

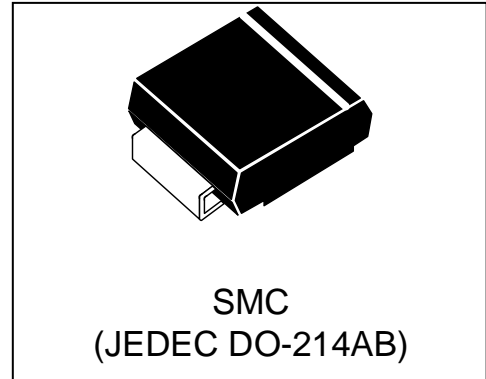


# WSxxP15SMC(-B)-AT

## Automotive Load Dump Protection TVS

### Features

- 1500 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-214AB 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 ( $t_p = 10/1000\mu s$ ) (see Note1&2)	$P_{PPM}$	1500	Watts
Peak pulse current (10/1000 $\mu$ s) (see Note2)	$I_{PPM}$	See Electrical Characteristics	A
Power Dissipation on infinite heat sink $T_L = 50^\circ C$ (Fig4)	$P_D$	6.5	W
Operating Junction Temperature range	$T_J$	-65 to + 150	$^\circ C$
Storage Temperature range	$T_{STG}$	-65 to + 150	$^\circ C$

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

**Note2:** Peak Pulse Power or Current Derated above  $T_A=25^\circ C$  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				
WS15P15SMC-AT	WS15P15SMC-B-AT	CYLP	CZLP	15	16.7	18.5	1	24.4	61.5	1
WS16P15SMC-AT	WS16P15SMC-B-AT	CYLQ	CZLQ	16	17.8	19.7	1	26.0	57.7	1
WS18P15SMC-AT	WS18P15SMC-B-AT	CYLS	CZLS	18	20.0	22.1	1	29.2	51.4	1
WS20P15SMC-AT	WS20P15SMC-B-AT	CYMY	CZMZ	20	22.2	24.5	1	32.4	46.3	1
WS22P15SMC-AT	WS22P15SMC-B-AT	CYMM	CZMM	22	24.4	26.9	1	35.5	42.3	1
WS24P15SMC-AT	WS24P15SMC-B-AT	CYMO	CZMO	24	26.7	29.5	1	38.9	38.6	1
WS26P15SMC-AT	WS26P15SMC-B-AT	CYMQ	CZMQ	26	28.9	31.9	1	42.1	35.7	1
WS28P15SMC-AT	WS28P15SMC-B-AT	CYMS	CZMS	28	31.1	34.4	1	45.4	33.1	1
WS30P15SMC-AT	WS30P15SMC-B-AT	CYNY	CZNY	30	33.3	36.8	1	48.4	31.0	1
WS33P15SMC-AT	WS33P15SMC-B-AT	CYNN	CZNN	33	36.7	40.6	1	53.3	28.2	1
WS36P15SMC-AT	WS36P15SMC-B-AT	CYNQ	CZNY	36	40.0	44.2	1	58.1	25.9	1
WS40P15SMC-AT	WS40P15SMC-B-AT	CYOY	CZOY	40	44.4	49.1	1	64.5	23.3	1
WS43P15SMC-AT	WS43P15SMC-B-AT	CYON	CZON	43	47.8	52.8	1	69.4	21.7	1

Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

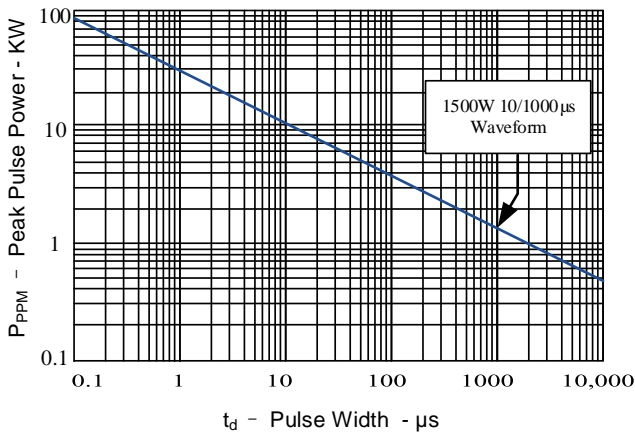


Figure 2: Pulse Derating Curve

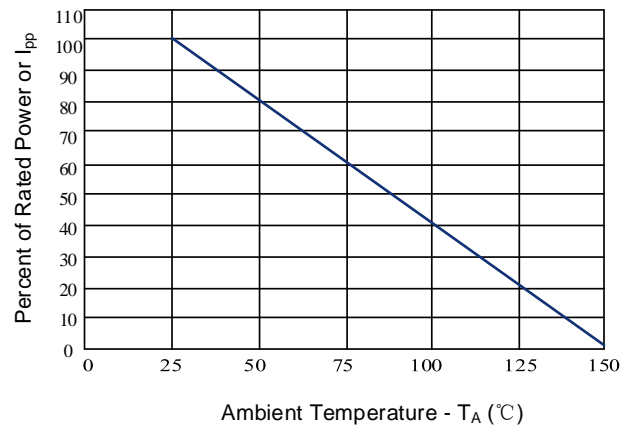


Figure 3: Pulse Waveform

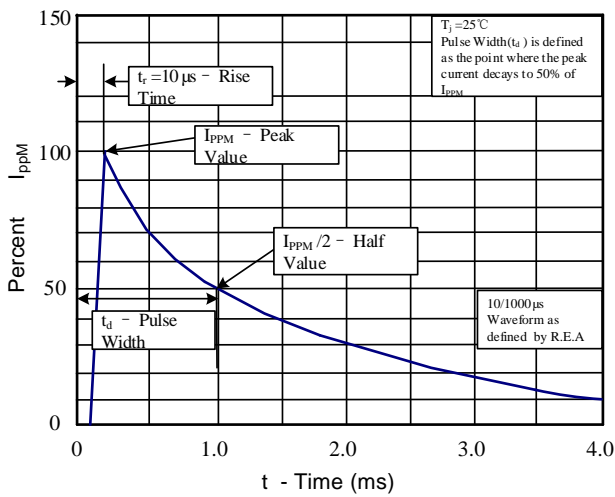
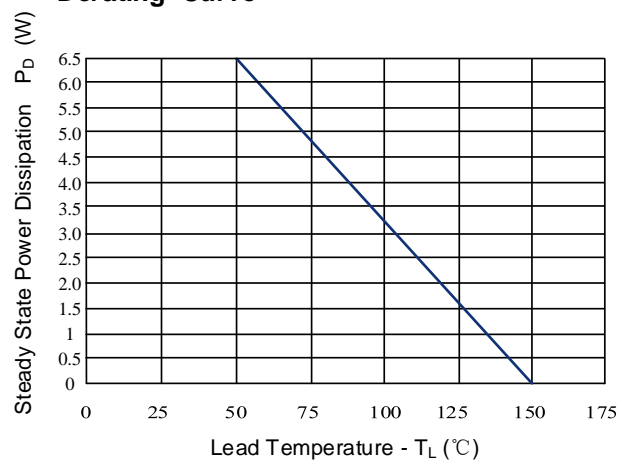
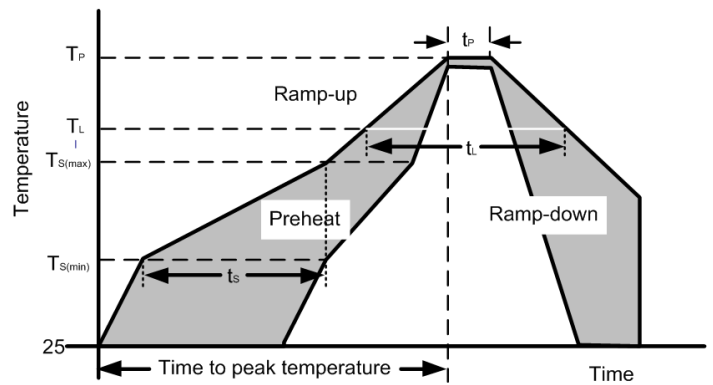


Figure 4: Steady State Power Dissipation Derating Curve



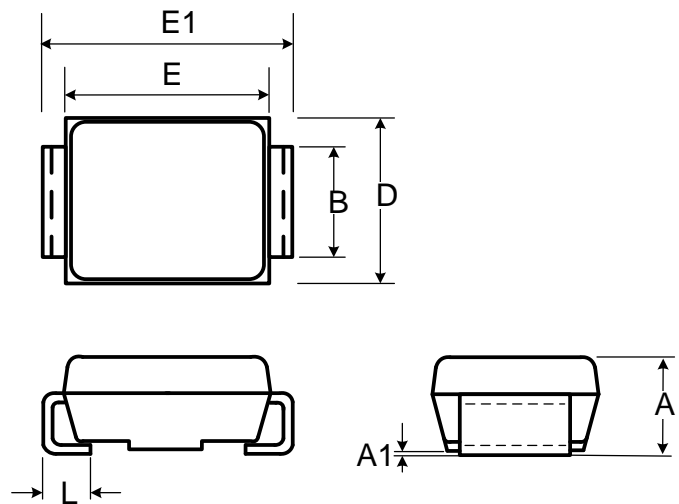
### Soldering Parameters

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 TL - 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

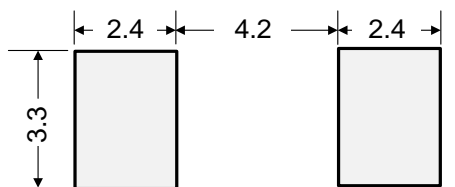


### Outline Drawing – SMC (DO-214AB)

Ref. (mm)	Millimeters	
	Min.	Max.
A	2.06	2.70
A1	-	0.30
B	2.90	3.20
E	6.60	7.40
E1	7.75	8.13
D	5.59	6.22
L	0.76	1.52

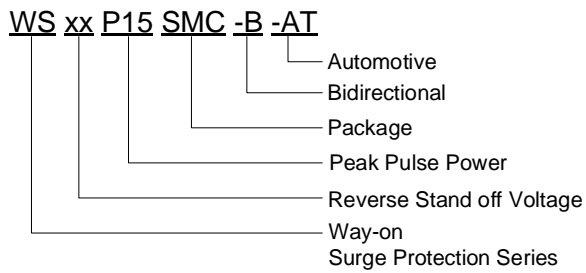


### Recommended Solder Pad Layout

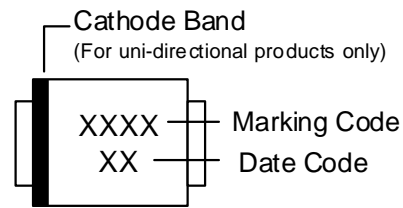


Dimensions in mm

## Part Numbering System



## Part Marking System



## Package Information

Package Type	Description	Quantity (pcs)
SMC(DO-214AB)	Tape & Reel -16mm/13" tape	3000

## 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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