



## 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
- 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) 12A (8/20 $\mu s$ )

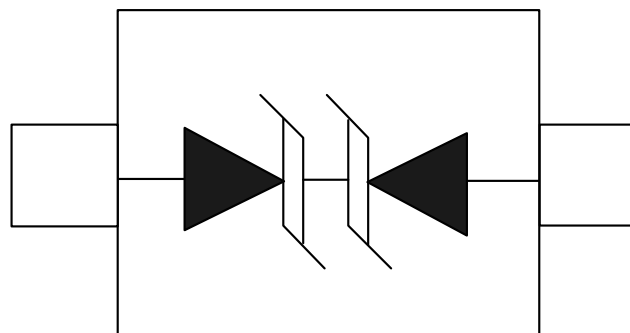
## Mechanical Characteristics

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

## Applications

- Laptop Computers
- Cellular Phones
- Digital Cameras
- Personal Digital Assistants (PDAs)

## Schematic & PIN Configuration

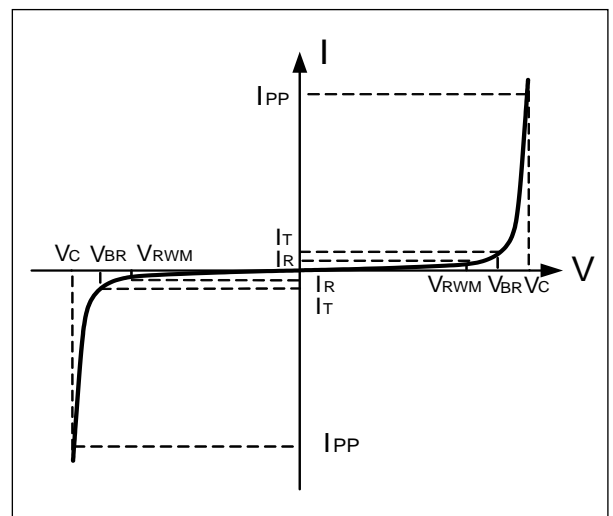


SOD-323 (Top View)

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

### Electrical Parameters (T=25 $^{\circ}C$ )

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

<b>DW12D-B-AT-S</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	$I_R$	$V_{RWM}=12V, T=25^{\circ}C$			500	nA
Clamping Voltage	$V_C$	$I_{PP}=12A, t_p=8/20\mu s$		16	20	V
Dynamic Resistance <sup>1,2</sup>	$R_{DYN}$	TLP=0.2/100ns		0.07		$\Omega$
ESD Clamping Voltage <sup>1</sup>	$V_C$	$I_{PP}=4A, t_p=0.2/100ns$ (TLP)		13.4		V
ESD Clamping Voltage <sup>1</sup>	$V_C$	$I_{PP}=16A, t_p=0.2/100ns$ (TLP)		14.2		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".

