

# STB606I - STB65G4

**V<sub>BR</sub> : 6.8 - 440 Volts**  
**P<sub>PK</sub> : 600 Watts**

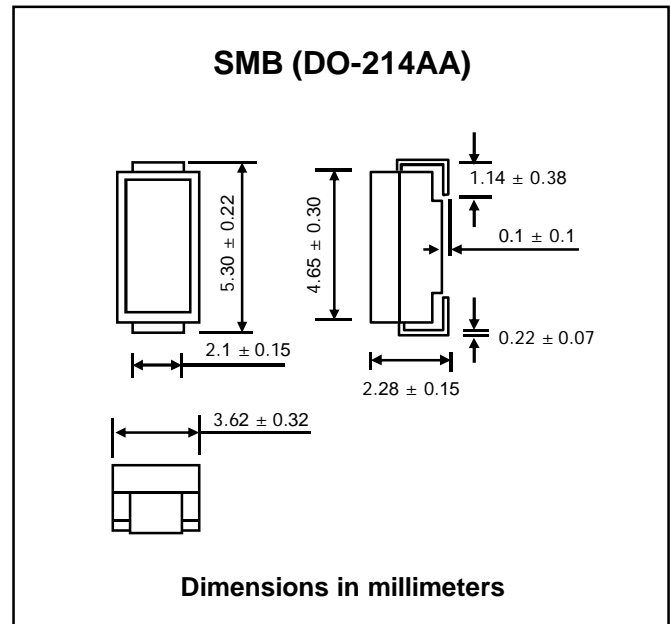
## FEATURES :

- \* 600W surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time : typically less than 1.0 ps from 0 volt to V<sub>BR(min.)</sub>
- \* Typical I<sub>R</sub> less than 1μA above 10V
- \* Pb / RoHS Free

## MECHANICAL DATA

- \* Case : SMB Molded plastic
- \* Epoxy : UL94V-O rate flame retardant
- \* Lead : Lead Formed for Surface Mount
- \* Mounting position : Any
- \* Weight : 0.093 grams

## SURFACE MOUNT BIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSOR



## DEVICES FOR UNIPOLAR APPLICATIONS

For Uni-directional altered the third letter of type from "B" to be "U".  
 Electrical characteristics apply in both directions

## MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified

| Rating  | Symbol                            | Value         | Unit |
|---|-----------------------------------|---------------|------|
| Peak Power Dissipation at T <sub>a</sub> = 25 °C, T <sub>p</sub> =1ms (Note1) | PPK                               | Minimum 600   | W    |
| Steady State Power Dissipation at T <sub>L</sub> = 75 °C                      | PD                                | 5.0           | W    |
| Operating and Storage Temperature Range                                       | T <sub>J</sub> , T <sub>STG</sub> | - 55 to + 150 | °C   |

### Note :

(1) Non-repetitive Current pulse per Fig. 2 and derated above T<sub>a</sub>= 25 °C per Fig. 1

