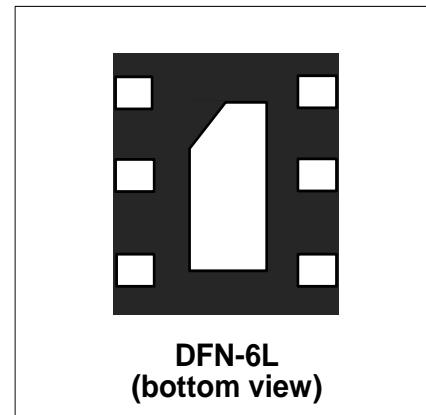




## Transient Voltage Suppressor

**Features**

- Array of surge rated diodes with internal TVS Diode
- Small package saves board space
- Protects up to four I/O lines
- Low capacitance(<0.8pF) for high speed interfaces
- Low operating voltage: 2.5V
- Low leakage current and clamping voltage
- Solid-state silicon-avalanche technology

**IEC COMPATIBILITY (EN61000-4)**

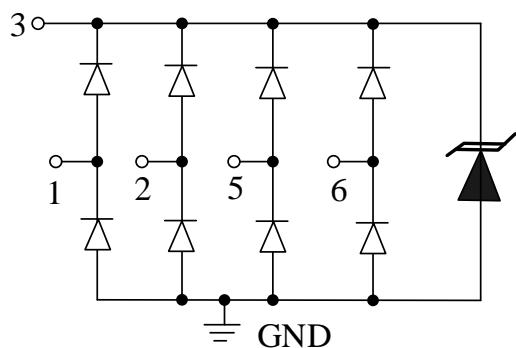
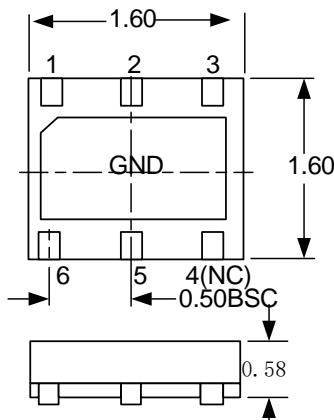
- IEC 61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning)5A (8/20μs)

**Mechanical Characteristics**

- DFN1616-6L package
- Nominal Dimensions:1.6x1.6 x0.58mm
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant & HF

**Applications**

- Multi Media Card(MMC) Interfaces
- SATA Interfaces
- SD Card Interfaces
- SIM Ports
- MDDI Ports
- MPPI Ports

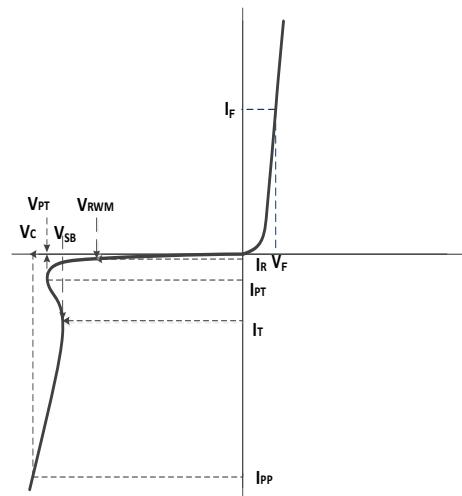
**Circuit Diagram****Schematic & PIN Configuration**

**Absolute Maximum Rating**

Rating	Symbol	Value	Units
Peak Pulse Power ( $t_p=8/20\mu s$ )	$P_{PP}$	55	Watts
Peak Pulse Current ( $t_p=8/20\mu s$ )	$I_{PP}$	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 @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{SB}$	Snapback Voltage @ $I_T$
$I_T$	Test Current
$V_{PT}$	Punch-through Breakdown Voltage @ $I_{PT}$
$I_{PT}$	Punch-through Current

