

6.3V Transient Voltage Suppressor

Features

- Small Body Outline Dimensions
- Protects one I/O or power line
- Low Clamping Voltage
- Working Voltage: 6.3 V
- Low Leakage Current

IEC COMPATIBILITY (EN61000-4)

- IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 155A (8/20 μs)

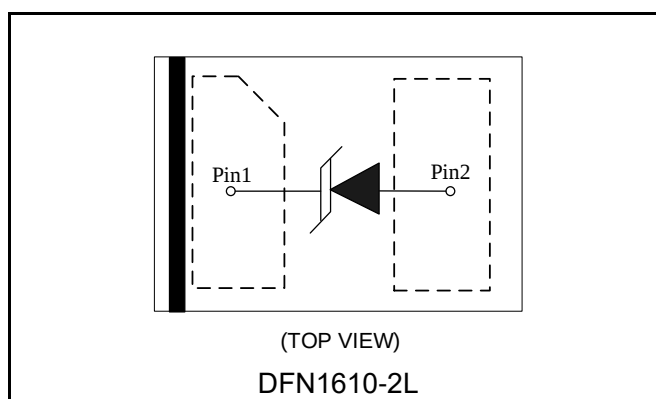
Mechanical Characteristics

- DFN1610-2L package
- Marking : Marking Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant & HF
- Device meets MSL1 requirement

Applications

- Laptop Computers
- Cellular Phones
- Digital Cameras
- Personal Digital Assistants (PDAs)

Schematic & PIN Configuration



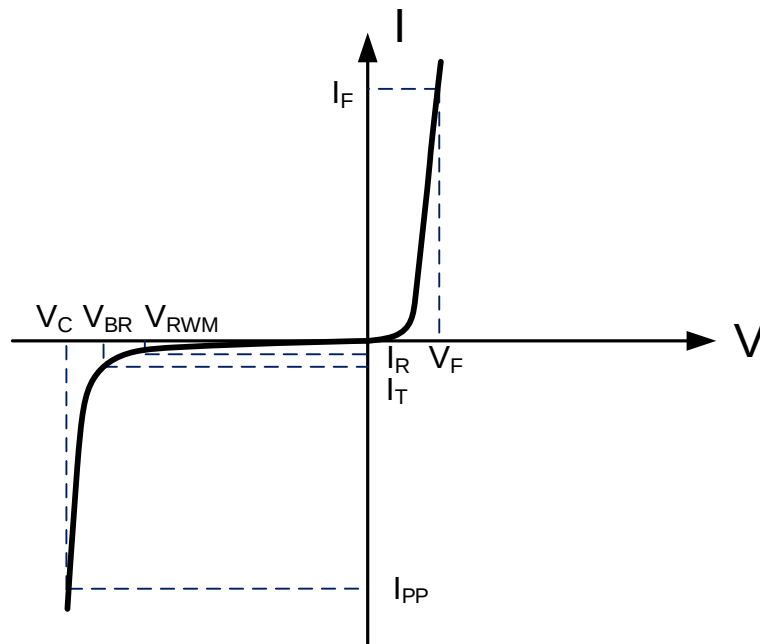
ES6V3DPX

Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{PP}	2170	Watts
Peak Pulse Current ($t_p = 8/20\mu s$)	I_{PP}	155	A
Operating Temperature	T_J	-55 to + 125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Parameters (T=25°C)

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



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Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Stand-Off Voltage	V_{RWM}				6.3	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	7			V
Reverse Leakage Current	I_R	$V_{RWM}=6.3\text{V}$			200	nA
Forward Voltage	V_F	$I_F=10\text{mA}$	0.6		1.0	V
Clamping Voltage	V_C	$I_{PP}=80\text{A}$, $t_p=8/20\mu\text{s}$		9.2		V
Clamping Voltage	V_C	$I_{PP}=155\text{A}$, $t_p=8/20\mu\text{s}$		12	14	V
ESD Clamping Voltage ⁽¹⁾	V_C	$I_{PP} = 4\text{A}$ $t_p = 0.2/100\text{ns}$		8.4		V
ESD Clamping Voltage ⁽¹⁾	V_C	$I_{PP} = 16\text{A}$ $t_p = 0.2/100\text{ns}$		9.2		V
Dynamic Resistance ^{(1) (2)}	R_{DYN}	$TLP=0.2/100\text{ns}$		0.07		Ω
Junction Capacitance	C_j	$V_R = 0\text{V}$, $f = 1\text{MHz}$		460	600	pF

Note1. TLP Setting: $t_p=100\text{ns}$, $t_r=0.2\text{ns}$, I_{TLP} and V_{TLP} sample window: $t_1=70\text{ns}$ to $t_2=90\text{ns}$.