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

| TYPE    | Breakdown Voltage @ It<br>( Note 1 ) |      | Working Peak<br>Reverse<br>Voltage<br>VRWM | Maximum<br>Reverse Leakage<br>@ VRWM<br>IR<br>( $\mu$ A) | Maximum<br>Reverse<br>Current<br>IRSM<br>(A) | Maximum<br>Clamping<br>Voltage @ IRSM<br>VRSM<br>(V) | Maximum<br>Temperature<br>Co-efficient<br>of VBR<br>(% / °C) |       |
|---------|--------------------------------------|------|--|--|--|--|--|-------|
|         | VBR (V)                              |      |  |  |  |  |  |       |
|         | Min.                                 | Max. | It<br>(mA)                                 | (V)  | (A)  | (V)  | (% / °C)   |       |
| STB606I | 6.12                                 | 7.48 | 10   | 5.50   | 2000   | 55.5   | 10.8   | 0.057 |
| STB656I | 6.45                                 | 7.14 | 10   | 5.80   | 2000   | 57.0   | 10.5   | 0.057 |
| STB607F | 6.75                                 | 8.25 | 10   | 6.05   | 1000   | 51.0   | 11.7   | 0.061 |
| STB657F | 7.13                                 | 7.88 | 10   | 6.40   | 1000   | 53.0   | 11.3   | 0.061 |
| STB608C | 7.38                                 | 9.02 | 10   | 6.63   | 400  | 48.0   | 12.5   | 0.065 |
| STB658C | 7.79                                 | 8.61 | 10   | 7.02   | 400  | 50.0   | 12.1   | 0.065 |
| STB609B | 8.19                                 | 10.0 | 1.0  | 7.37   | 100  | 44.0   | 13.8   | 0.068 |
| STB659B | 8.65                                 | 9.55 | 1.0  | 7.78   | 100  | 45.0   | 13.4   | 0.068 |
| STB6010 | 9.00                                 | 11.0 | 1.0  | 8.10   | 20   | 40.0   | 15.0   | 0.073 |
| STB6510 | 9.50                                 | 10.5 | 1.0  | 8.55   | 20   | 41.0   | 14.5   | 0.073 |
| STB6011 | 9.90                                 | 12.1 | 1.0  | 8.92   | 10   | 37.0   | 16.2   | 0.075 |
| STB6511 | 10.5                                 | 11.6 | 1.0  | 9.40   | 10   | 38.0   | 15.6   | 0.075 |
| STB6012 | 10.8                                 | 13.2 | 1.0  | 9.72   | 5.0  | 35.0   | 17.3   | 0.078 |
| STB6512 | 11.4                                 | 12.6 | 1.0  | 10.2   | 5.0  | 36.0   | 16.7   | 0.078 |
| STB6013 | 11.7                                 | 14.3 | 1.0  | 10.5   | 5.0  | 32.0   | 19.0   | 0.081 |
| STB6513 | 12.4                                 | 13.7 | 1.0  | 11.1   | 5.0  | 33.0   | 18.2   | 0.081 |
| STB6015 | 13.5                                 | 16.5 | 1.0  | 12.1   | 5.0  | 27.0   | 22.0   | 0.084 |
| STB6515 | 14.3                                 | 15.8 | 1.0  | 12.8   | 5.0  | 28.0   | 21.2   | 0.084 |
| STB6016 | 14.4                                 | 17.6 | 1.0  | 12.9   | 5.0  | 26.0   | 23.5   | 0.086 |
| STB6516 | 15.2                                 | 16.8 | 1.0  | 13.6   | 5.0  | 27.0   | 22.5   | 0.086 |
