

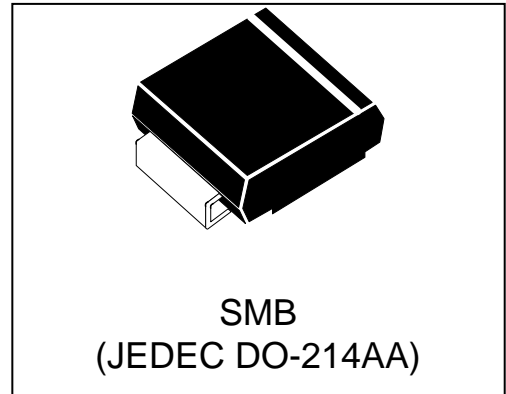


# WSxxP10SMB(-B)-AT

## Automotive Load Dump Protection TVS

### Features

- 1000 watts Peak Pulse Power (10/1000 $\mu$ s)
- Unidirectional and Bidirectional Protection
- Fast Response Time : Typically < 1ns
- Excellent Clamping Capability
- Built-in Strain relief
- Low inductance
- Low profile package
- High temperature solder:260°C/10 seconds at terminal
- AEC-Q101 compliant



### Mechanical Characteristics

- JEDEC DO-214AA package
- Molding compound flammability rating:  
UL 94V-0
- Marking : Marking Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant

### Applications

- Auto power system
- Car audio and video
- Automotive instrument
- Car GPS
- Can-bus

### Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (tp =10/1000 $\mu$ s) (see Note1&2)	P <sub>PPM</sub>	1000	Watts
Peak pulse current (10/1000 $\mu$ s) (see Note2)	I <sub>PPM</sub>	See Electrical Characteristics	A
Power Dissipation on infinite heat sink T <sub>L</sub> = 50 °C (Fig4)	P <sub>D</sub>	6.5	W
Operating Junction Temperature range	T <sub>J</sub>	-65 to + 150	°C
Storage Temperature range	T <sub>STG</sub>	-65 to + 150	°C

**Note1:** Peak Pulse Power Rating as Pulse Width ,per Fig1.

**Note2:** Peak Pulse Power or Current Derated above T<sub>A</sub>=25°C Per Fig. 2 and Non-Repetitive Current Pulse, Per Fig.3.

## Electrical Characteristics

Part Number		Marking		Reverse Stand off Voltage $V_{RWM}$ (Volts)	Breakdown Voltage $V_{BR}@I_T$ (Volts)		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_c@I_{FP}$ (Volts)	Maximum Peak Pulse Current $I_{PP}$ (Amps)	Maximum Reverse Leakage $I_R@V_{RWM}$ ( $\mu$ A)
UNI-POLAR	BI-POLAR	UNI-POLAR	BI-POLAR		MIN	MAX				
WS15P10SMB-AT	WS15P10SMB-B-AT	IYLP	IZLP	15	16.70	18.50	1	24.4	40.98	1
WS16P10SMB-AT	WS16P10SMB-B-AT	IYLQ	IZLQ	16	17.80	19.70	1	26.0	38.46	1
WS18P10SMB-AT	WS18P10SMB-B-AT	IYLS	IZLS	18	20.00	22.10	1	29.2	34.25	1
WS20P10SMB-AT	WS20P10SMB-B-AT	IYMY	IZMZ	20	22.20	24.50	1	32.4	30.86	1
WS22P10SMB-AT	WS22P10SMB-B-AT	IYMM	IZMM	22	24.40	26.90	1	35.5	28.17	1
WS24P10SMB-AT	WS24P10SMB-B-AT	IYMO	IZMO	24	26.70	29.50	1	38.9	25.71	1
WS26P10SMB-AT	WS26P10SMB-B-AT	IYMQ	IZMQ	26	28.90	31.90	1	42.1	23.75	1
WS28P10SMB-AT	WS28P10SMB-B-AT	IYMS	IZMS	28	31.10	34.40	1	45.4	22.03	1
WS30P10SMB-AT	WS30P10SMB-B-AT	IYNY	IZNZ	30	33.30	36.80	1	48.4	20.66	1
WS33P10SMB-AT	WS33P10SMB-B-AT	IYNN	IZNN	33	36.70	40.60	1	53.3	18.76	1
WS36P10SMB-AT	WS36P10SMB-B-AT	IYNQ	IZNQ	36	40.00	44.20	1	58.1	17.21	1
WS40P10SMB-AT	WS40P10SMB-B-AT	IYOY	IZOZ	40	44.40	49.10	1	64.5	15.50	1
WS43P10SMB-AT	WS43P10SMB-B-AT	IYON	IZON	43	47.80	52.80	1	69.4	14.41	1

Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

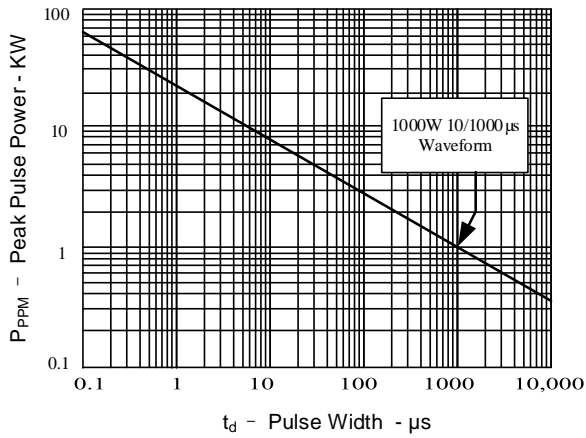


Figure 2: Pulse Derating Curve

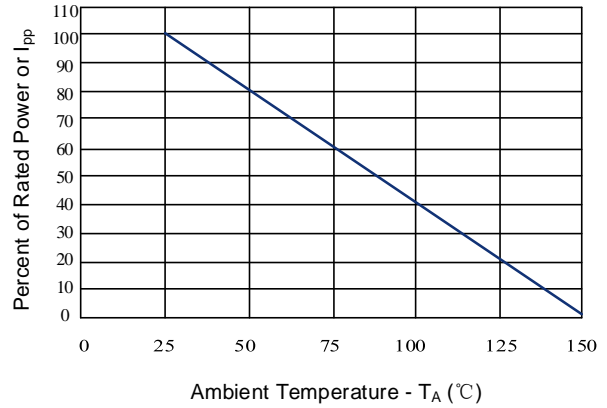


Figure 3: Pulse Waveform

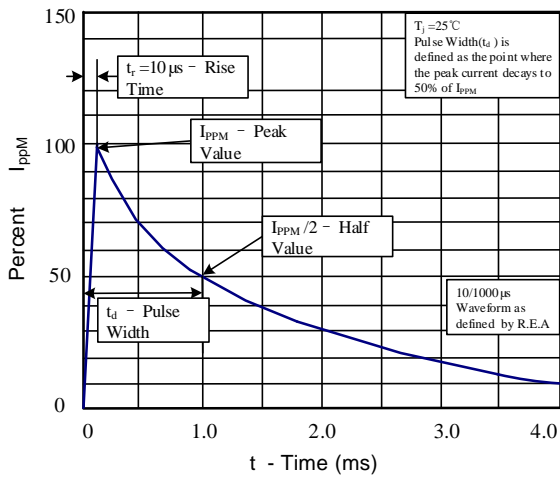
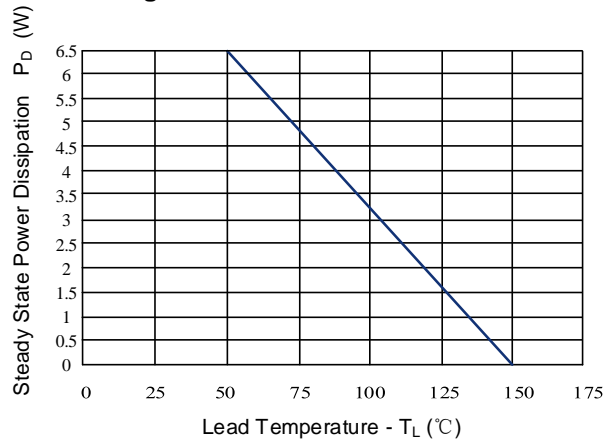
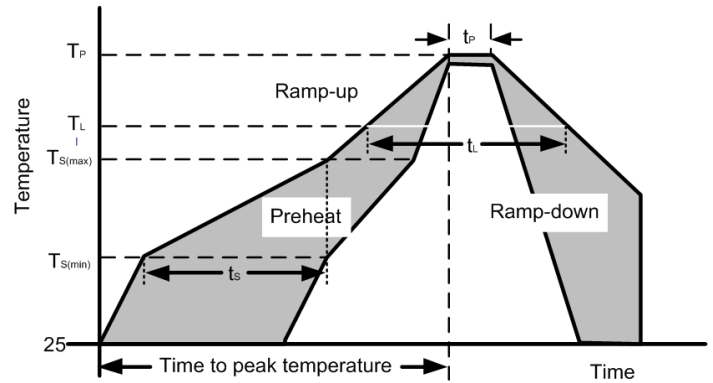


