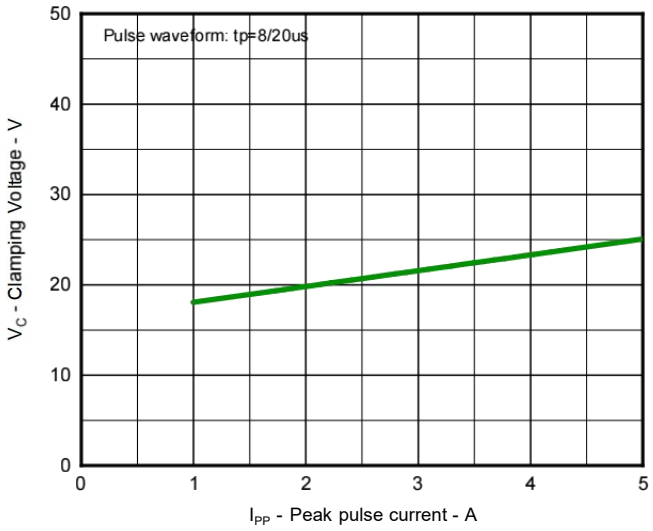


Fig 3. Clamping voltage vs. Peak pulse current

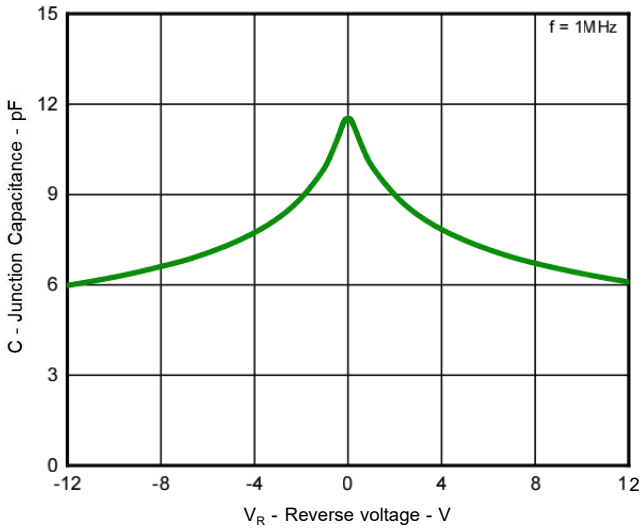


Fig 4. Capacitance vs. Reveres voltage

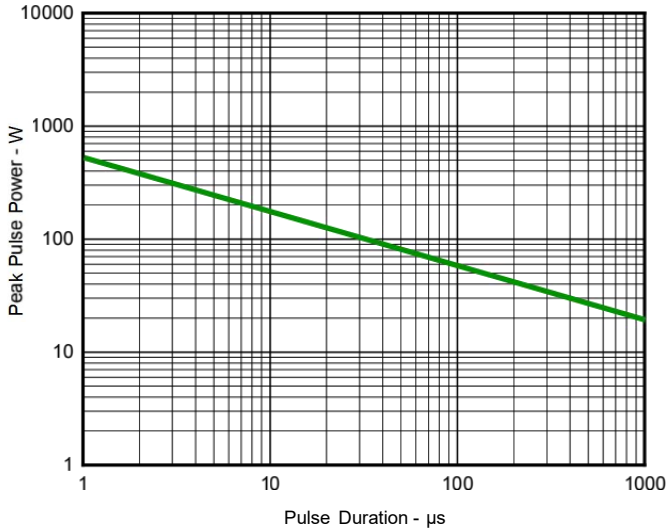


Fig 5. Non Repetitive Peak Pulse Power vs. Pulse time

