1-Line Low Capacitance Bi-directional TVS Diode WPE5201N

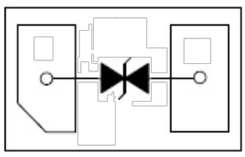
Features

- Ultra small package: 0.6x0.3x0.3mm
- Very low capacitance: 2.5pF typical
- Protects one data or power line
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±15kV
    Contact discharge: ±8kV
  - –EC61000-4-5 (Lightning) 2A (8/20μs)
- RoHS Compliant

DFN0603-2L

Mechanical Characteristics

- Package: DFN0603-2 (0.6×0.3×0.3mm)
- Lead Finish: NiPdAu
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See symbol
- Marking Information: Refer to customer approval list



Bi-directional

SYMBOL

Absolute Maximum Ratings (T_A=25ºC, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±15 ±8	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

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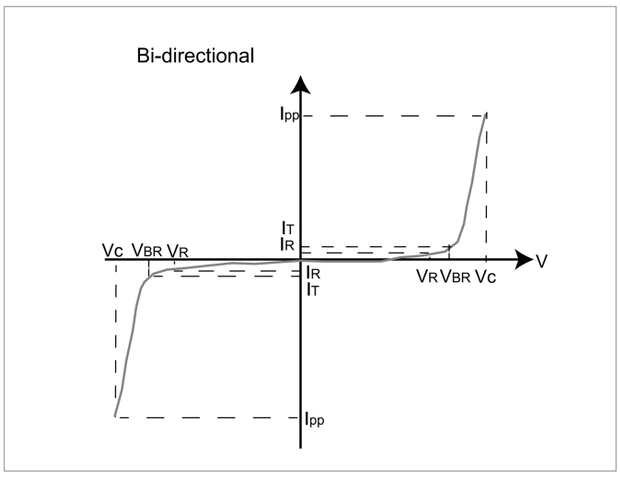
Electrical characteristics (T_A=25℃ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	Pin 1 to Pin 2 or Pin 2 to Pin 1
Breakdown Voltage	V_{BR}	6			V	I_T = 1mA, Pin 1 to Pin 2 or Pin 2 to Pin 1
Reverse Leakage Current	I_R			0.2	μA	V_{RWM} = 5V
Clamping Voltage	V_C			10	V	I_{PP} = 1A (8 x 20μs pulse)
Junction Capacitance	C_J		2.5	3	pF	V_R = 0V, f = 1MHz

I-V Curve Characteristics



P_{PPM} **Peak Pulse Power Dissipation** ---------- Max power dissipation

V_R **Stand-off Voltage** ---------- Maximum voltage that can be applied to the TVS without operation

V_{BR} **Breakdown Voltage** ---------- Maximum voltage that flows though the TVS at a specified test current (I_T)

V_C **Clamping Voltage** ----- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R **Reverse Leakage Current** ---------- Current measured at V_R

V_F **Forward Voltage Drop for Uni-directional**

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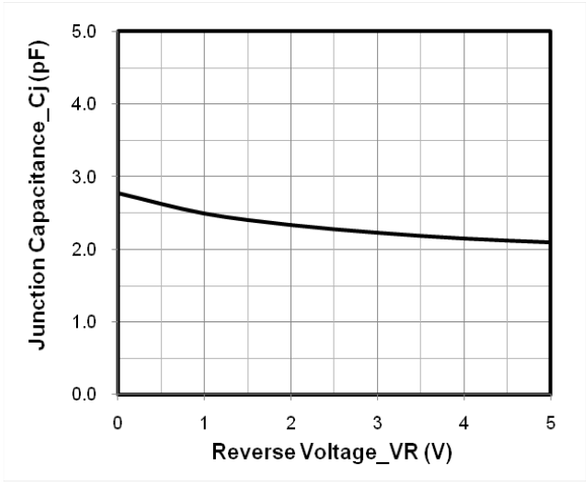
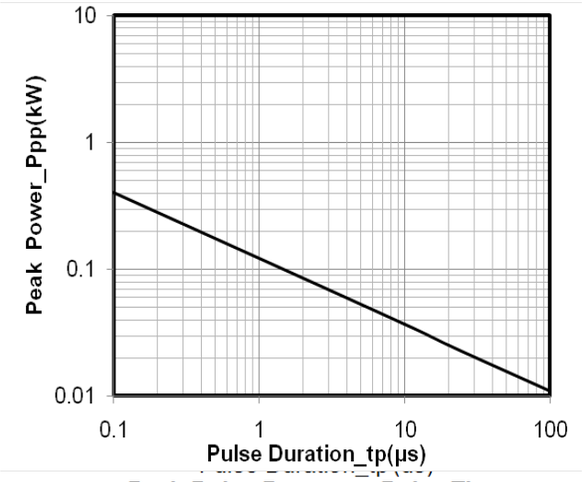
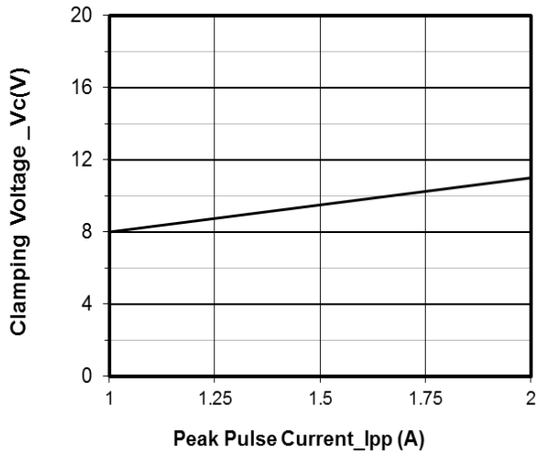
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



