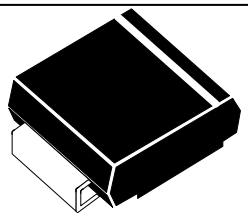
WSxxP10SMB(-B)

Power Transient Voltage Suppressor

Features

- 1000 watts Peak Pulse Power (10/1000μs)
- Unidirectional and Bidirectional Protection
- Fast Response Time : Typically < 1ns
- Excellent Clamping Capability
- Built-in Strain relief
- Low inductance
- Low profile package
- IEC 61000-4-2 (ESD) ±30kV(air), ±30kV(contact)
- MSL: Level 1



SMB
(JEDEC DO-214AA)

Mechanical Characteristics

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

Applications

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

Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (tp =10/1000μs) (see Note1,2& 3)	P_{PPM}	1000	Watts
Peak pulse current (10/1000μs) (see Note2&3)	I_{PPM}	See Electrical Characteristics	A
Peak Forward surge current (see Note4&5)	I_{FSM}	300	A
Power Dissipation on infinite heat sink T_L = 50 °C (Fig5)	P_D	6.5	W
Operating Junction Temperature range	T_J	-55 to + 150	℃
Storage Temperature range	T_{STG}	-55 to + 150	℃

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

Note2: Peak Pulse Power or Current Derated above T_A=25℃ Per Fig. 2 and Non-Repetitive Current Pulse, Per Fig.3.

Note3: Mounted on 5.0x5.0mm^2 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}	Breakdown Voltage V_{BR}(Volts)@I_T		Test Current I_T	Maximum Clamping Voltage V_c@I_{PP}	Maximum Peak Pulse Current I_{pp}	Maximum Reverse Leakage I_R@V_{RWM}
UNI-POLAR	BI-POLAR	(Volts)	MIN	MAX	(mA)	(Volts)	(Amps)	(μA)
WS5.0P10SMB	WS5.0P10SMB-B	5.0	6.40	7.07	10	9.2	108.7	800
WS6.0P10SMB	WS6.0P10SMB-B	6.0	6.67	7.37	10	10.3	97.09	800
WS6.5P10SMB	WS6.5P10SMB-B	6.5	7.22	7.98	10	11.2	89.29	500
WS7.0P10SMB	WS7.0P10SMB-B	7.0	7.78	8.60	10	12.0	83.33	200
WS7.5P10SMB	WS7.5P10SMB-B	7.5	8.33	9.21	1	12.9	77.52	100
WS8.0P10SMB	WS8.0P10SMB-B	8.0	8.89	9.83	1	13.6	73.53	50
WS8.5P10SMB	WS8.5P10SMB-B	8.5	9.44	10.40	1	14.4	69.44	20
WS9.0P10SMB	WS9.0P10SMB-B	9.0	10.00	11.10	1	15.4	64.94	10
WS10P10SMB	WS10P10SMB-B	10	11.10	12.30	1	17.0	58.82	10
WS11P10SMB	WS11P10SMB-B	11	12.20	13.50	1	18.2	54.95	1
WS12P10SMB	WS12P10SMB-B	12	13.30	14.7	1	19.9	50.25	1
WS13P10SMB	WS13P10SMB-B	13	14.40	15.90	1	21.5	46.51	1
WS14P10SMB	WS14P10SMB-B	14	15.60	17.20	1	23.2	43.10	1
WS15P10SMB	WS15P10SMB-B	15	16.70	18.50	1	24.4	40.98	1
WS16P10SMB	WS16P10SMB-B	16	17.80	19.70	1	26.0	38.46	1
WS17P10SMB	WS17P10SMB-B	17	18.90	20.90	1	27.6	36.23	1
WS18P10SMB	WS18P10SMB-B	18	20.00	22.10	1	29.2	34.25	1
WS20P10SMB	WS20P10SMB-B	20	22.20	24.50	1	32.4	30.86	1
WS22P10SMB	WS22P10SMB-B	22	24.40	26.90	1	35.5	28.17	1
WS24P10SMB	WS24P10SMB-B	24	26.70	29.50	1	38.9	25.71	1
WS26P10SMB	WS26P10SMB-B	26	28.90	31.90	1	42.1	23.75	1
WS28P10SMB	WS28P10SMB-B	28	31.10	34.40	1	45.4	22.03	1
WS30P10SMB	WS30P10SMB-B	30	33.30	36.80	1	48.4	20.66	1
WS33P10SMB	WS33P10SMB-B	33	36.70	40.60	1	53.3	18.76	1
WS36P10SMB	WS36P10SMB-B	36	40.00	44.20	1	58.1	17.21	1
WS40P10SMB	WS40P10SMB-B	40	44.40	49.10	1	64.5	15.50	1
WS43P10SMB	WS43P10SMB-B	43	47.80	52.80	1	69.4	14.41	1
WS45P10SMB	WS45P10SMB-B	45	50.00	55.30	1	72.7	13.76	1

Electrical Characteristics (Cont.)

