WAYON

WS12DLC

Transient Voltage Suppressor

Features

- 450 Watts Peak Pulse Power per Line (tp = 8/20μs)
- Protects one I/O or power line
- Low Clamping Voltage
- Working Voltage: 12V
- Low Leakage Current
- Ultra Low Capacitance: 1.0 pF Typical

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) 15A (8/20μs)**

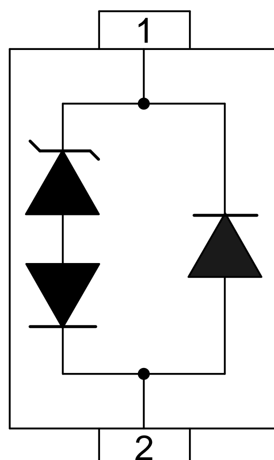
Mechanical Characteristics

- JEDEC SOD-323 package
- Packaging : Tape and Reel Per EIA 481
- Device Marking: Marking Code
- RoHS Compliant

Applications

- Ethernet - 10/100/1000 Base T
- Cellular Phones
- Handheld - Wireless Systems
- Personal Digital Assistant (PDA)
- USB Interface

PIN Configuration



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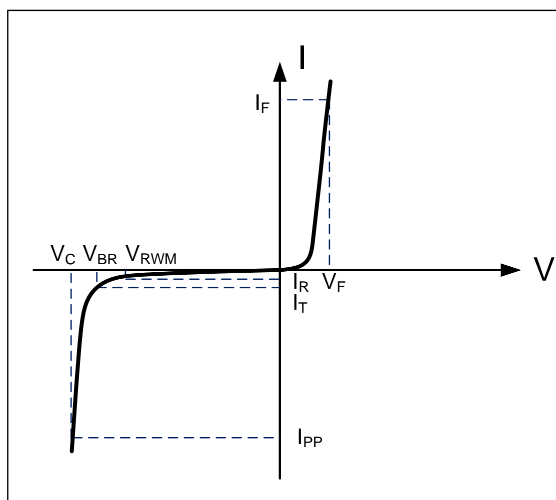
Absolute Maximum Rating			
Rating	**Symbol**	**Value**	**Units**
Peak Pulse Power (t_p = 8/20μs)	P_{PP}	450	Watts
Peak Pulse Current (t_p = 8/20μs)	I_{PP}	15	A
Operating Temperature	T_J	-55 to + 150	℃
Storage Temperature	T_{STG}	-55 to +150	℃

Electrical Parameters (T=25℃)

Symbol	Parameter
I_{PP}	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

WS12DLC						
Parameter	**Symbol**	**Conditions**	**Minimum**	**Typical**	**Maximum**	**Units**
Reverse Stand-Off Voltage	V_{RWM}				12	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	13.3		18	V
Reverse Leakage Current	I_R	V_{RWM}=12V, T=25℃			100	nA
Forward Voltage	V_F	I_F=10mA	0.5		1.0	V
Clamping Voltage	V_C	I_{PP}=15A, t_p=8/20μs		26	30	V
Dynamic Resistance[1,2]	R_{DYN}	TLP=0.2/100ns		0.5		Ω
ESD Clamping Voltage[1]	V_C	IPP = 4A, tp = 0.2/100ns (TLP)		17.3		V
ESD Clamping Voltage[1]	V_C	IPP = 16A, tp = 0.2/100ns (TLP)		23.3		V
Junction Capacitance	C_j	V_R =0V, f =1MHz		1	1.35	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

