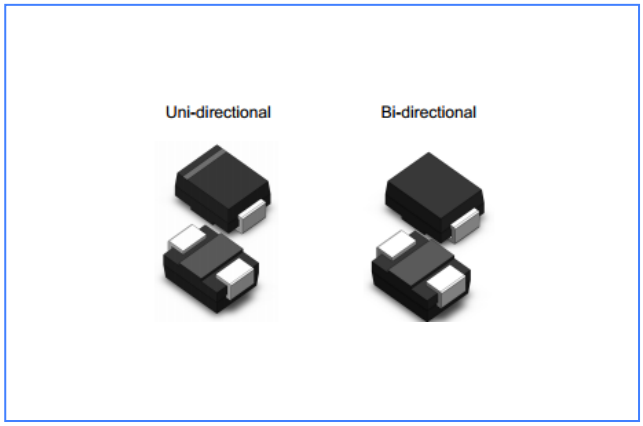
1.5SMB Series

Description

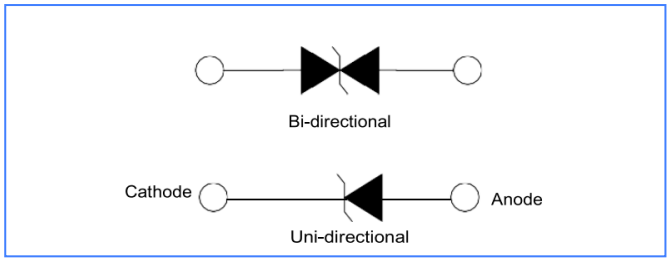
The 1.5SMB series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The 1.5SMB series is supplied in YINT Semiconductor's exclusive, cost-effective, highly reliable and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer Applications.



Features

- Case: DO-214AA(SMB)
- Excellent clamping capability
- 1500 W peak pulse power capability with a 10/1000 μs waveform
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Fast response time: typically less than 1.0ps from 0 Volts to VB min.
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).

Functional Diagram



Applications

TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Maximum Ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25ºC by 10/1000μs Waveform	P_{PK}	1500	W
Power Dissipation on Infinite Heat Sink at T_L=50°C	P_D	5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave[1]	I_{FSM}	100	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only[2]	V_F	5	V
Operating Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

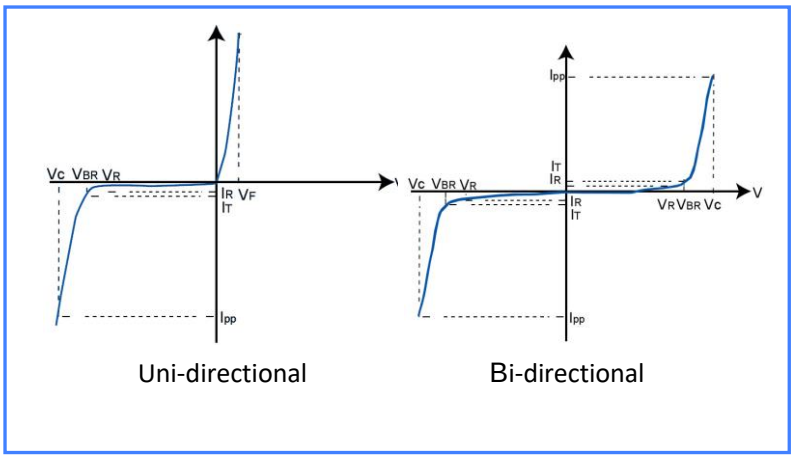
NOTES:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Electrical characteristics (TA = 25 °C unless otherwise noted)