| STB6018 | 16.2                                 | 19.8 | 1.0  | 14.5   | 5.0  | 23.0   | 26.5   | 0.088 |
| STB6518 | 17.1                                 | 18.9 | 1.0  | 15.3   | 5.0  | 24.0   | 25.2   | 0.088 |
| STB6020 | 18.0                                 | 22.0 | 1.0  | 16.2   | 5.0  | 21.0   | 29.1   | 0.090 |
| STB6520 | 19.0                                 | 21.0 | 1.0  | 17.1   | 5.0  | 22.0   | 27.7   | 0.090 |
| STB6022 | 19.8                                 | 24.2 | 1.0  | 17.8   | 5.0  | 19.0   | 31.9   | 0.092 |
| STB6522 | 20.9                                 | 23.1 | 1.0  | 18.8   | 5.0  | 20.0   | 30.6   | 0.092 |
| STB6024 | 21.6                                 | 26.4 | 1.0  | 19.4   | 5.0  | 17.0   | 34.7   | 0.094 |
| STB6524 | 22.8                                 | 25.2 | 1.0  | 20.5   | 5.0  | 18.0   | 33.2   | 0.094 |
| STB6027 | 24.3                                 | 29.7 | 1.0  | 21.8   | 5.0  | 15.0   | 39.1   | 0.096 |
| STB6527 | 25.7                                 | 28.4 | 1.0  | 23.1   | 5.0  | 16.0   | 37.5   | 0.096 |
| STB6030 | 27.0                                 | 33.0 | 1.0  | 24.3   | 5.0  | 14.0   | 43.5   | 0.097 |
| STB6530 | 28.5                                 | 31.5 | 1.0  | 25.6   | 5.0  | 14.4   | 41.4   | 0.097 |
| STB6033 | 29.7                                 | 36.3 | 1.0  | 26.8   | 5.0  | 12.6   | 47.7   | 0.098 |
| STB6533 | 31.4                                 | 34.7 | 1.0  | 28.2   | 5.0  | 13.2   | 45.7   | 0.098 |
| STB6036 | 32.4                                 | 39.6 | 1.0  | 29.1   | 5.0  | 11.6   | 52.0   | 0.099 |
| STB6536 | 34.2                                 | 37.8 | 1.0  | 30.8   | 5.0  | 12.0   | 49.9   | 0.099 |
| STB6039 | 35.1                                 | 42.9 | 1.0  | 31.6   | 5.0  | 10.6   | 56.4   | 0.100 |
| STB6539 | 37.1                                 | 41.0 | 1.0  | 33.3   | 5.0  | 11.2   | 53.9   | 0.100 |
| STB6043 | 38.7                                 | 47.3 | 1.0  | 34.8   | 5.0  | 9.6  | 61.9   | 0.101 |
| STB6543 | 40.9                                 | 45.2 | 1.0  | 36.8   | 5.0  | 10.1   | 59.3   | 0.101 |
| STB6047 | 42.3                                 | 51.7 | 1.0  | 38.1   | 5.0  | 8.9  | 67.8   | 0.101 |
| STB6547 | 44.7                                 | 49.4 | 1.0  | 40.2   | 5.0  | 9.3  | 64.8   | 0.101 |
| STB6051 | 45.9                                 | 56.1 | 1.0  | 41.3   | 5.0  | 8.2  | 73.5   | 0.102 |
| STB6551 | 48.5                                 | 53.6 | 1.0  | 43.6   | 5.0  | 8.6  | 70.1   | 0.102 |
| STB6056 | 50.4                                 | 61.6 | 1.0  | 45.4   | 5.0  | 7.4  | 80.5   | 0.103 |
| STB6556 | 53.2                                 | 58.8 | 1.0  | 47.8   | 5.0  | 7.8  | 77.0   | 0.103 |

