

# TDSEMIC

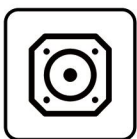
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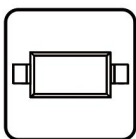
WEB | [WWW.TDSEMIC.COM](http://WWW.TDSEMIC.COM)



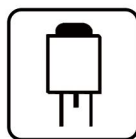
電源管理



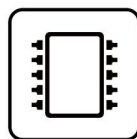
顯示驅動



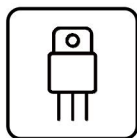
二三極管



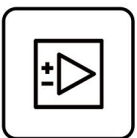
LDO穩壓器



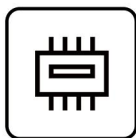
觸摸芯片



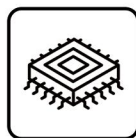
MOS管



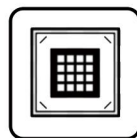
運算放大器



存儲芯片



MCU



串口通信

### SMBJ6.5CA

產品規格說明書

Surface mount transient voltage suppressor power 600 watts  
Stand-Off Voltage : 5.0V~440V

### FEATURES

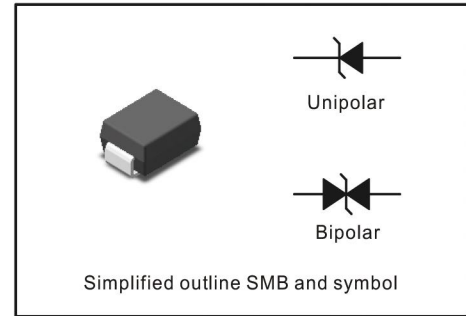
- For surface mounted applications in order to optimize board space.
- Low profile package
- Glass passivated junction
- Low inductance
- Plastic package has Underwriters Laboratory Flammability

### MECHANICAL DATA

- Case: SMB
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.055g / 0.002oz

### PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Cathode     |
| 2   | Anode       |



### Maximum Ratings and Electrical characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

| Parameter                                                                                                         | Symbol                   | Value                | Unit |
|-------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------|------|
| Peak Pulse Power Dissipation on 10/1000 s waveform (Note1,Note2, Fig.1).                                          | $P_{PPM}$                | 600                  | W    |
| Peak Forward Surge Current,8.3ms Single Half Sine-Wave Superimposed on Rated Load, (JEDEC Method) (Note 3, Fig4). | $I_{FSM}$<br>(UNI)       | 100                  | A    |
| Peak Pulse Current on 10/1000 us waveform (Note 1, Fig 3)                                                         | $I_{PPM}$                | see Table 1          | A    |
| Typical Junction capacitance at VR=4V, f=1MHz                                                                     | $C_J$                    | 390                  | pF   |
| ESD Voltage per IEC6100-4-2<br>Contact<br>Air                                                                     | $V_{ESD1}$<br>$V_{ESD2}$ | $\pm 30$<br>$\pm 30$ | kV   |
| Typical Thermal Resistance Junction to Ambient(Note 2)                                                            | $R_{\theta JA}$          | 100                  | °C/W |
| Operating Junction Temperature and Storage Temperature Range                                                      | $T_j, T_{stg}$           | -65 ~ +150           | °C   |

### NOTES:

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^\circ\text{C}$  per Fig. 2.
2. Mounted on 5 mm<sup>2</sup> (0.13mm thick) land areas.
3. Measured on 8.3ms, single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.
4. Peak pulse power waveform is 10/1000μS.

