

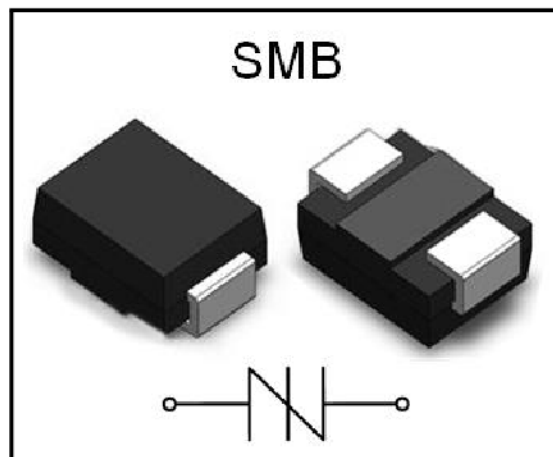
BEPxxxxSB

Thyristor Surge Suppressor

Features

- Silicon technology
- Cannot be damaged by voltage
- Low capacitance
- Eliminate voltage overshoot
- Epoxy resin package
- Will not fatigue
- Complies with following standards:
 - GR1089
 - ITU K.20, K.21 and K.45
 - IEC 60950
 - UL 60950
 - TIA-968
- RoHS Compliant

Package



Mechanical Characteristics

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

Applications

- COMMERCIAL SYSTEMS
- INDUSTRIAL & INSTRUMENTATION
- COMMUNICATIONS

Making Information



XXXB=Type Code
YYWW=Date 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

**BORN SEMICONDUCTOR, INC. ALL
RIGHT RESERVED**

Specifications are subject to change without notice.

Please refer to <http://www.born-tw.com> for current information.

Revision: 2022-Jan-1-A



BEPxxxxSB

Thyristor Surge Suppressor

Absolute Maximum Ratings

Parameter	Symbol	Value	Units	Remarks
Peak Pulse Voltage	V_{PP}	4000	W	10/700us
Peak Pulse Current	I_{PP}	80	A	10/1000us
Peak Pulse Current	I_{PK}	250	A	8/20us
Peak One-cycle Surge Current	I_{TSM}	25	A	60HZ
Rate of Rise of Current	d_i/d_t	500	A/us	
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	20	°C/W	
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	100	°C/W	
Operating Temperature Range	T_J	-40 to 150	°C	
Storage Temperature Range	T_{STG}	-55 to 150	°C	

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

Pact Number	Marking	I_H	V_S	I_{SLMT}	V_T	I_T	I_D	V_D	C_O
		(mA)	(V)	(mA)	(V)	(A)	(uA)	(V)	(pF)
			100KV/S		@ I_T		@ V_D		1MHZ,2V _{DC}
		MIN.	MAX.		MAX.		MAX.		TYP
BEP0080SB	E-8B	40	25	500	4	2.2	5	6	84
BEP0220SB	P02B	40	30	500	4	2.2	5	15	84
BEP0300SB	P03B	40	40	500	4	2.2	5	25	80
BEP0640SB	P06B	120	77	800	4	2.2	5	58	76
BEP0720SB	P07B	120	88	800	4	2.2	5	65	76
BEP0900SB	P09B	120	98	800	4	2.2	5	75	76
BEP1100SB	P11B	120	130	800	4	2.2	5	90	72
BEP1300SB	P13B	120	160	800	4	2.2	5	120	72
BEP1500SB	P15B	120	180	800	4	2.2	5	140	68
BEP1800SB	P18B	120	220	800	4	2.2	5	170	64
BEP2300SB	P23B	120	260	800	4	2.2	5	190	60
BEP2600SB	P26B	120	300	800	4	2.2	5	220	56
BEP3100SB	P31B	120	350	800	4	2.2	5	275	52
BEP3500SB	P35B	120	400	800	4	2.2	5	320	48
BEP4200SB	P42B	120	550	800	4	2.2	5	400	36



