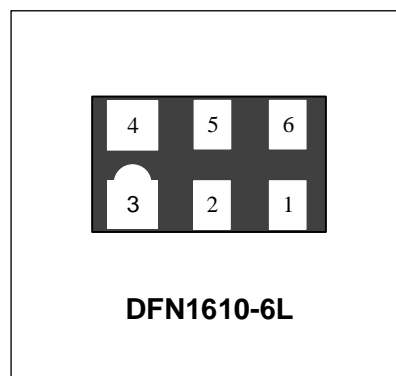


## Transient Voltage Suppressor

### Features

- Solid-state silicon-avalanche technology
- Low operating and clamping voltage
- Up to two I/O Lines of Protection
- Ultra low capacitance
- Low operating voltage:3.3V
- 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) 8A (8/20 $\mu\text{s}$ )

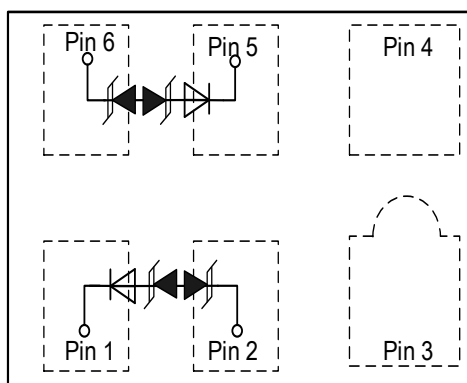
### Mechanical Characteristics

- DFN1610-6L package
- Marking : Marking Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant & HF
- Device meets MSL1 requirement

### Applications

- Digital Visual Interface(DVI)
- MDDI Ports
- Display Port TM Interface
- PCI Express
- High Definition Multi-Media Interface(HDMI)
- HDMI Interfaces

### Schematic & PIN Configuration



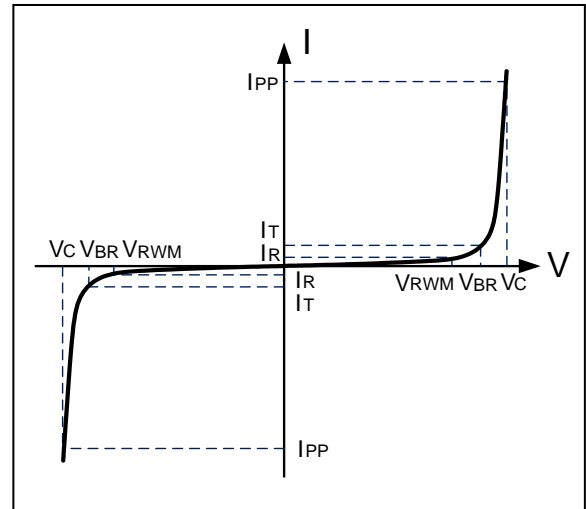
DFN1610-6L (Top View)

**Absolute Maximum Rating**

Rating	Symbol	Value	Units
Peak Pulse Power ( $t_p = 8/20\mu s$ )	$P_{PP}$	128	Watts
Peak Pulse Current ( $t_p = 8/20\mu s$ )	$I_{PP}$	8	A
Operating Temperature	$T_J$	-55 to + 125	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55 to +150	$^{\circ}C$

**Electrical Parameters**

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



**Electrical Characteristics(T=25 $^{\circ}C$  unless otherwise noted)**

WS03-2RUCB						
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	$V_{RWM}$				3.3	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	4			V
Reverse Leakage Current	$I_R$	$V_{RWM}=3.3V$			200	nA
Clamping Voltage	$V_C$	$I_{PP}=8A, t_p=8/20\mu s$ See Note3		14	16	V
Dynamic Resistance <sup>1,2</sup>	$R_{DYN}$	TLP=0.2/100ns		0.47		$\Omega$
ESD Clamping Voltage <sup>1</sup>	$V_C$	$I_{PP} = 4A$ $t_p = 0.2/100ns$		8.2		V
ESD Clamping Voltage <sup>1</sup>	$V_C$	$I_{PP} = 16A$ $t_p = 0.2/100ns$		13.7		V
Junction Capacitance	$C_j$	$V_R = 0V, f = 1MHz$ Pin1&Pin6 to Pin2&Pin5		0.35	0.6	pF