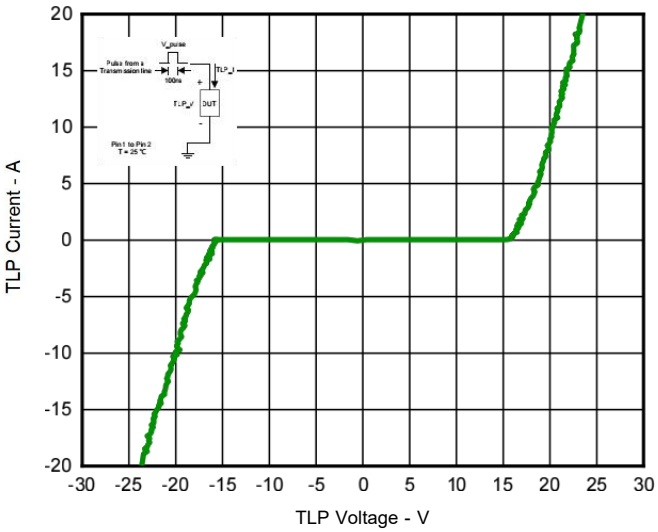


Fig 6. TLP Measurement

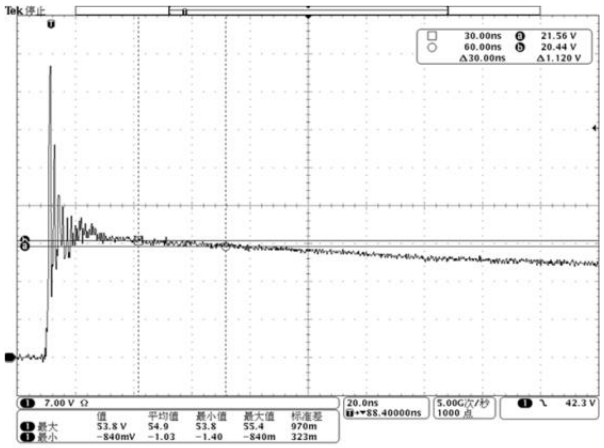


Fig 7. Clamping Voltage at IEC61000-4-2 +8kV Pulse Waveform

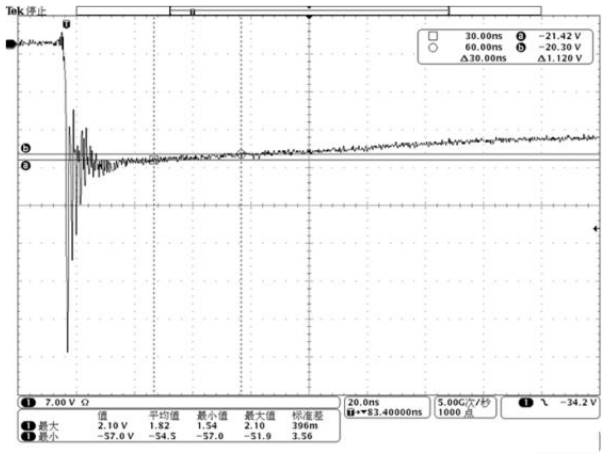
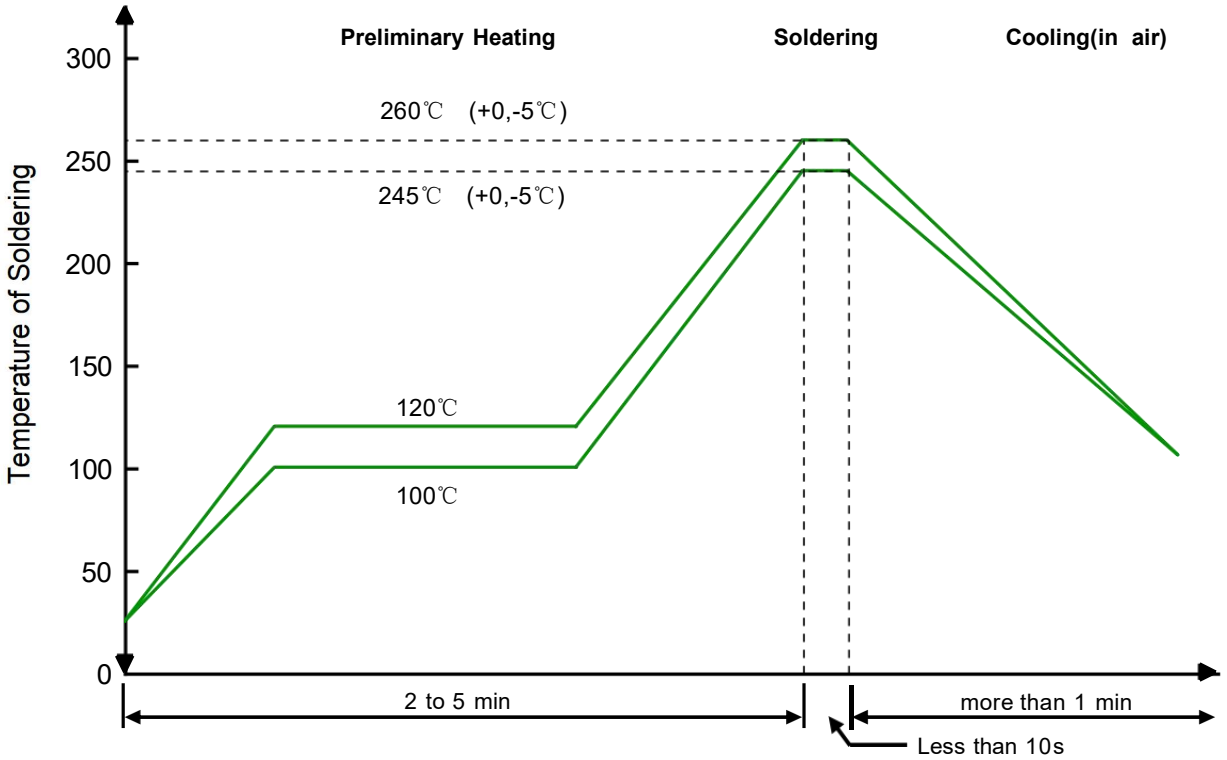


