WPE5V02LUB-G
Ultra Low Capacitance ESD Protection Diode

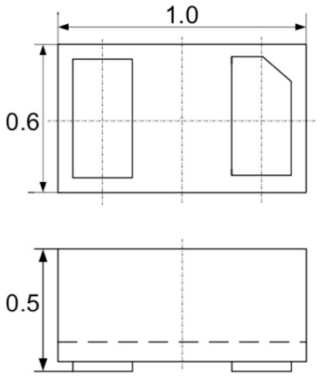
Description

WPE5V02LUB-G is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.4pF, WPE5V02LUB-G is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 (±20kV air, ±20kV contact discharge). The combined features of low capacitance, ultra-small size and high ESD robustness make WPE5V02LUB-G ideal for high-speed data port and high-frequency line applications, such as cellular phones and HD visual devices.

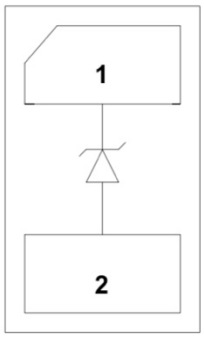
Features

- Ultra small package: 1.0x0.6x0.5mm
- Protects one data or power line
- Ultra low leakage: nA level
- Working voltage: 5V
- Low clamping voltage
- Complies with following standards:
  – IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±20kV
    Contact discharge: ±20kV
  – IEC61000-4-4 (EFT) 40A (5/50ns)
  – IEC61000-4-5 (Lightning) 4A (8/20μs)
- RoHS Compliant

Dimensions & Symbol（Unit: mm Max）



Package Dimensions



Circuit and Pin Schematic

Mechanical Characteristics

- Package: DFN1006-2 (1.0×0.6×0.5mm)
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- Serial ATA
- MDDI Ports
- Display Ports
- Cellular Phones
- USB Data Line Protection
- Digital Visual Interfaces (DVI)
- Desktops, Servers and Notebooks

Marking information

Ordering Information

Part Number	Packaging	Reel Size
WPE5V02LUB-G	10000/T & R	7 inch

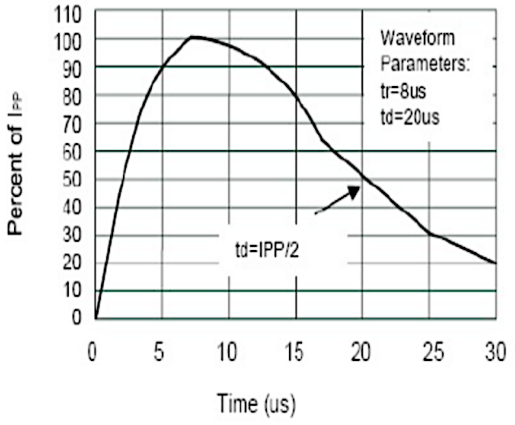
Absolute Maximum Ratings (T_A=25ºC, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	60	W
Peak Pulse Current (8/20μs)	I_{PP}	4	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±20 ±20	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

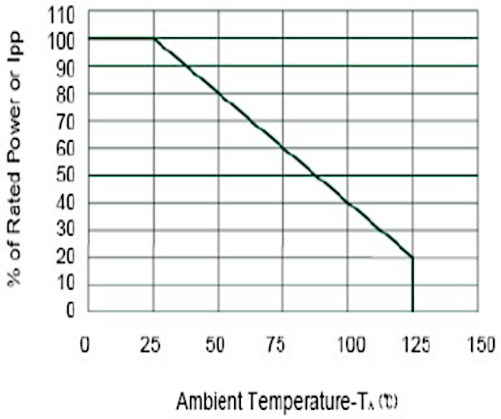
Electrical characteristics (T_A=25℃)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5.0	V	
Breakdown Voltage	V_{BR}	6.0			V	I_T = 1mA
Reverse Leakage Current	I_R			0.1	μA	V_{RWM} = 5V
Clamping Voltage	V_C			10	V	I_{PP} = 1A (8 x 20μs pulse)
	V_C			14	V	I_{PP} = 4A (8 x 20μs pulse)
Junction Capacitance	C_J		0.4	0.5	pF	V_R = 0V, f = 1MHz

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



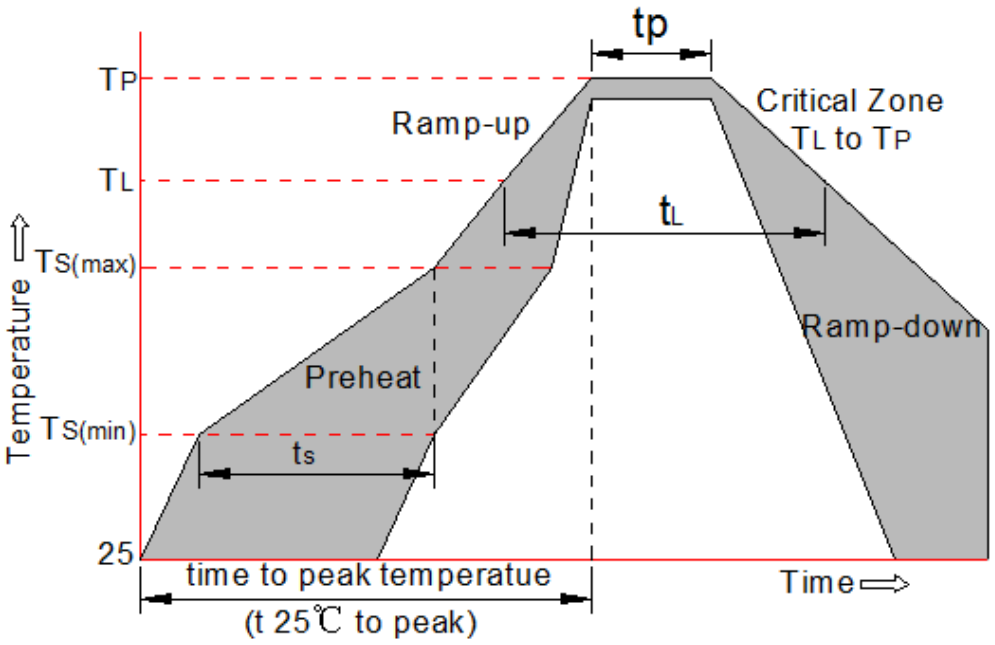
Pulse Waveform



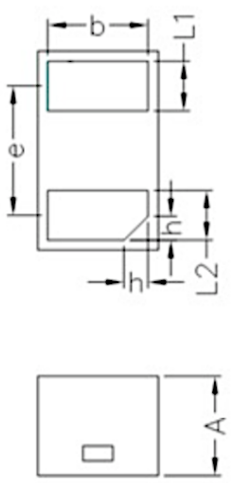
Power Derating Curve

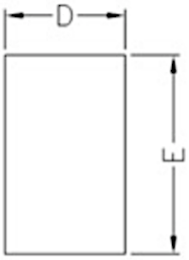
Soldering Parameters

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℃



Package Mechanical Data





Unit: mm

	MIN	NOM	MAX
D	0.55	0.60	0.65
E	0.95	1.00	1.05
L1	0.20	0.25	0.30
L2	0.20	0.25	0.30
b	0.45	0.50	0.55
e	0.65BSC		
A	0.45	0.50	0.55
h	0.07	0.12	0.17

Contact Information

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