

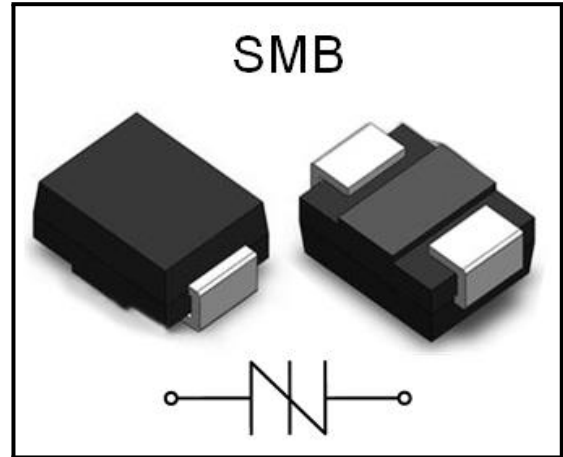
BEPxxxxSB

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



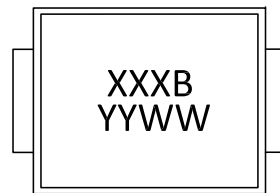
Mechanical Characteristics

- 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 |



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Absolute Maximum Ratings

| Parameter | Symbol | Value | Units | Remarks |
|--|-----------------|------------|-------|-----------|
| Peak Pulse Voltage | V_{PP} | 4000 | V | 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) | (μA) | (V) | (pF) |
| | | MIN. | MAX. | | @ I_T | | @ V_D | | 1MHZ, $2V_{DC}$ |
| | | | | | 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 | P35C | 120 | 400 | 800 | 4 | 2.2 | 5 | 320 | 48 |
| BEP4200SB | P42B | 120 | 550 | 800 | 4 | 2.2 | 5 | 400 | 36 |