Characteristics at Ta = 25°C

Table 1

| Type                             |            | Reverse Stand-off Voltage | Breakdown Voltage                |      | Test Current   | Maximum Reverse Leakage          | Max. Clamp Voltage | Peak Pulse Current   | Package |    |
|----------------------------------|------------|---------------------------|----------------------------------|------|----------------|----------------------------------|--------------------|----------------------|---------|----|
|                                  |            |                           | V <sub>BR</sub> @ I <sub>T</sub> |      |                |                                  |                    |                      | SMB     |    |
|                                  |            | V <sub>RWV</sub>          | Min                              | Max  | I <sub>T</sub> | V <sub>C</sub> @ I <sub>PP</sub> | I <sub>PP</sub>    | Device Marking Ccode |         |    |
| UNI                              | BI         | V                         | V                                | V    | mA             | µA                               | V                  | A                    | UNI     | BI |
| 600W Transient Voltage Suppresso |            |                           |                                  |      |                |                                  |                    |                      |         |    |
| SMBJ5.0A                         | SMBJ5.0CA  | 5                         | 6.4                              | 7    | 10             | 800                              | 9.2                | 65.3                 | KE      | AE |
| SMBJ6.0A                         | SMBJ6.0CA  | 6                         | 6.67                             | 7.37 | 10             | 800                              | 10.3               | 58.3                 | KG      | AG |
| SMBJ6.5A                         | SMBJ6.5CA  | 6.5                       | 7.22                             | 7.98 | 10             | 500                              | 11.2               | 53.6                 | KK      | AK |
| SMBJ7.0A                         | SMBJ7.0CA  | 7                         | 7.78                             | 8.6  | 10             | 200                              | 12.0               | 50.0                 | KM      | AM |
| SMBJ7.5A                         | SMBJ7.5CA  | 7.5                       | 8.33                             | 9.21 | 1              | 100                              | 12.9               | 46.6                 | KP      | AP |
| SMBJ8.0A                         | SMBJ8.0CA  | 8                         | 8.89                             | 9.83 | 1              | 50                               | 13.6               | 44.2                 | KR      | AR |
| SMBJ8.5A                         | SMBJ8.5CA  | 8.5                       | 9.44                             | 10.4 | 1              | 20                               | 14.4               | 41.7                 | KT      | AT |
| SMBJ9.0A                         | SMBJ9.0CA  | 9                         | 10                               | 11.1 | 1              | 10                               | 15.4               | 39.0                 | KV      | AV |
| SMBJ10A                          | SMBJ10CA   | 10                        | 11.1                             | 12.3 | 1              | 5                                | 17.0               | 35.3                 | KX      | AX |
| SMBJ11A                          | SMBJ11CA   | 11                        | 12.2                             | 13.5 | 1              | 1                                | 18.2               | 33.0                 | KZ      | AZ |
| SMBJ12A                          | SMBJ12CA   | 12                        | 13.3                             | 14.7 | 1              | 1                                | 19.9               | 30.2                 | LE      | BE |
| SMBJ13A                          | SMBJ13CA   | 13                        | 14.4                             | 15.9 | 1              | 1                                | 21.5               | 28.0                 | LG      | BG |
| SMBJ14A                          | SMBJ14CA   | 14                        | 15.6                             | 17.2 | 1              | 1                                | 23.2               | 25.9                 | LK      | BK |
| SMBJ15A                          | SMBJ15CA   | 15                        | 16.7                             | 18.5 | 1              | 1                                | 24.4               | 24.6                 | LM      | BM |
