

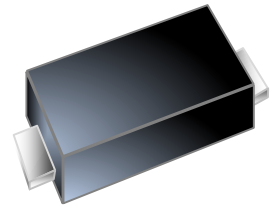
Transient Voltage Suppressor

Features

- 240 Watts Peak Pulse Power per Line ($t_p = 8/20\mu s$)
- Protects one I/O or power line
- Low Clamping Voltage
- Working Voltage: 12V
- 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) 12A (8/20 μs)



SOD-523

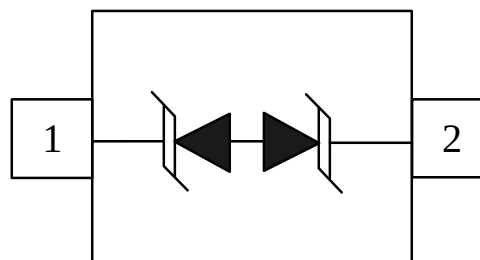
Mechanical Characteristics

- JEDEC SOD-523 package
- Marking : Marking Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant

Applications

- Cellular Handsets & Accessories
- Personal Digital Assistants (PDAs)
- Notebooks & Handhelds
- Portable Instrumentation
- Digital Cameras
- MP3 players

Schematic & PIN Configuration



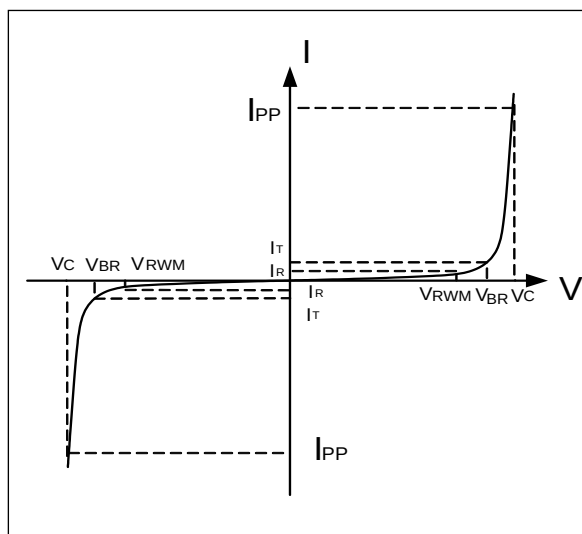
SOD-523 (Top View)

Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{PP}	240	Watts
Peak Pulse Current($t_p = 8/20\mu s$)	I_{PP}	12	A
Operating Temperature	T_J	-55 to + 125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Parameters (T=25°C)

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



Electrical Characteristics

WS12D5-B						
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			V
Reverse Leakage Current	I_R	$V_{RWM} = 12V, T = 25^\circ C$			200	nA
Clamping Voltage	V_C	$I_{PP} = 12A, t_p = 8/20\mu s$		16.5	20	V
Dynamic Resistance ^{1,2}	R_{DYN}	$TLP = 0.2/100ns$		0.15		Ω
ESD Clamping Voltage ¹	V_C	$I_{PP} = 4A, t_p = 0.2/100ns (TLP)$		14.2		V
ESD Clamping Voltage ¹	V_C	$I_{PP} = 16A, t_p = 0.2/100ns (TLP)$		16		V
Junction Capacitance	C_j	$V_R = 0V, f = 1MHz$		30	40	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

