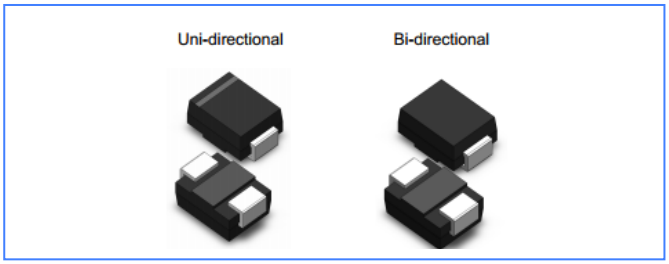
1.0SMB Series

Description

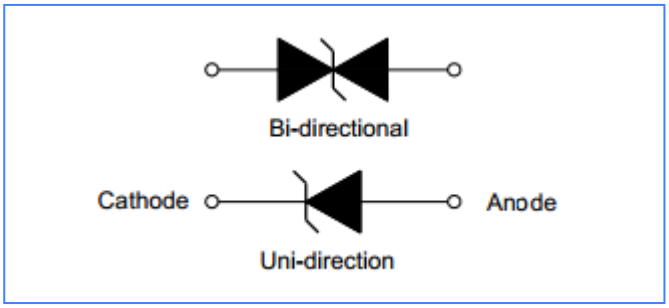
The 1.0SMB series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.



Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in uni-directional and bi-directional
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Case: DO-214AA (SMBJ)
- 1000 W peak pulse power capability with a10/1000 us waveform, repetitive rate (duty cycle):0.01 %
- Polarity: For uni-directional types the color band denotes cathode end, no marking on bi-directional types

Functional Diagram



Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, and telecommunication

Maximum Ratings (TA=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T = 1 ms)	P_{PK}	1000	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method)	I_{FSM}	100	Amps
Steady State Power Dissipation @ TL = 75 °C	P_D	5	Watts
Maximum Instantaneous Forward Voltage @ I_{PP} = 35 A (For Unidirectional Units Only)	V_F	3.5/5.0	Volts
Operating Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

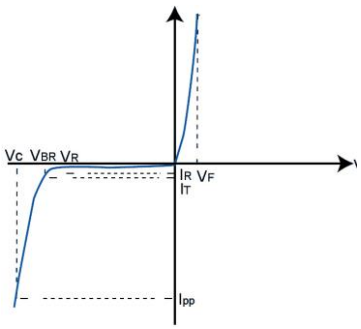
Note：

1. Non-repetitive current pulse per Fig.5 and derated above TA= 25 °C per Fig.1
2. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum
3. VF<3.5V for devices of VBR<50V.、

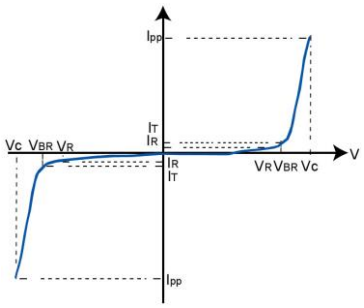
Electrical Characteristics (TA = 25 °C unless otherwise noted)