Note2. Dynamic resistance calculated from $I_{PP}=4\text{A}$ to $I_{PP}=16\text{A}$ using “Best Fit”.

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Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

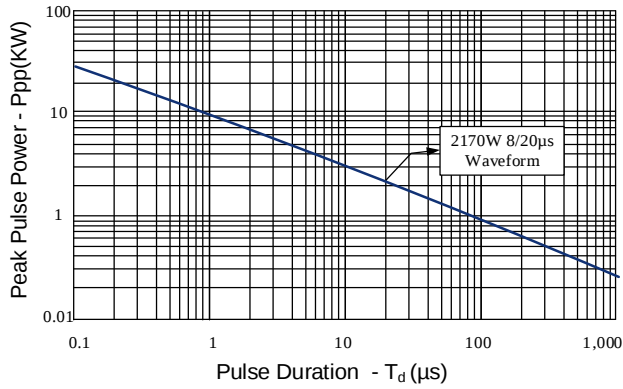


Figure 2: Power Derating Curve

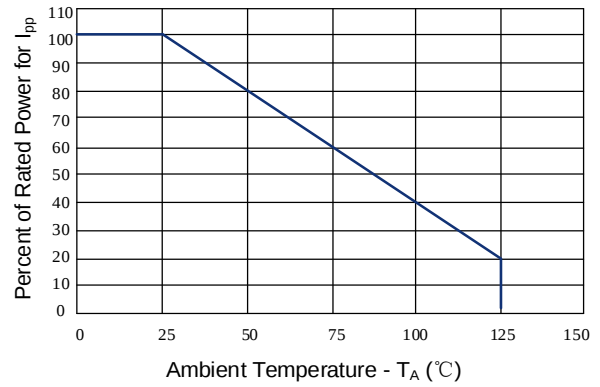


Figure 3: Clamping Voltage vs. Peak Pulse Current

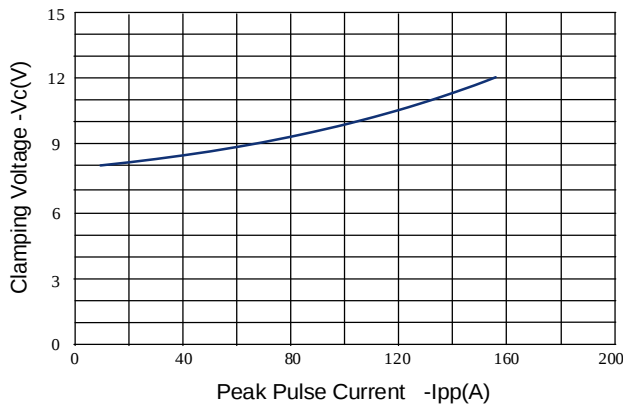


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

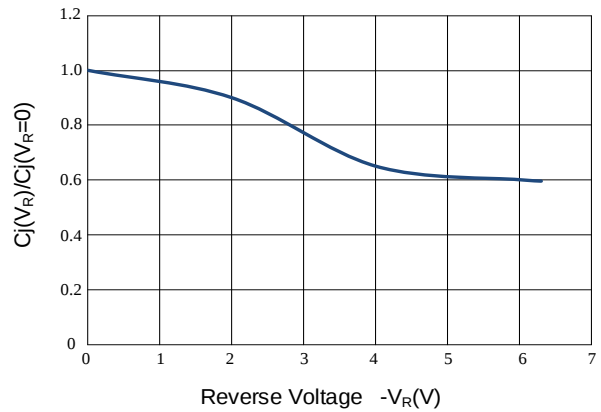


Figure 5: Pulse Waveform

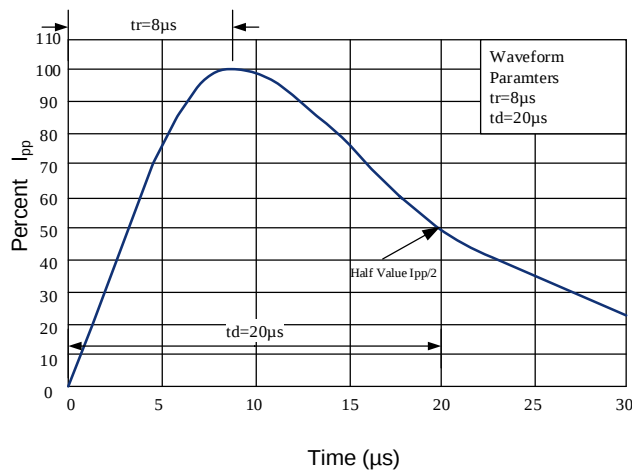
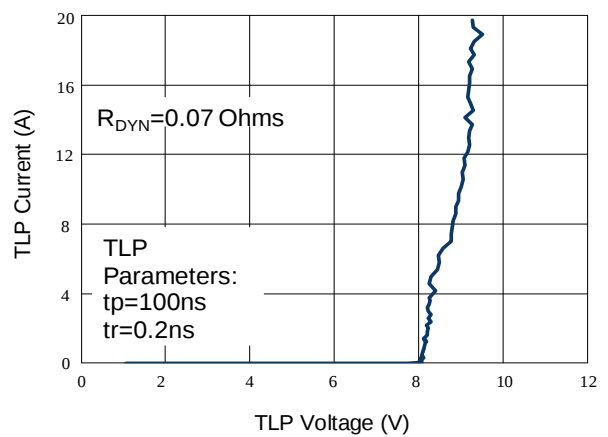