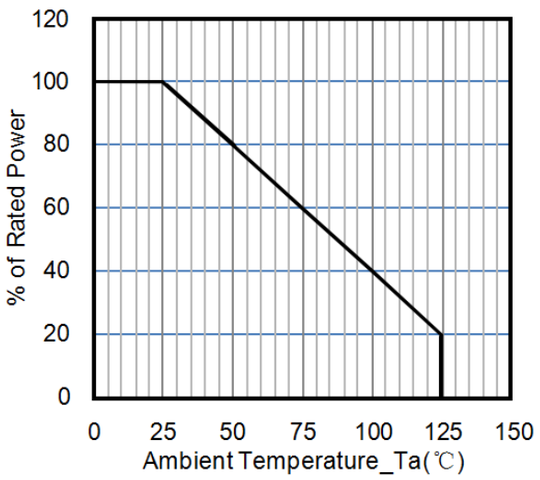
Junction Capacitance vs. Reverse Voltage



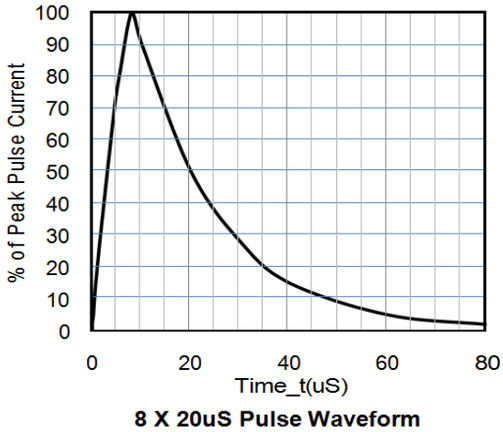
Peak Pulse Power vs. Pulse Time



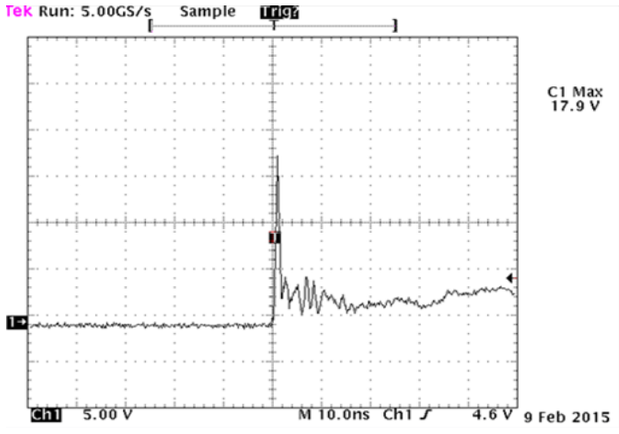
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20uS Pulse Waveform



