

Features

- Small Body Outline Dimensions
- 375 Watts peak pulse power ($t_p = 8/20\mu s$)
- Protects one I/O or power line
- Low clamping voltage
- Working voltage: 12V
- Low leakage current
- AEC-Q101 Qualified



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) 15A (8/20 μs)

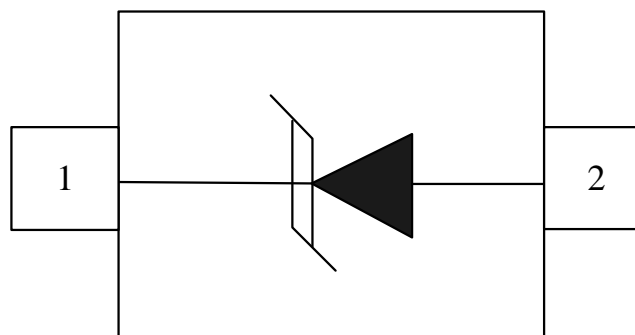
Mechanical Characteristics

- SOD-523 package
- Marking : Marking Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant & HF
- Device meets MSL1 requirement

Applications

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

Schematic & PIN Configuration



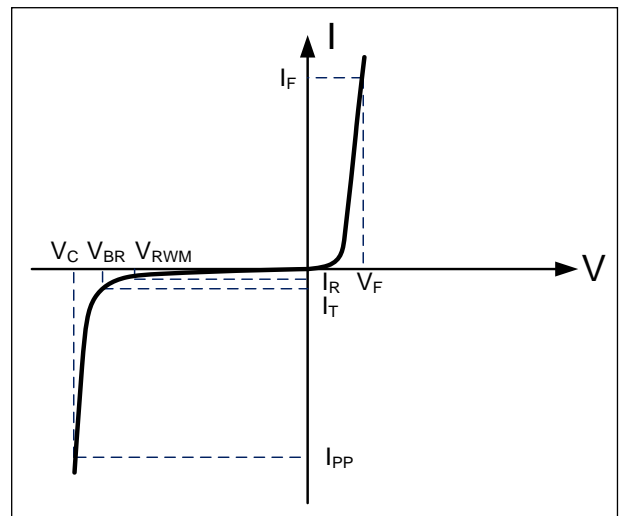
SOD-523 (Top View)

Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power ($t_p = 8/20\mu s$)	P _{PP}	375	Watts
Peak Pulse Current ($t_p = 8/20\mu s$)	I _{PP}	15	A
Operating Temperature	T _J	-55 to + 150	°C
Storage Temperature	T _{STG}	-55 to +150	°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°C unless otherwise noted)

WS12D5-AT						
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			500	nA
Clamping Voltage	V _C	I _{PP} =1A, t _p =8/20μs			16	V
Clamping Voltage	V _C	I _{PP} =15A, t _p =8/20μs		22	25	V
ESD Clamping Voltage ¹	V _C	I _{PP} = 4A t _p = 0.2/100ns		15.4		V
ESD Clamping Voltage ¹	V _C	I _{PP} = 16A t _p = 0.2/100ns		18		V
Dynamic Resistance ^{1,2}	R _{DYN}	TLP=0.2/100ns		0.2		Ω
Junction Capacitance	C _j	V _R =0V, f =1MHz		80	100	pF

Note: 1、 TLP Setting : t_p=100ns, t_r=0.2ns, I_{TLP} and V_{TLP} sample window:t₁=70ns to t₂=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

