

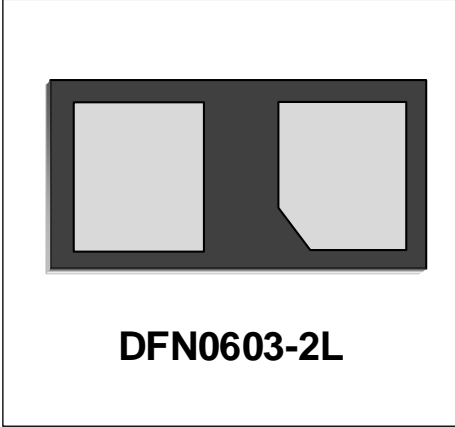


# WS2019KS

## Transient Voltage Suppressor

### Features

- Small Body Outline Dimensions
- 81 Watts Peak Pulse Power per Line ( $t_p=8/20\mu s$ )
- ESD Protection of one line
- Low Clamping Voltage
- Working Voltage: 5.0V
- Low Leakage Current



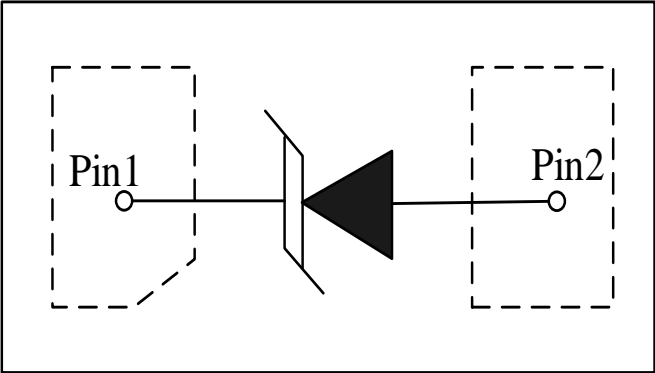
### IEC COMPATIBILITY (EN61000-4)

- IEC 61000-4-2 (ESD)  $\pm 30kV$  (air),  $\pm 30kV$  (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning)9A (8/20 $\mu s$ )

### Mechanical Characteristics Applications

- DFN0603-2L package
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant & HF
- Device meets MSL1 requirement
- Cellular handsets and accessories
- Portable electronics
- Communication systems
- Computers and peripherals

### Schematic & PIN Configuration

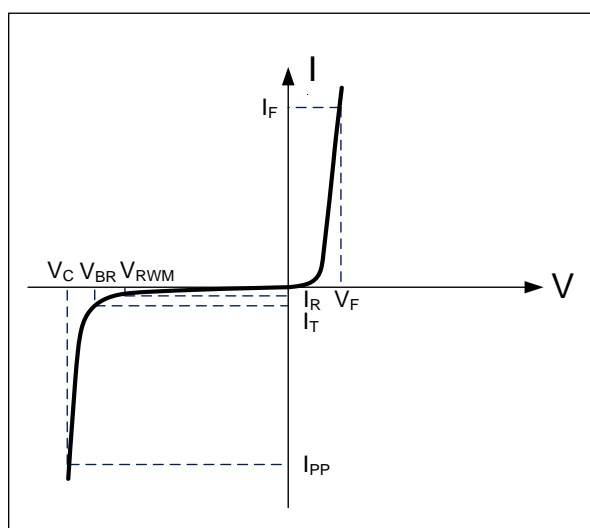


(TOP VIEW)

Absolute Maximum Rating			
Rating	Symbol	Value	Units
Peak Pulse Power ( $t_p = 8/20\mu s$ )	$P_{PP}$	81	W
Peak Pulse Current ( $t_p = 8/20\mu s$ )	$I_{PP}$	9	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
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



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

WS2019KS						
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	$V_{RWM}$				5.0	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T = 1mA$	5.6			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5.0V$			500	nA
Forward Voltage	$V_F$	$I_F = 10mA$	0.6		1.2	V
Clamping Voltage	$V_C$	$I_{PP} = 9A, t_p = 8/20\mu s$		7.8	9	V
ESD Clamping Voltage <sup>1</sup>	$V_C$	$I_{PP} = 4A$ $t_p = 0.2/100ns$		6.5		V
ESD Clamping Voltage <sup>1</sup>	$V_C$	$I_{PP} = 16A$ $t_p = 0.2/100ns$		7.5		V
Dynamic Resistance <sup>1,2</sup>	$R_{DYN}$	TLP=0.2/100ns		0.1		$\Omega$
Junction Capacitance	$C_j$	$V_R = 0V, f = 1MHz$		29	40	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"