- Note:** 1、 TLP Setting :  $t_p=100ns, t_r=0.2ns, I_{TLP}$  and  $V_{TLP}$  sample window: $t_1=70ns$  to  $t_2=90ns$ .  
 2、 Dynamic resistance calculated from  $I_{PP}=4A$  to  $I_{PP}=16A$  using "Best Fit"  
 3、 Device measured from Pin1&Pin6 to Pin2&Pin5.

Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

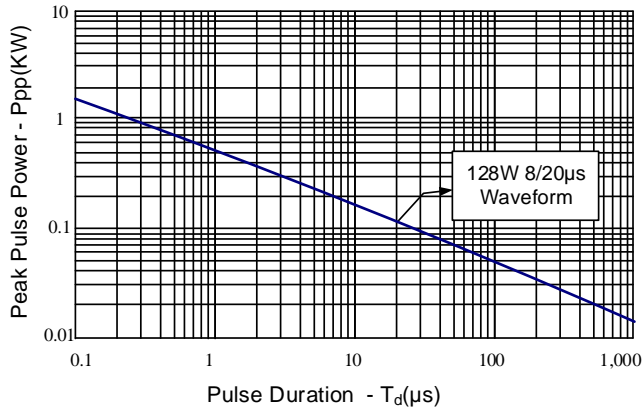


Figure 2: Power Derating Curve

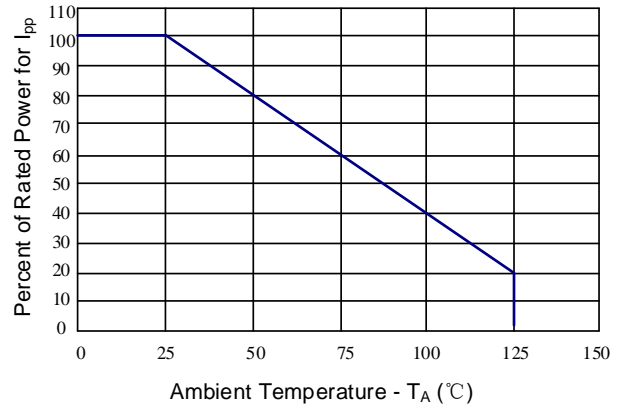


Figure 3: Clamping Voltage vs. Peak Pulse Current

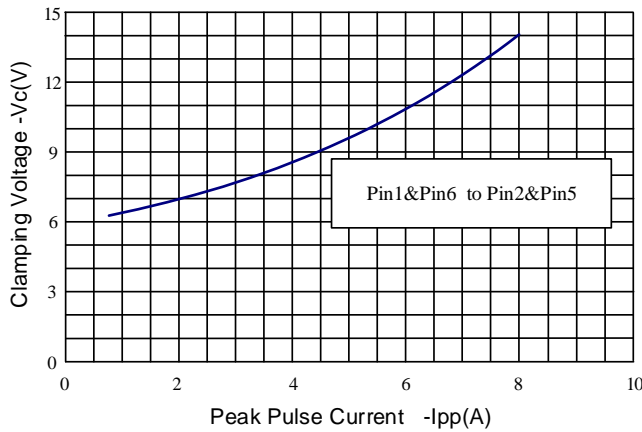


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

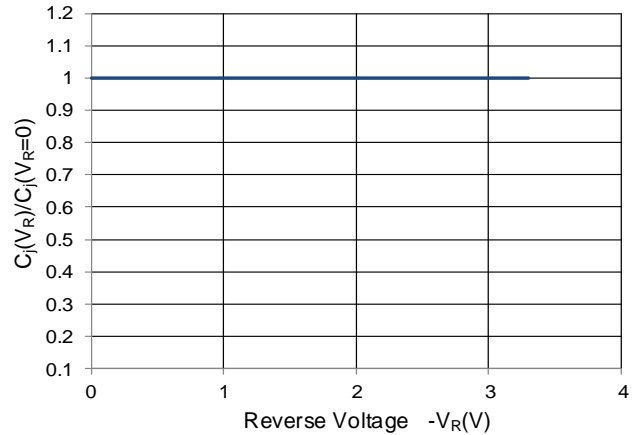


Figure 5: TLP I-V Curve(Pin1&Pin6 to Pin2&Pin5)

