

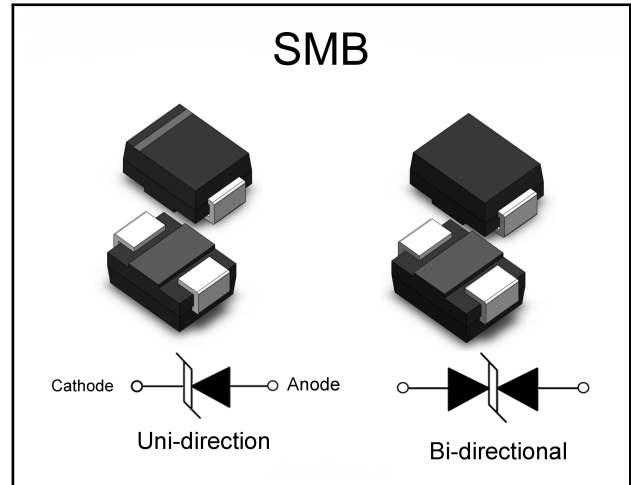
3.0SMBJ / 3.0HSMBJ Series

Transient
Voltage Suppressor

Features

- Excellent clamping capability
- Low leakage current
- Low capacitance
- High surge capability
- Glass passivated chip
- Epoxy resin package
- Built-in strain relief
- Will not fatigue
- RoHS Compliant
- “H” Prefix is for Automotive applications, AEC-Q101 qualified

Package



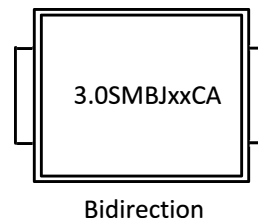
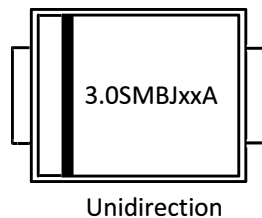
Mechanical Characteristics

- Package: SMB plastic package
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

Applications

- Telecom
- Computer
- Industrial electronic
- Consumer electronic
- Automotive electronic

Making Code



Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SMB	Tape/Reel, 13" reel	3000	EIA-481-1
	Tape/Reel, 7" reel	500	EIA-481-1

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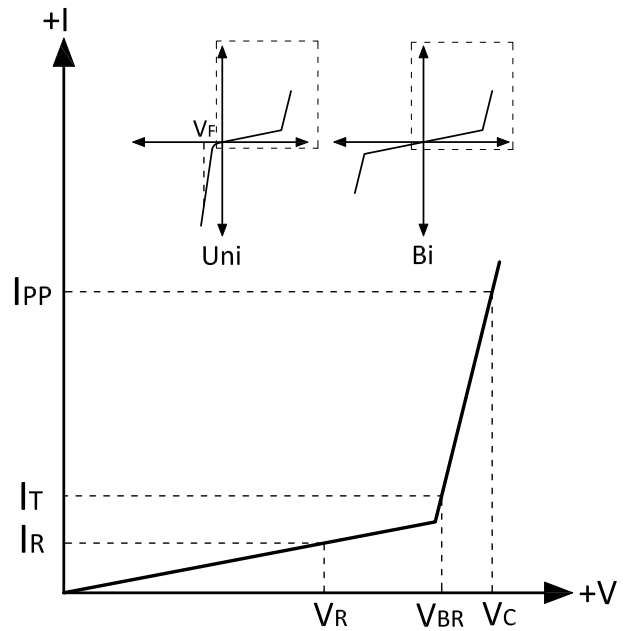
Specifications are subject to change without notice.

Please refer to <http://www.born-tw.com> for current information. **Revision: 2022-Jan-1-A**



Electrical Parameters

Parameter	Definition
C_J	Junction Capacitance - typical capacitance measured with 0V or V_R bias
I_{PP}	Peak Pulse Current - maximum rated peak impulse current
V_C	Clamping Voltage - Peak voltage measured across the suppressor at a specified I_{ppm}
V_{BR}	Breakdown Voltage - Maximum voltage that flows though the TVS at a specified test current (I_T)
I_R	Leakage Current - maximum peak off-state current measured at V_R
V_R	Peak Off-state Voltage - maximum voltage that can be applied while maintaining off state