Typical Characteristics

Figure 1: Peak Pulse Power Vs Pulse Time

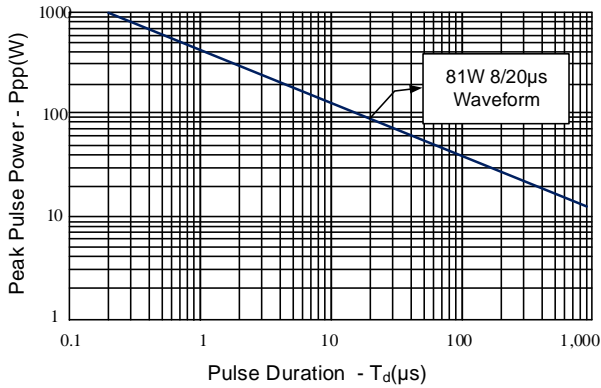


Figure 2: Power Derating Curve

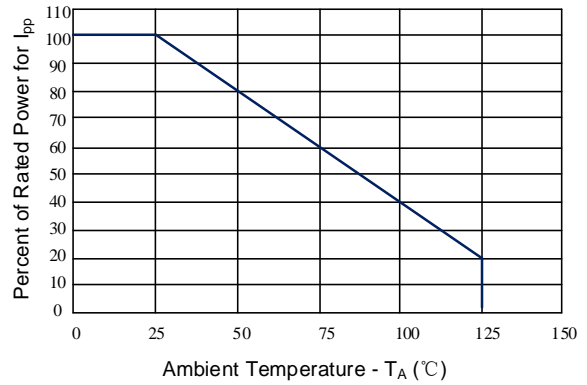


Figure 3: Clamping Voltage vs. Peak Pulse Current

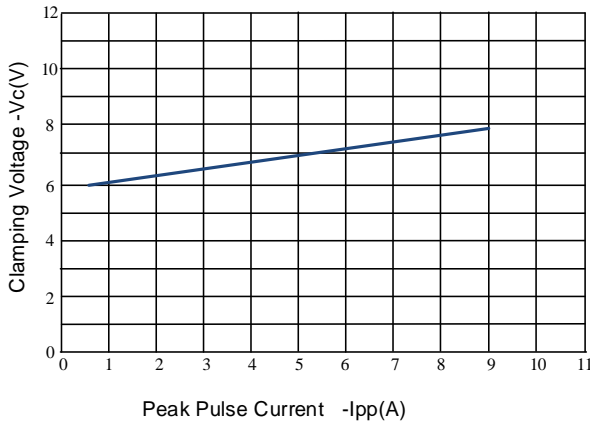


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

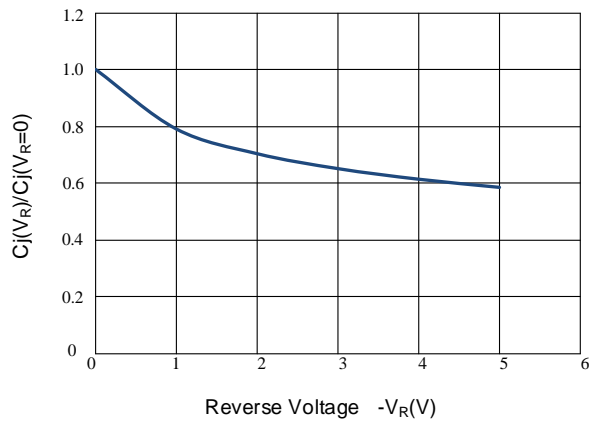


Figure 5: Pulse Waveform

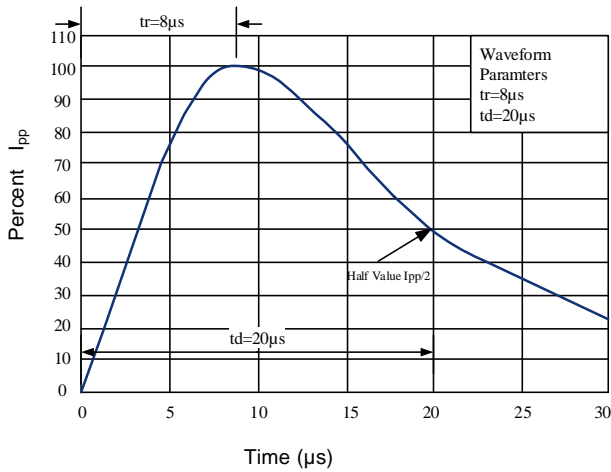
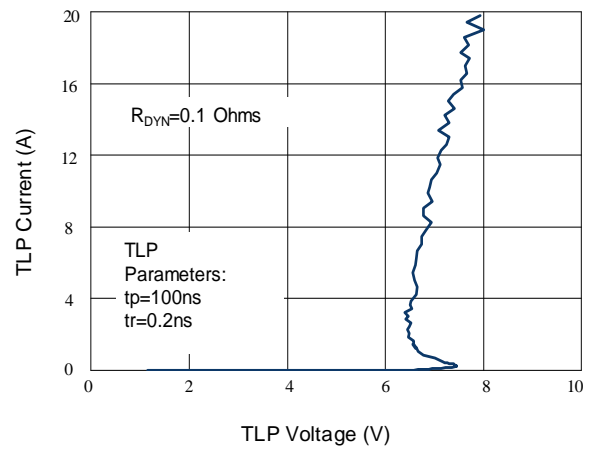
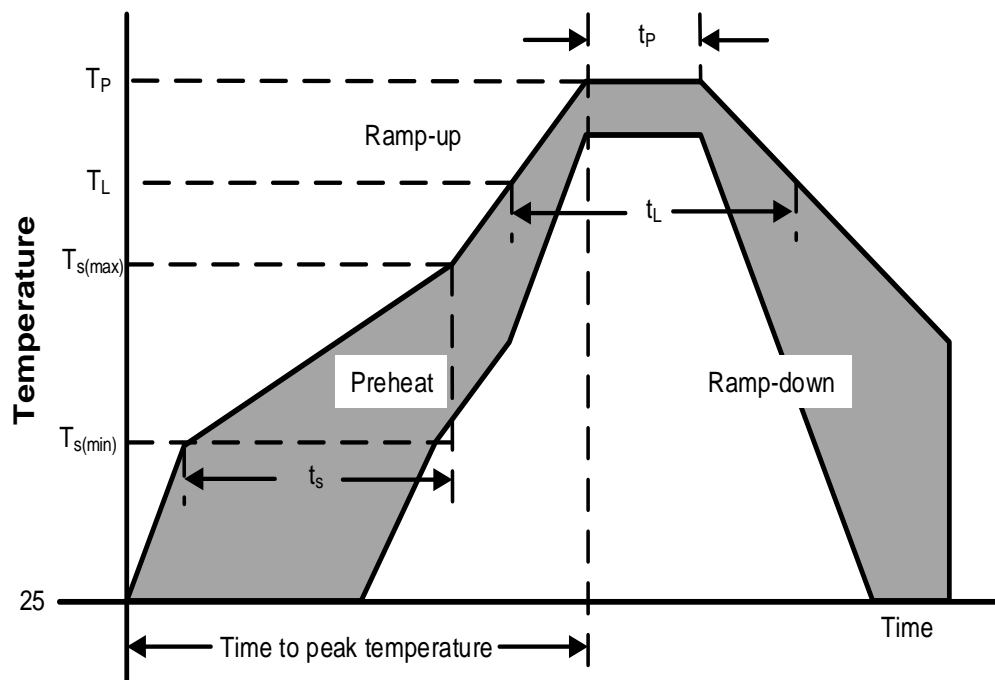