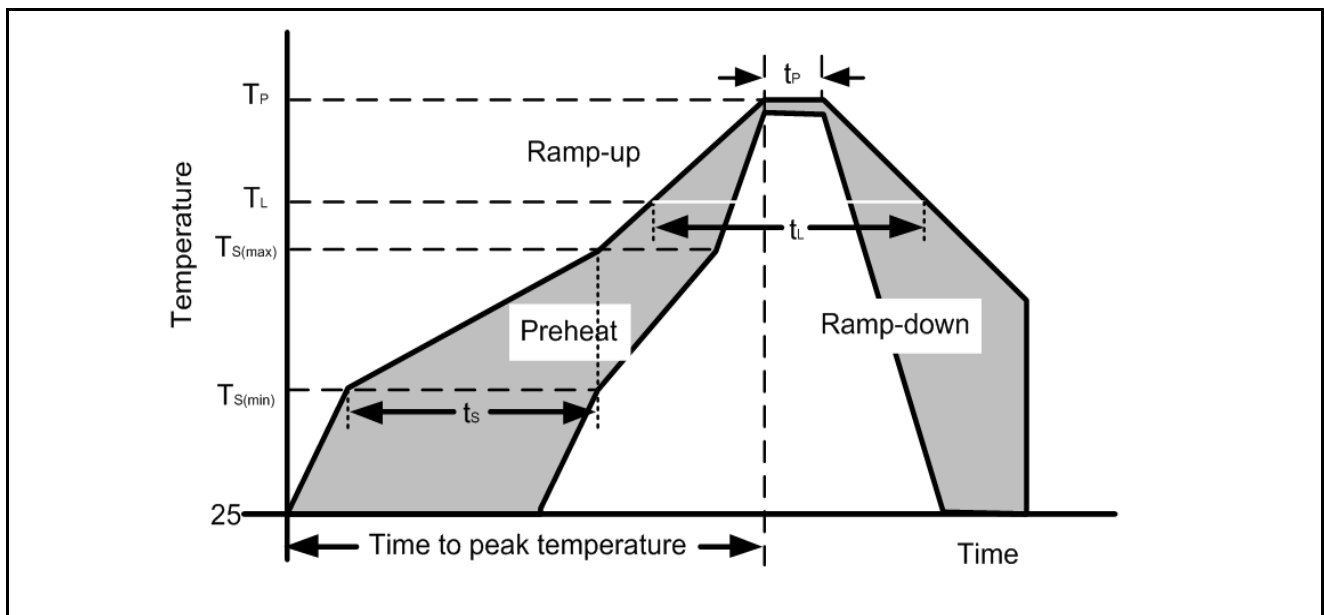
Figure 6: TLP Curve



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Soldering Parameters

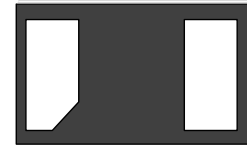
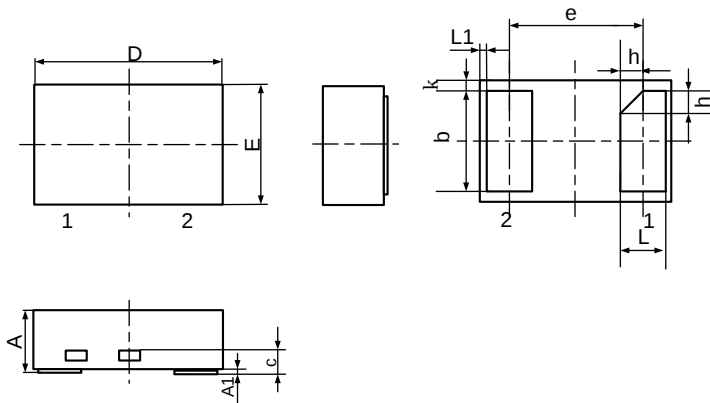
Reflow Condition		Pb – Free assembly
Pre Heat	Temperature Min ($T_{S(min)}$)	150°C
	Temperature Max ($T_{S(max)}$)	200°C
	Time (min to max) (t_s)	60 – 190 secs
Average ramp up rate (Liquidus Temp) (T_L) to peak		5°C/second max
$T_{S(max)}$ to T_L —Ramp-up Rate		5°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260+0/-5 °C
Time within actual peak Temperature (t_P)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		280°C



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Package Dimension

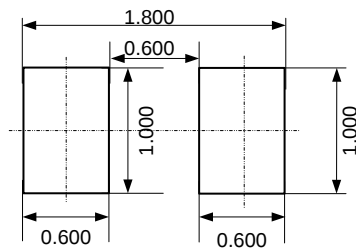
PACKAGE OUTLINE



DFN1610-2L

SYMBOL	MILLIMETERS		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0	0.02	0.05
b	0.75	0.80	0.85
C	0.152REF		
D	1.55	1.60	1.65
