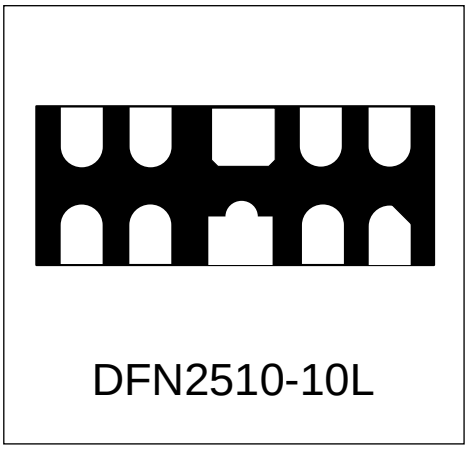
WS6416KC

Transient Voltage Suppressor

Features

- Solid-state silicon-avalanche technology
- Low operating and clamping voltage
- Up to four I/O lines of protection
- Low leakage
- Low operating voltage:5.0V



DFN2510-10L

IEC COMPATIBILITY (EN61000-4)

- **IEC 61000-4-2 (ESD) ±15kV (air), ±10kV (contact)**
- **IEC 61000-4-4 (EFT) 40A (5/50ns)**
- **IEC 61000-4-5 (Lightning) 6.5A (8/20μs)**

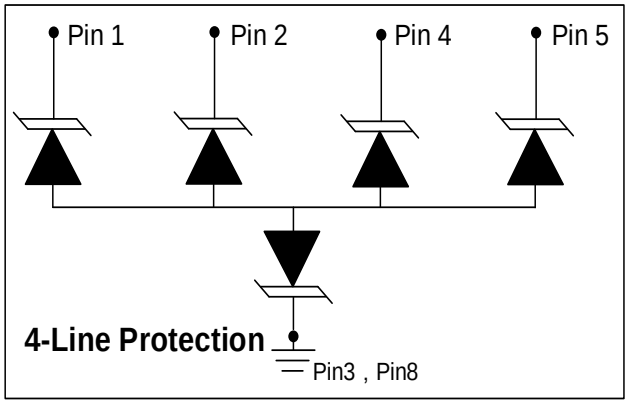
Mechanical Characteristics

- DFN2510-10L package
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant & HF
- Device meets MSL1 requirement

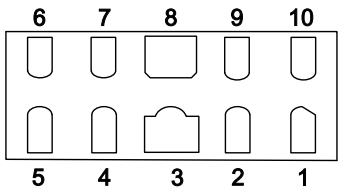
Applications

- USB2.0 and USB 3.0
- HDMI 1.3, HDMI 1.4
- SATA and eSATA
- DVI
- IEEE 1394
- PCI Express
- Portable Electronics and Notebooks

Circuit Diagram



Schematic & PIN Configuration



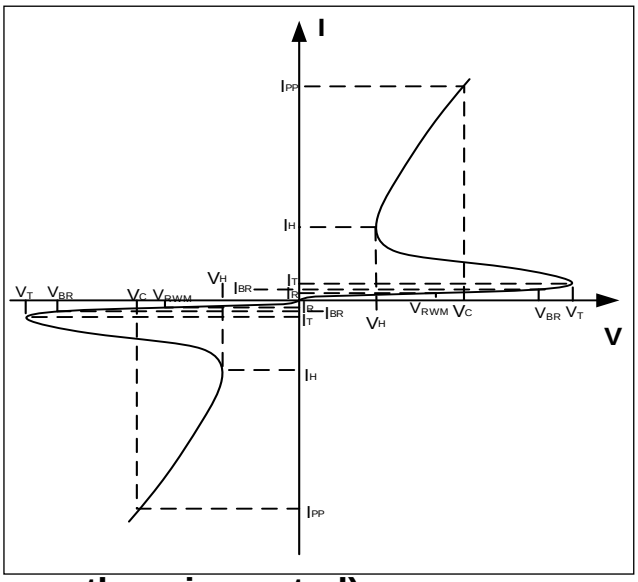
Pin	Identificaion
1,2,4,5	Input Lines
6,7,9,10	Output Lines (No Internal Connection)
3,8	Ground

Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (t_p =8/20μs)	P_{PP}	52	Watts
Peak Pulse Current (t_p =8/20μs)	I_{pp}	6.5	A
Operating Temperature	T_J	-55 to + 125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Parameters

Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage
V_{RWM}	Reverse Stand-Off Voltage
I_R	Reverse Leakage Current
V_{BR}	Reverse Breakdown Voltage
I_{BR}	Reverse Breakdown Current
V_T	Reverse Trigger Voltage
I_T	Reverse Trigger Current
V_H	Reverse Holding Voltage
I_H	Reverse Holding current