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

Figure 1: Peak Pulse Current Rating

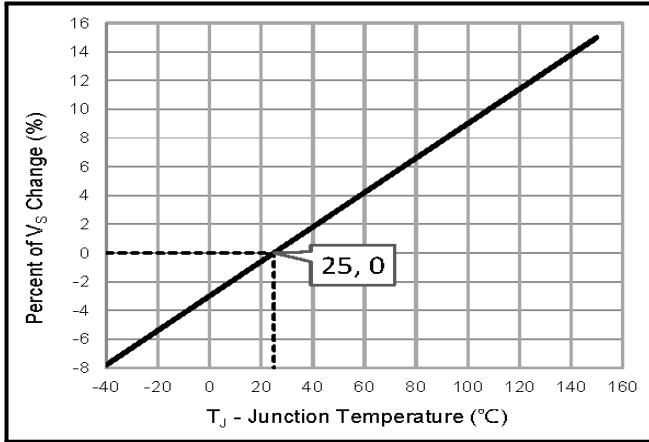


Figure 2: Normalized DC Holding Current vs. Case Temperature

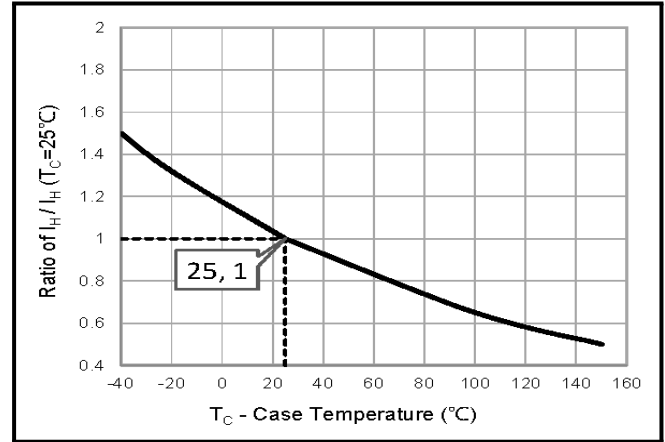


Figure 3: t_r/t_d us Pulse Waveform

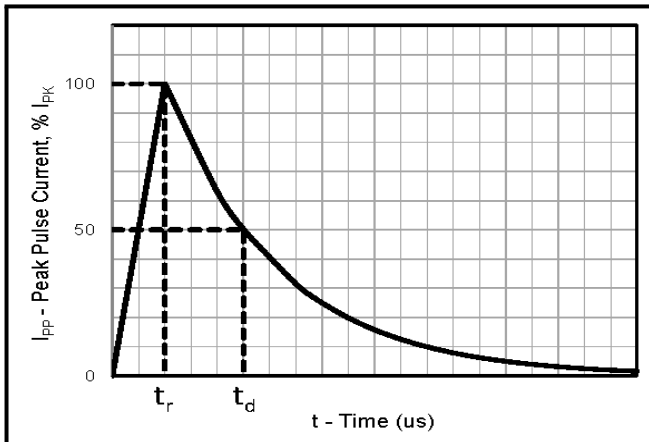


Figure 4: VI Curve

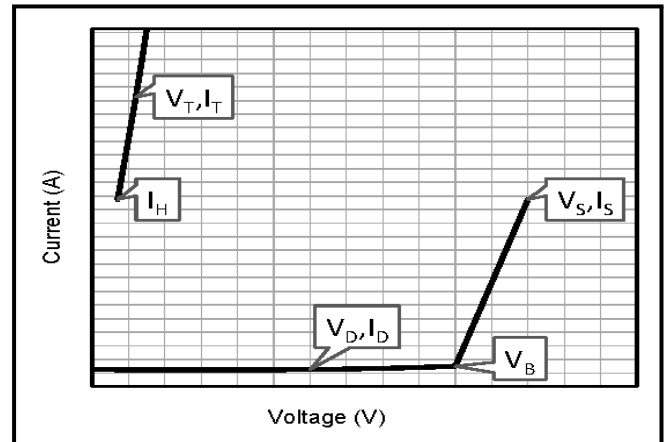


Figure 5: Peak Pulse Current Rating

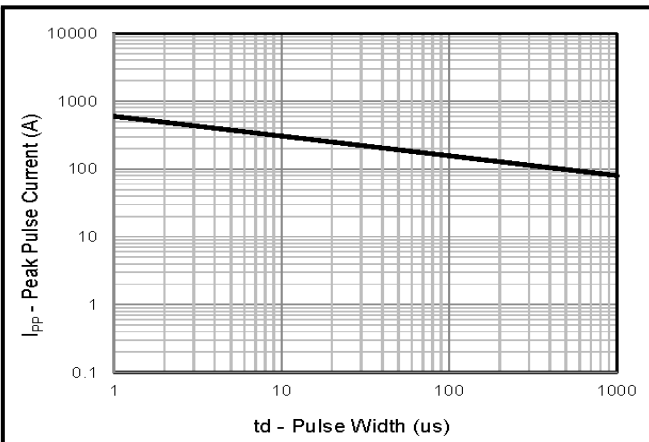
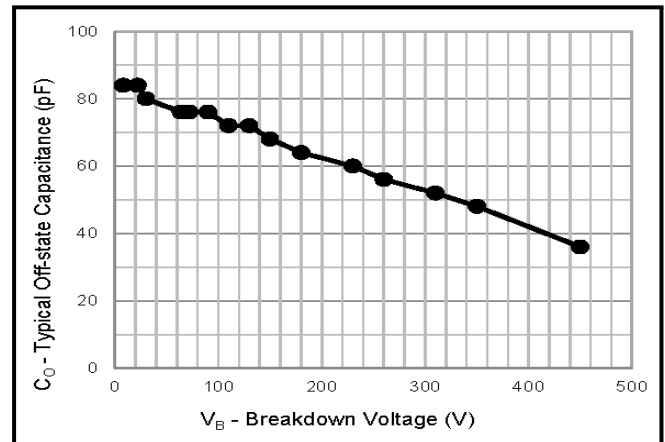


