

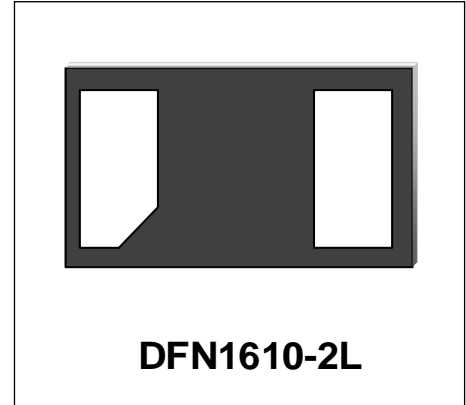


# WS30DPXM

## Transient Voltage Suppressor

### Features

- 1440 Watts Peak Power ( $t_p = 8/20\mu s$ )
- Small Body Outline Dimensions
- Protects one I/O or power line
- Low Clamping Voltage
- Working Voltage: 30V
- Low Leakage Current



### IEC COMPATIBILITY (EN61000-4)

- IEC 61000-4-2 (ESD)  $\pm 30kV$  (air),  $\pm 30kV$  (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 45A (8/20 $\mu s$ )

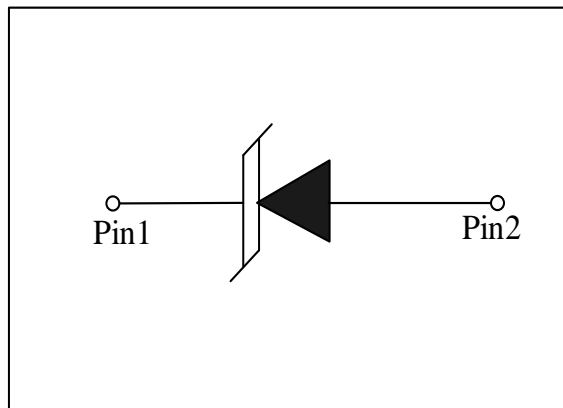
### Mechanical Characteristics

- DFN1610-2L package
- Marking: Marking Code
- Packaging: Tape and Reel per EIA 481
- RoHS Compliant & HF
- Device meets MSL 1 requirement

### Applications

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

### Schematic & PIN Configuration

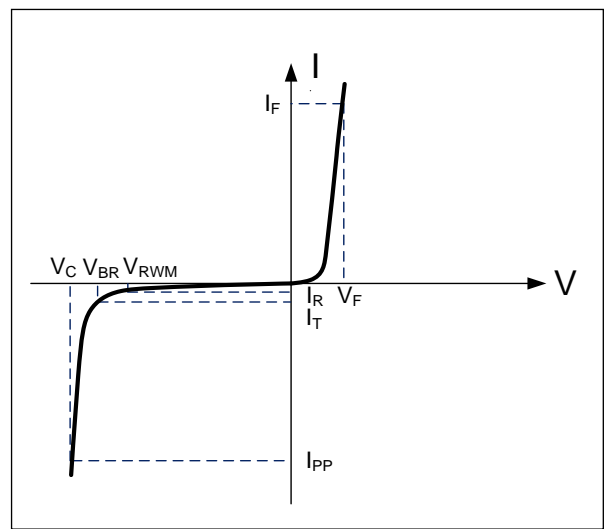


**Absolute Maximum Rating**

Rating	Symbol	Value	Units
Peak Pulse Power ( $t_p = 8/20\mu s$ )	PPP	1440	Watts
Peak Pulse Current ( $t_p = 8/20\mu s$ )	I <sub>PP</sub>	45	A
Operating Temperature	T <sub>J</sub>	-55 to + 125	°C
Storage Temperature	T <sub>STG</sub>	-55 to + 150	°C

**Electrical Parameters**

Symbol	Parameter
I <sub>PP</sub>	Reverse Peak Pulse Current
V <sub>C</sub>	Clamping Voltage @ I <sub>PP</sub>
V <sub>RWM</sub>	Reverse Stand-Off Voltage
I <sub>R</sub>	Reverse Leakage Current @ V <sub>RWM</sub>
V <sub>BR</sub>	Breakdown Voltage @ I <sub>T</sub>
I <sub>T</sub>	Test Current
I <sub>F</sub>	Forward Current
V <sub>F</sub>	Forward Voltage @ I <sub>F</sub>