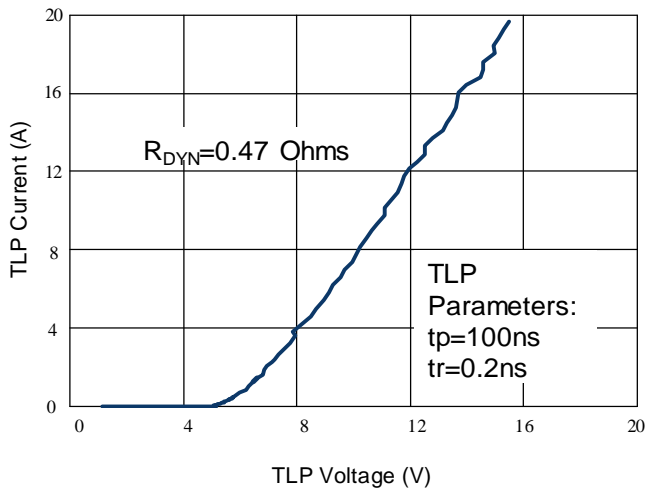
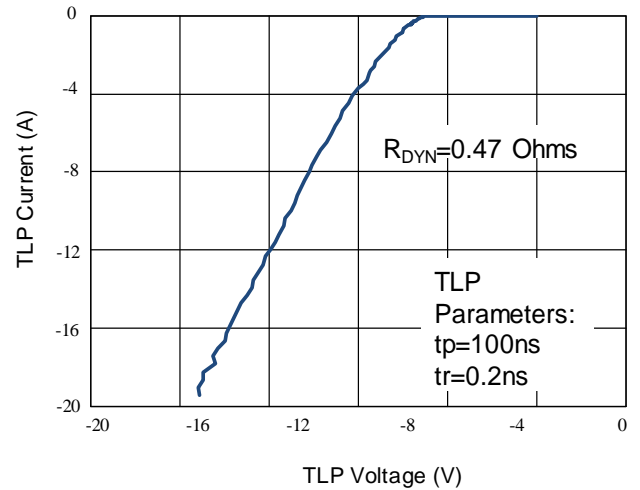
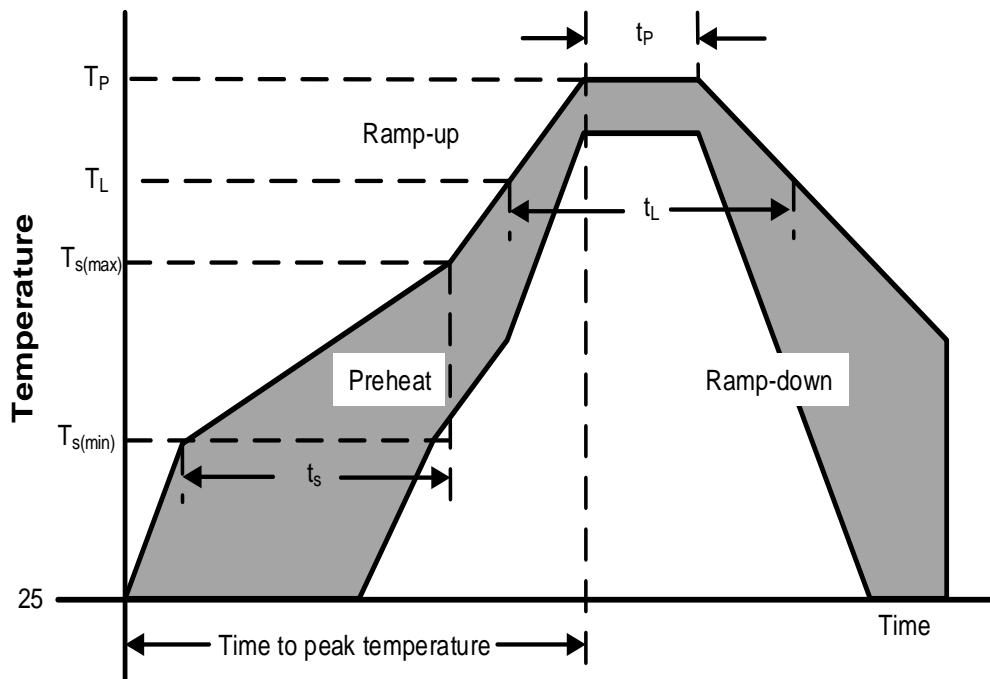


