

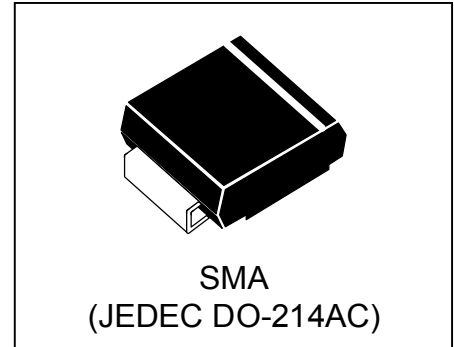


# WSxxP6SMA(-B)

## Power Transient Voltage Suppressor

### Features

- 600 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



### Mechanical Characteristics

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

### Applications

- I/O Interfaces
- Power lines
- Automotive and Telecommunication
- Computers & Consumer Electronics
- Industrial Electronics

Absolute Maximum Rating			
Rating	Symbol	Value	Units
Peak Pulse Power (tp =10/1000 $\mu$ s) (see Note1,2& 3)	P <sub>PPM</sub>	600	Watts
Peak pulse current (10/1000 $\mu$ s) (see Note2&3)	I <sub>PPM</sub>	See Electrical Characteristics	A
Peak Forward surge current (see Note4&5)	I <sub>FSM</sub>	60	A
Power Dissipation on infinite heat sink T <sub>L</sub> = 50 °C (Fig5)	P <sub>D</sub>	5.0	W
Operating Junction Temperature range	T <sub>J</sub>	-55 to + 150	°C
Storage Temperature range	T <sub>STG</sub>	-55 to + 150	°C

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

**Note2:** Peak Pulse Power or Current Derated above TA=25°C Per Fig. 2 and Non-Repetitive Current Pulse, Per Fig.3.

**Note3:** Mounted on 5.0x5.0mm<sup>2</sup> copper pad to each terminal.

**Note4:** 8.3ms Single Half Sine Wave or Equivalent Square Wave.

**Note5:** Maximum Forward Surge Current only for Unidirectional Device per Fig6.

## Electrical Characteristics

Part Number		Reverse Stand off Voltage $V_{RWM}$ (Volts)	Breakdown Voltage $V_{BR}$ (Volts)@ $I_T$		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C@I_{PP}$ (Volts)	Maximum Peak Pulse Current $I_{pp}$ (Amps)	Maximum Reverse Leakage $I_R@V_{RWM}$ ( $\mu$ A)
			MIN	MAX				
UNI-POLAR	BI-POLAR							
WS5.0P6SMA	WS5.0P6SMA-B	5.0	6.40	7.07	10	9.2	65.2	800
WS6.0P6SMA	WS6.0P6SMA-B	6.0	6.67	7.37	10	10.3	58.3	800
WS6.5P6SMA	WS6.5P6SMA-B	6.5	7.22	7.98	10	11.2	53.6	500
WS7.0P6SMA	WS7.0P6SMA-B	7.0	7.78	8.60	10	12.0	50.0	200
WS8.0P6SMA	WS8.0P6SMA-B	8.0	8.89	9.83	1	13.6	44.1	50
WS10P6SMA	WS10P6SMA-B	10	11.10	12.30	1	17.0	35.3	5
WS12P6SMA	WS12P6SMA-B	12	13.30	14.7	1	19.9	30.2	5
WS13P6SMA	WS13P6SMA-B	13	14.40	15.90	1	21.5	27.9	1
WS14P6SMA	WS14P6SMA-B	14	15.60	17.20	1	23.2	25.9	1
WS15P6SMA	WS15P6SMA-B	15	16.70	18.50	1	24.4	24.6	1
WS16P6SMA	WS16P6SMA-B	16	17.80	19.70	1	26.0	23.1	1
WS18P6SMA	WS18P6SMA-B	18	20.00	22.10	1	29.2	20.5	1
WS20P6SMA	WS20P6SMA-B	20	22.20	24.50	1	32.4	18.5	1
WS22P6SMA	WS22P6SMA-B	22	24.40	26.90	1	35.5	16.9	1
WS24P6SMA	WS24P6SMA-B	24	26.70	29.50	1	38.9	15.4	1
WS26P6SMA	WS26P6SMA-B	26	28.90	31.90	1	42.1	14.3	1
WS28P6SMA	WS28P6SMA-B	28	31.10	34.40	1	45.4	13.2	1
WS30P6SMA	WS30P6SMA-B	30	33.30	36.80	1	48.4	12.4	1
WS33P6SMA	WS33P6SMA-B	33	36.70	40.60	1	53.3	11.3	1
WS36P6SMA	WS36P6SMA-B	36	40.00	44.20	1	58.1	10.3	1
WS40P6SMA	WS40P6SMA-B	40	44.40	49.10	1	64.5	9.3	1
WS43P6SMA	WS43P6SMA-B	43	47.80	52.80	1	69.4	8.6	1
WS45P6SMA	WS45P6SMA-B	45	50.00	55.30	1	72.7	8.3	1
WS48P6SMA	WS48P6SMA-B	48	53.30	58.90	1	77.4	7.8	1
WS51P6SMA	WS51P6SMA-B	51	56.70	62.70	1	82.4	7.3	1
WS54P6SMA	WS54P6SMA-B	54	60.00	66.30	1	87.1	6.9	1
WS58P6SMA	WS58P6SMA-B	58	64.40	71.20	1	93.6	6.4	1
WS60P6SMA	WS60P6SMA-B	60	66.70	73.70	1	96.8	6.2	1
WS64P6SMA	WS64P6SMA-B	64	71.10	78.60	1	103	5.8	1
WS70P6SMA	WS70P6SMA-B	70	77.80	86.00	1	113	5.3	1
WS75P6SMA	WS75P6SMA-B	75	83.30	92.10	1	121	5.0	1
WS78P6SMA	WS78P6SMA-B	78	86.70	95.80	1	126	4.8	1
WS85P6SMA	WS85P6SMA-B	85	94.40	104	1	137	4.4	1

Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

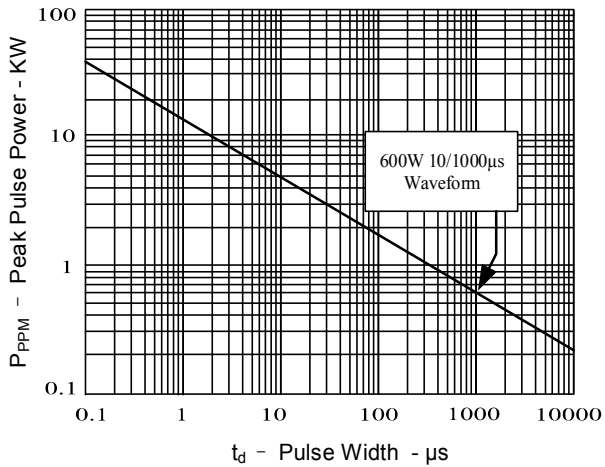


Figure 2: Pulse Derating Curve

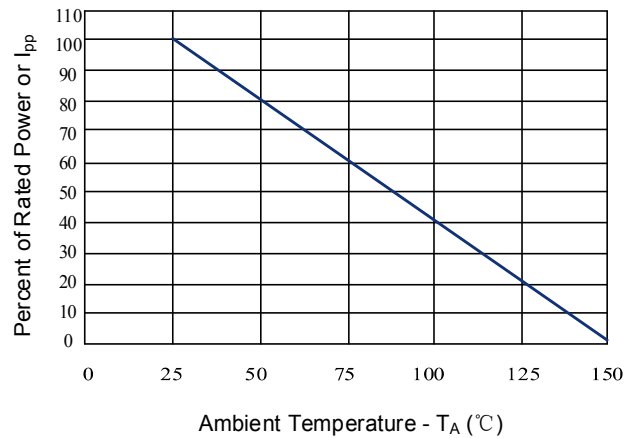


Figure 3: Pulse Waveform

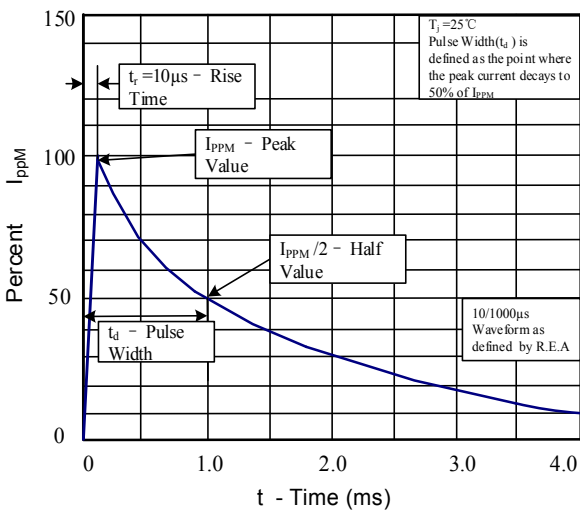