Absolute Maximum Ratings ($T_A=+25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation (Note1,2)	P_{PPM}	3000	W
Steady State Power Dissipation (Note3)	P_D	6.5	W
Peak Forward Surge Current (Note4)	I_{FSM}	300	A
Maximum Instantaneous Forward Voltage at 100A (Note5)	V_{FM}	3.5/5	V
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	15	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	75	$^\circ\text{C/W}$
Operating Temperature Range	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$

Notes:

- (1) Non-repetitive current pulse , 10/1000us Waveform.
- (2) Mounted on copper pad area of 8×8mm to each terminal.
- (3) Infinite HeatSink at $T_A = 50^\circ\text{C}$
- (4) Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 perminute maximum.
- (5) For UnidirectionalOnly, $V_{FW} < 3.5\text{V}$ for $V_{BR} \leq 200\text{V}$ and $V_{FM} < 5.0\text{V}$ for $V_{BR} \geq 201\text{V}$.





3.0SMBJ / 3.0HSMBJ Series

Transient Voltage Suppressor

Electrical Characteristics (T_A=+25°C, unless otherwise noted)

Part Number	Part Number	Reverse Stand-Off Voltage	Breakdown Voltage V _{BR} @I _T		Test Current I _T (mA)	Maximum Clamping Voltage V _C @ I _{PP} (V)	Maximum Peak Pulse Current I _{PP} (A)	Maximum Reverse Leakage I _R @V _R (uA)
			Min.(V)	Max.(V)				
3.0SMBJ18A 3.0HSMBJ18A	3.0SMBJ18CA 3.0HSMBJ18CA	18	20	22.1	1	29.2	102.7	1
3.0SMBJ22A 3.0HSMBJ22A	3.0SMBJ22CA 3.0HSMBJ22CA	22	24.4	26.9	1	35.5	84.5	1
3.0SMBJ24A 3.0HSMBJ24A	3.0SMBJ24CA 3.0HSMBJ24CA	24	26.7	29.5	1	38.9	77.1	1
3.0SMBJ26A 3.0HSMBJ26A	3.0SMBJ26CA 3.0HSMBJ26CA	26	28.9	31.9	1	42.1	71.3	1
3.0SMBJ30A 3.0HSMBJ30A	3.0SMBJ30CA 3.0HSMBJ30CA	30	33.3	36.8	1	48.4	62.0	1
3.0SMBJ33A 3.0HSMBJ33A	3.0SMBJ33CA 3.0HSMBJ33CA	33	36.7	40.6	1	53.3	56.3	1
3.0SMBJ36A 3.0HSMBJ36A	3.0SMBJ36CA 3.0HSMBJ36CA	36	40	44.2	1	58.1	51.6	1
3.0SMBJ43A 3.0HSMBJ43A	3.0SMBJ43CA 3.0HSMBJ43CA	43	47.8	52.8	1	69.4	43.2	1
3.0SMBJ48A 3.0HSMBJ48A	3.0SMBJ48CA 3.0HSMBJ48CA	48	53.3	58.9	1	77.4	38.8	1
3.0SMBJ51A 3.0HSMBJ51A	3.0SMBJ51CA 3.0HSMBJ51CA	51	56.7	62.7	1	82.4	36.4	1
3.0SMBJ54A 3.0HSMBJ54A	3.0SMBJ54CA 3.0HSMBJ54CA	54	60.0	66.3	1	87.1	34.4	1
3.0SMBJ58A 3.0HSMBJ58A	3.0SMBJ58CA 3.0HSMBJ58CA	58	60.4	71.2	1	93.6	32.1	1
3.0SMBJ60A 3.0HSMBJ60A	3.0SMBJ60CA 3.0HSMBJ60CA	60	66.7	73.7	1	96.8	31	1
3.0SMBJ64A 3.0HSMBJ64A	3.0SMBJ64CA 3.0HSMBJ64CA	64	71.1	78.6	1	103	29	1
3.0SMBJ70A 3.0HSMBJ70A	3.0SMBJ70CA 3.0HSMBJ70CA	70	77.8	86.0	1	113	26.5	1
3.0SMBJ75A 3.0HSMBJ75A	3.0SMBJ75CA 3.0HSMBJ75CA	75	83.3	92.1	1	121	24.7	1



Ratings and Characteristic Curves ($T_A=+25^\circ\text{C}$, unless otherwise noted)