Part Number		Reverse Stand off Voltage V_{RWM}	Breakdown Voltage V_{BR}(Volts)@I_T		Test Current I_T	Maximum Clamping Voltage V_c@I_{PP}	Maximum Peak Pulse Current I_{pp}	Maximum Reverse Leakage I_R@V_{RWM}
UNI-POLAR	**BI-POLAR**	**(Volts)**	**MIN**	**MAX**	**(mA)**	**(Volts)**	**(Amps)**	**(μA)**
WS48P10SMB	WS48P10SMB-B	48	53.30	58.90	1	77.4	12.92	1
WS51P10SMB	WS51P10SMB-B	51	56.70	62.70	1	82.4	12.14	1
WS54P10SMB	WS54P10SMB-B	54	60.00	66.30	1	87.1	11.48	1
WS58P10SMB	WS58P10SMB-B	58	64.40	71.20	1	93.6	10.68	1
WS60P10SMB	WS60P10SMB-B	60	66.70	73.70	1	96.8	10.33	1
WS64P10SMB	WS64P10SMB-B	64	71.10	78.60	1	103	9.71	1
WS70P10SMB	WS70P10SMB-B	70	77.80	86.00	1	113	8.85	1
WS75P10SMB	WS75P10SMB-B	75	83.30	92.10	1	121	8.26	1
WS78P10SMB	WS78P10SMB-B	78	86.70	95.80	1	126	7.94	1
WS85P10SMB	WS85P10SMB-B	85	94.40	104	1	137	7.30	1
WS90P10SMB	WS90P10SMB-B	90	100	111	1	146	6.85	1
WS100P10SMB	WS100P10SMB-B	100	111	123	1	162	6.17	1
WS110P10SMB	WS110P10SMB-B	110	122	135	1	177	5.65	1
WS120P10SMB	WS120P10SMB-B	120	133	147	1	193	5.18	1
WS130P10SMB	WS130P10SMB-B	130	144	159	1	209	4.78	1
WS150P10SMB	WS150P10SMB-B	150	167	185	1	243	4.12	1
WS160P10SMB	WS160P10SMB-B	160	178	197	1	259	3.86	1
WS170P10SMB	WS170P10SMB-B	170	189	209	1	275	3.64	1
WS180P10SMB	WS180P10SMB-B	180	201	222	1	292	3.42	1
WS190P10SMB	WS190P10SMB-B	190	211	233	1	308	3.25	1
WS200P10SMB	WS200P10SMB-B	200	224	247	1	324	3.09	1
WS220P10SMB	WS220P10SMB-B	220	246	272	1	356	2.81	1
WS250P10SMB	WS250P10SMB-B	250	279	309	1	405	2.47	1
WS300P10SMB	WS300P10SMB-B	300	335	371	1	486	2.06	1
WS350P10SMB	WS350P10SMB-B	350	391	432	1	567	1.76	1
WS400P10SMB	WS400P10SMB-B	400	447	494	1	648	1.54	1
WS440P10SMB	WS440P10SMB-B	440	492	543	1	713	1.40	1

Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

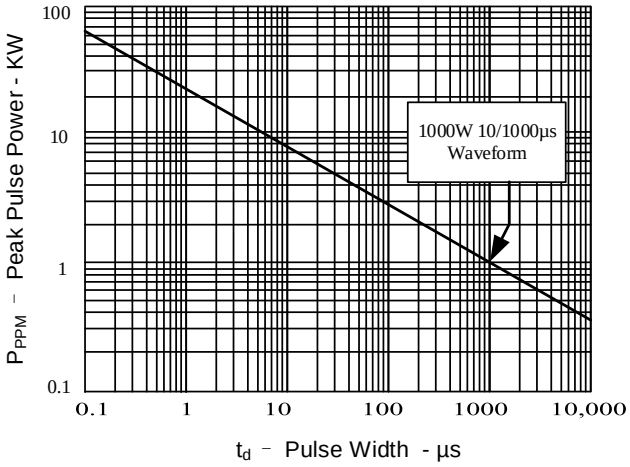


Figure 2: Pulse Derating Curve

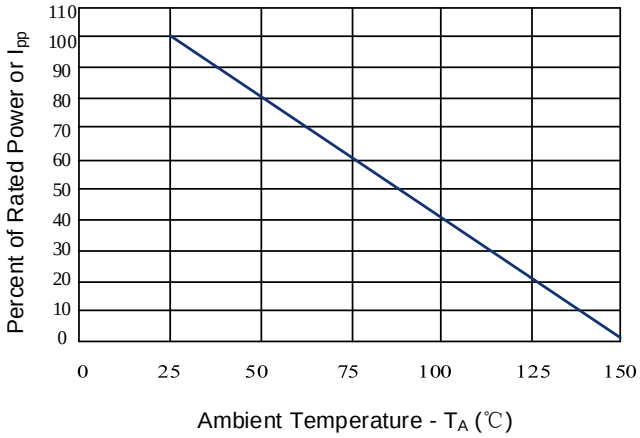


Figure 3: Pulse Waveform

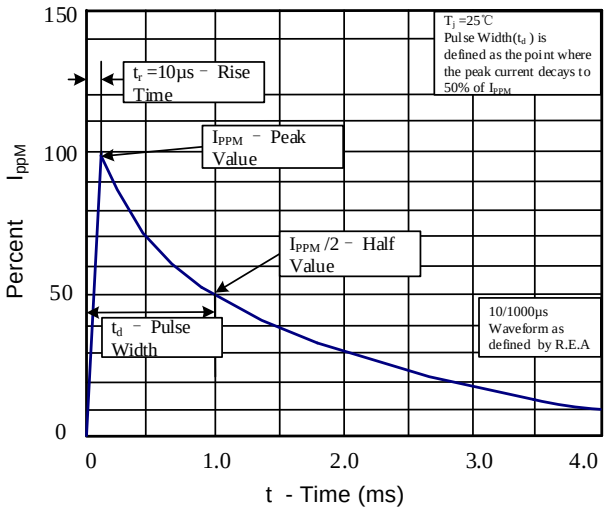


Figure 4: Typical Junction Capacitance

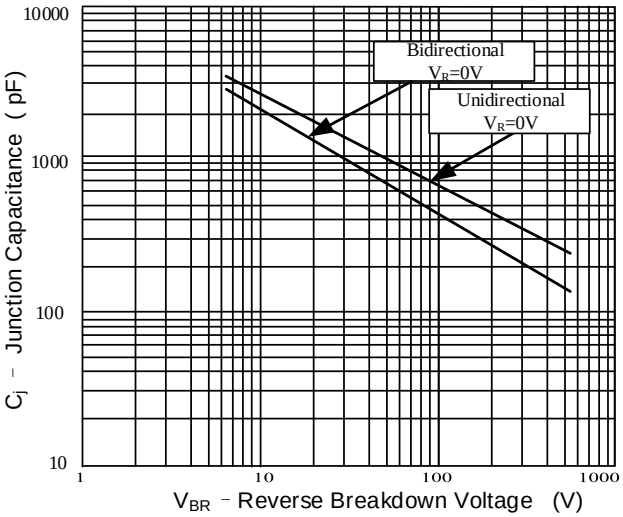


Figure 5: Steady State Power Dissipation Derating Curve

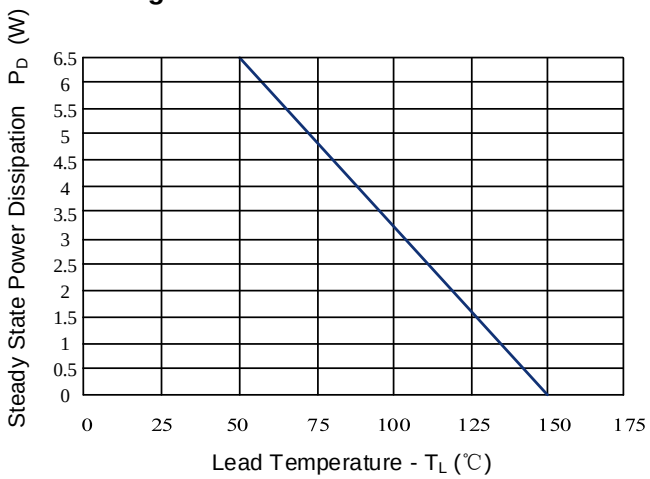
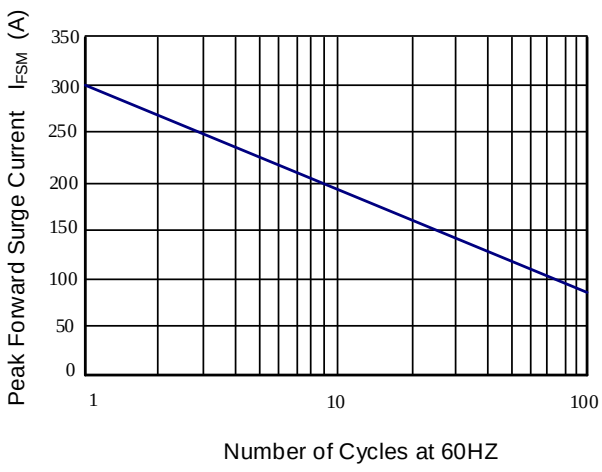


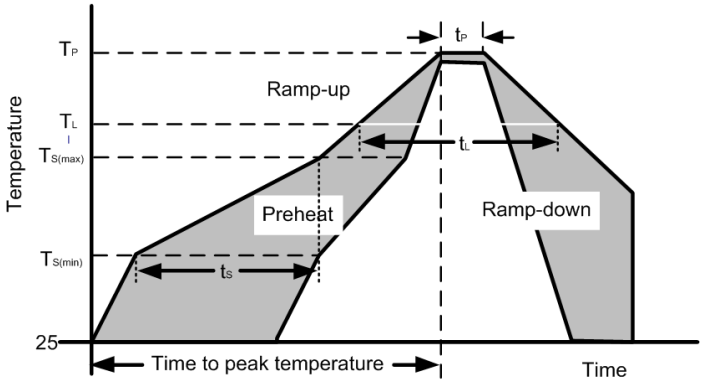
Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional



Note: The above typical parameters or typical characteristics are only indicative and do not make specific guarantees. If detailed values are required, additional communication and provision are required.

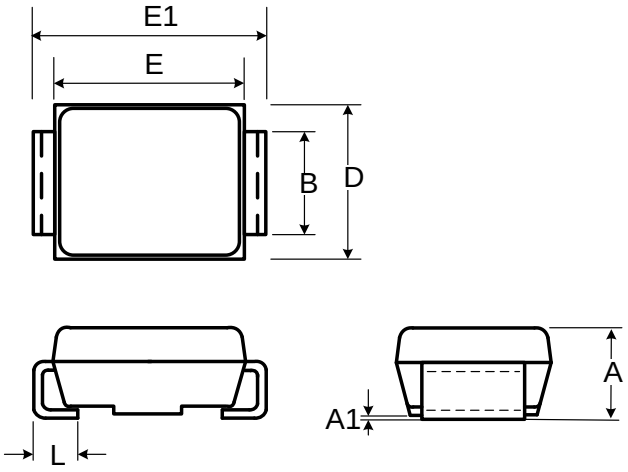
Soldering Parameters

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
$T_{s(max)}$ 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)		$260^{+0/-5}$°C
Time within 5°C of 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

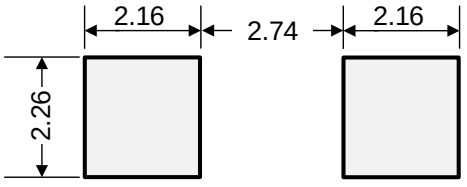


Outline Drawing – SMB(DO-214AA)