**Electrical Characteristics (T=25°C unless otherwise noted)**

WS30DPXM						
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V <sub>RWM</sub>				30	V
Reverse Breakdown Voltage	V <sub>BR</sub>	I <sub>T</sub> =1mA	31			V
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =10mA	0.6		1.2	V
Reverse Leakage Current	I <sub>R</sub>	V <sub>RWM</sub> =30V			200	nA
Clamping Voltage	V <sub>C</sub>	I <sub>PP</sub> =45A, t <sub>p</sub> =8/20μs		29	32	V
Dynamic Resistance <sup>1,2</sup>	R <sub>DYN</sub>	TLP=0.2/100ns		0.13		Ω
ESD Clamping Voltage <sup>1</sup>	V <sub>C</sub>	I <sub>PP</sub> = 4A, t <sub>p</sub> = 0.2/100ns (TLP)		36.7		V
ESD Clamping Voltage <sup>1</sup>	V <sub>C</sub>	I <sub>PP</sub> = 16A, t <sub>p</sub> = 0.2/100ns (TLP)		38.3		V
Junction Capacitance	C <sub>j</sub>	V <sub>R</sub> = 0V, f = 1MHz		250	300	pF

Note: 1、TLP Setting : t<sub>p</sub>=100ns, t<sub>r</sub>=0.2ns, I<sub>TLP</sub> and V<sub>TLP</sub> sample window:t<sub>1</sub>=70ns to t<sub>2</sub>=90ns.  
 2、Dynamic resistance calculated from I<sub>PP</sub>=4A to I<sub>PP</sub>=16A using “Best Fit”.

Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

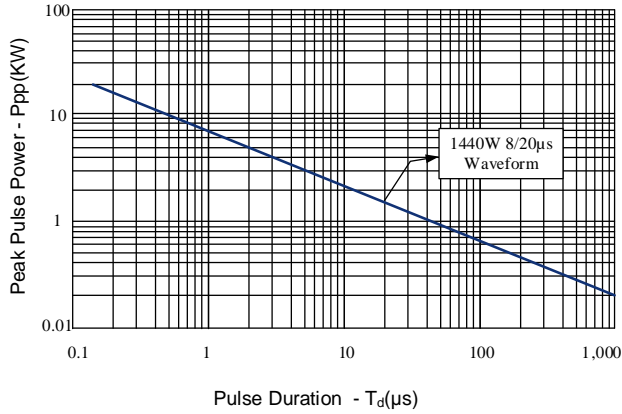


Figure 2: Power Derating Curve

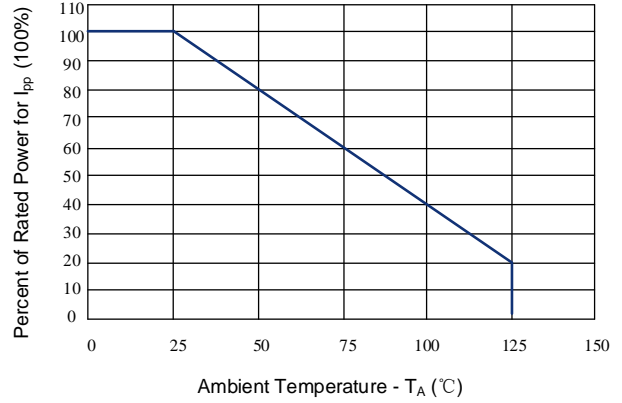


Figure 3: Clamping Voltage vs. Peak Pulse Current

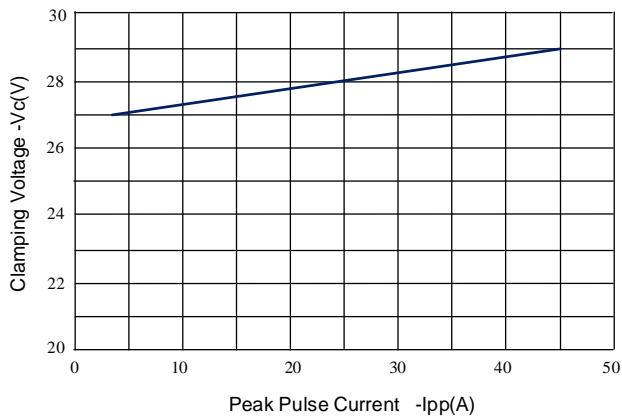


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

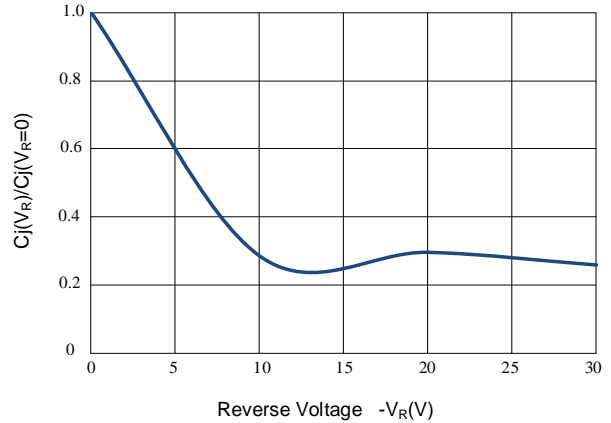


Figure 5: Pulse Waveform

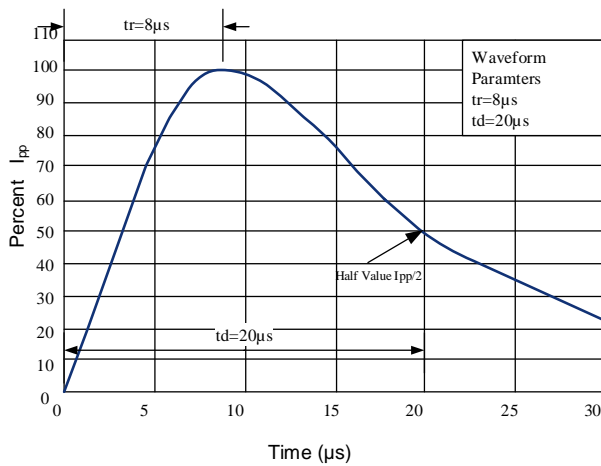
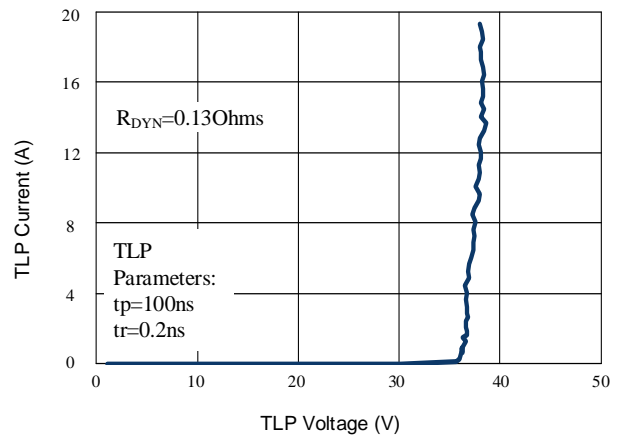
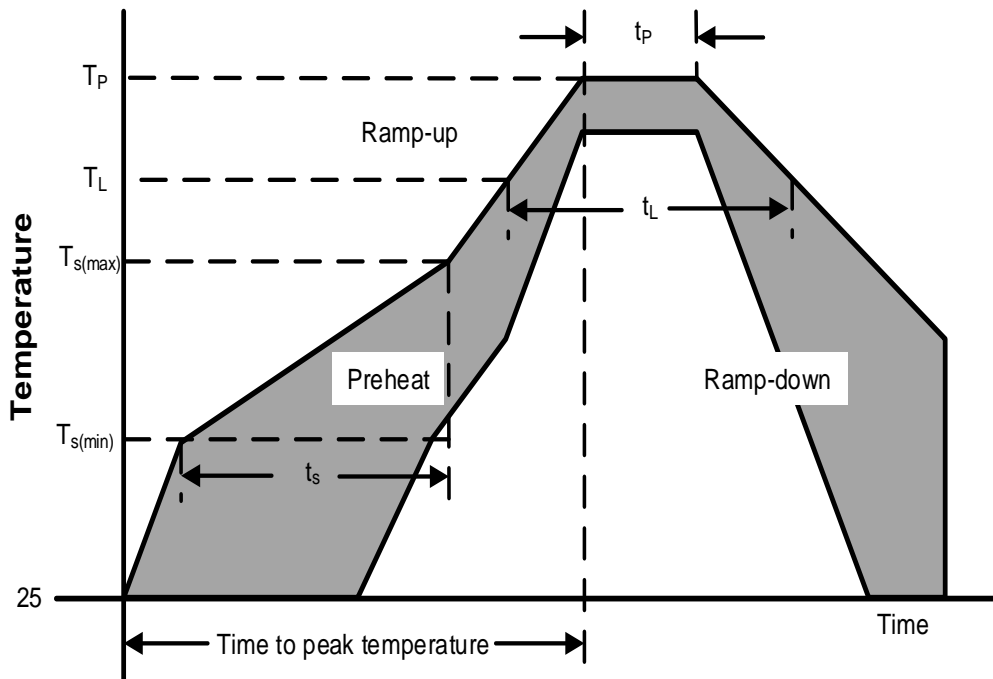