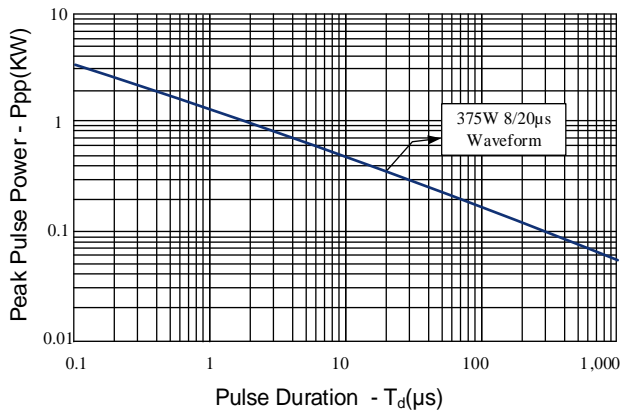


Figure 2: Power Derating Curve

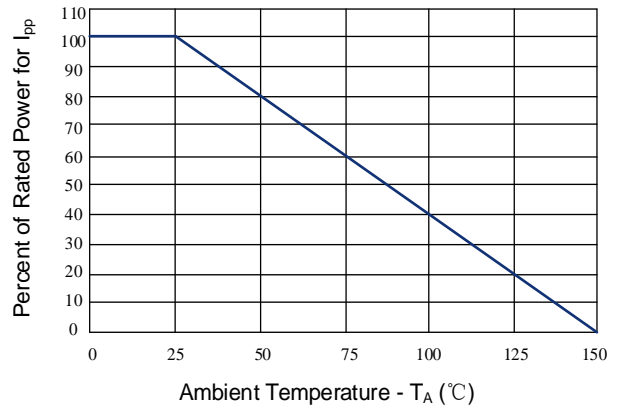


Figure 3: Clamping Voltage vs. Peak Pulse Current

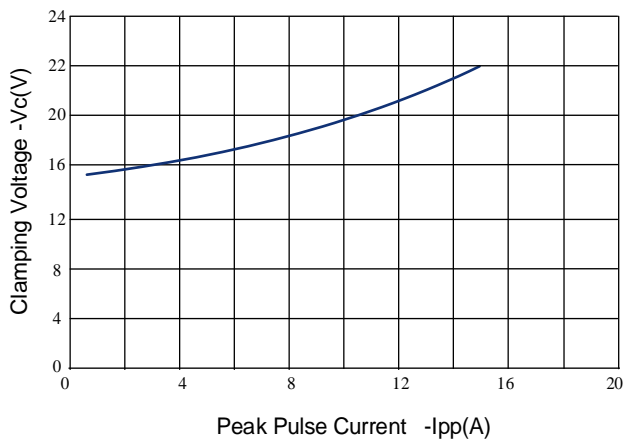


