

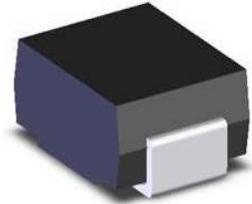
1.0SMB Series Datasheet

Description

The 1.0SMB series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events. For surface mounted applications in order to optimize board space.

Features

- Halogen free and RoHS compliant
- Low profile package
- Built-in strain relief Design
- Low inductance
- Excellent clamping capability
- 1000W peak pulse power capability at 10/1000 μ s waveform, repetition rate (duty cycle): 0.01%
- Fast response time: typically less than 1.0ps from 0V to VB min
- Typical IR less than 1 μ A above 11V devices
- Peak 260 $^{\circ}$ C high temperature Reflow Soldering withstanding
- Meet MSL level1, per J-STD-020
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- Unit Weight: 0.10g/PCS



Applications

TVS components are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in telecom, computer, Industrial and consumer electronic applications.

Maximum Ratings and Characteristics

Ratings at 25 $^{\circ}$ C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000 μ s waveform (Note1, Note2, Fig.1)	P _{PPM}	Minimum 1000	Watts
Peak pulse current of at 10/1000 μ s waveform (Note 1, Fig.3)	I _{PPM}	See Table	Amps
Steady state power dissipation at T _A =50 $^{\circ}$ C (Fig.5)	P _{M(AV)}	5.0	Watts
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only	V _F	3.5/5.0	V
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6)	I _{FSM}	100	Amps
Operating junction and Storage Temperature Ranges.	T _J , T _{STG}	-55 to +150	$^{\circ}$ C
Typical thermal resistance junction to lead	R _{θJL}	20	$^{\circ}$ C/W
Typical thermal resistance junction to ambient	R _{θJA}	100	$^{\circ}$ C/W

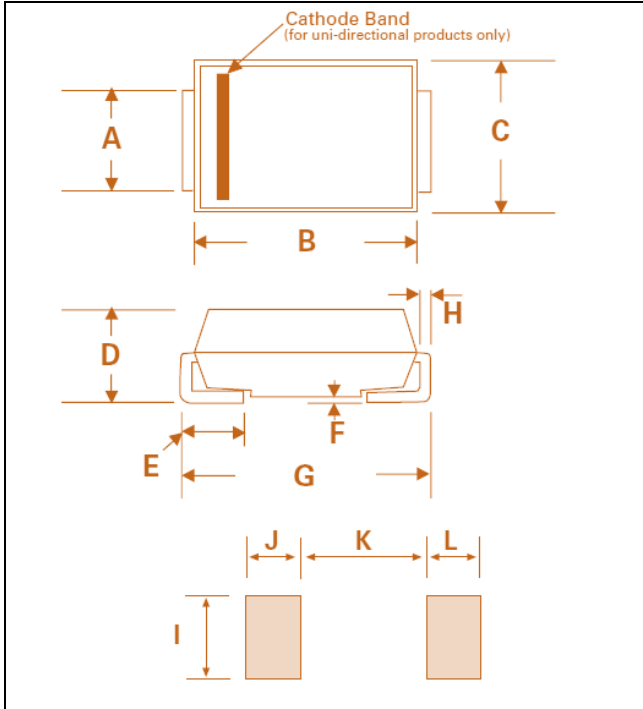
Notes: 1. Non-repetitive current pulse, per Fig.3 and Derating above T_A=25 $^{\circ}$ C per Fig.2.

2. Each terminal is surface Mounted on the 5.0mm \times 5.0mm (0.03mm thick) copper pads.

3. 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.