| SMBJ16A                          | SMBJ16CA   | 16                        | 17.8                             | 19.7 | 1              | 1                                | 26.0               | 23.1                 | LP      | BP |
| SMBJ17A                          | SMBJ17CA   | 17                        | 18.9                             | 20.9 | 1              | 1                                | 27.6               | 21.8                 | LR      | BR |
| SMBJ18A                          | SMBJ18CA   | 18                        | 20                               | 22.1 | 1              | 1                                | 29.2               | 20.6                 | LT      | BT |
| SMBJ20A                          | SMBJ20CA   | 20                        | 22.2                             | 24.5 | 1              | 1                                | 32.4               | 18.6                 | LV      | BV |
| SMBJ22A                          | SMBJ22CA   | 22                        | 24.4                             | 26.9 | 1              | 1                                | 35.5               | 16.9                 | LX      | BX |
| SMBJ24A                          | SMBJ24CA   | 24                        | 26.7                             | 29.5 | 1              | 1                                | 38.9               | 15.5                 | LZ      | BZ |
| SMBJ26A                          | SMBJ26CA   | 26                        | 28.9                             | 31.9 | 1              | 1                                | 42.1               | 14.3                 | ME      | CE |
| SMBJ28A                          | SMBJ28CA   | 28                        | 31.1                             | 34.4 | 1              | 1                                | 45.4               | 13.3                 | MG      | CG |
| SMBJ30A                          | SMBJ30CA   | 30                        | 33.3                             | 36.8 | 1              | 1                                | 48.4               | 12.4                 | MK      | CK |
| SMBJ33A                          | SMBJ33CA   | 33                        | 36.7                             | 40.6 | 1              | 1                                | 53.3               | 11.3                 | MM      | CM |
| SMBJ36A                          | SMBJ36CA   | 36                        | 40                               | 44.2 | 1              | 1                                | 58.1               | 10.4                 | MP      | CP |
| SMBJ40A                          | SMBJ40CA   | 40                        | 44.4                             | 49.1 | 1              | 1                                | 64.5               | 9.3                  | MR      | CR |
| SMBJ43A                          | SMBJ43CA   | 43                        | 47.8                             | 52.8 | 1              | 1                                | 69.4               | 8.7                  | MT      | CT |
| SMBJ45A                          | SMBJ45CA   | 45                        | 50                               | 55.3 | 1              | 1                                | 72.7               | 8.3                  | MV      | CV |
| SMBJ48A                          | SMBJ48CA   | 48                        | 53.3                             | 58.9 | 1              | 1                                | 77.4               | 7.8                  | MX      | CX |
| SMBJ51A                          | SMBJ51CA   | 51                        | 56.7                             | 62.7 | 1              | 1                                | 82.4               | 7.3                  | MZ      | CZ |
| SMBJ54A                          | SMBJ54CA   | 54                        | 60                               | 66.3 | 1              | 1                                | 87.1               | 6.9                  | NE      | DE |
| SMBJ58A                          | SMBJ58CA   | 58                        | 64.4                             | 71.2 | 1              | 1                                | 93.6               | 6.5                  | NG      | DG |
| SMBJ60A                          | SMBJ60CA   | 60                        | 66.7                             | 73.7 | 1              | 1                                | 96.8               | 6.2                  | NK      | DK |
| SMBJ64A                          | SMBJ64CA   | 64                        | 71.1                             | 78.6 | 1              | 1                                | 103.0              | 5.9                  | NM      | DM |
| SMBJ70A                          | SMBJ70CA   | 70                        | 77.8                             | 86   | 1              | 1                                | 113.0              | 5.3                  | NP      | DP |