Figure 1: Peak Pulse Power Rating



Figure 2: Pulse Derating Curve

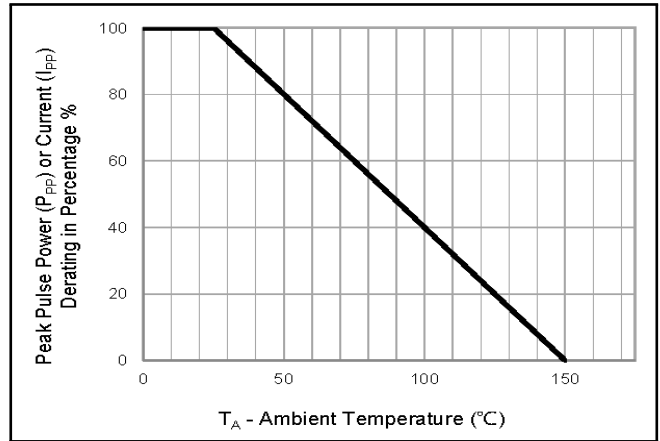


Figure 3: Pulse Waveform

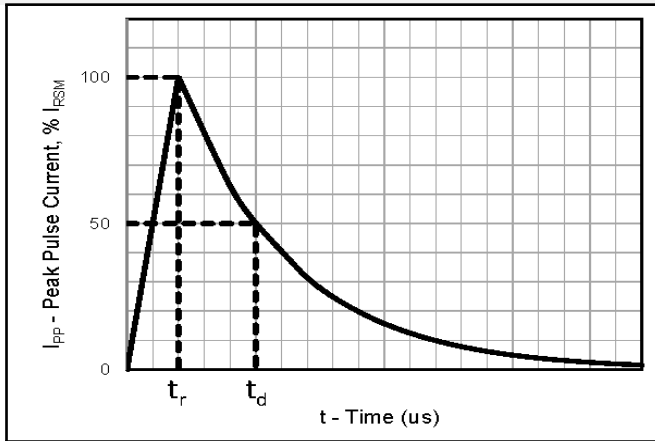


Figure 4: Typical Junction Capacitance