BEPxxxxSB

Thyristor Surge Suppressor

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

Figure 1: Peak Pulse Current Rating

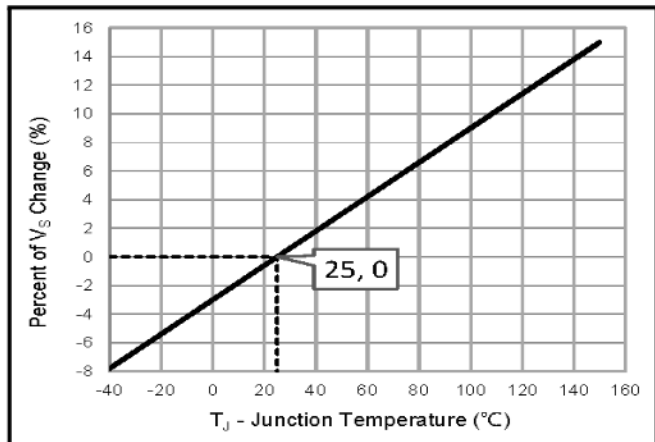


Figure 2: Normalized DC Holding Current vs. Case Temperature

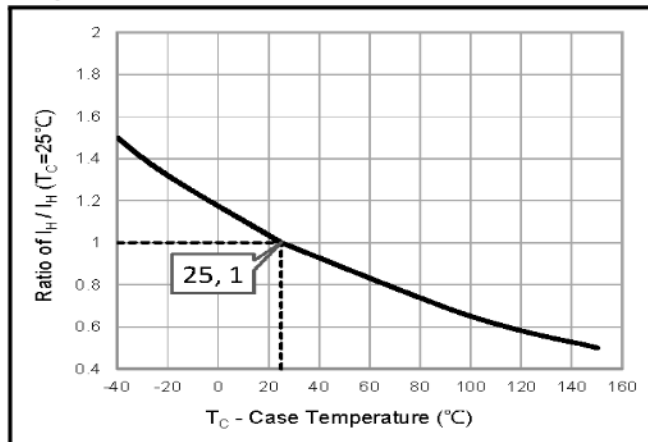


Figure 3: t_r/t_d us Pulse Waveform

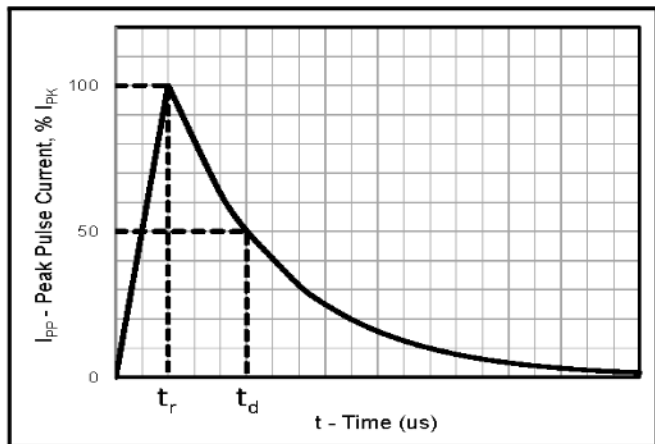


Figure 4: VI Curve

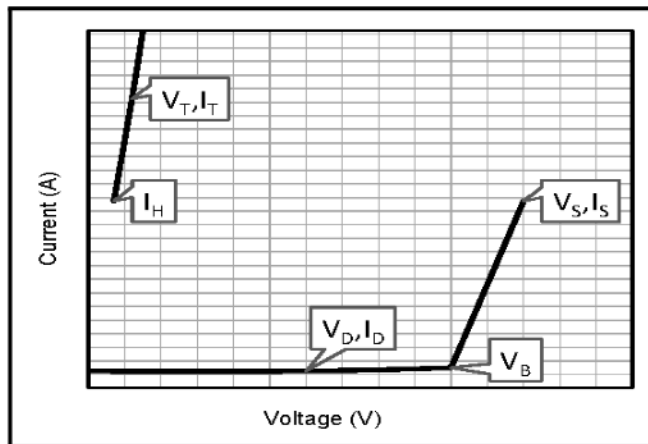


Figure 5: Peak Pulse Current Rating

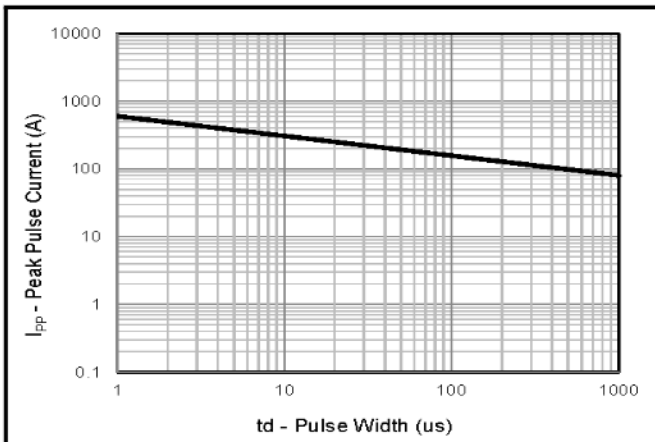
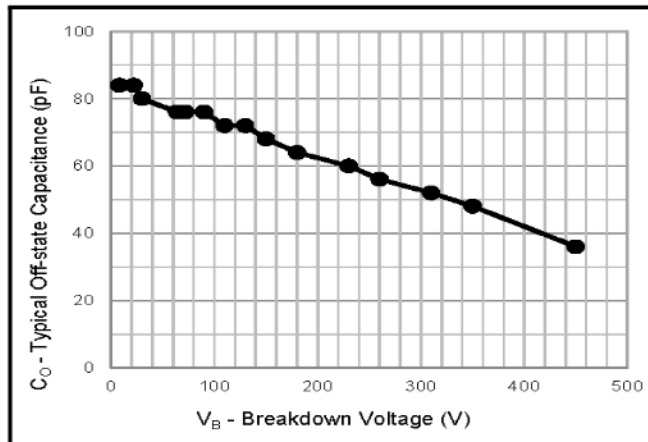