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

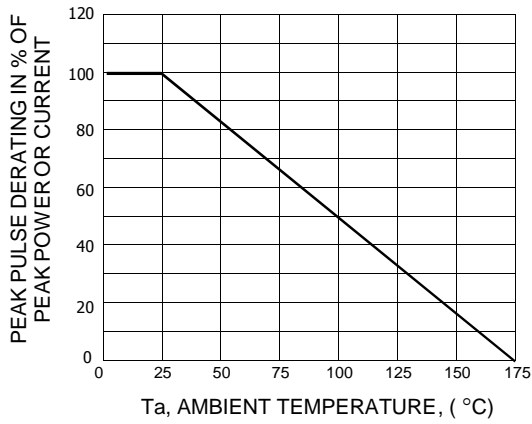
| TYPE    | Breakdown Voltage @ It<br>( Note 1 ) |      |            | Working Peak<br>Reverse<br>Voltage<br>VRWM<br>(V) | Maximum<br>Reverse Leakage<br>@ VRWM<br>IR<br>(μA) | Maximum<br>Reverse<br>Current<br>IRSM<br>(A) | Maximum<br>Clamping<br>Voltage @ IRSM<br>VRSM<br>(V) | Maximum<br>Temperature<br>Co-efficient<br>of VBR<br>(% / °C) |
|---------|--------------------------------------|------|------------|---|--|--|--|--|
|         | VBR (V)                              |      | It<br>(mA) |   |  |  |  |  |
|         | Min.                                 | Max. |            |   |  |  |  |  |
| STB6062 | 55.8                                 | 68.2 | 1.0        | 50.2  | 5.0  | 6.8  | 89.0   | 0.104  |
| STB6562 | 58.9                                 | 65.1 | 1.0        | 53.0  | 5.0  | 7.1  | 85.0   | 0.104  |
| STB6068 | 61.2                                 | 74.8 | 1.0        | 55.1  | 5.0  | 6.1  | 98.0   | 0.104  |
| STB6568 | 64.6                                 | 71.4 | 1.0        | 58.1  | 5.0  | 6.5  | 92.0   | 0.104  |
| STB6075 | 67.5                                 | 82.5 | 1.0        | 60.7  | 5.0  | 5.5  | 108  | 0.105  |
| STB6575 | 71.3                                 | 78.8 | 1.0        | 64.1  | 5.0  | 5.8  | 103  | 0.105  |
| STB6082 | 73.8                                 | 90.2 | 1.0        | 66.4  | 5.0  | 5.1  | 118  | 0.105  |
| STB6582 | 77.9                                 | 86.1 | 1.0        | 70.1  | 5.0  | 5.3  | 113  | 0.105  |
| STB6091 | 81.9                                 | 100  | 1.0        | 73.7  | 5.0  | 4.5  | 131  | 0.106  |
| STB6591 | 86.5                                 | 95.5 | 1.0        | 77.8  | 5.0  | 4.8  | 125  | 0.106  |
| STB60B0 | 90.0                                 | 110  | 1.0        | 81.0  | 5.0  | 4.2  | 144  | 0.106  |
| STB65B0 | 95.0                                 | 105  | 1.0        | 85.5  | 5.0  | 4.4  | 137  | 0.106  |
| STB60B1 | 99.0                                 | 121  | 1.0        | 89.2  | 5.0  | 3.8  | 158  | 0.107  |
| STB65B1 | 105                                  | 116  | 1.0        | 94.0  | 5.0  | 4.0  | 152  | 0.107  |
| STB60B2 | 108                                  | 132  | 1.0        | 97.2  | 5.0  | 3.5  | 173  | 0.107  |
| STB65B2 | 114                                  | 126  | 1.0        | 102   | 5.0  | 3.6  | 165  | 0.107  |
| STB60B3 | 117                                  | 143  | 1.0        | 106   | 5.0  | 3.2  | 187  | 0.107  |
| STB65B3 | 124                                  | 137  | 1.0        | 111   | 5.0  | 3.3  | 179  | 0.107  |
| STB60B5 | 135                                  | 165  | 1.0        | 121   | 5.0  | 2.8  | 215  | 0.108  |
| STB65B5 | 143                                  | 158  | 1.0        | 128   | 5.0  | 2.9  | 207  | 0.108  |
| STB60B6 | 144                                  | 176  | 1.0        | 130   | 5.0  | 2.6  | 230  | 0.108  |
| STB65B6 | 152                                  | 168  | 1.0        | 136   | 5.0  | 2.7  | 219  | 0.108  |
| STB60B7 | 153                                  | 187  | 1.0        | 138   | 5.0  | 2.5  | 244  | 0.108  |
| STB65B7 | 162                                  | 179  | 1.0        | 145   | 5.0  | 2.6  | 234  | 0.108  |
| STB60B8 | 162                                  | 198  | 1.0        | 146   | 5.0  | 2.3  | 258  | 0.108  |
| STB65B8 | 171                                  | 189  | 1.0        | 154   | 5.0  | 2.4  | 246  | 0.108  |
| STB60D0 | 180                                  | 220  | 1.0        | 162   | 5.0  | 2.1  | 287  | 0.108  |
| STB65D0 | 190                                  | 210  | 1.0        | 171   | 5.0  | 2.2  | 274  | 0.108  |
| STB60D2 | 198                                  | 242  | 1.0        | 175   | 5.0  | 1.75   | 344  | 0.108  |
| STB65D2 | 209                                  | 231  | 1.0        | 185   | 5.0  | 1.83   | 328  | 0.108  |
| STB60D5 | 225                                  | 275  | 1.0        | 202   | 5.0  | 1.67   | 360  | 0.110  |
| STB65D5 | 237                                  | 263  | 1.0        | 214   | 5.0  | 1.75   | 344  | 0.110  |
| STB60E0 | 270                                  | 330  | 1.0        | 243   | 5.0  | 1.40   | 430  | 0.110  |
| STB65E0 | 285                                  | 315  | 1.0        | 256   | 5.0  | 1.45   | 414  | 0.110  |
| STB60E5 | 315                                  | 385  | 1.0        | 284   | 5.0  | 1.20   | 504  | 0.110  |
| STB65E5 | 332                                  | 368  | 1.0        | 300   | 5.0  | 1.25   | 482  | 0.110  |
| STB60G0 | 360                                  | 440  | 1.0        | 324   | 5.0  | 1.05   | 574  | 0.110  |
| STB65G0 | 380                                  | 420  | 1.0        | 342   | 5.0  | 1.10   | 548  | 0.110  |
| STB60G4 | 396                                  | 484  | 1.0        | 356   | 5.0  | 0.95   | 631  | 0.110  |
| STB65G4 | 418                                  | 462  | 1.0        | 376   | 5.0  | 1.00   | 602  | 0.110  |