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

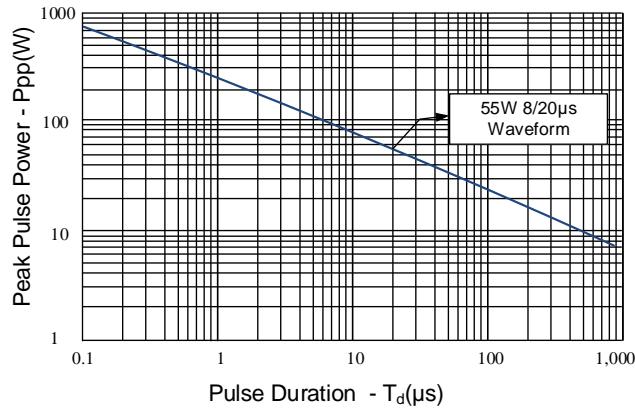
WE2.5-4RP						
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	$V_{RWM}$	Pin 3 to GND			2.5	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	3.5			V
Reverse Leakage Current	$I_R$	$V_{RWM}=2.5V$			500	nA
Clamping Voltage	$V_C$	$I_{PP}=1A, t_p=8/20\mu s$ Between I/O To GND			7.5	V
Clamping Voltage	$V_C$	$I_{PP}=5A, t_p=8/20\mu s$ Between I/O To GND		11	13	V
Dynamic Resistance <sup>1,2</sup>	$R_{DYN}$	$TLP=0.2/100ns$		0.31		Ω
ESD Clamping Voltage <sup>1</sup>	$V_C$	$IPP = 4A,$ $tp = 0.2/100ns (TLP)$		9.7		V
ESD Clamping Voltage <sup>1</sup>	$V_C$	$IPP = 16A,$ $tp = 0.2/100ns (TLP)$		13.4		V
Junction Capacitance	$C_J$	Between I/O pins and Ground $V_R=0V, f=1MHz$			0.8	pF
		Between I/O pins $V_R=0V, f=1MHz$		0.4		pF

Notes : 1、TLP Setting :  $t_p=100ns, t_f=0.2ns, I_{TLP}$  and  $V_{TLP}$  sample window: $t_1=70ns$  to  $t_2=90ns$ .

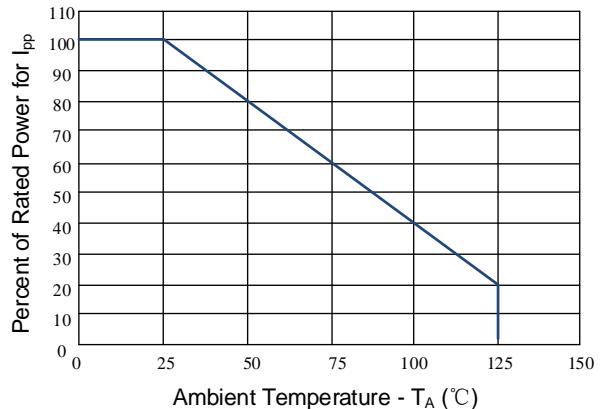
2、Dynamic resistance calculated from  $I_{PP}=4A$  to  $I_{PP}=16A$  using "Best Fit".

## Typical Characteristics

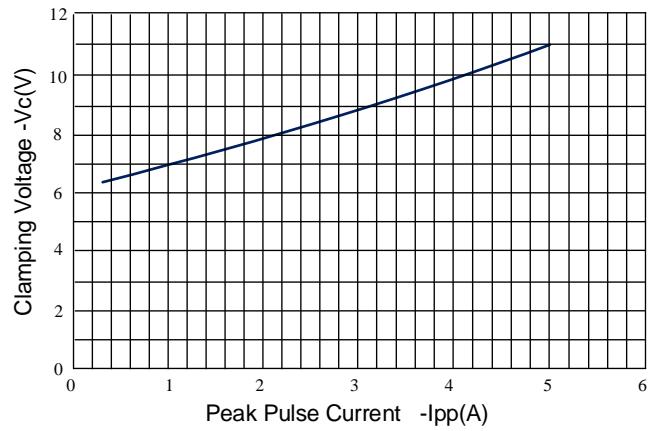
**Figure 1: Peak Pulse Power vs. Pulse Time**