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

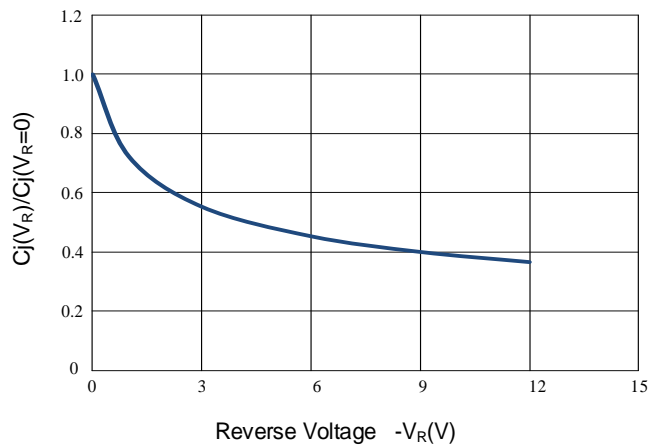


Figure 5: 8/20µs Pulse Waveform

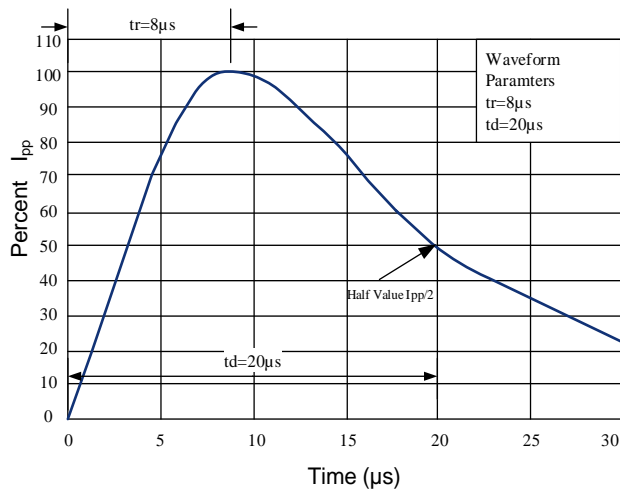
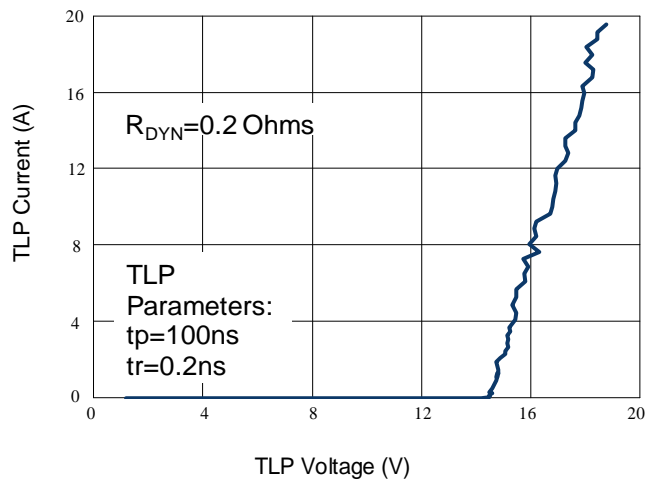
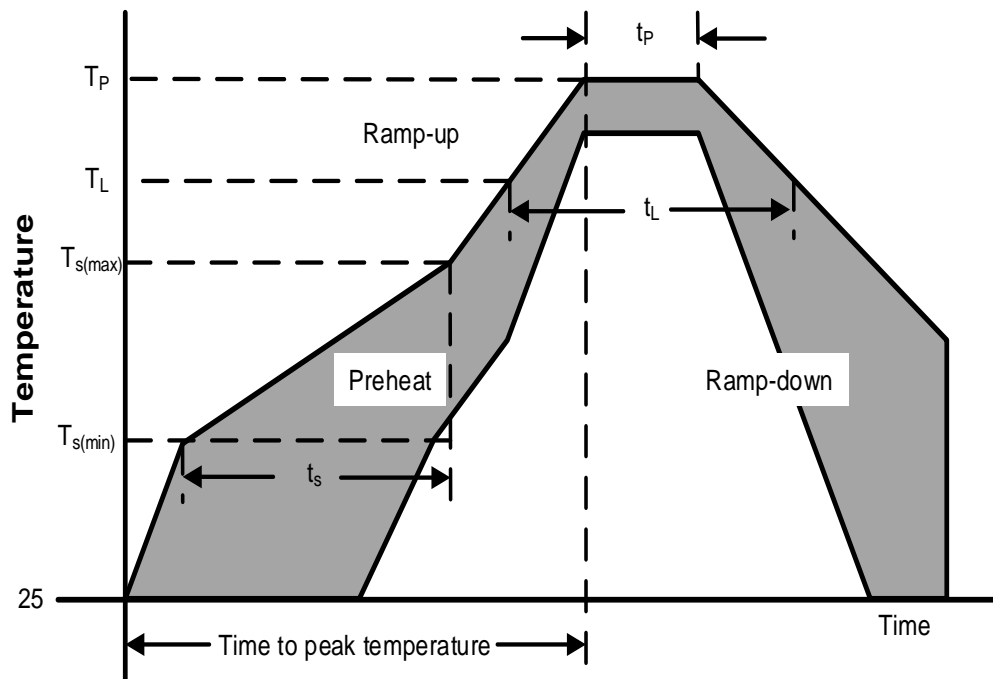