**Note:**

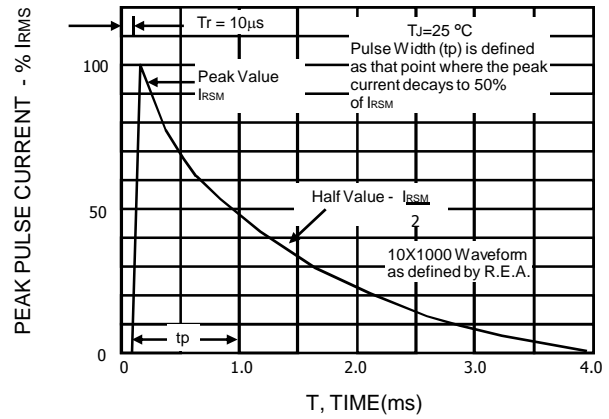
- ( 1 ) VBR measured after It applied for 300 μs., It = square wave pulse or equivalent.
- ( 2 ) "STB" will be omitted in marking on the diode.

**RATING AND CHARACTERISTIC CURVES ( STB606I - STB65G4 )**

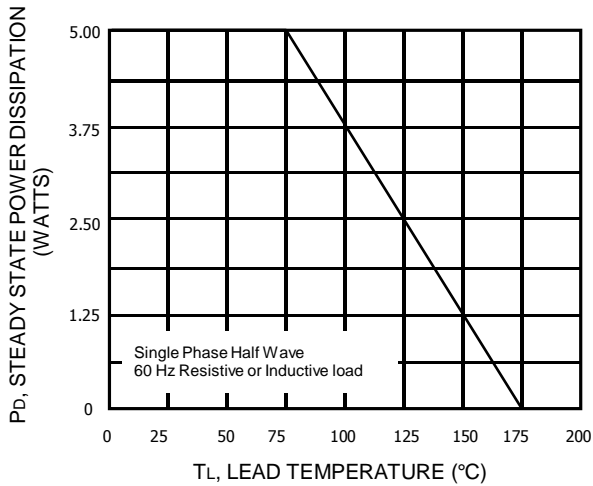
**FIG.1 - PULSE DERATING CURVE**



**FIG.2 - PULSE WAVEFORM**



**FIG.3 - STEADY STATE POWER DERATING**



**FIG.4 - PULSE RATING CURVE**