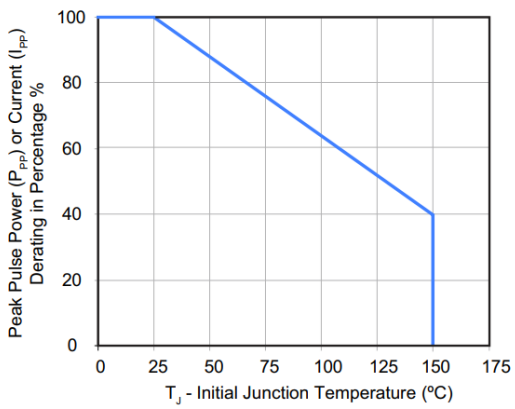
Part Number (Bi)	Part Number (Uni)	MARKING		Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@I_T		Test Current I_T(mA)	Maximum Reverse Leakage I_R @ V_R(μA)	Maximum Peak Pulse Current Ipp(A)		Maximum Clamping Voltage V_C @I_{pp}(V)	
		BI	UNI		Min .V	Max .V			10/1000 μs	8/20 μs	10/1000 μs	8/20 μs
1.5SMB20CA	1.5SMB20A	B15I	H15I	17.1	19.0	21.0	1	20	54.9	302.0	27.7	34.8
1.5SMB22CA	1.5SMB22A	B15K	H15K	18.8	20.9	23.1	1	10	49.7	273.4	30.6	35.0
1.5SMB23CA	1.5SMB23A	B15L	H15L	20.0	22.0	24.2	1	1	45.0	250.0	33.2	35.0
1.5SMB24CA	1.5SMB24A	B15N	H15N	20.5	22.8	25.2	1	1	45.0	249.0	33.2	42.9
1.5SMB27CA	1.5SMB27A	B15P	H15P	23.1	25.7	28.4	1	1	40.5	222.8	37.5	48.4
1.5SMB30CA	1.5SMB30A	B15S	H15S	25.6	28.5	31.5	1	1	36.7	201.9	41.4	53.5
1.5SMB33CA	1.5SMB33A	B15V	H15V	28.2	31.4	34.7	1	1	33.3	183.2	45.7	59.0
1.5SMB36CA	1.5SMB36A	B15Z	H15Z	30.8	34.2	37.8	1	1	30.5	167.8	49.9	64.5
1.5SMB39CA	1.5SMB39A	C15B	N15B	33.3	37.1	41.0	1	1	28.2	155.1	53.9	69.6
1.5SMB43CA	1.5SMB43A	C15D	N15D	36.8	40.9	45.2	1	1	25.6	140.8	59.3	76.6
1.5SMB47CA	1.5SMB47A	C15F	N15F	40.2	44.7	49.4	1	1	23.5	129.3	64.8	83.7
1.5SMB51CA	1.5SMB51A	C15G	N15G	43.6	48.5	53.6	1	1	21.7	119.4	70.1	90.6
1.5SMB56CA	1.5SMB56A	C15I	N15I	47.8	53.2	58.8	1	1	19.7	108.4	77.0	99.5
1.5SMB62CA	1.5SMB62A	C15K	N15K	53.0	58.9	65.1	1	1	17.9	98.5	85.0	109.8
1.5SMB68CA	1.5SMB68A	C15L	N15L	58.1	64.6	71.4	1	1	16.5	90.8	92.0	118.9
1.5SMB75CA	1.5SMB75A	C15N	N15N	64.1	71.3	78.8	1	1	14.8	81.4	103.0	133.1
1.5SMB82CA	1.5SMB82A	C15P	N15P	70.1	77.9	86.1	1	1	13.5	74.3	113.0	146.0
1.5SMB91CA	1.5SMB91A	C15S	N15S	77.8	86.5	95.5	1	1	12.2	67.1	125.0	161.5
1.5SMB100CA	1.5SMB100A	C15V	N15V	85.5	95.0	105.0	1	1	11.1	61.1	137.0	177.0

I-V Curve characteristics

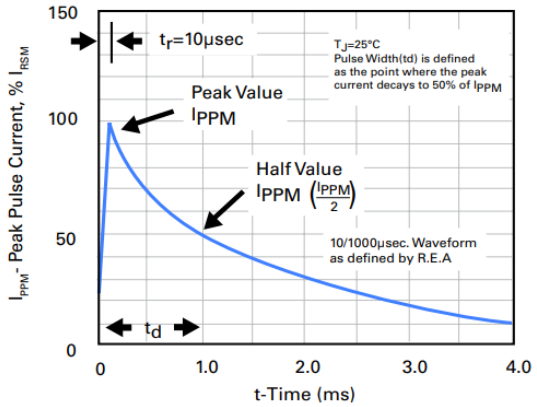


Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @V_{RWM}
V_{BR}	Breakdown Voltage @ I_T(Test Current)