Figure 6: TLP I-V Curve



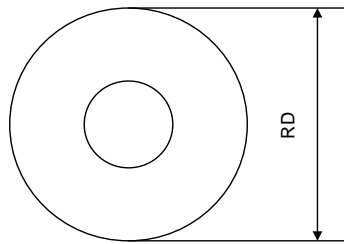
Soldering Parameters

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

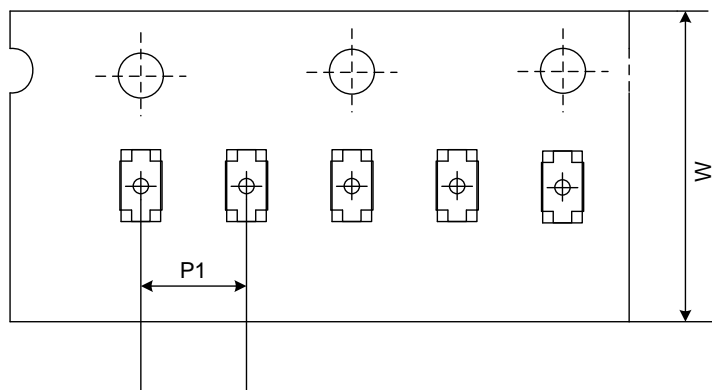


Tape And Reel Information

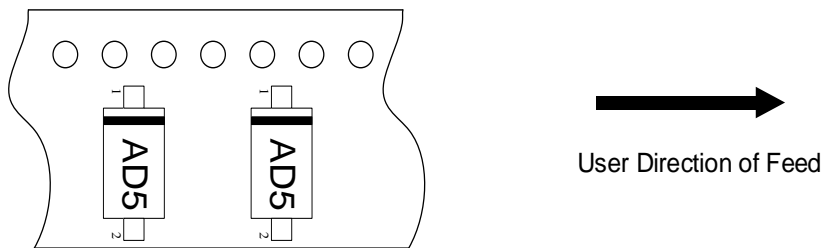
Reel Dimensions



Tape Dimensions

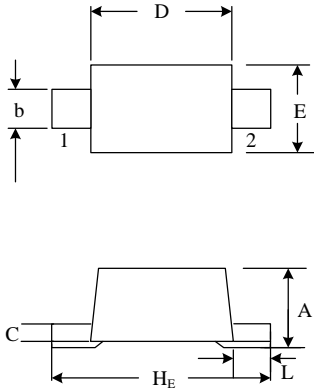
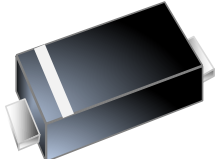
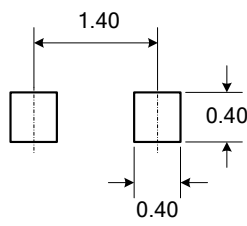


Quadrant Assignments For PIN1 Orientation In Tape




RD	Reel Dimensions	7 inch
W	Overall width of the carrier tape	8 mm
P1	Pitch between successive cavity centers	2mm

Outline Drawing –SOD-523

<p style="text-align: center;">PACKAGE OUTLINE</p> 	 <p style="text-align: center;">SOD-523</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2">SYMBOL</th> <th colspan="2">MILLIMETERS</th> </tr> <tr> <th>MIN</th> <th>MAX</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>0.50</td> <td>0.77</td> </tr> <tr> <td>b</td> <td>0.25</td> <td>0.35</td> </tr> <tr> <td>C</td> <td>0.07</td> <td>0.20</td> </tr> <tr> <td>D</td> <td>1.10</td> <td>1.30</td> </tr> <tr> <td>E</td> <td>0.70</td> <td>0.90</td> </tr> <tr> <td>H_E</td> <td>1.50</td> <td>1.70</td> </tr> <tr> <td>L</td> <td>0.15</td> <td>0.25</td> </tr> </tbody> </table>	SYMBOL	MILLIMETERS		MIN	MAX	A	0.50	0.77	b	0.25	0.35	C	0.07	0.20	D	1.10	1.30	E	0.70	0.90	H _E	1.50	1.70	L	0.15	0.25
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 <p style="text-align: center;">DIMENSIONS: MILLIMETERS</p>	<p>Notes: Controlling Dimension: Millimeter.</p>																										

Marking Codes

Part Number	WS12D5-AT
Marking Code	

Package Information

Qty: 5k/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.