Electrical Characteristics(T=25℃ unless otherwise noted)

WS6416KC						
Parameter	**Symbol**	**Conditions**	**Minimum**	**Typical**	**Maximum**	**Units**
Reverse Stand-Off Voltage	V_{RWM}	Any I/O pin to ground			5.0	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Any I/O pin to ground	5.6			V
Reverse Leakage Current	I_R	V_{RWM} = 5.0V Any I/O pin to ground			200	nA
Holding current	I_H	T=25℃		43		mA
Clamping Voltage	Vc	I_{pp}=6.5A, t_p=8/20μs Any I/O pin to ground		5.5	8	V
ESD Clamping Voltage[1]	V_C	I_{pp} = 4A, tp = 0.2/100ns (TLP)		4.7		V
ESD Clamping Voltage[1]	V_C	I_{pp} = 16A, tp = 0.2/100ns (TLP)		8.6		V
Holding Voltage	V_H	tp = 0.2/100ns (TLP)		3.8		V
Dynamic Resistance[1,2]	R_{DYN}	TLP=0.2/100ns		0.34		Ω
Junction Capacitance	C_j	V_R =1.65V, f = 1MHz I/O pin to GND		0.4	0.5	pF

Notes：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”.

Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

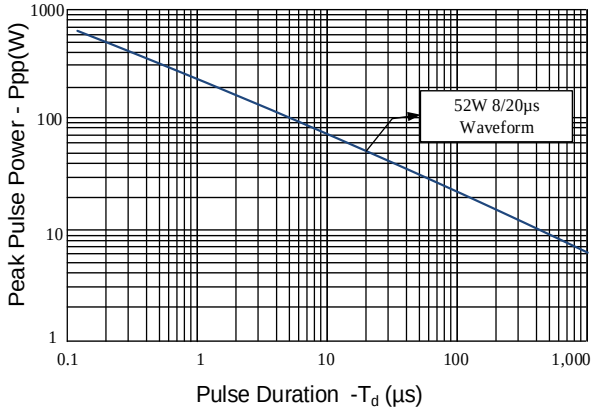


Figure 2: Power Derating Curve

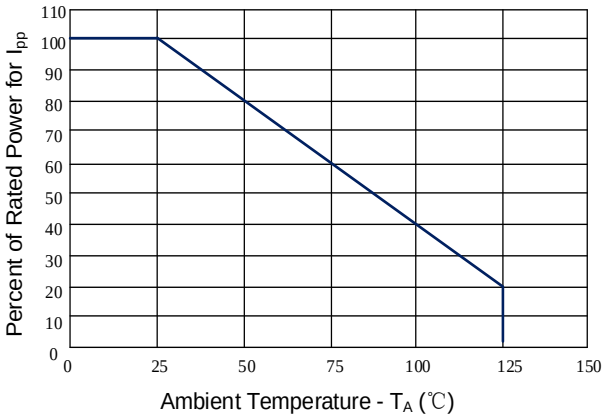


Figure 3: Clamping Voltage vs. Peak Pulse Current

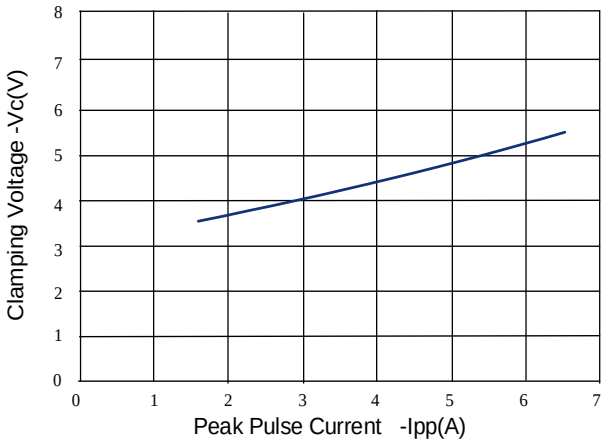


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

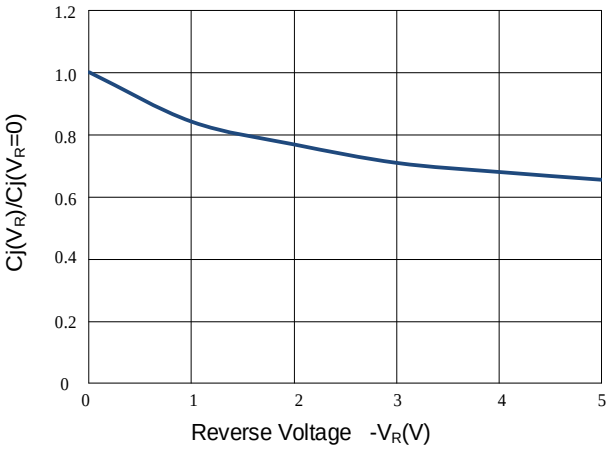


Figure 5: TLP Positive I-V Curve

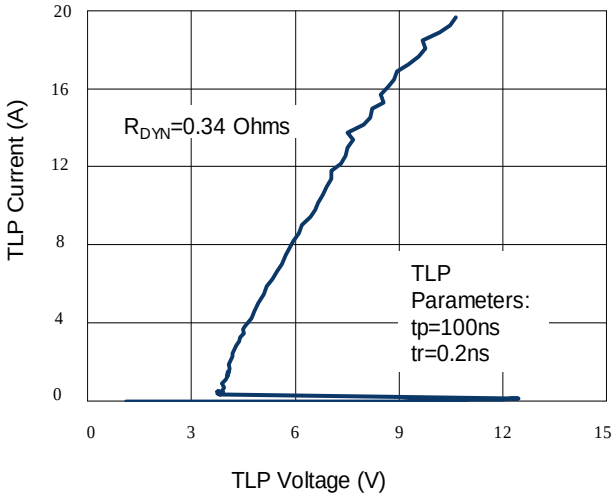
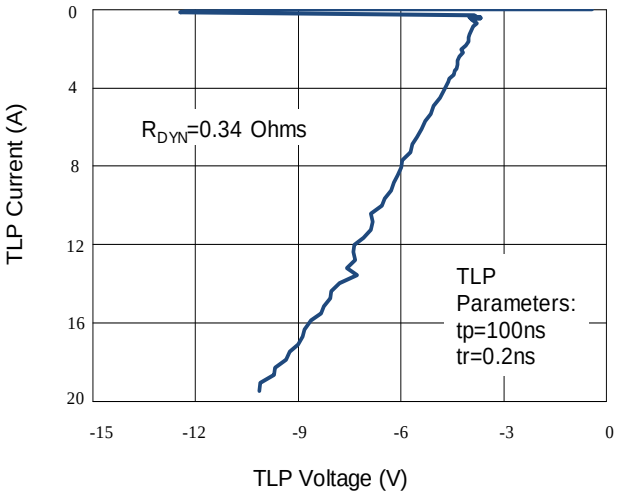
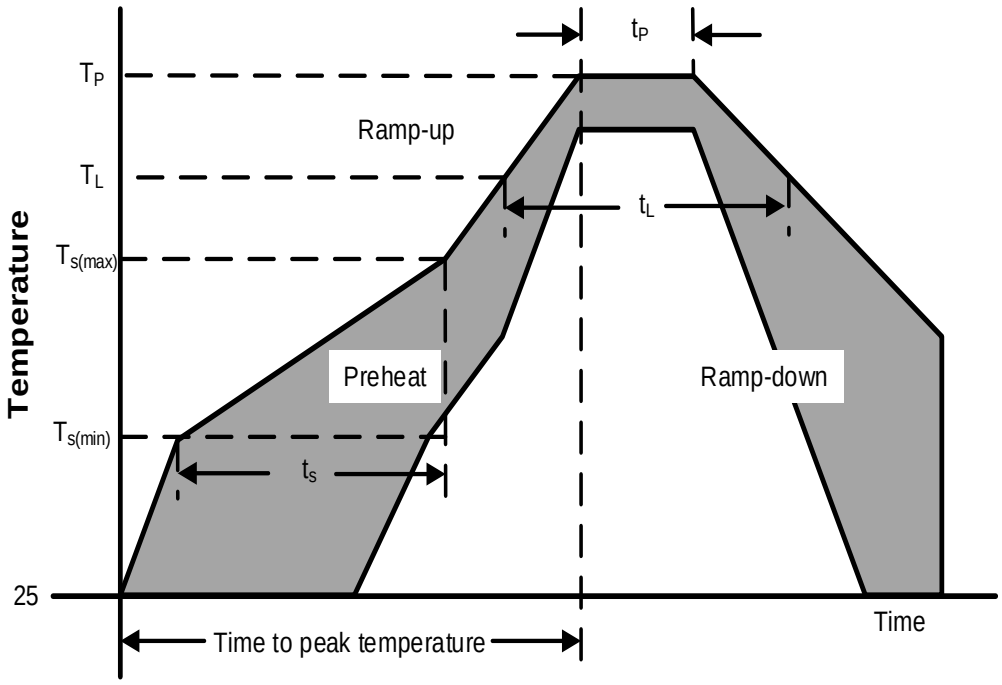