4. V_F < 3.5V for single die parts and V_F < 5.0V for stacked-die parts.

Dimensions (SMB/DO-214AA)



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.076	0.086	1.930	2.200
B	0.160	0.187	4.060	4.750
C	0.130	0.155	3.300	3.940
D	0.085	0.104	2.160	2.650
E	0.030	0.060	0.760	1.520
F	-	0.008	-	0.203
G	0.205	0.220	5.210	5.590
H	0.006	0.012	0.152	0.305
I	0.089	-	2.260	-
J	0.085	-	2.160	-
K	-	0.107	-	2.740
L	0.085	-	2.160	-

Electrical Characteristics (TA=25°C)

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _R
Uni	Bi	UNI	BI	V _R (V)	Min(V)	Max(V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
1.0SMB6.8A	1.0SMB6.8CA	6V8A •	6V8C •	5.80	6.45	7.14	10	10.5	96.8	1000
1.0SMB7.5A	1.0SMB7.5CA	7V5A •	7V5C •	6.40	7.13	7.88	10	11.3	90.0	500
1.0SMB8.2A	1.0SMB8.2CA	8V2A •	8V2C •	7.02	7.79	8.61	10	12.1	84.0	200
1.0SMB9.1A	1.0SMB9.1CA	9V1A •	9V1C •	7.78	8.65	9.55	1	13.4	75.8	50
1.0SMB10A	1.0SMB10CA	10A •	10C •	8.55	9.50	10.50	1	14.5	70.2	10
1.0SMB11A	1.0SMB11CA	11A •	11C •	9.40	10.50	11.60	1	15.6	65.2	5
1.0SMB12A	1.0SMB12CA	12A •	12C •	10.20	11.40	12.60	1	16.7	60.8	5
1.0SMB13A	1.0SMB13CA	13A •	13C •	11.10	12.40	13.70	1	18.2	55.8	1
1.0SMB15A	1.0SMB15CA	15A •	15C •	12.80	14.30	15.80	1	21.2	48.0	1
1.0SMB16A	1.0SMB16CA	16A •	16C •	13.60	15.20	16.80	1	22.5	45.2	1
1.0SMB18A	1.0SMB18CA	18A •	18C •	15.30	17.10	18.90	1	25.2	40.3	1
1.0SMB20A	1.0SMB20CA	20A •	20C •	17.10	19.00	21.00	1	27.7	36.7	1
1.0SMB22A	1.0SMB22CA	22A •	22C •	18.80	20.90	23.10	1	30.6	33.2	1
1.0SMB24A	1.0SMB24CA	24A •	24C •	20.50	22.80	25.20	1	33.2	30.7	1
1.0SMB27A	1.0SMB27CA	27A •	27C •	23.10	25.70	28.40	1	37.5	27.2	1
1.0SMB30A	1.0SMB30CA	30A •	30C •	25.60	28.50	31.50	1	41.4	24.5	1
1.0SMB33A	1.0SMB33CA	33A •	33C •	28.20	31.40	34.70	1	45.7	22.2	1

Electrical Characteristics (TA=25°C)

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _R
Uni	Bi	UNI	BI	V _R (V)	Min(V)	Max(V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
1.0SMB36A	1.0SMB36CA	36A •	36C •	30.80	34.20	37.80	1	49.9	20.3	1
1.0SMB39A	1.0SMB39CA	39A •	39C •	33.30	37.10	41.00	1	53.9	18.8	1
1.0SMB43A	1.0SMB43CA	43A •	43C •	36.80	40.90	45.20	1	59.3	17.2	1
1.0SMB47A	1.0SMB47CA	47A •	47C •	40.20	44.70	49.40	1	64.8	15.7	1
1.0SMB51A	1.0SMB51CA	51A •	51C •	43.60	48.50	53.60	1	70.1	14.5	1
1.0SMB56A	1.0SMB56CA	56A •	56C •	47.80	53.20	58.80	1	77.0	13.2	1
1.0SMB62A	1.0SMB62CA	62A •	62C •	53.00	58.90	65.10	1	85.0	12.0	1
1.0SMB68A	1.0SMB68CA	68A •	68C •	58.10	64.60	71.40	1	92.0	11.0	1

Ratings and Characteristic Curves (Ta=25°C unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