e	1.10BSC		
E	0.95	1.00	1.05
L	0.35	0.40	0.45
L1	0.05REF		
h	0.15	0.20	0.25
k	0.05	0.10	0.15

MOUNTING PAD



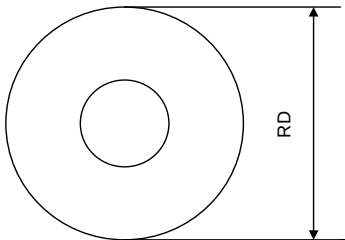
Notes:

Controlling Dimension: Millimeter.

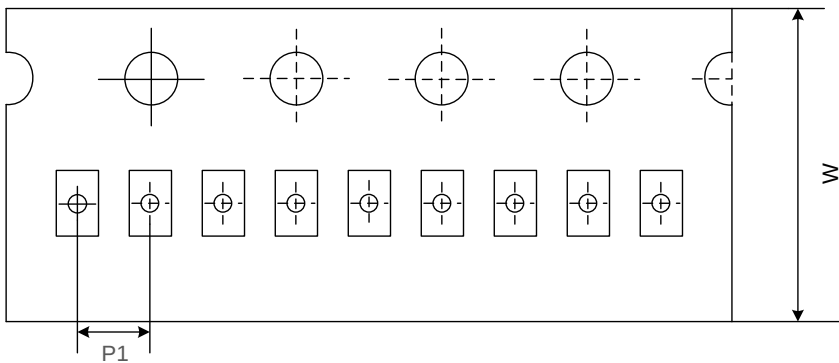
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Tape And Reel Information

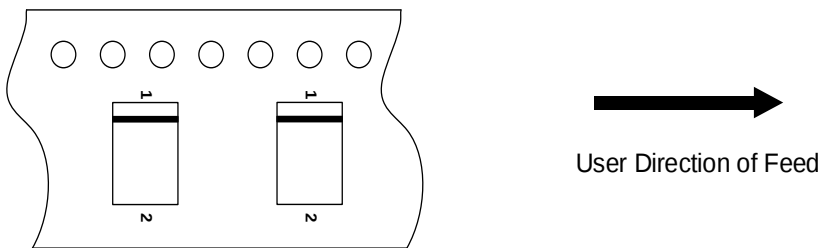
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimensions	7 inch
W	Overall width of the carrier tape	8 mm
P1	Pitch between successive cavity centers	2mm

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Ordering Information

Part	Package	Marking	Packing Information
ES6V3DPX	DFN1610-2L	1  2 G=Specific Device Code X=Tracking Number	10k/Reel

Revision History and Checking Table

No.	Version	Date	Revision Item	Request	Function & Spec Checking	Package Checking	Tape Checking
1	1.0	2022-12-12	Released Version	Qi Shu Kun	Qi Shu Kun	Liu Jia Ying	Liu Jia Ying