Figure 4: Typical Junction Capacitance

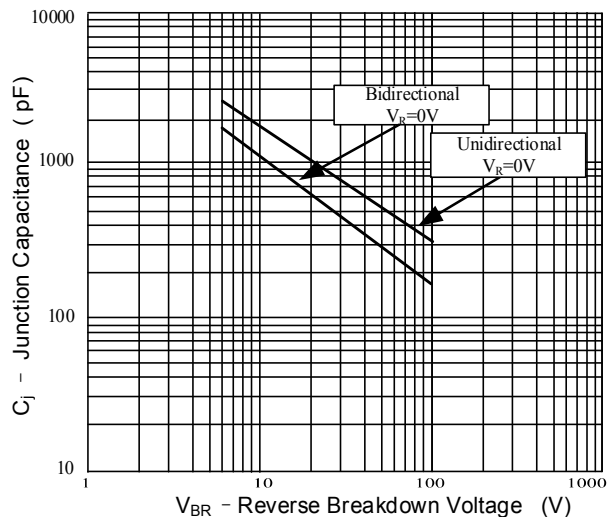


Figure 5: Steady State Power Dissipation Derating Curve

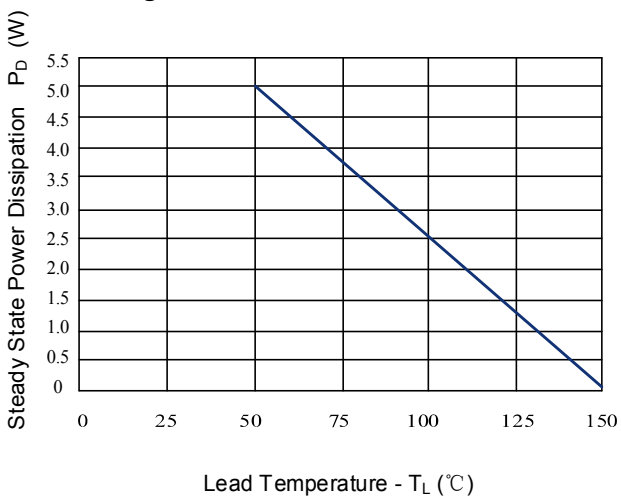
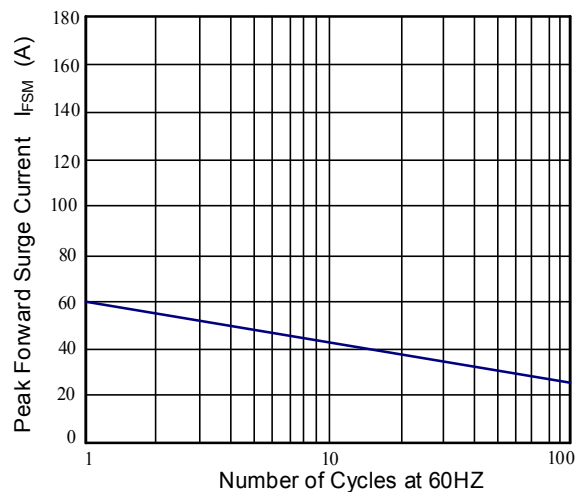
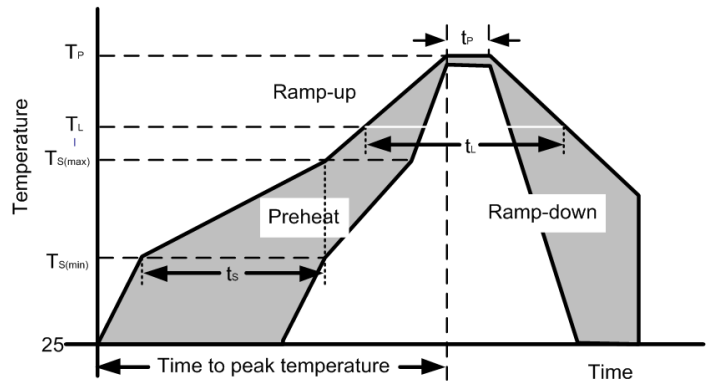


Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional



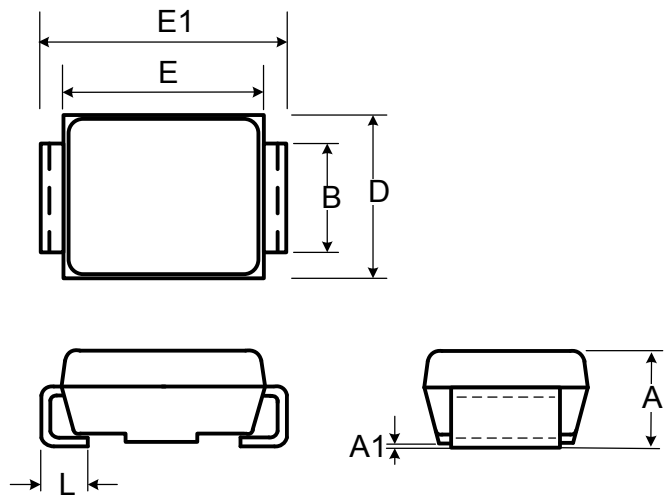
Soldering Parameters

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

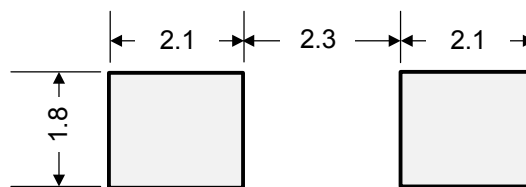


Outline Drawing – SMA(DO-214AC)

Ref. (mm)	Millimeters	
	Min.	Max.
A	1.980	2.290
A1	-	0.203
B	1.250	1.650
E	3.990	4.500
E1	4.930	5.280
D	2.540	2.790
L	0.780	1.520



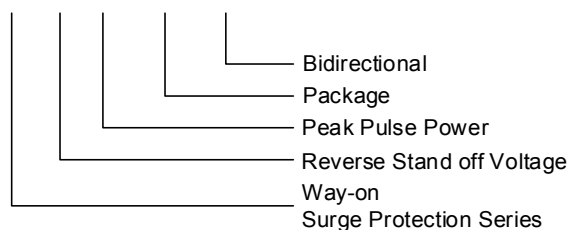
Recommended Solder Pad Layout



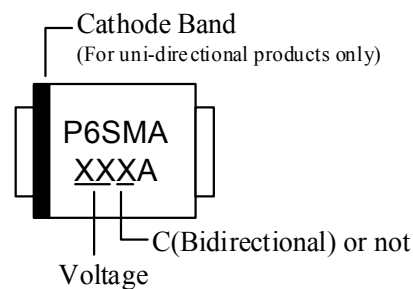
Dimensions in mm

## Part Numbering System

WS xx P6 SMA -B



## Part Marking System



## Package Information

Package Type	Description	Quantity (pcs)	Standard
SMA(DO-214AC)	Tape & Reel -12mm/13" tape	5000	EIA-481-D

## 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.com

WAYON website: <http://www.way-on.com>

For additional information, please contact your local Sales Representative.

**WAYON**® is registered trademarks of Wayon Corporation.

*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.*