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

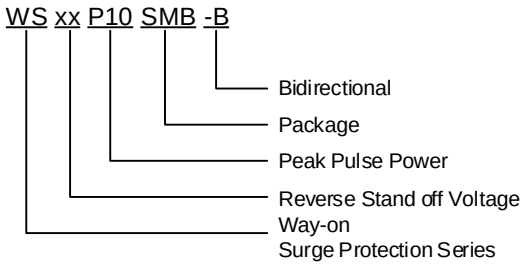


Recommended Solder Pad Layout

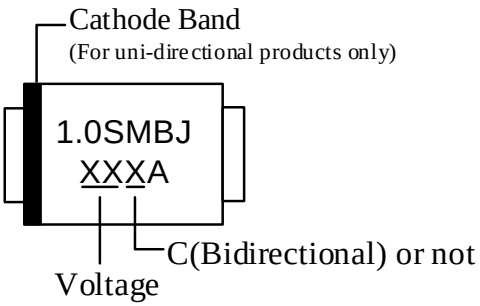


Dimensions in mm

Part Numbering System



Part Marking System



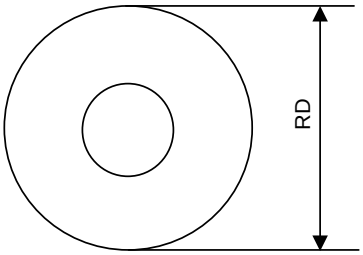
Package Information

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

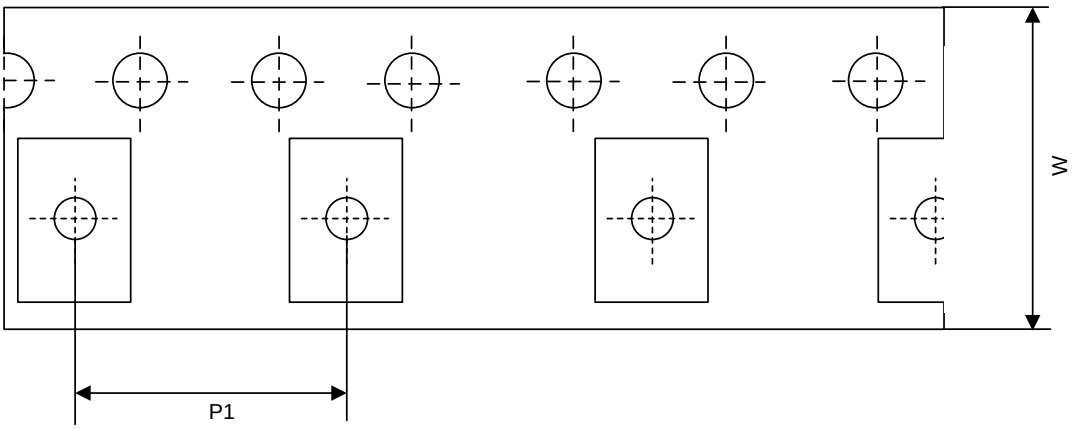
Tape and Reel Information

RD	Reel Dimensions	13 inch
W	Overall width of the carrier tape	12 mm
P1	Pitch between successive cavity centers	8 mm

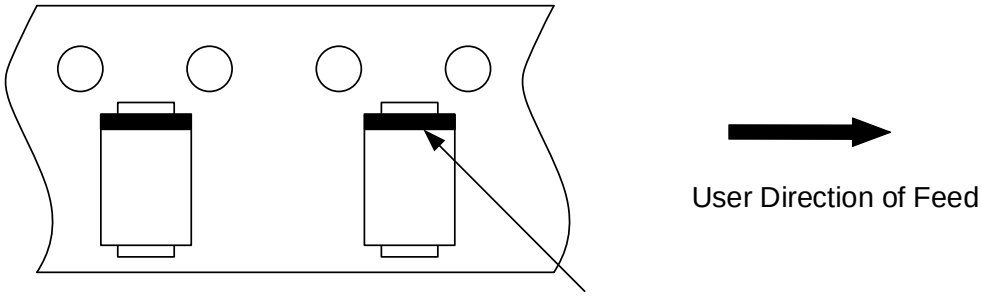
Reel Dimensions



Tape Dimensions



Quadrant Assignments for PIN1 Orientation in tape



User Direction of Feed

Top View

Uni-directional products only

Contact Information

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For additional information, please contact your local Sales Representative.

Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. WAYON shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and WAYON assumes no responsibility for the application of the product.

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Users are advised to pay attention to the parameter limit values specified in the product specification and maintain a certain margin in design or application to ensure that the product does not exceed the parameter limit values defined in the product specification. This precaution should be taken to avoid exceeding one or more of the limit values, which may result in permanent irreversible damage to the product, ultimately affecting the quality and reliability of the system or equipment.

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