Ver.: A1 2019-02-22 WA

## Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

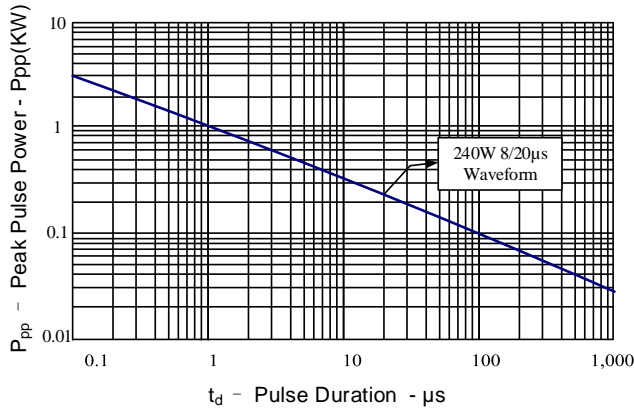


Figure 2: Power Derating Curve

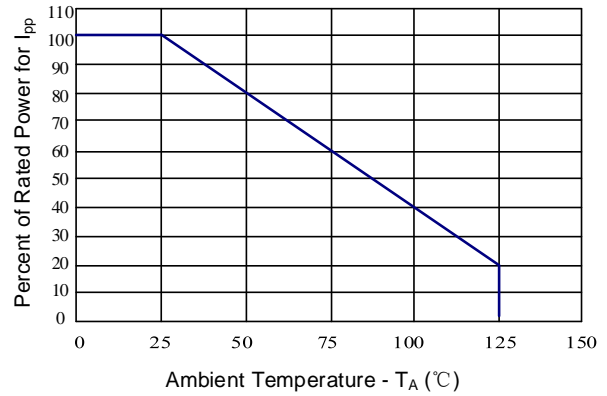


Figure 3: Clamping Voltage vs. Peak Pulse Current

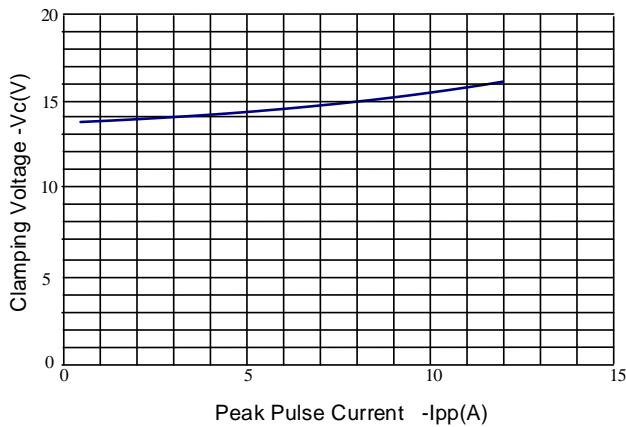


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

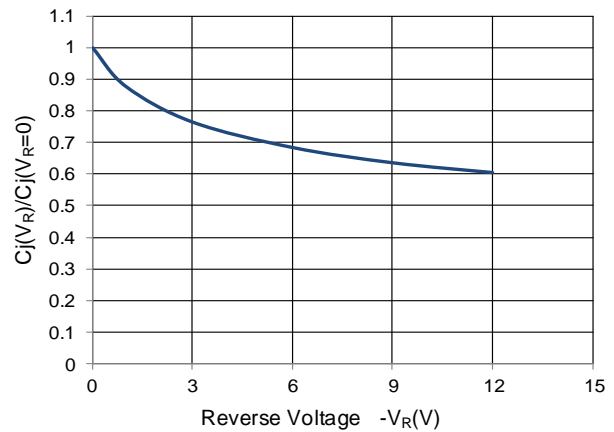


Figure 5: TLP Positive I-V Curve

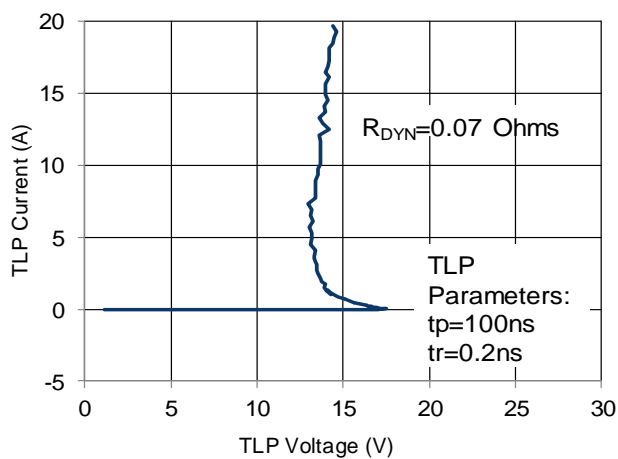
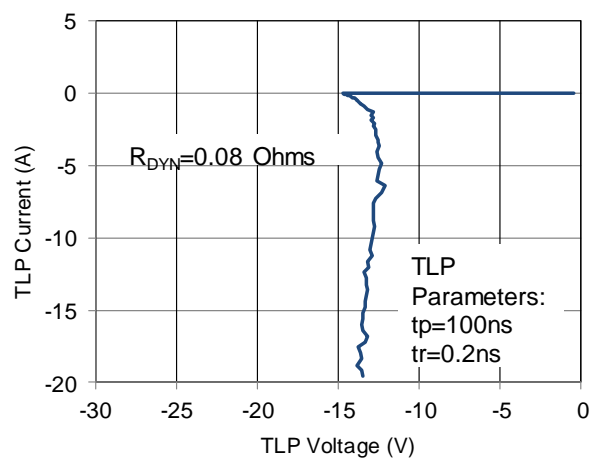