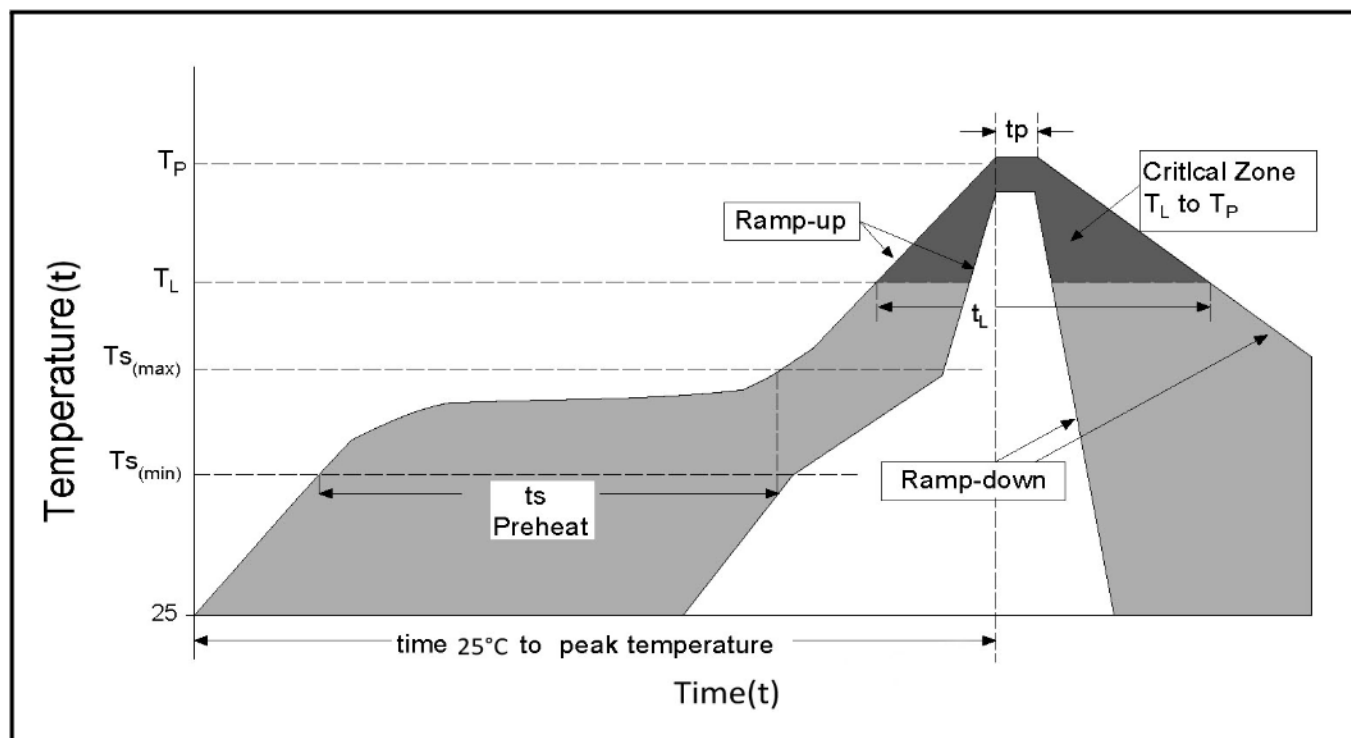
Figure 6: Typical Off-state Capacitance



BEPxxxxSB

Thyristor Surge Suppressor

Soldering Parameters



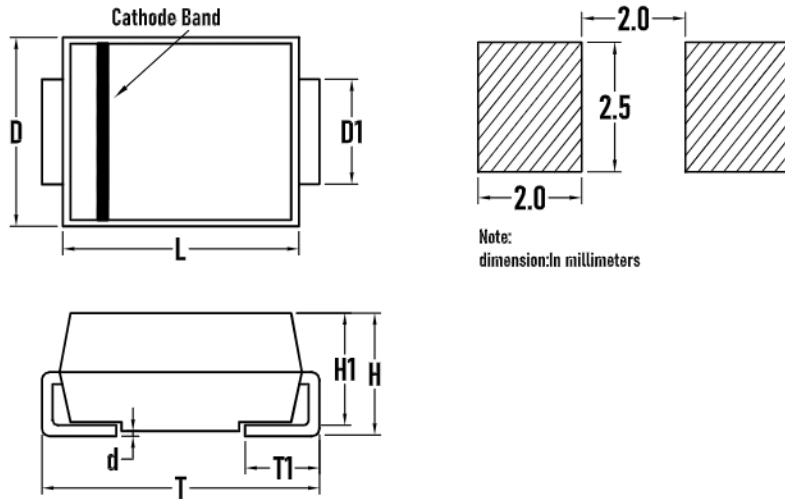
Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ($T_{S(min)}$)	150°C
	- Temperature Max ($T_{S(max)}$)	200°C
	- Time (min to max) (t_s)	60 - 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (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



BEPxxxxSB

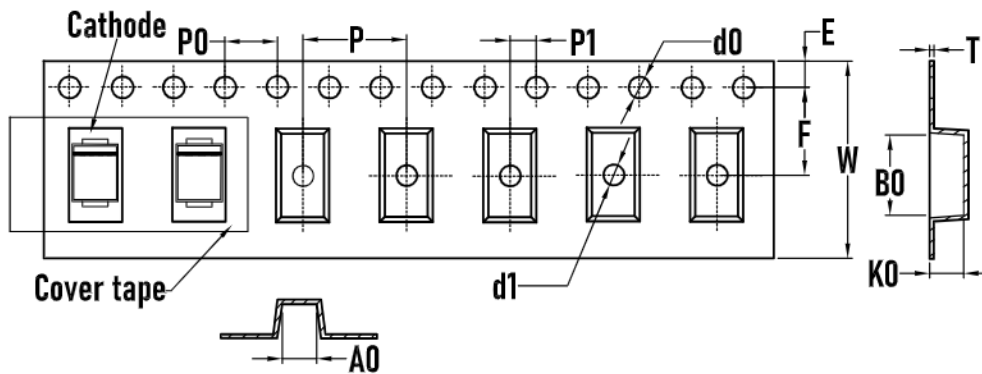
Thyristor Surge Suppressor