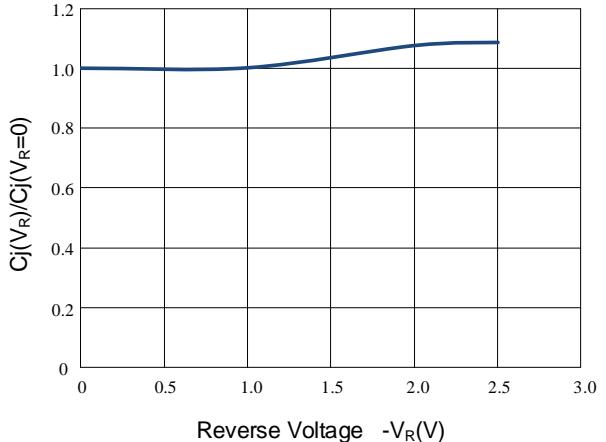
**Figure 2: Power Derating Curve**



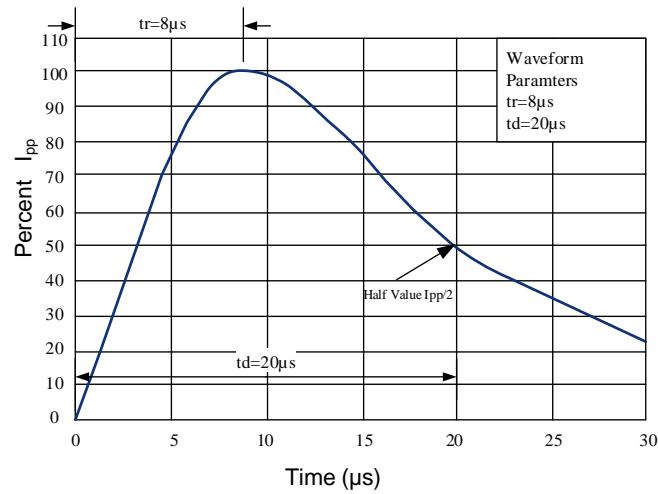
**Figure 3: Clamping Voltage vs. Peak Pulse Current**



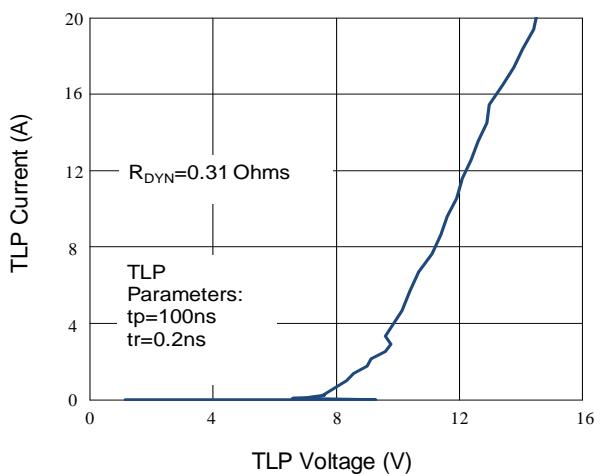
**Figure 4: Normalized Junction Capacitance vs. Reverse Voltage**