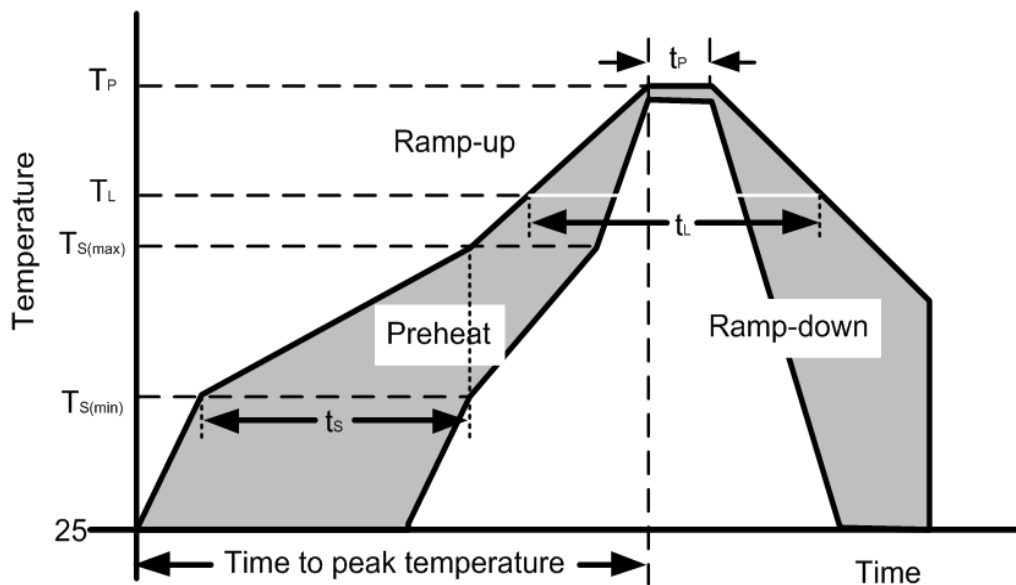
Figure 6: TLP Negative I-V Curve



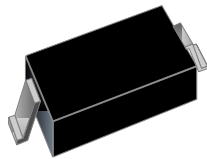
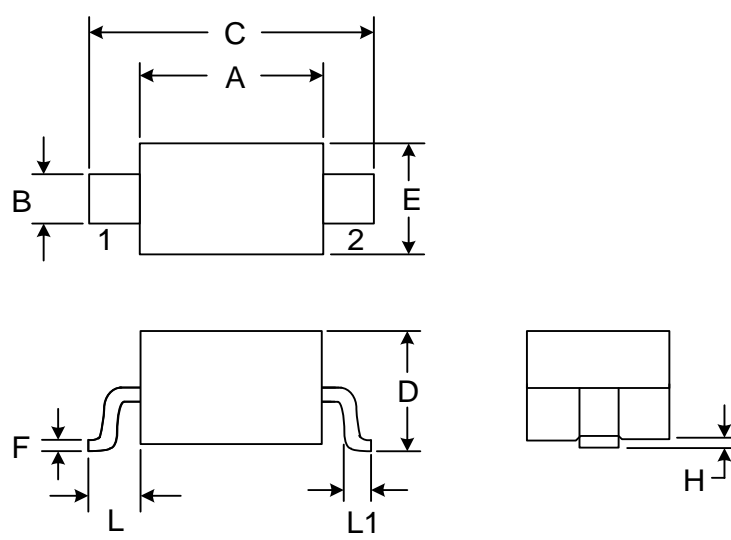
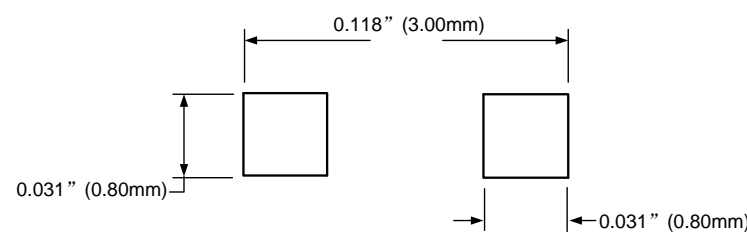


## Soldering Parameters

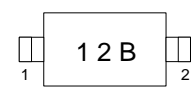
Reflow Condition		Pb – Free assembly
Pre Heat	Temperature Min ( $T_{S(min)}$ )	150°C
	Temperature Max ( $T_{S(max)}$ )	200°C
	Time (min to max) ( $t_s$ )	60 – 190 secs
Average ramp up rate (Liquidus Temp) ( $T_L$ ) to peak		5°C/second max
$T_{S(max)}$ to $T_L$ —Ramp-up Rate		5°C/second max
Reflow	Temperature ( $T_L$ ) (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-323

PACKAGE OUTLINE		 SOD-323			
		<b>DIMENSIONS</b>			
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	
<b>MOUNTING PAD</b> 		<b>Notes:</b> Controlling Dimension: Millimeter.			

## Marking Codes

Part Number	Marking Code
DW12D-B-AT-S	

## Package Information

Qty: 3k/Reel