ESD Clamping Voltage

8 kV Contact per IEC61000−4−2

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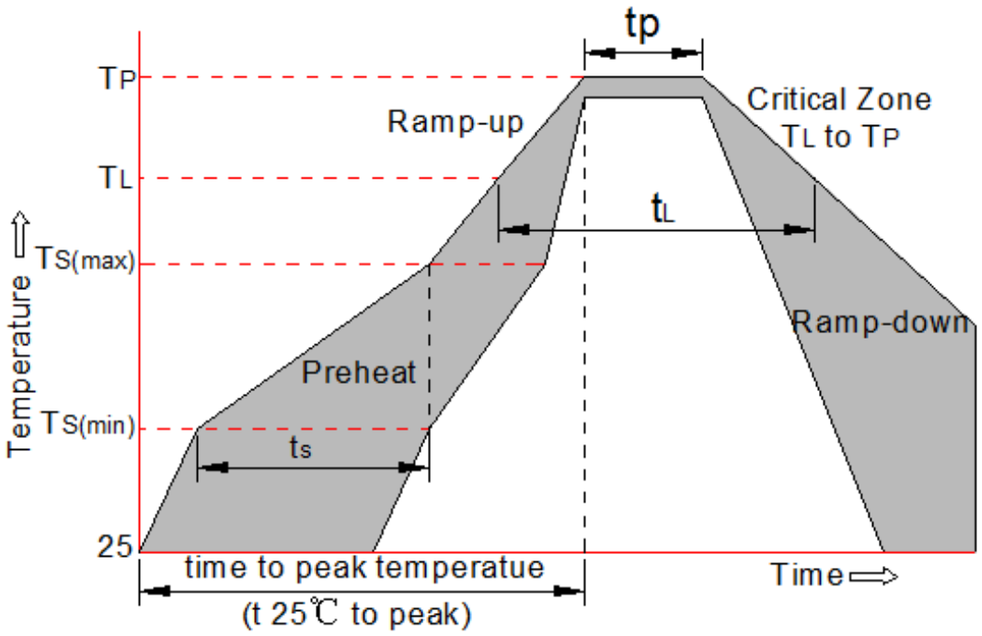
Soldering Parameters



Reflow Condition		Pb-Free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max ($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature (T_L) (Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

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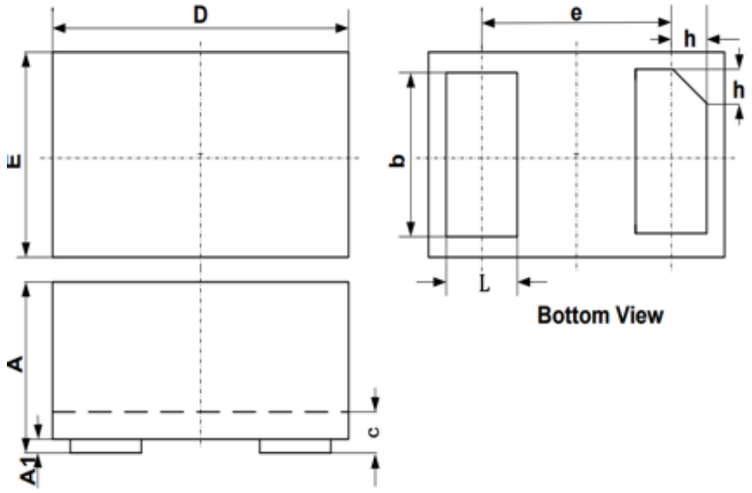
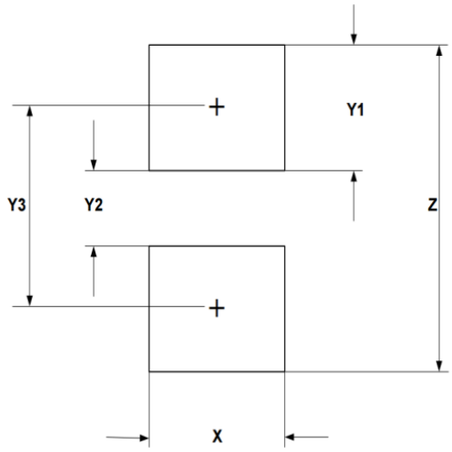
Package Outline Dimensions



SYM	DIMENSIONS		
	MILLIMETERS		
	MIN	NOM	MAX
A	0.230		0.330
A1	0.000	0.020	0.050
b	0.215	0.245	0.275
c	0.120	0.150	0.180
D	0.550	0.600	0.650
e	0.355 BSC		
E	0.250	0.300	0.350
L	0.160	0.190	0.220
h	0.079 BSC		

Suggested PAD Layout



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.30	0.012
Y1	0.25	0.010
Y2	0.15	0.006
Y3	0.40	0.016
Z	0.65	0.026

Ordering Information

Part Number	Package	Weight	Base qty	Reel Size	Delivery mode
		grams(approx.)	(pcs)	(inch)	
WPE5201N	DFN0603		10000	7	Tape and Reel

Contact Information

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