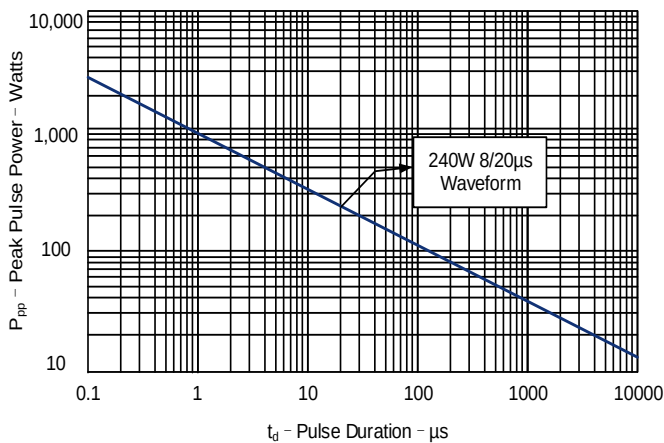


Figure 2: Power Derating Curve

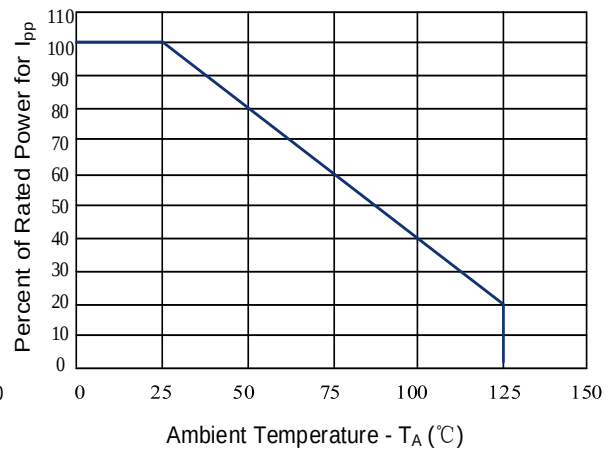


Figure 3: Clamping Voltage vs. Peak Pulse Current

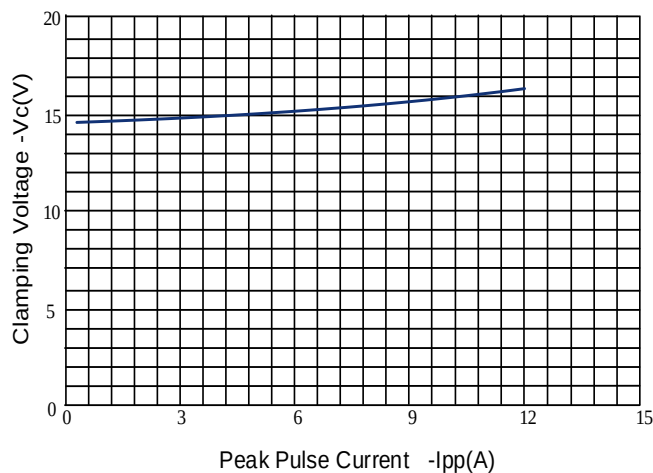


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

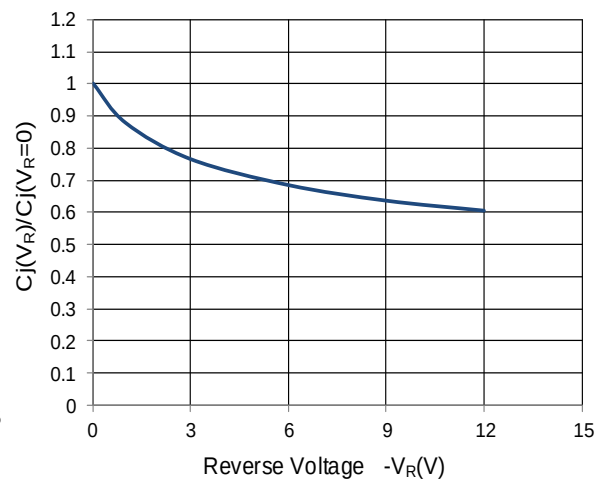


Figure 5: 8/20μs Pulse Waveform

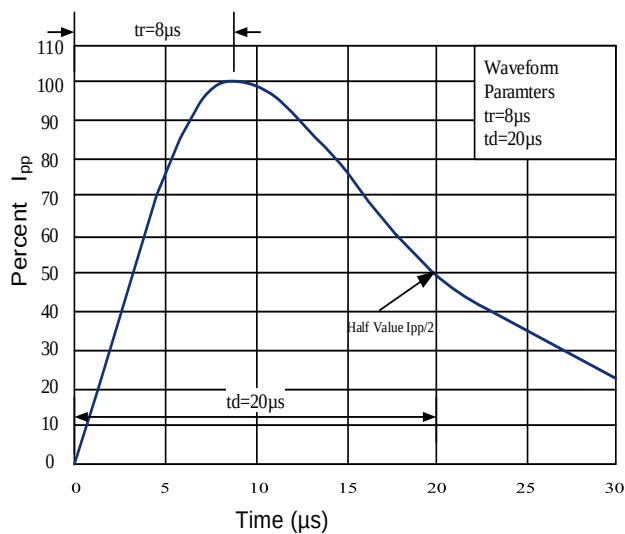
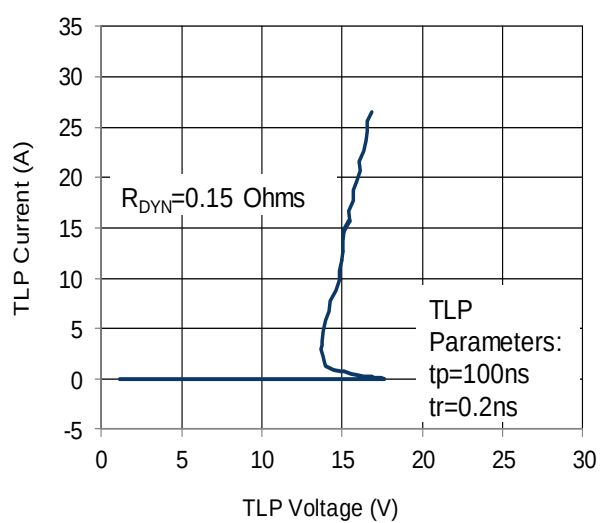
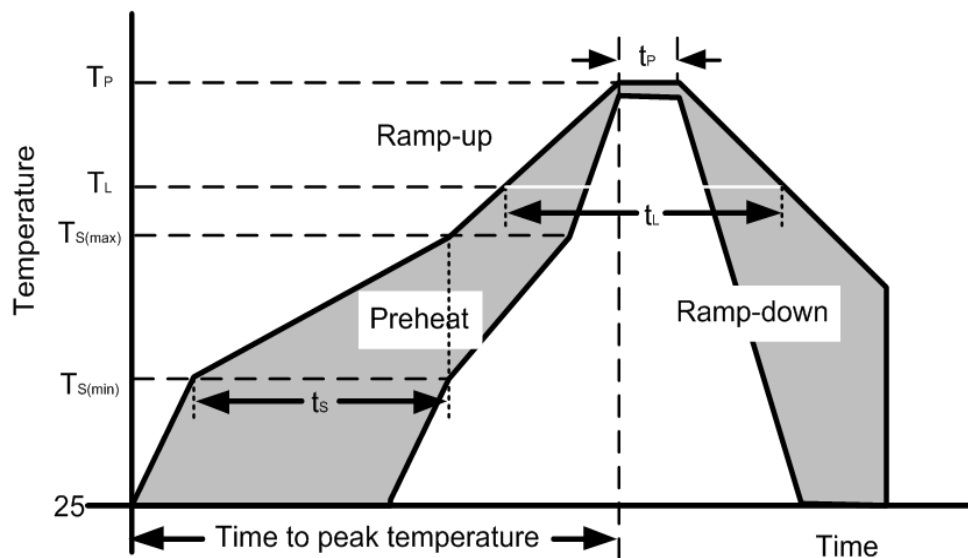