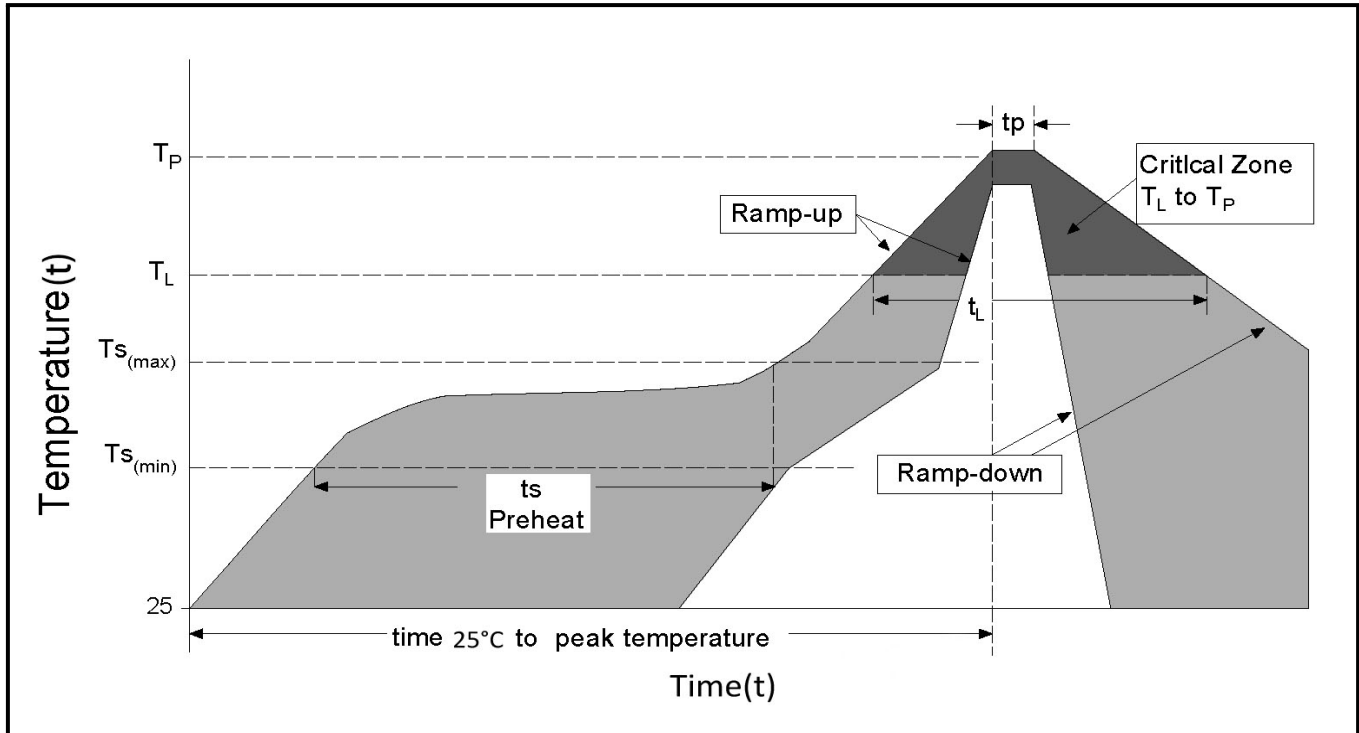
Figure 6: Typical Off-state Capacitance



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Soldering Parameters



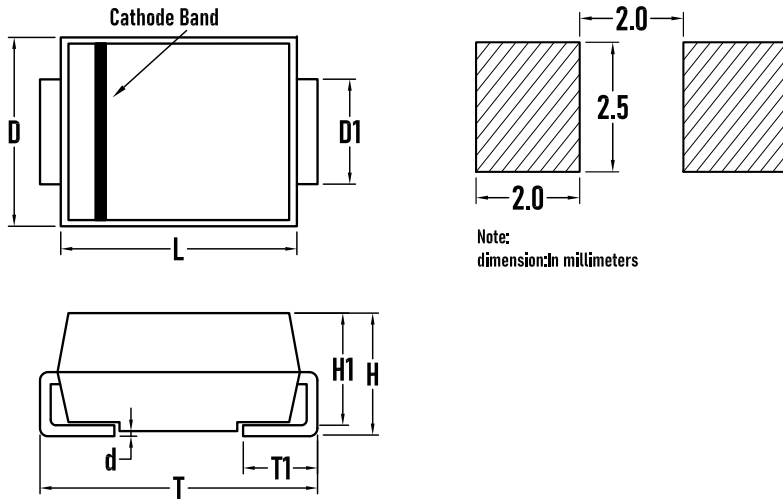
| Reflow Condition | | Lead-free assembly |
|--|------------------------------------|-------------------------|
| Pre Heat | - Temperature Min ($T_{S(min)}$) | 150°C |
| | - Temperature Max ($T_{S(max)}$) | 200°C |
| | - Time (min to max) (t_s) | 60 - 180 secs |
| Average ramp up rate (Liquidus Temp (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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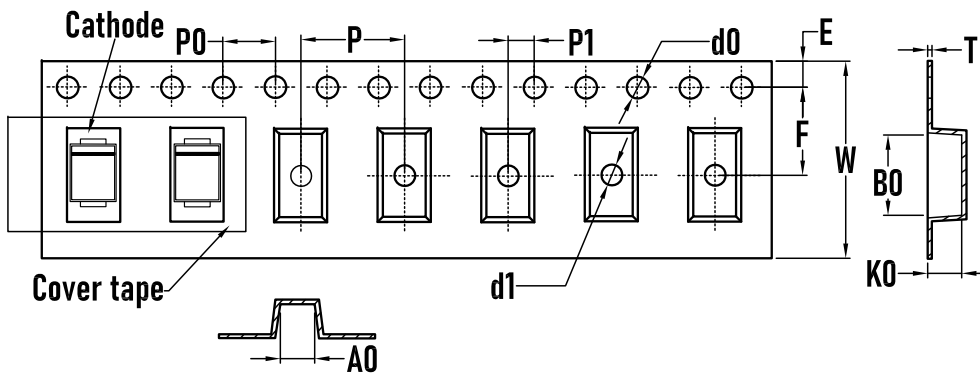
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Outline Drawing - SMB



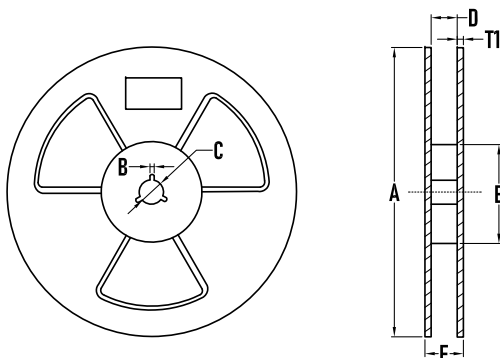
| SYMBOL | MILLIMETER | | Inches | |
|--------|------------|------|--------|-------|
| | MIN. | MAX. | MIN. | MAX. |
| D | 3.3 | 3.9 | 0.130 | 0.154 |
| D1 | 1.7 | 2.3 | 0.067 | 0.091 |
| T | 5.1 | 5.7 | 0.201 | 0.224 |
| T1 | 0.8 | 1.6 | 0.031 | 0.063 |
| d | — | 0.3 | — | 0.012 |
| H1 | 2.0 | 2.4 | 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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Specifications are subject to change without notice.

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

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