Figure 6: TLP Negative I-V Curve



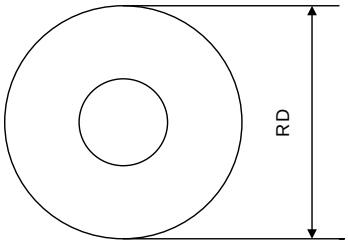
Soldering Parameters

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) (ts)	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

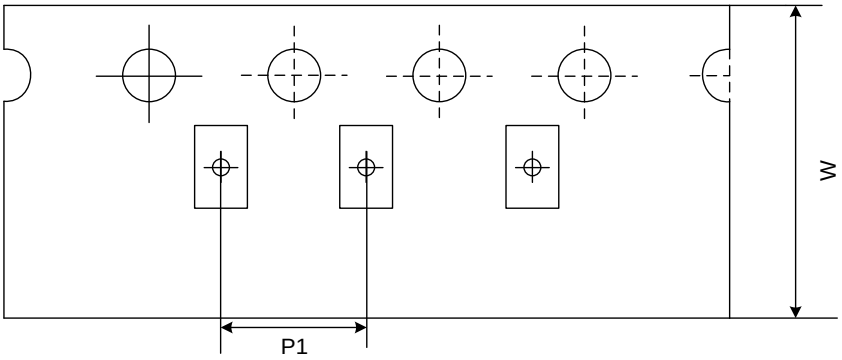


Tape And Reel Information

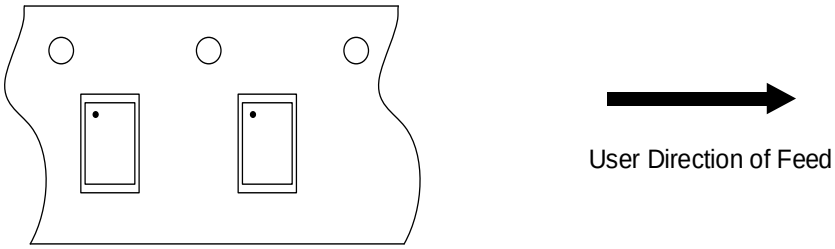
Reel Dimensions



Tape Dimensions

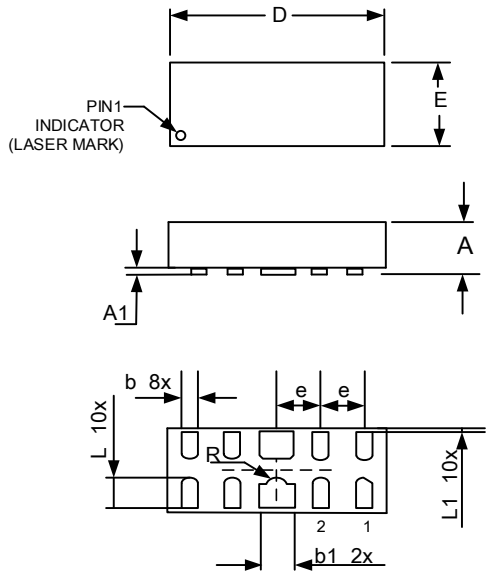


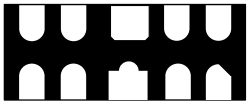
Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimensions	7 inch
W	Overall width of the carrier tape	8 mm
P1	Pitch between successive cavity centers	4mm

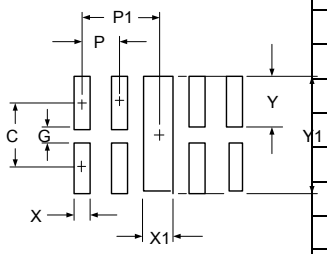
Outline Drawing –DFN2510-10L





DFN2.5x1-10L

DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.450	-	0.550
A1	0.025	0.050	0.075
D	2.450	2.500	2.550
E	0.950	1.000	1.050
b	0.150	0.200	0.250
b1	0.350	0.400	0.450
L	0.320	0.370	0.420
L1	0.000	0.030	0.060
R	0.100 REF		
e	0.500 BSC		



DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	0.034	0.875
G	0.008	0.20
P	0.020	0.50
P1	0.039	1.00
X	0.010	0.25
X1	0.018	0.45
Y	0.027	0.675
Y1	0.061	1.55

Notes:
Controlling Dimension: Millimeter.

Marking Codes

Part Number	WS6416KC
Marking Code	66KX 66K= Specific Device Code X=Month Code

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.