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 I pp (A)	Maximum Clamping Voltage V_C @ I_{pp} (V)
		BI	UNI		Min .V	Max .V				
1.0SMB6.8CA	1.0SMB6.8A	N10A	A10A	5.8	6.46	7.14	10	900	95.2	10.5
1.0SMB7.5CA	1.0SMB7.5A	N10B	A10B	6.4	7.13	7.88	10	400	88.5	11.3
1.0SMB8.2CA	1.0SMB8.2A	N10C	A10C	7.0	7.79	8.61	10	180	82.6	12.1
1.0SMB9.1CA	1.0SMB9.1A	N10D	A10D	7.8	8.65	9.56	1	45	74.6	13.4
1.0SMB10CA	1.0SMB10A	N10E	A10E	8.6	9.50	10.50	1	8	69.0	14.5
1.0SMB11CA	1.0SMB11A	N10F	A10F	9.4	10.45	11.55	1	4	64.1	15.6
1.0SMB12CA	1.0SMB12A	N10G	A10G	10.2	11.40	12.60	1	1	59.9	16.7
1.0SMB13CA	1.0SMB13A	N10H	A10H	11.1	12.35	13.65	1	1	54.9	18.2
1.0SMB15CA	1.0SMB15A	N10I	A10I	12.8	14.25	15.75	1	1	47.2	21.2
1.0SMB16CA	1.0SMB16A	N10J	A10J	13.6	15.20	16.80	1	1	44.4	22.5
1.0SMB18CA	1.0SMB18A	N10K	A10K	15.3	17.10	18.90	1	1	39.7	25.2
1.0SMB20CA	1.0SMB20A	N10L	A10L	17.1	19.00	21.00	1	1	36.1	27.7
1.0SMB22CA	1.0SMB22A	N10M	A10M	18.8	20.90	23.10	1	1	32.7	30.6
1.0SMB24CA	1.0SMB24A	N10N	A10N	20.5	22.80	25.20	1	1	30.1	33.2
1.0SMB27CA	1.0SMB27A	N10O	A10O	23.1	25.65	28.35	1	1	26.7	37.5
1.0SMB30CA	1.0SMB30A	N10P	A10P	25.6	28.50	31.50	1	1	24.2	41.4
1.0SMB33CA	1.0SMB33A	N10Q	A10Q	28.2	31.35	34.65	1	1	21.9	45.7
1.0SMB36CA	1.0SMB36A	N10R	A10R	30.8	34.20	37.80	1	1	20.0	49.9
1.0SMB39CA	1.0SMB39A	N10S	A10S	33.3	37.05	40.95	1	1	18.6	53.9
1.0SMB43CA	1.0SMB43A	N10T	A10T	36.8	40.85	45.15	1	1	16.9	59.3
1.0SMB47CA	1.0SMB47A	N10U	A10U	40.2	44.65	49.35	1	1	15.4	64.8
1.0SMB51CA	1.0SMB51A	N10V	A10V	43.6	48.45	53.55	1	1	14.3	70.1
1.0SMB56CA	1.0SMB56A	N10W	A10W	47.8	53.20	58.80	1	1	13.0	77.0
1.0SMB62CA	1.0SMB62A	N10X	A10X	53.0	58.90	65.10	1	1	11.8	85.0
1.0SMB68CA	1.0SMB68A	N10Y	A10Y	58.1	64.60	71.40	1	1	10.9	92.0
1.0SMB75CA	1.0SMB75A	N10Z	A10Z	64.1	71.25	78.75	1	1	9.7	103.0