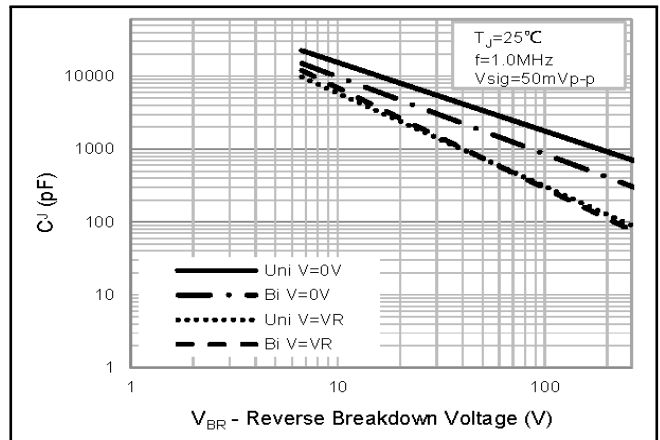


Figure 5: Steady State Power Dissipation Derating

Curve

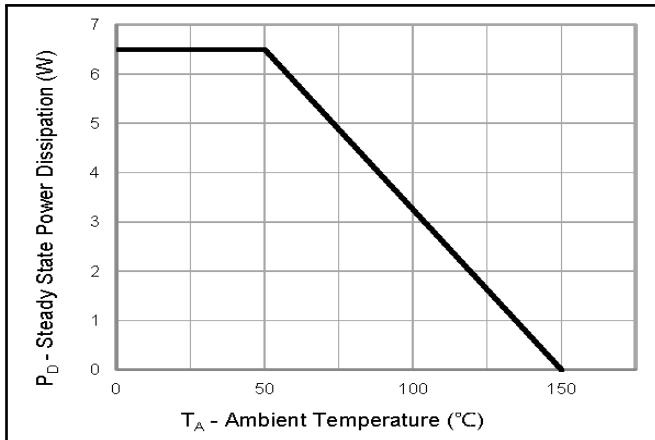
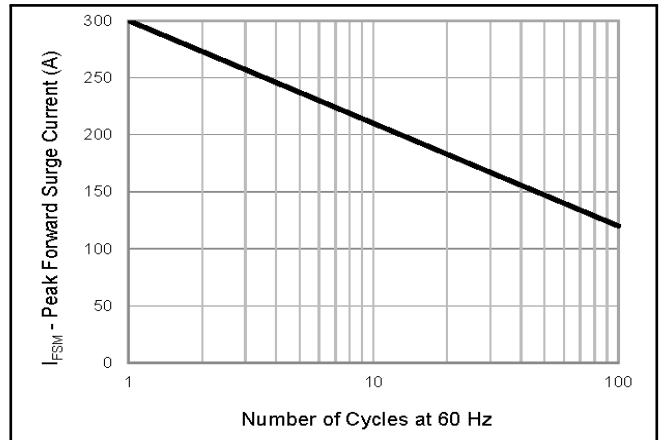
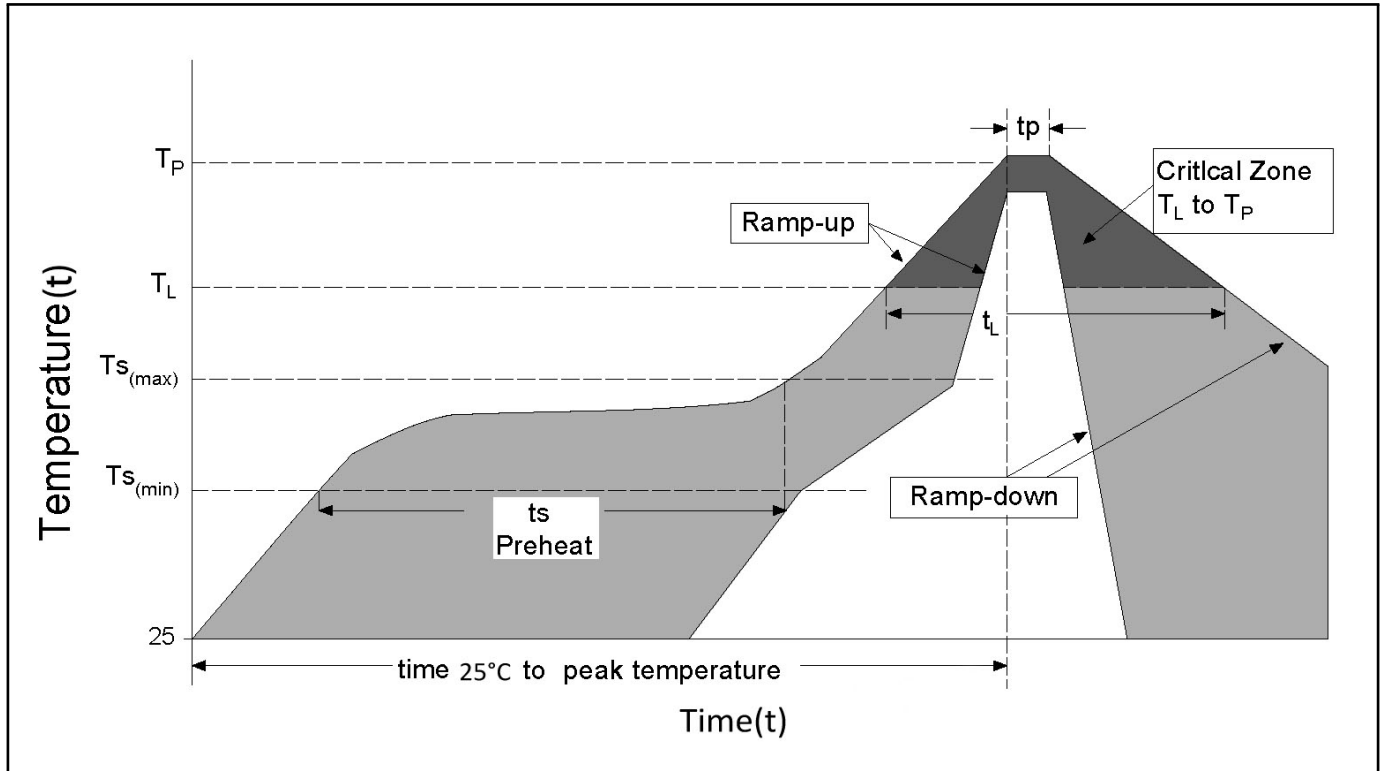


