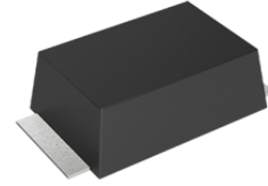


## Thyristor Surge Suppressor

### Features

- Excellent capability of absorbing transient surge
- Quick response to surge voltage (nS Level)
- Low Capacitance <55pF
- Eliminates overvoltage caused by fast rising transients
- Moisture sensitivity level: Level 1
- Weight: 87mg
- Non degenerative

### Exterior



SMB-F

### Application information

- Video

### Package (Top View)



### Agency Approvals

| Icon        | Description                        |
|-------------|------------------------------------|
| <b>RoHS</b> | Compliance with 2011/65/EU         |
| <b>HF</b>   | Compliance with IEC61249-2-21:2003 |

### Schematic Symbol



### Part Number and Electrical Parameter

| Part Number   | IDRM@VDRM |   | Vs <sup>①</sup> @ Is |     | VT@IT |     | IH  | Co <sup>②</sup> |
|---------------|-----------|---|----------------------|-----|-------|-----|-----|-----------------|
|               | μA        | V | V                    | mA  | V     | A   | mA  | pF              |
|               | MAX       |   | MAX                  |     | MAX   |     | MIN | MAX             |
| BS0060N-C-FLC | 5         | 6 | 25                   | 800 | 4     | 2.2 | 15  | 55              |

Absolute maximum ratings measured at TA= 25°C RH = 45%-75% (unless otherwise noted).

① Vs is measured at 100KV/S

② Off-state capacitance is measured at VDC=2V, VRMS=1V, f=1MHz

Thyristor Surge Suppressor

Part Numbering System

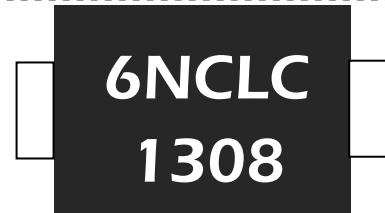
BS 0060 N C F LC  
(1) (2) (3) (4) (5) (6)

- (1) Bencent Semiconductor Surge Arrester
- (2) Off-state Voltage, e.g.0060=6 × 10<sup>0</sup>=6V
- (3) Package : SMB-F,
- (4) 6KV(10/700μs)
- (5) Flat Feet
- (6) Low Capacitance

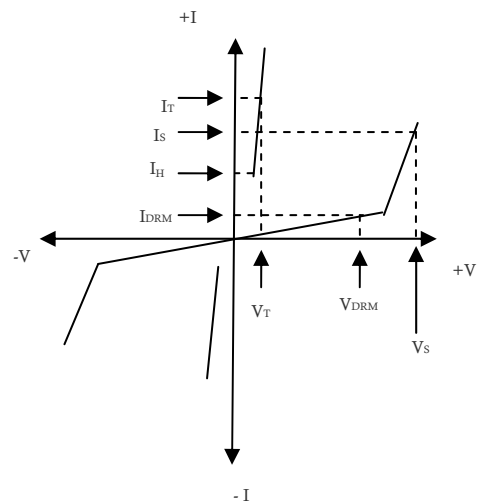
V-I Curve

| Parameters       | Definition             |
|------------------|------------------------|
| V <sub>DRM</sub> | Peak off-state voltage |
| I <sub>DRM</sub> | Off-state Current      |
| V <sub>S</sub>   | Switching Voltage      |
| I <sub>S</sub>   | Switching Current      |
| I <sub>H</sub>   | Holding Current        |
| V <sub>T</sub>   | On-state voltage       |
| I <sub>T</sub>   | On-state current       |
| C <sub>O</sub>   | Off-state capacitance  |

Mark



6NCLC: Part Number  
1308 : August,2013



Surge Ratings

|                  |           |
|------------------|-----------|
| Current Waveform | 5/320μs*  |
| Voltage Waveform | 10/700μs* |
| I <sub>pp</sub>  | 150A      |

- Peak pulse current rating(I<sub>pp</sub>)is repetitive and guaranteed for the life of the product;
- Bencent only makes the test for 5/320μs@150A\*(10/700μs@6KV) Bencent will not take any obligation for these parameters, so before applying our parts, please make sure to verify the parameters listed in the above table.