| SMBJ75A                          | SMBJ75CA   | 75                        | 83.3                             | 92.1 | 1              | 1                                | 121.0              | 5.0                  | NR      | DR |
| SMBJ78A                          | SMBJ78CA   | 78                        | 86.7                             | 95.8 | 1              | 1                                | 126.0              | 4.8                  | NT      | DT |
| SMBJ85A                          | SMBJ85CA   | 85                        | 94.4                             | 104  | 1              | 1                                | 137.0              | 4.4                  | NV      | DV |
| SMBJ90A                          | SMBJ90CA   | 90                        | 100                              | 111  | 1              | 1                                | 146.0              | 4.1                  | NX      | DX |
| SMBJ100A                         | SMBJ100CA  | 100                       | 111                              | 123  | 1              | 1                                | 162.0              | 3.7                  | NZ      | DZ |
| SMBJ110A                         | SMBJ110CA  | 110                       | 122                              | 135  | 1              | 1                                | 177.0              | 3.4                  | PE      | EE |
| SMBJ120A                         | SMBJ120CA  | 120                       | 133                              | 147  | 1              | 1                                | 193.0              | 3.1                  | PG      | EG |
| SMBJ130A                         | SMBJ130CA  | 130                       | 144                              | 159  | 1              | 1                                | 209.0              | 2.9                  | PK      | EK |
| SMBJ150A                         | SMBJ150CA  | 150                       | 167                              | 185  | 1              | 1                                | 243.0              | 2.5                  | PM      | EM |
| SMBJ160A                         | SMBJ160CA  | 160                       | 178                              | 197  | 1              | 1                                | 259.0              | 2.3                  | PP      | EP |
| SMBJ170A                         | SMBJ170CA  | 170                       | 189                              | 209  | 1              | 1                                | 275.0              | 2.2                  | PR      | ER |
| SMBJ180A                         | SMBJ180CA  | 180                       | 201                              | 222  | 1              | 1                                | 292.0              | 2.1                  | PT      | ET |
| SMBJ188A                         | SMBJ188CA  | 188                       | 209                              | 231  | 1              | 1                                | 304.0              | 2.0                  | PB      | EB |
| SMBJ200A                         | SMBJ200CA  | 200                       | 224                              | 247  | 1              | 1                                | 324.0              | 1.9                  | PV      | EV |
| SMBJ220A                         | SMBJ220CA  | 220                       | 246                              | 272  | 1              | 1                                | 356.0              | 1.7                  | PX      | EX |
| SMBJ250A                         | SMBJ250CA  | 250                       | 279                              | 309  | 1              | 1                                | 405.0              | 1.5                  | PZ      | EZ |
| SMBJ300A*                        | SMBJ300CA* | 300                       | 335                              | 371  | 1              | 1                                | 486.0              | 1.3                  | QE      | FE |
| SMBJ350A*                        | SMBJ350CA* | 350                       | 391                              | 432  | 1              | 1                                | 567.0              | 1.1                  | QG      | FG |
| SMBJ400A*                        | SMBJ400CA* | 400                       | 447                              | 494  | 1              | 1                                | 648.0              | 0.9                  | QK      | FK |
| SMBJ440A*                        | SMBJ440CA* | 440                       | 492                              | 543  | 1              | 1                                | 713.0              | 0.9                  | QM      | FM |