Figure 6: TLP I-V Curve



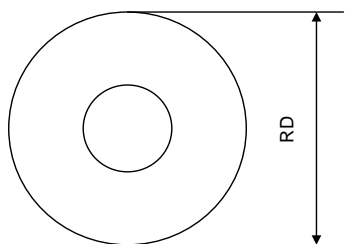
Soldering Parameters

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

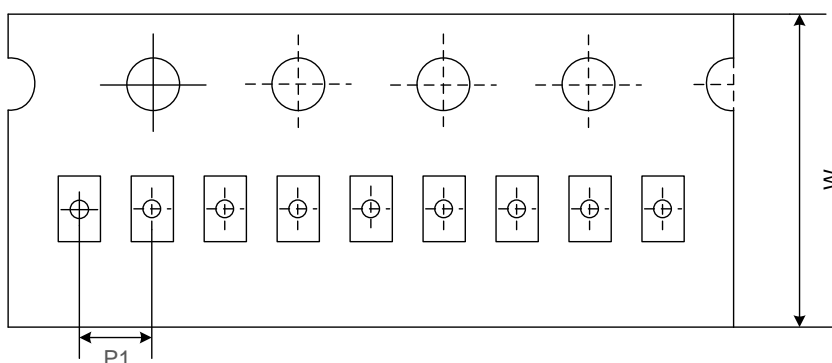


**Tape And Reel Information**

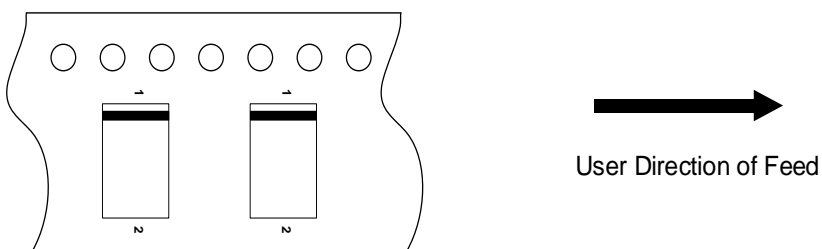
**Reel Dimensions**



**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	2mm

Outline Drawing –DFN1610-2L

**PACKAGE OUTLINE**

TOP VIEW

BOTTOM VIEW

SIDE VIEW

**DFN1610-2L**

DIMENSIONS			
SYMBOL	MILLIMETERS		
	MIN	NOM	MAX
A	0.450	-	0.550
A1	-	-	0.050
D	1.590	1.620	1.650
E	0.990	1.020	1.050
b	0.750	0.800	0.850
L	0.350	0.400	0.450
h	0.150	0.200	0.250
L1	0.060REF		
L2	0.110REF		
e	1.100BSC		

**Land Pattern**

**Marking Codes**

Part Number	Marking Code
WS30DPXM	<p style="font-size: small;">NP=Specific Device Code X=Month Code</p>

**Package Information**

Qty: 10k/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.