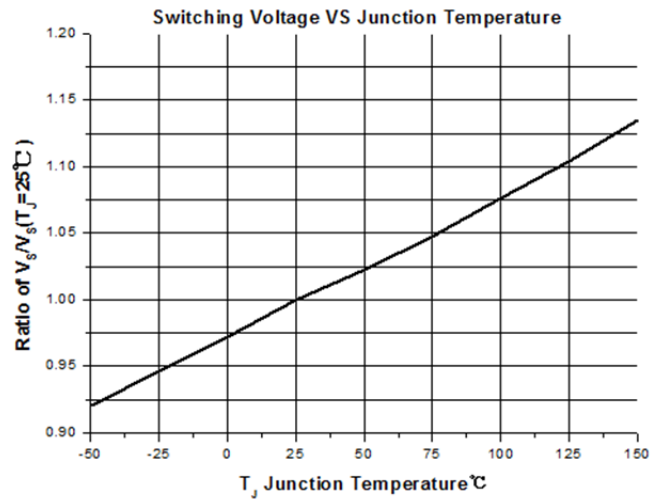
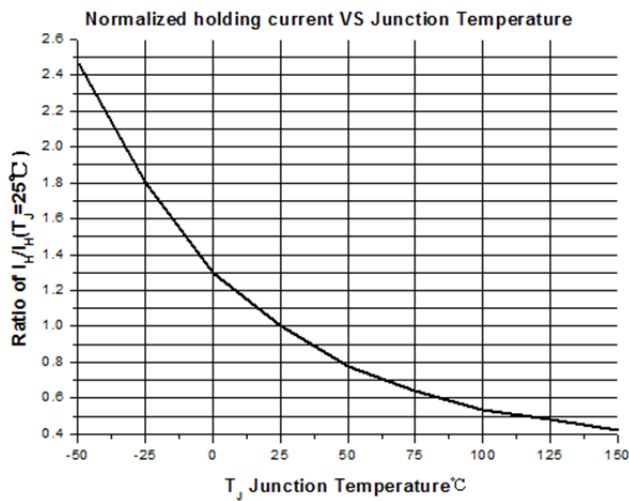
Thermal Considerations

| Symbol         | Parameter                            | Value       | Unit |
|----------------|--------------------------------------|-------------|------|
| T <sub>J</sub> | Operating Junction Temperature Range | -40 to +150 | °C   |
| T <sub>S</sub> | Storage Temperature Range            | -60 to +150 | °C   |

Product Characteristics

|                 |   |
|-----------------|---|
| Lead Material   | Copper Alloy  |
| Body Material   | UL recognized epoxy meeting flammability classification 94V-0 |
| Terminal Finish | 100% Matte-Tin Plated   |

### Typical Characteristics

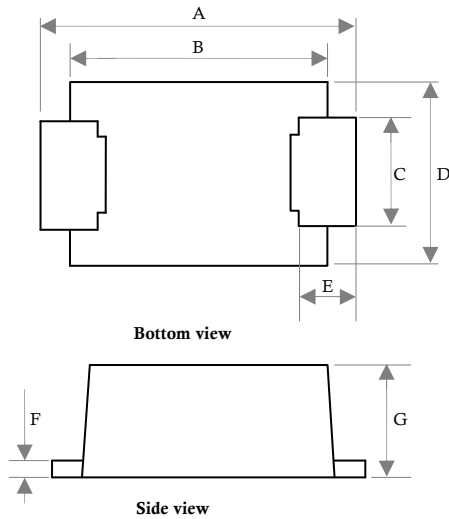


### Environmental Characteristics

| Testing items                        | Technical standards   |
|--------------------------------------|---|
| High temperature Reverse Bias Test   | Temperature: 125±3°C, Bias=80%V <sub>DRM</sub><br>Time:168H   |
| High Temperature Life Test           | Temperature: 150°C<br>Time:168H                               |
| High-low Temperature Cycle test      | Temperature: From -40°C to125°C<br>Dwell time: 30min,10cycles |
| High Temperature &High Humidity Test | Temperature: 85°C, Humidity:85%<br>Test time:168H             |
| Pressure cooker Test                 | Temperature: 121°C, 2atm, Humidity:100%<br>Test time:24H      |
| Resistance of soldering heat         | Temperature: 260±5°C<br>Time of dip soldering: 10s, 3times    |

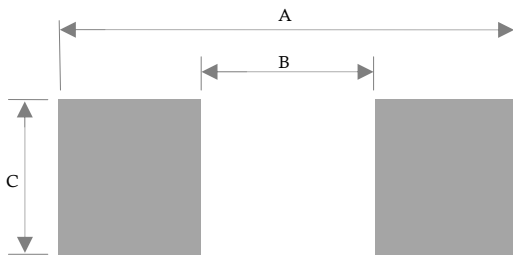
Note: The above testing items can be specified by customer's special request

Product Dimensions



| REF | mm        | inch        |
|-----|-----------|-------------|
| A   | 5.4±0.3   | 0.213±0.012 |
| B   | 4.4±0.2   | 0.173±0.008 |
| C   | 2.0±0.1   | 0.079±0.004 |
| D   | 3.3±0.3   | 0.130±0.012 |
| E   | 0.8±0.3   | 0.032±0.012 |
| F   | 0.25±0.05 | 0.010±0.002 |
| G   | 2±0.3     | 0.079±0.012 |