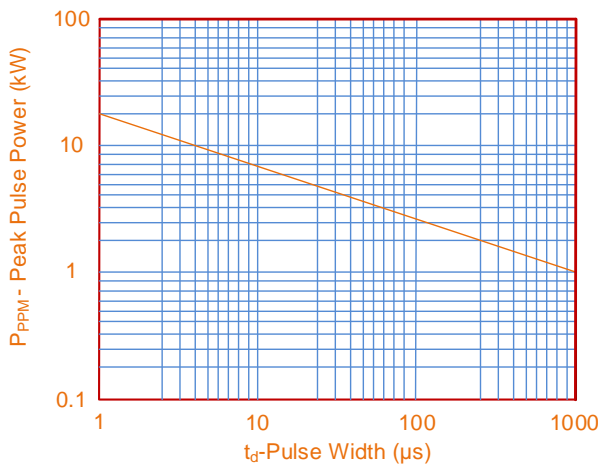


Figure 2. Pulse Derating Curve

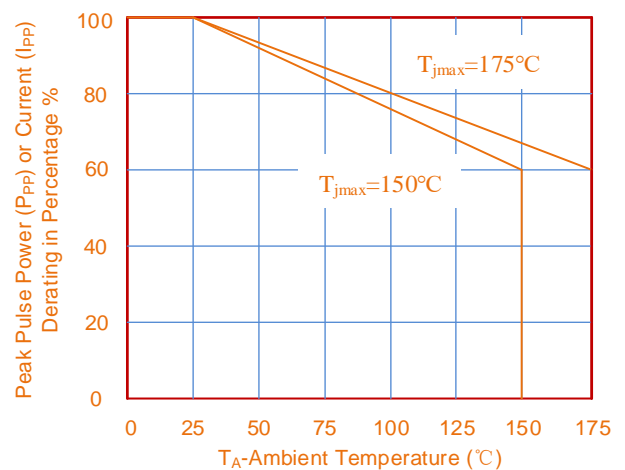


Figure 3. Pulse Waveform

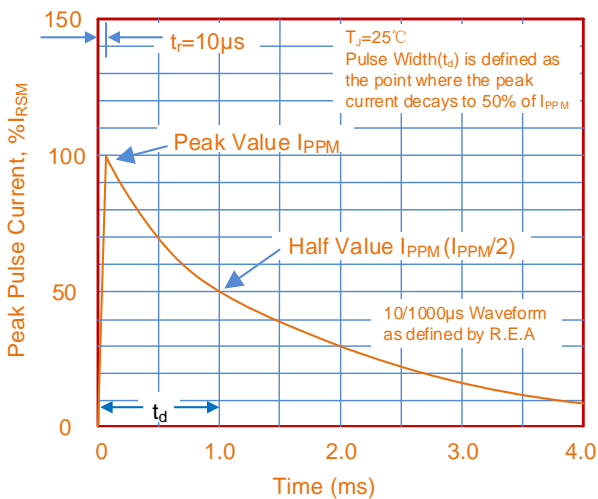


Figure 4. Typical Junction Capacitance

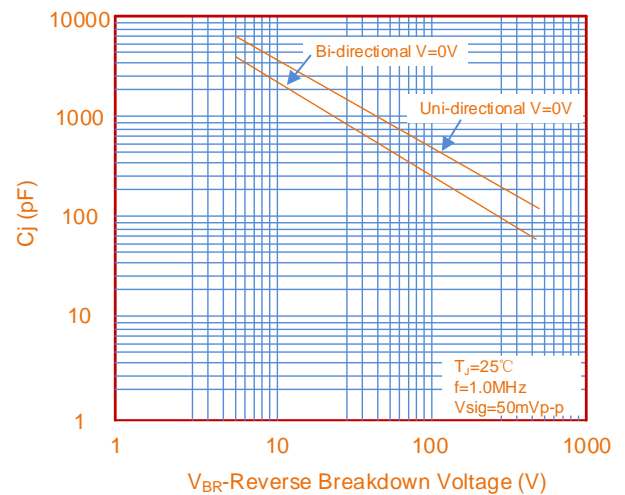