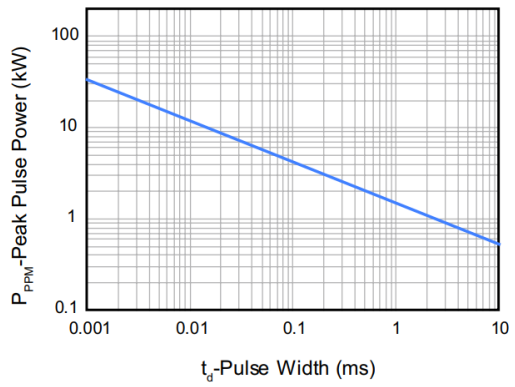
Rating & Characteristic Curves



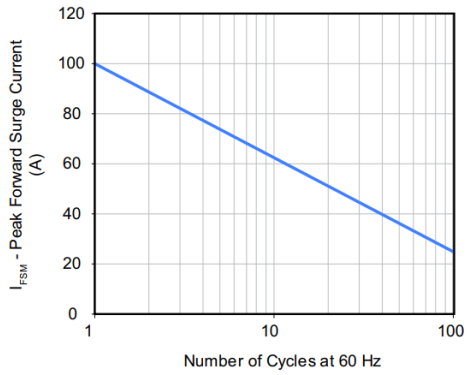
1.Peak pulse power derating curve



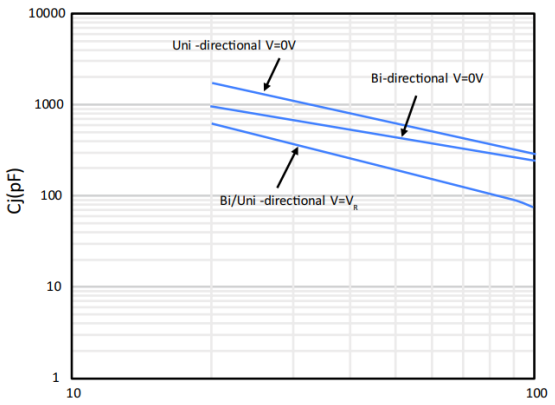
2. Pulse waveform



3. Peak pulse power rating curve

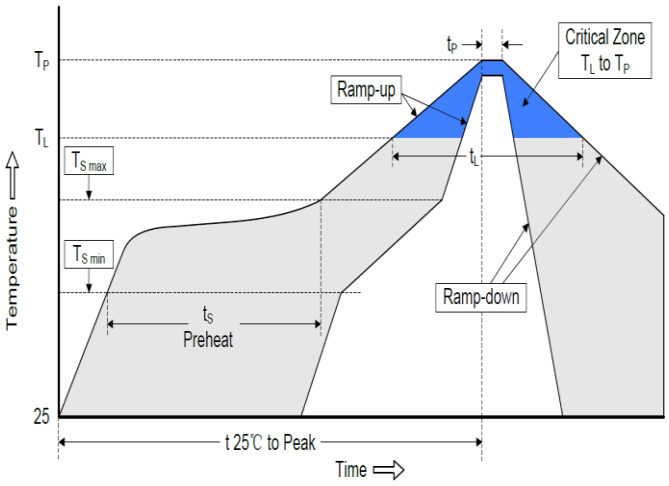


4. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



5. Typical Junction Capacitance

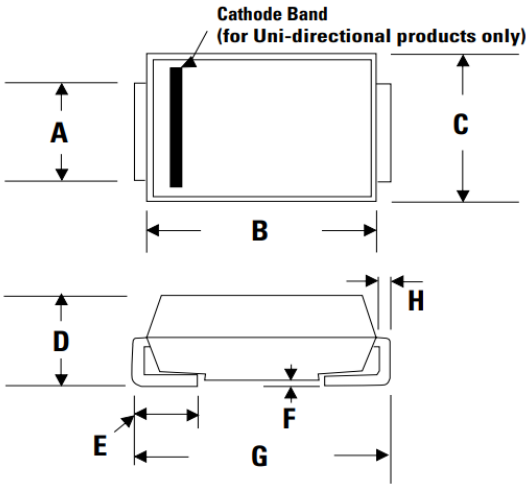
Soldering parameters



Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max)(t_S)	 150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3°C/second max.
Time maintained above: - Temperature (T_L) - Time (t_L)	 217°C 60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6°C /second max.
Time 25°C to Peak Temperature	8 minutes max.

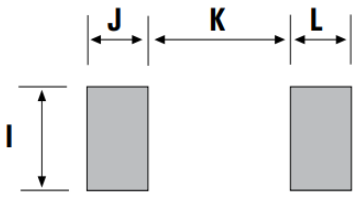
Package outline dimensions in millimeters

DO-214AA (SMB J-Bend)

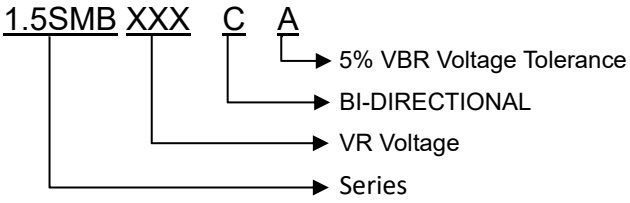


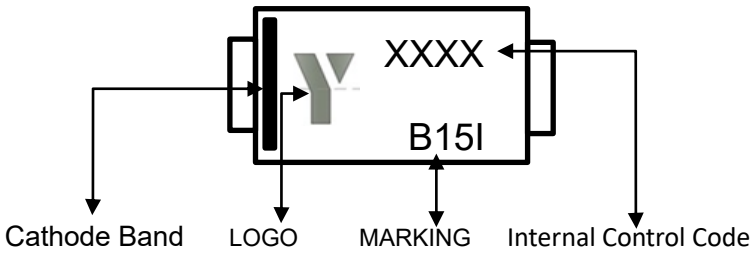
Dimensions	Millimeter	
	Min	Max
A	1.930	2.200
B	4.060	4.750
C	3.300	3.940
D	1.990	2.610
E	0.760	1.520
F	-	0.203
G	5.210	5.590
H	0.152	0.305
I	2.260	-
J	2.160	-
K	-	2.740
L	2.160	-

Mounting Pad Layout



Part number code & Marking code





(for Uni-directional products only)

Disclaimer

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.