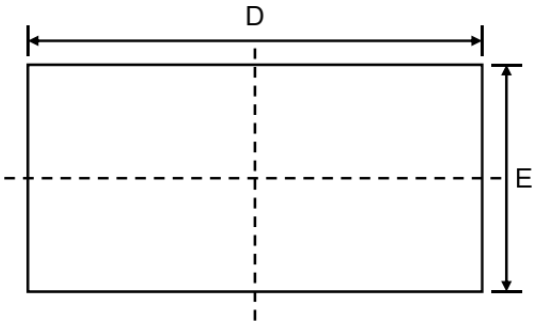
Fig 8. Clamping Voltage at IEC61000-4-2 -8kV Pulse Waveform

Solder Reflow Recommendation

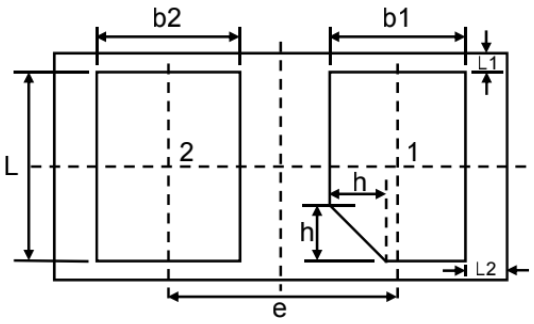


Remark: Pb free for 260℃; Pb for 245℃.

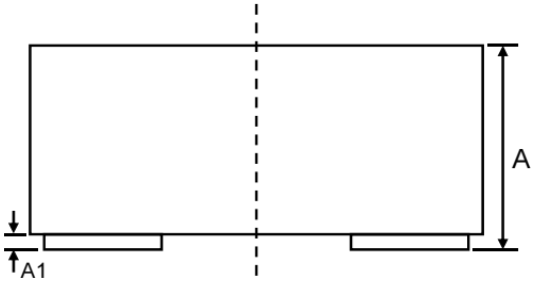
Product dimension (DFN0603-2L)



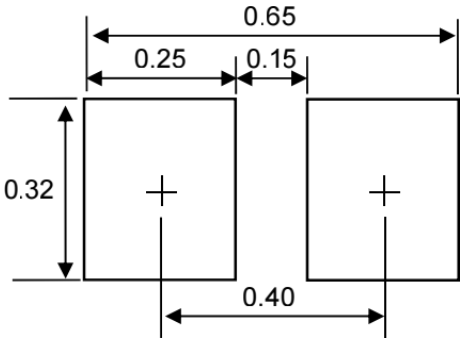
Top View



Bottom View



Side View



Unit:mm

Suggested PCB Layout

Dim	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.28	0.31	0.34	0.011	0.012	0.013
A1	0.00	0.025	0.05	0.000	0.001	0.002
b1	0.155	0.18	0.205	0.006	0.007	0.008
b2	0.155	0.18	0.205	0.006	0.007	0.008
D	0.59	0.62	0.64	0.023	0.024	0.025
E	0.29	0.32	0.34	0.011	0.013	0.013
e	0.36 BSC			0.014 BSC		
L	0.215	0.24	0.265	0.008	0.009	0.010
L1	0.04 BSC			0.002 BSC		
L2	0.04 BSC			0.002 BSC		
h	0.05	0.075	0.10	0.002	0.003	0.004

Ordering information

Device	Package	Reel	Shipping
TAPING	DFN0603-2L (Pb-Free)	7"	10000 / Tape & Reel