Fig.1 Peak Pulse Power Rating Curve

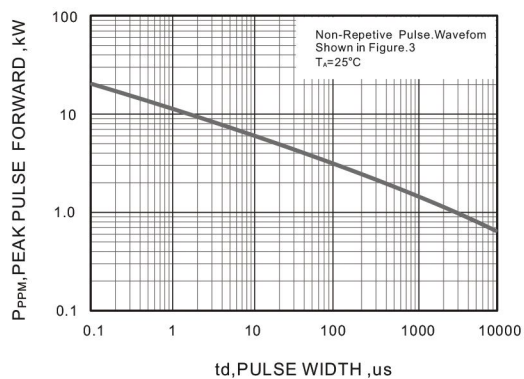


Fig.2 Forward Current Derating Curve

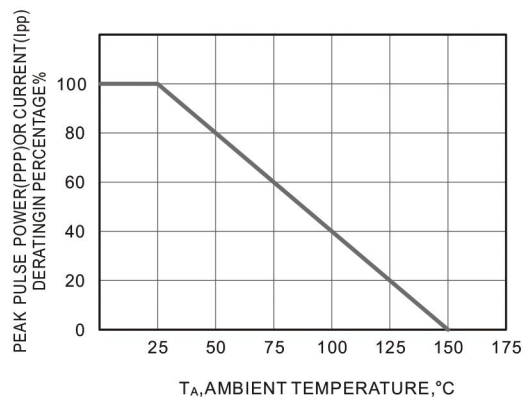


Fig.3 Pulse Waveform

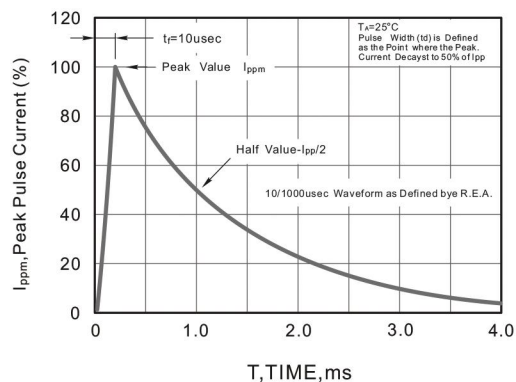
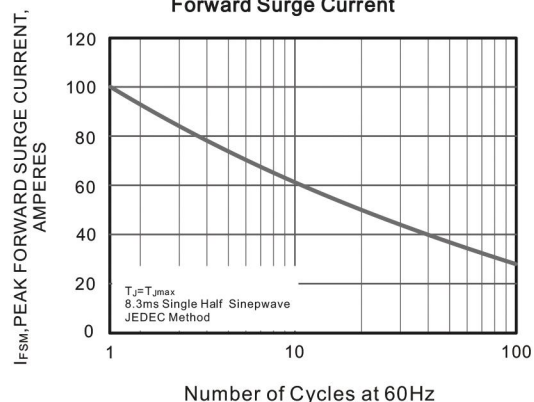


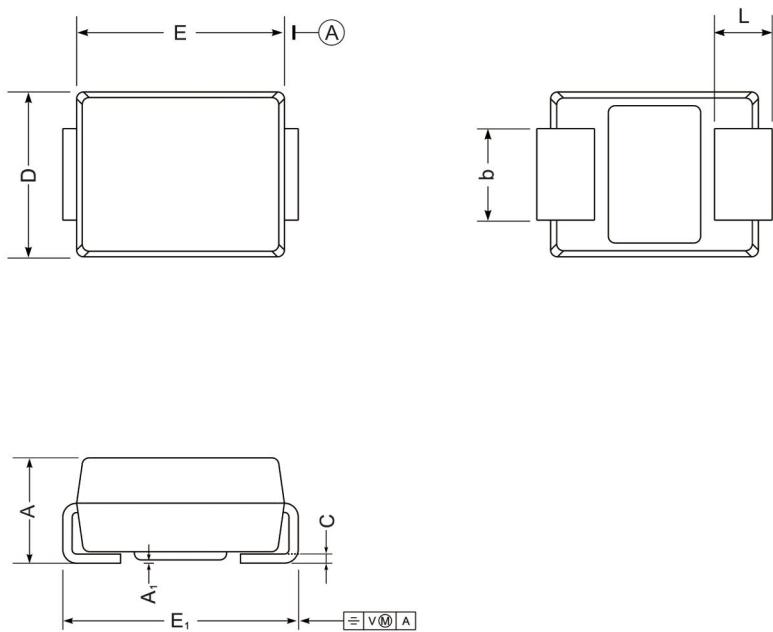
Fig.4 Maximum Non-Repetitive Peak Forward Surge Current



PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SMB



SMB mechanical data

| UNIT |     | A    | E    | D    | E <sub>1</sub> | A <sub>1</sub> | L   | C     | b    |
|------|-----|------|------|------|----------------|----------------|-----|-------|------|
| mm   | max | 2.44 | 4.70 | 3.94 | 5.59           | 0.20           | 1.5 | 0.305 | 2.11 |
|      | min | 2.13 | 4.06 | 3.3  | 5.08           | 0.05           | 0.8 | 0.152 | 1.91 |
| mil  | max | 96   | 185  | 155  | 220            | 7.9            | 59  | 12    | 83   |
|      | min | 84   | 160  | 130  | 200            | 2.0            | 32  | 6     | 75   |

The recommended mounting pad size