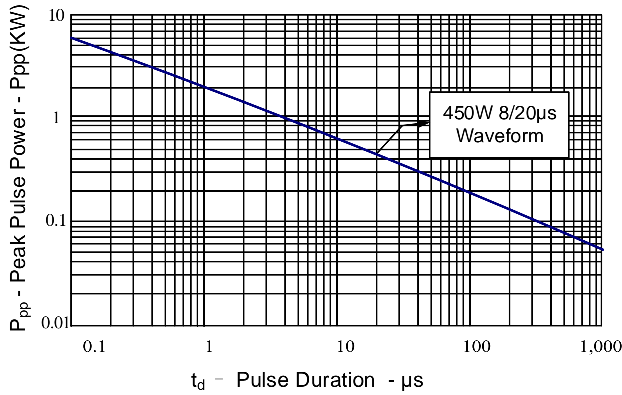


Figure 2: Power Derating Curve

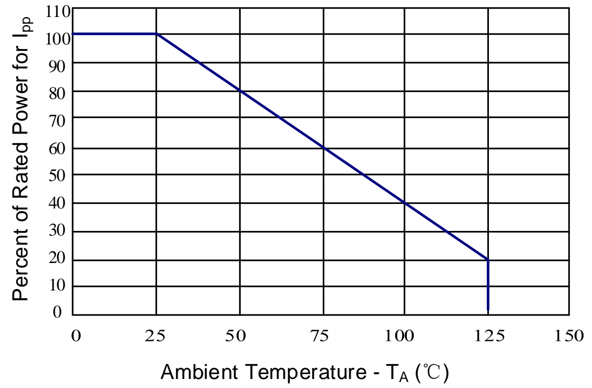


Figure 3: Clamping Voltage vs. Peak Pulse Current

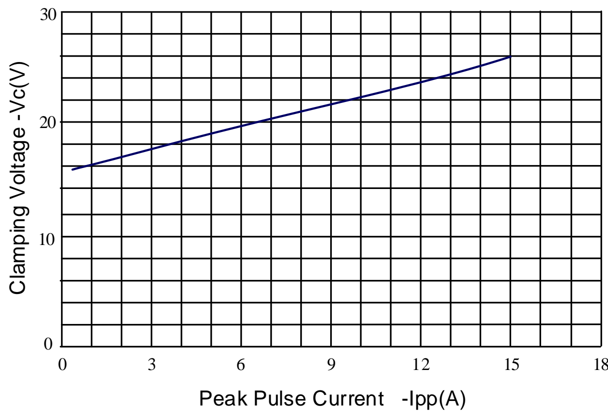


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

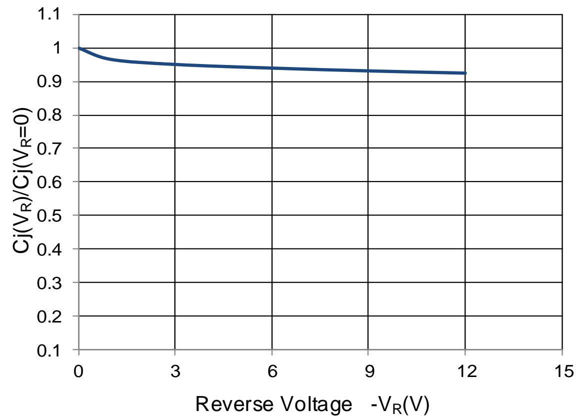


Figure 5: 8/20μs Pulse Waveform

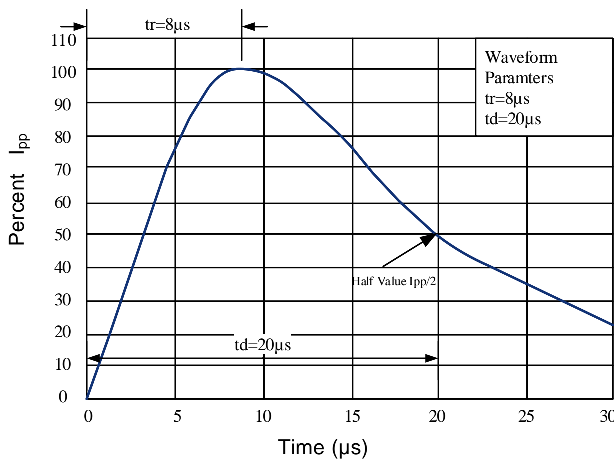
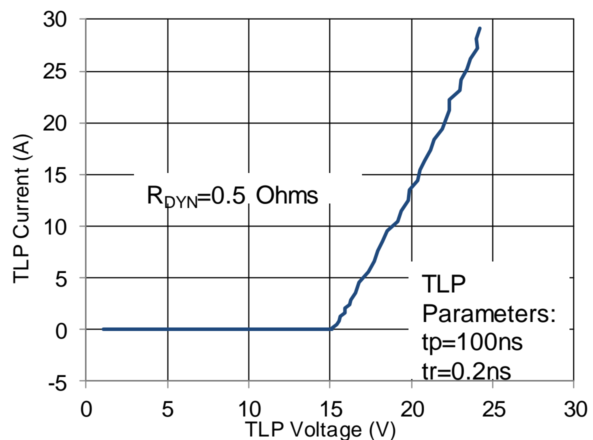
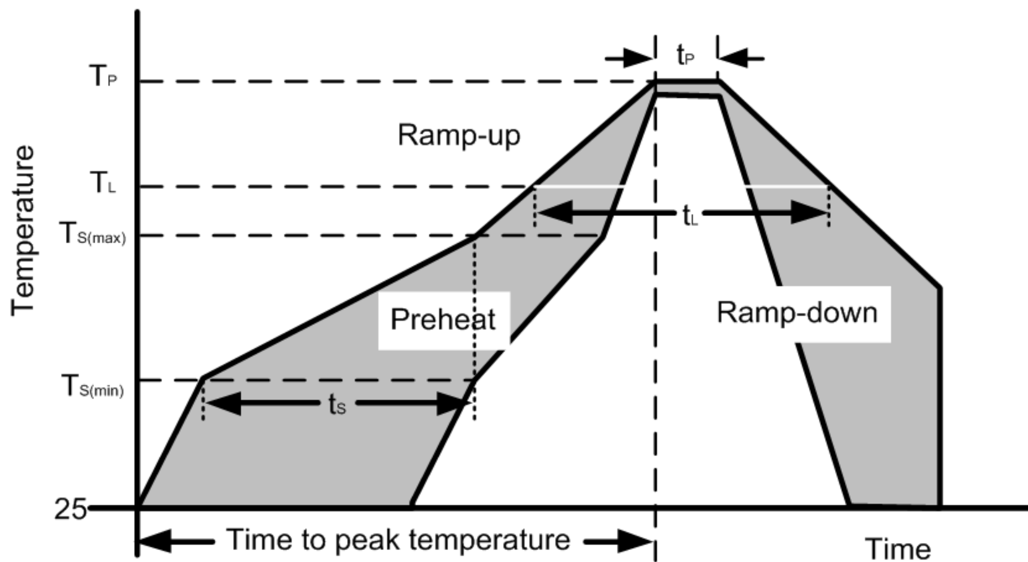


Figure 6: TLP Positive I-V Curve



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



Outline Drawing – SOD-323

PACKAGE OUTLINE

C A B E 1 2 D F H L L1

SOD-323

DIMENSIONS

SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.52	1.80	0.060	0.071
B	0.25	0.40	0.010	0.016
C	2.46	2.71	0.097	0.107
D	0.80	1.16	0.031	0.046
E	1.11	1.40	0.044	0.055
F	0.08	0.20	0.003	0.008
L	0.475 REF		0.019REF	
L1	0.25	0.40	0.010	0.016
H	0.00	0.10	0.000	0.004

MOUNTING PAD

0.118” (3.00mm)

0.031” (0.80mm)

0.031” (0.80mm)

Notes:
Controlling Dimension: Millimeter.

Marking Codes

Part Number	WS12DLC
Marking Code	AB LC (1, 2)

Package Information

Qty：3k/Reel

CONTACT INFORMATION

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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.