Figure 5. Steady State Power Dissipation Derating Curve

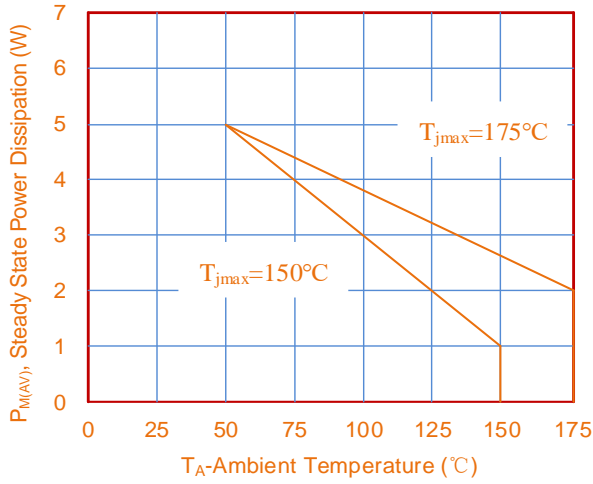
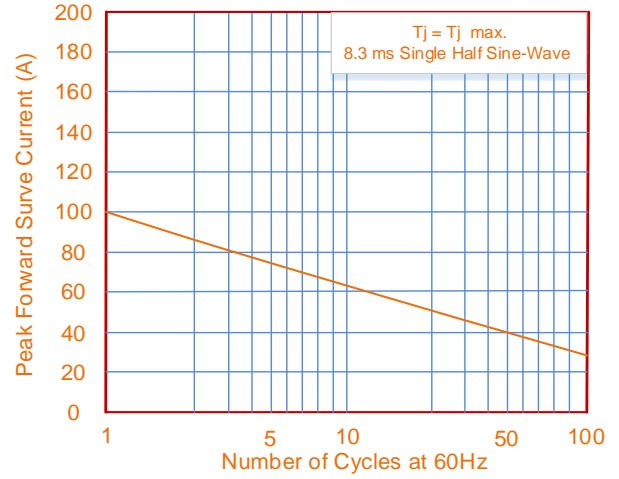
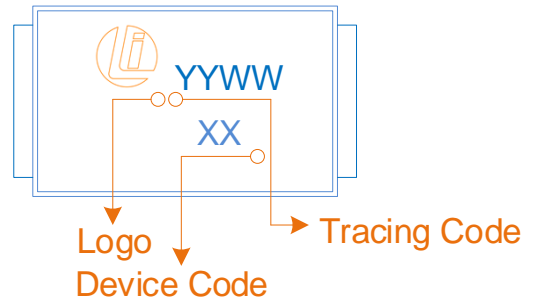
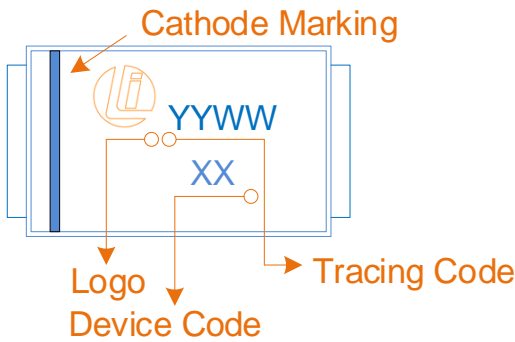


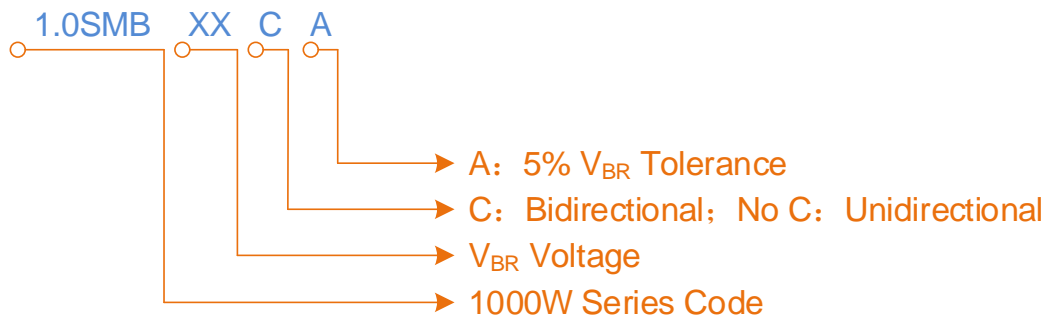
Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