**Figure 5: 8/20 $\mu$ s Pulse Waveform**

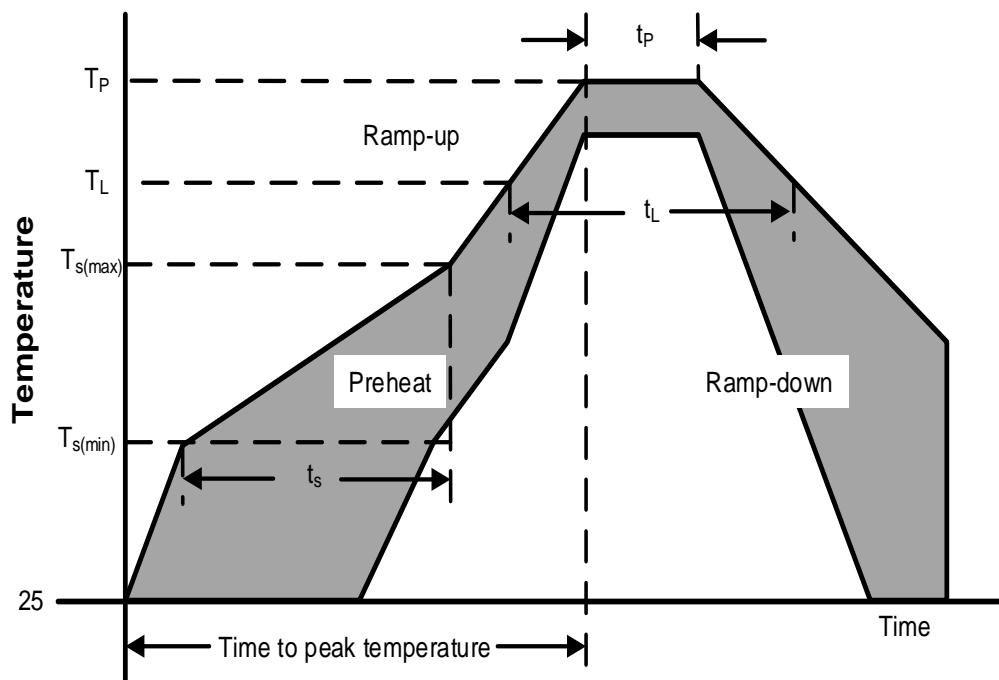


**Figure 6: TLP Curve**



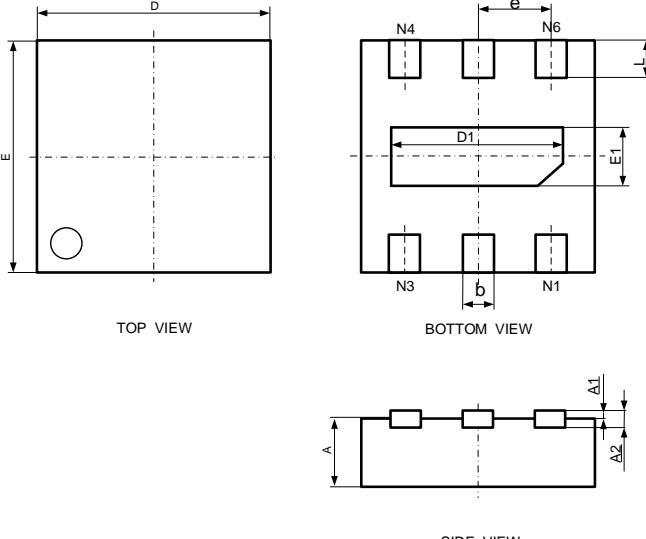
## Soldering Parameters

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



## Outline Drawing – DFN1616-6L

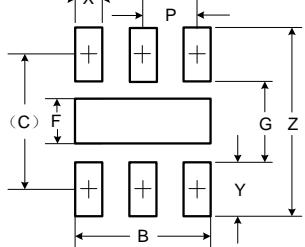
PACKAGE OUTLINE		DIMENSIONS			
SYMBOL	MILLIMETERS		INCHES		
	MIN	MAX	MIN	MAX	
A	0.450	0.600	0.018	0.024	
A1	0.000	0.050	0.000	0.002	
A2	0.200REF		0.008REF		
D	1.550	1.650	0.061	0.065	
E	1.550	1.650	0.061	0.065	
E1	0.500	0.600	0.020	0.024	
D1	1.150	1.250	0.045	0.049	
b	0.200	0.300	0.008	0.012	
e	0.500 BSC.		0.020 BSC.		
L	0.280	0.380	0.011	0.015	



The diagram shows three views of the DFN1616-6L package: TOP VIEW, BOTTOM VIEW, and SIDE VIEW. The TOP VIEW shows a square package with a circular pad at the bottom center. The BOTTOM VIEW shows internal lead frames labeled N1 through N6, with dimensions D, e, E1, b, and D1. The SIDE VIEW shows the height A, width A1, and thickness A2.

DIMENSIONS		
DIM	INCHES	MILLIMETERS
B	0.051	1.30
C	0.055	1.40
F	0.018	0.45
Z	0.075	1.91
G	0.035	0.89
P	0.020TYP	0.50 TYP
X	0.012	0.30
Y	0.020	0.51



The pinout diagram shows the package with pins labeled X, Y, Z, P, F, C, G, and B. Pin X is the top-left pad, Y is the bottom-left pad, Z is the bottom-right pad, P is the top-right pad, F is the left-most pad, C is the second-left pad, G is the right-most pad, and B is the second-right pad.



DFN1616-6L

DIMENSIONS				
SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.450	0.600	0.018	0.024
A1	0.000	0.050	0.000	0.002
A2	0.200REF		0.008REF	
D	1.550	1.650	0.061	0.065
E	1.550	1.650	0.061	0.065
E1	0.500	0.600	0.020	0.024
D1	1.150	1.250	0.045	0.049
b	0.200	0.300	0.008	0.012
e	0.500 BSC.		0.020 BSC.	
L	0.280	0.380	0.011	0.015

## Notes

- Dimensioning and tolerances per ANSI Y14.5M, 1985.
- Controlling Dimension: Inches
- Dimensions are exclusive of mold flash and metal burrs.

## Marking Codes

Part Number	WE2.5-4RP
Marking Code	4RP

## Package Information

Qty: 3k/Reel

## CONTACT INFORMATION

No.1001, Shiwan(7) Road, Pudong District, Shanghai, P.R.China.201207

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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.