Figure 4: Steady State Power Dissipation Derating Curve



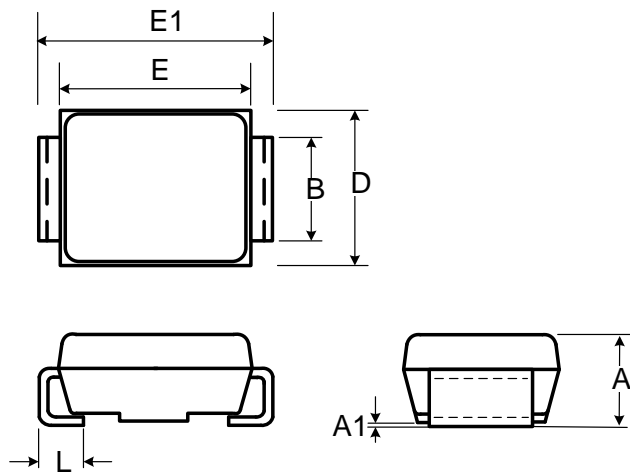
### Soldering Parameters

Reflow Condition		
Pre Heat	Temperature min ( $T_{s(min)}$ )	150°C
	Temperature max ( $T_{s(max)}$ )	200°C
	Time (min to max) ( $t_s$ )	60-190 s
Average ramp up rate (Liquidus Temp) ( $T_L$ ) to peak		3°C/s max
Ts(max) to $T_L$ - Ramp-up Rate		3°C/s max
Reflow	Temperature ( $T_L$ ) (Liquidus)	217°C
	Temperature ( $t_L$ )	60-150 s
Peak Temperature ( $T_P$ )		260 <sup>+0/-5</sup> °C
Time within actual peak Temperature ( $t_p$ )		20-40 s
Ramp-down Rate		5°C/s max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes max
Do not exceed		260°C

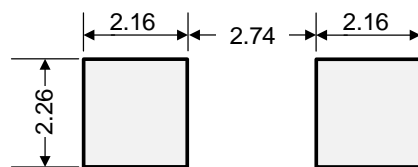


### Outline Drawing – SMB(DO-214AA)

Ref. (mm)	Millimeters	
	Min.	Max.
A	2.130	2.600
A1	-	0.300
B	1.900	2.200
E	4.100	4.750
E1	5.210	5.590
D	3.300	3.940
L	0.760	1.520

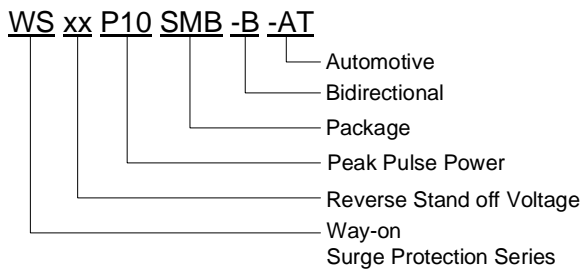


### Recommended Solder Pad Layout

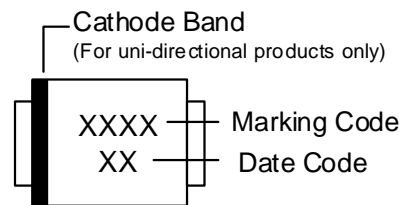


Dimensions in mm

## Part Numbering System



## Part Marking System



## Package Information

Package Type	Description	Quantity (pcs)	Standard
SMB(DO-214AA)	Tape & Reel -12mm/13" tape	3000	EIA-481-D

## 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.*

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