Outline Drawing - SMB



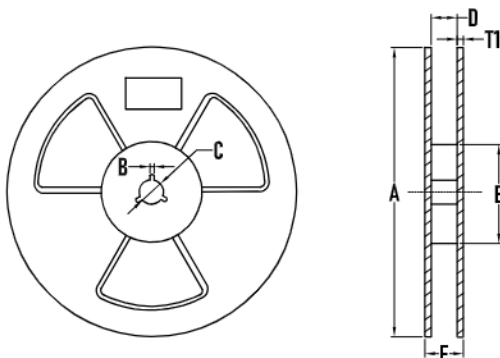
SYMBOL	MILLIMETER		Inches	
	MIN.	MAX.	MIN.	MAX.
D	3.3	3.9	0.130	0.154
D1	1.7	2.3	0.067	0.091
T	5.1	5.7	0.201	0.224
T1	0.8	1.6	0.031	0.063
d	—	0.3	—	0.012
H1	2.0	2.4	0.079	0.094
H	2.1	2.5	0.083	0.098
L	4.0	4.7	0.157	0.185

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

**BORN SEMICONDUCTOR, INC. ALL
RIGHT RESERVED**

Specifications are subject to change without notice.

Please refer to <http://www.born-tw.com> for current information.

Revision: 2022-Jan-1-A