Figure 6: TLP I-V Curve



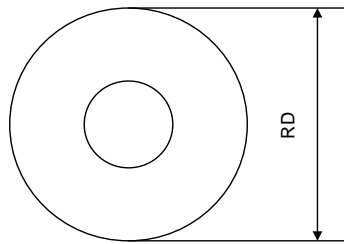
Soldering Parameters

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

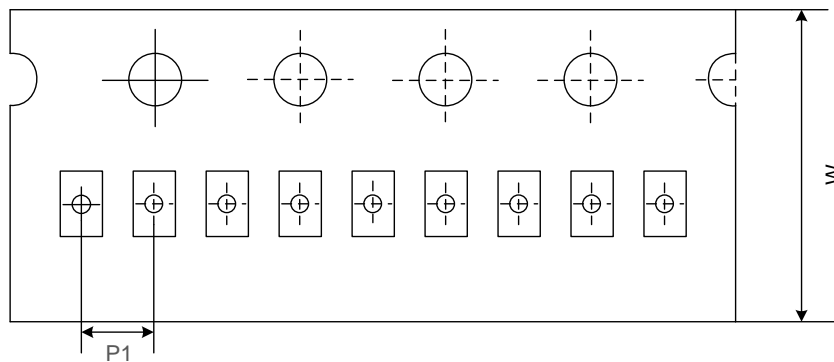


**Tape And Reel Information**

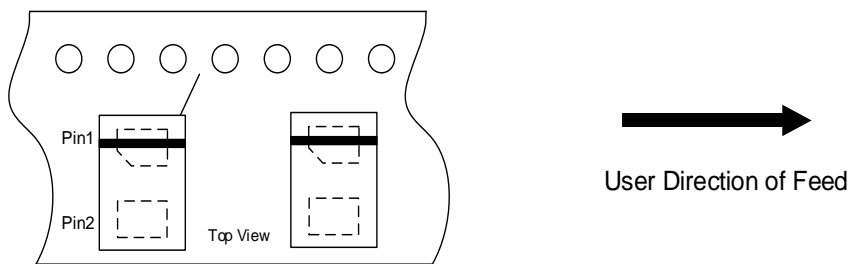
**Reel Dimensions**



**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 –DFN0603-2L

### PACKAGE OUTLINE

Bottom View                      Top View

Side View

**DFN0603-2L**

SYMBOL	MILLIMETERS		
	NOM	MIN	MAX
A	0.30	0.280	0.320
A1	--	--	0.050
D	0.620	0.590	0.640
E	0.320	0.290	0.340
b	0.180	0.155	0.205
L	0.240	0.215	0.265
h	--	0.050	0.100
L1	0.040REF		
L2	0.040REF		
e	0.360BSC		

### Land Pattern

### Marking Codes

Part Number	Marking Code
WS2019KS	<p>K = Specific Device Code M = Month Code</p>

### Package Information

Qty: 15k/Reel

### CONTACT INFORMATION

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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.

单击下面可查看定价，库存，交付和生命周期等信息

[>>WAY-ON\(维安\)](#)