Figure 6: Maximum Non-Repetitive Peak Forward

Surge Current Uni-Directional Only



Soldering Parameters



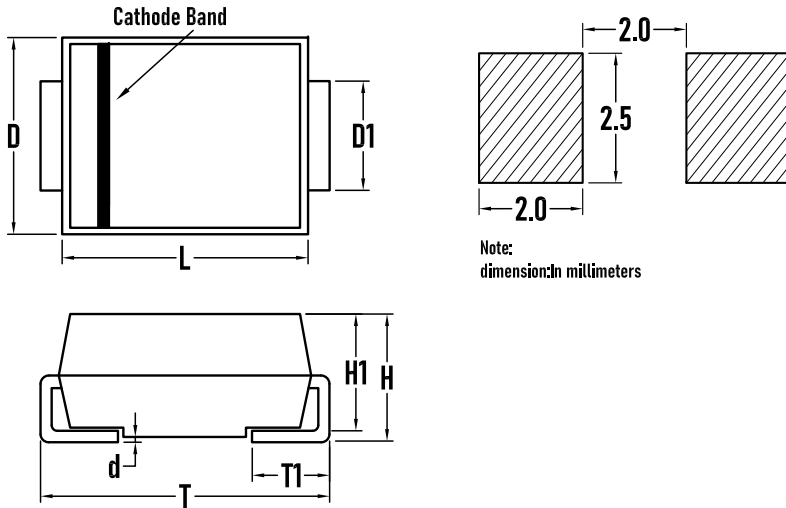
Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ($T_{S(min)}$)	150°C
	- Temperature Max ($T_{S(max)}$)	200°C
	- Time (min to max) (t_s)	60 - 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (t_L)	60 - 150 secs
Peak Temperature (T_P)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 - 40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C



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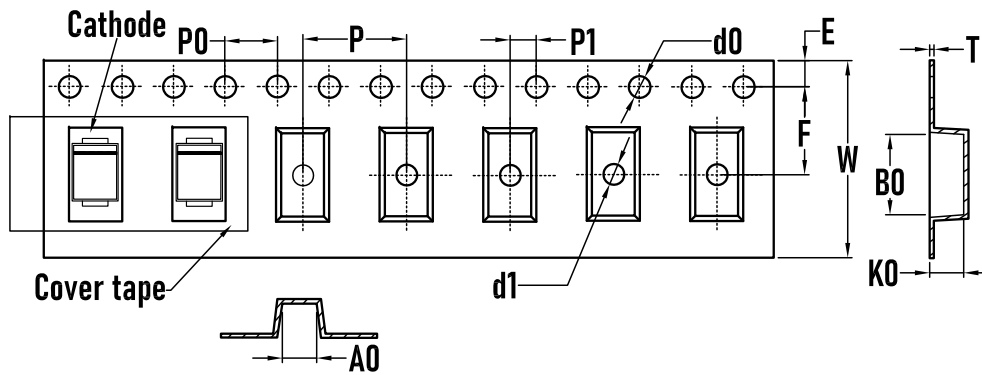
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Outline Drawing - SMB



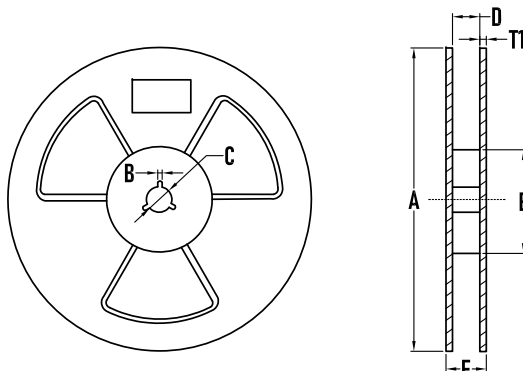
SYMBOL	MILLIMETER		Inches	
	MIN	MAX	MIN	MAX
D	3.3	3.9	0.130	0.154
D1	1.7	2.3	0.067	0.091
T	5.1	5.7	0.201	0.224
T1	0.8	1.6	0.031	0.063
d	-	0.3	-	0.012
H1	2.0	2.4	0.079	0.094
H	2.1	2.5	0.083	0.098
L	4.0	4.7	0.157	0.185

Packaging Tape - SMB



SYMBOL	MILLIMETER
A0	3.60±0.1
B0	5.45±0.1
d0	1.50±0.1
d1	1.50±0.1
E	1.75±0.1
F	5.50±0.1
K0	2.30±0.1
P	8.00±0.1
P0	4.00±0.1
P1	2.00±0.1
W	12.00±0.1
T	0.22±0.02

Packaging Reel



SYMBOL	MILLIMETER
A	323±2
B	3.0±0.2
C	15.0±0.5
D	13±2
E	73±2
T1	2.2±0.2
Quantity	3000PCS

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