Figure 6: TLP I-V Curve(Pin2&Pin5 to Pin1&Pin6)



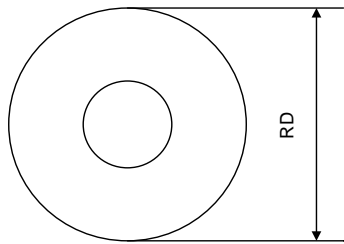
Soldering Parameters

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

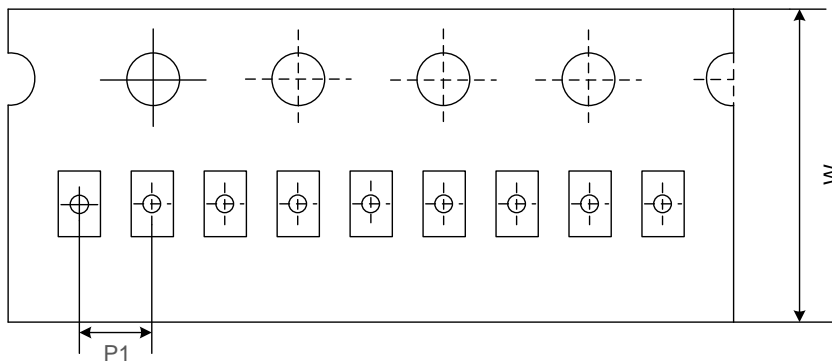


**Tape And Reel Information**

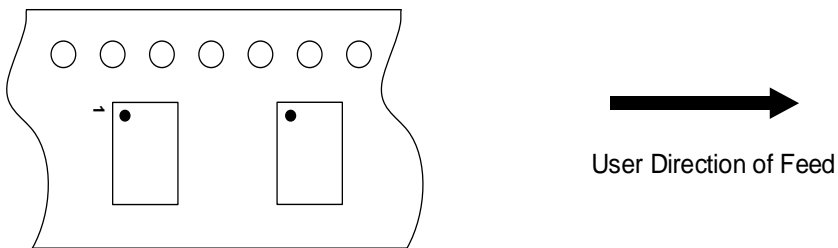
**Reel Dimensions**



**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	4 mm

Outline Drawing – DFN1610-6L

TOP VIEW

BOTTOM VIEW

SIDE VIEW

SYMBOL	MILLIMETERS		
	NOM	MIN	MAX
A	-	0.450	0.550
A1	-	-	0.005
A2	-	0.050	0.150
D	1.600	1.550	1.650
E	1.000	0.950	1.050
b	0.200	0.150	0.250
b1	0.400	0.350	0.450
L	0.330	0.280	0.380
L1	0.050	0.010	0.090
R	0.125REF		
e	0.500BSC		
e1	0.500BSC		

DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	0.024	0.60
G	0.004	0.10
P	0.020	0.50
P1	0.039	1.00
X	0.012	0.30
Y	0.020	0.50
Y1	0.043	1.10

**Notes:**  
Controlling Dimension: Millimeter.

Marking Codes

Part Number	Marking Code
WS03-2RUCB	

Package Information

Qty: 3k/Reel

CONTACT INFORMATION

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WAYON website: <http://www.way-on.com>

For additional information, please contact your local Sales Representative.

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Specifications are subject to change without notice.  
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.  
Users should verify actual device performance in their specific applications.