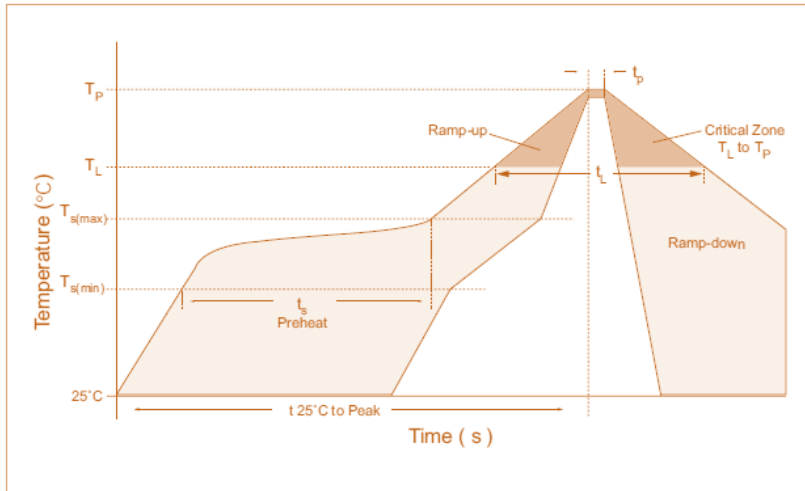
Marking Code



Part Number Code



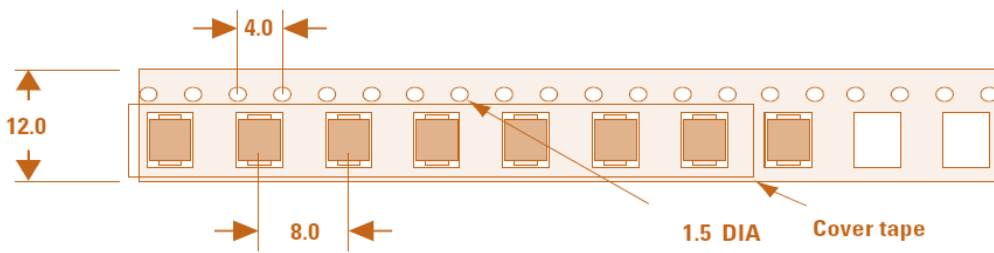
Soldering Parameters



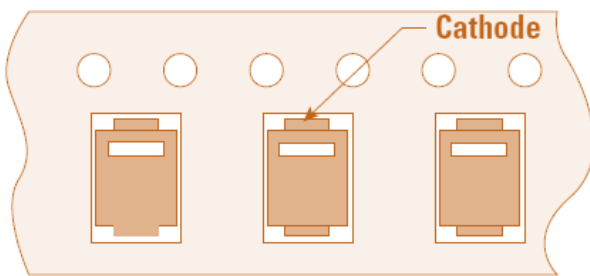
Reflow Condition		Lead-free Soldering
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak)		3°C/second max
$T_{s(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A)	217°C
	- Time (min to max) (t_r)	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 (T_p)		8 minutes Max.
Do not exceed Temperature		260°C

Packaging Specification

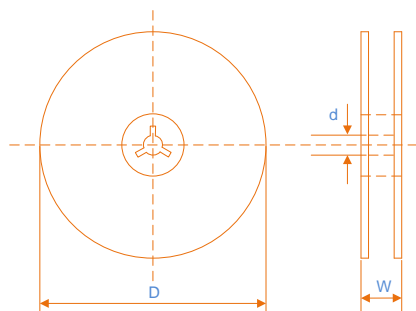
Tape



For Uni-Devices



13 Inches Reel



D	$\Phi 330.0 \pm 2.0$
d	$\Phi 13.5 \pm 0.5$
W	16.0 ± 2.0
Quantity: 3000PCS/Reel	