I-V Curve Characteristics



Uni-directional



Bi-directional

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

Figure 1- Pulse Derating Curve

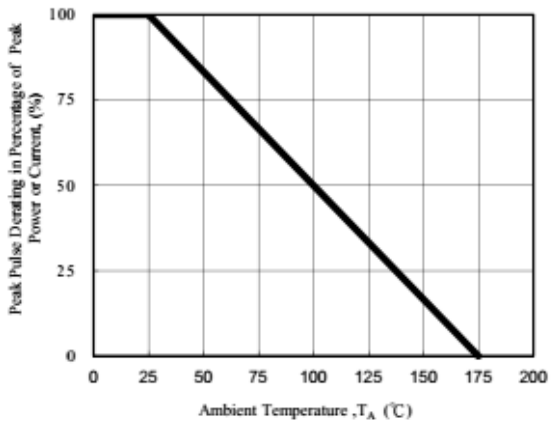


Figure 2- Maximum Non-Repetitive Surge Curren

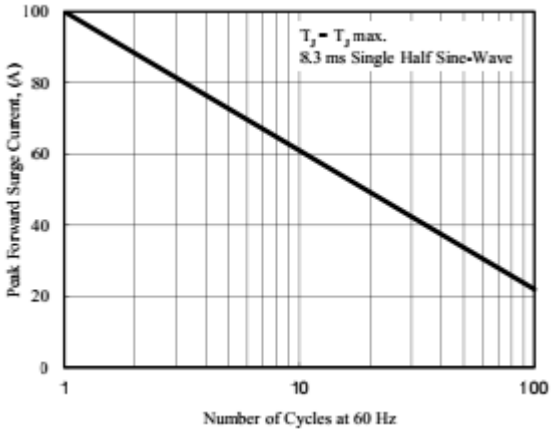


Figure 3- Steady State Power Derating Curve

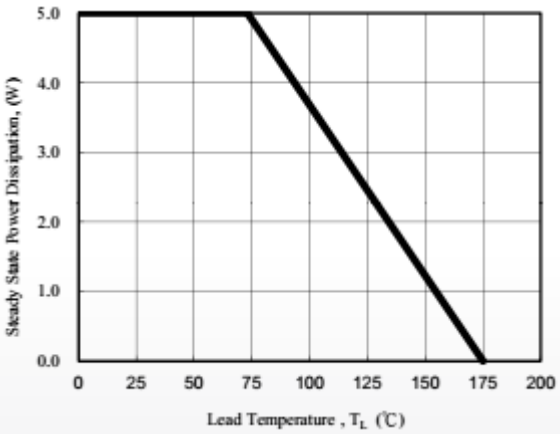


Figure 4- Peak Pulse Power Rating Curve

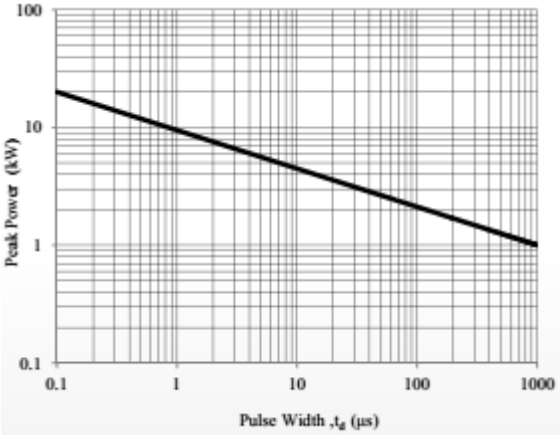


Figure 5- Pulse Waveform

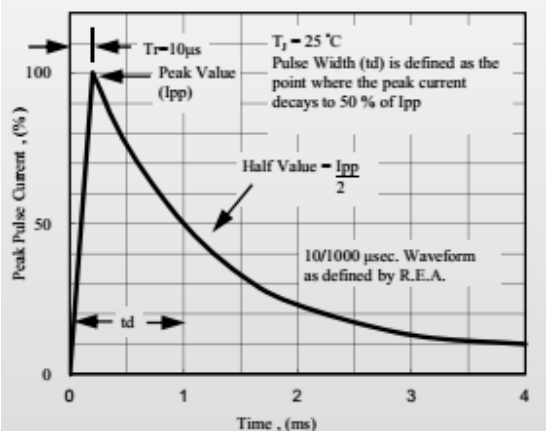
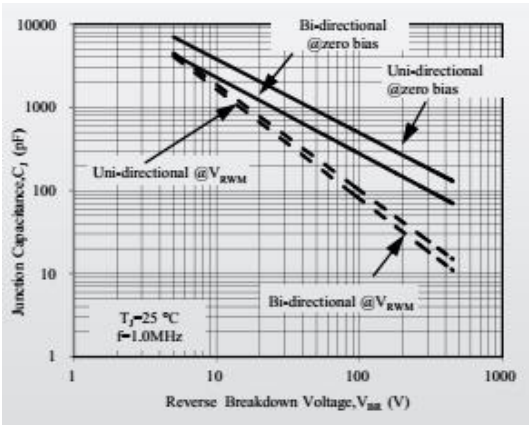
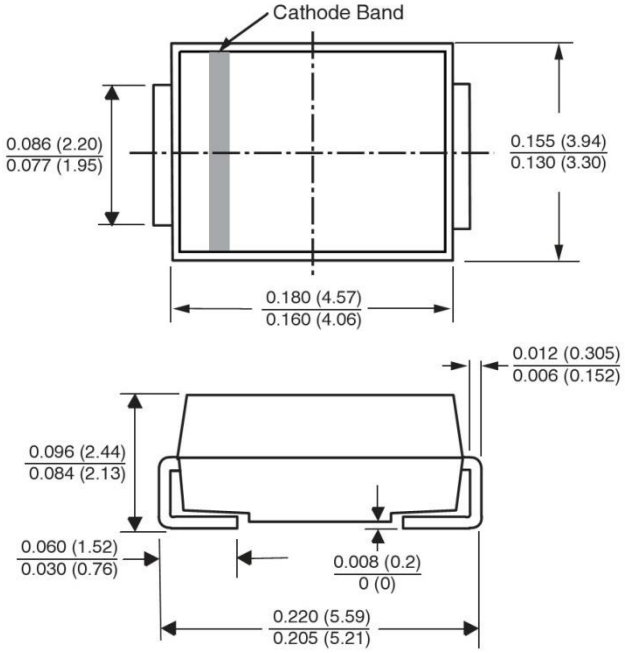


Figure 5- Typical Junction Capacitance

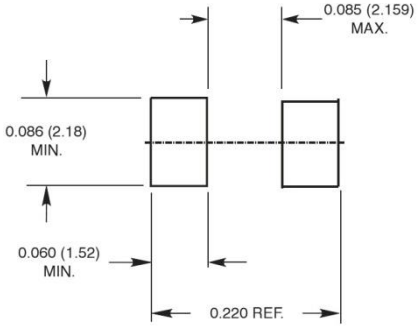


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB)



Mounting Pad Layout



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.