Figure 6: TLP I-V Curve

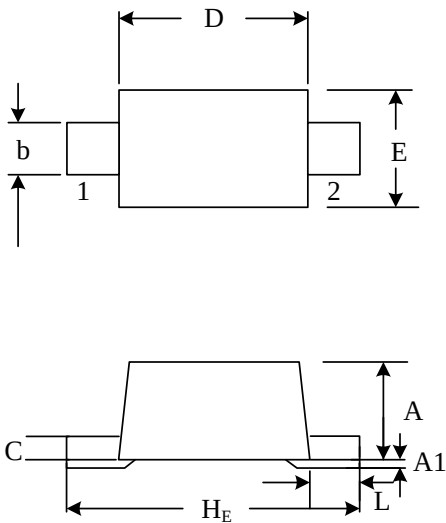
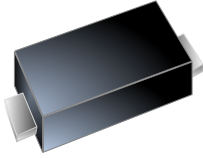
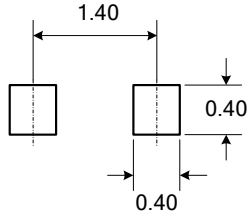


Soldering Parameters

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



Outline Drawing –SOD-523

PACKAGE OUTLINE 	 SOD-523 <table><tr><th colspan="5">DIMENSIONS</th></tr><tr><th rowspan="2">SYMBOL</th><th colspan="2">MILLIMETERS</th><th colspan="2">INCHES</th></tr><tr><th>MIN</th><th>MAX</th><th>MIN</th><th>MAX</th></tr><tr><td>A</td><td>0.50</td><td>0.70</td><td>0.020</td><td>0.028</td></tr><tr><td>A1</td><td>0.00</td><td>0.07</td><td>0.000</td><td>0.003</td></tr><tr><td>b</td><td>0.25</td><td>0.35</td><td>0.010</td><td>0.014</td></tr><tr><td>C</td><td>0.07</td><td>0.20</td><td>0.003</td><td>0.008</td></tr><tr><td>D</td><td>1.10</td><td>1.30</td><td>0.043</td><td>0.051</td></tr><tr><td>E</td><td>0.70</td><td>0.90</td><td>0.028</td><td>0.035</td></tr><tr><td>H_E</td><td>1.50</td><td>1.70</td><td>0.059</td><td>0.067</td></tr><tr><td>L</td><td>0.15</td><td>0.25</td><td>0.006</td><td>0.010</td></tr></table>	DIMENSIONS					SYMBOL	MILLIMETERS		INCHES		MIN	MAX	MIN	MAX	A	0.50	0.70	0.020	0.028	A1	0.00	0.07	0.000	0.003	b	0.25	0.35	0.010	0.014	C	0.07	0.20	0.003	0.008	D	1.10	1.30	0.043	0.051	E	0.70	0.90	0.028	0.035	H _E	1.50	1.70	0.059	0.067	L	0.15	0.25	0.006	0.010
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Marking Codes

Part Number	WS12D5-B
Marking Code	AB5

Package Information

Qty: 5k/Reel

CONTACT INFORMATION

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

Tel: 86-21-68969993 Fax: 86-21-50757680 Email: market@way-on.comWAYON website: <http://www.way-on.com>

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.