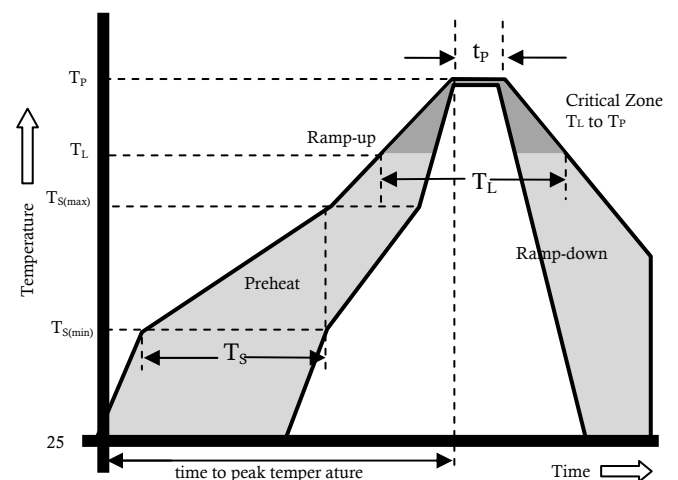
Recommended Soldering Pad



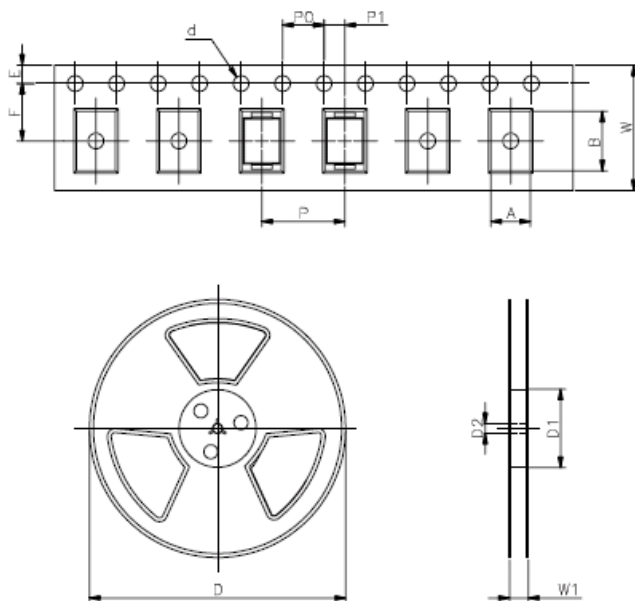
| REF | mm   | inch  |
|-----|------|-------|
| A   | 6.4  | 0.252 |
| B   | 3.4  | 0.134 |
| C   | 2.75 | 0.108 |

Reflow Profile

| Reflow Condition  |                                  | Pb-Free assembly |
|---|----------------------------------|------------------|
| Pre Heat  | Temperature Min                  | 150°C            |
|   | Temperature Max                  | 200°C            |
|   | Time (min to max)                | 60 – 180 secs    |
| Average ramp up rate (Liquid) $T_{amp}$ ( $T_L$ ) to peak |                                  | 3°C/second max   |
| $T_S(\max)$ to $T_L$ - Ramp-up Rate                       |                                  | 3°C/second max   |
| Reflow  | - Temperature ( $T_L$ ) (Liquid) | 217°C            |
|   | - Temperature ( $T_L$ )          | 60 – 150 seconds |
| Peak Temperature ( $T_P$ )                                |                                  | 260+0/-5 °C      |
| Time within 5°C of actual peak Temperature ( $T_P$ )      |                                  | 25seconds        |
| Ramp-down Rate  |                                  | 6°C/second max   |
| Time 25°C to peak Temperature ( $T_P$ )                   |                                  | 8 minutes Max.   |
| Do not exceed   |                                  | 260°C            |



Package Reel Information



| REF | mm         | inch          |
|-----|------------|---------------|
| A   | 3.65+/-0.3 | 0.144+/-0.012 |
| B   | 5.69+/-0.3 | 0.244+/-0.012 |
| d   | 1.5+/-0.1  | 0.059+/-0.004 |
| D   | 330.0      | 13.0          |
| D1  | 100+/-3    | 3.937+/-0.118 |
| D2  | 13+/-0.3   | 0.512+/-0.012 |
| E   | 1.5+/-0.2  | 0.059+/-0.008 |
| F   | 5.65+/-0.2 | 0.222+/-0.008 |
| P   | 8.0+/-0.2  | 0.315+/-0.008 |
| P0  | 4.0+/-0.2  | 0.157+/-0.008 |
| P1  | 2.0+/-0.2  | 0.079+/-0.008 |
| W   | 12.0+/-0.2 | 0.472+/-0.008 |
| W1  | 16.8+/-2.0 | 0.661+/-0.079 |

| OUTLINE | REEL (PCS) | PER CARTON (PCS) | REEL DIAMETERS (mm) | CARTON SIZE(mm) |     |     |
|---------|------------|------------------|---------------------|-----------------|-----|-----|
|         |            |                  |                     | L               | W   | H   |
| TAPING  | 3,000      | 24,000           | 330                 | 360             | 360 | 380 |