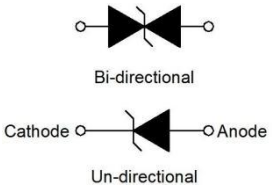
## 600W Transient Voltage Suppressor SMBJ Series

| Parameter | Value | Unit |
|---|---|---|
| $P_{PP}$ | 600 | W |
| $T_j$ | -55 to +125 | °C |




SMB/DO-214AA

**FEATURES**

- Excellent clamping capability
- 600W peak pulse power capability with a 10/1000μs waveform.
- VRWM: 3.3-440V
- Low profile package and low inductance
- Typical IR less than 1uA above 10V
- Fast response time: typically less than 1.0ps from 0V to VBR min.

**APPLICATIONS**

- For surface mounted applications
- Computer system
- Domestic appliance
- Video input

**MAXIMUM RATED VALUES** (at TJ = 25 °C, unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak pulse power dissipation on 10/1000μs waveform | PPP | 600 | W |
| Steady state power dissipation at TL=75℃ | PM(AV) | 5.0 | W |
| Operating junction temperature range | Tj | -55 to +125 | ℃ |
| Storage temperature range | Tstg | -55 to +150 | ℃ |

**ELECTRICAL CHARACTERISTICS** (at TJ = 25°C unless otherwise specified)

| Part Number | | VR | IR@VR | VBR@IT | | IT | VC@IPP | IPP① |
|---|---|---|---|---|---|---|---|---|
| Uni-Polar | Bi-Polar | V | μA | min(V) | max(V) | mA | max(V) | A |
| SMBJ3.3A | / | 3.3 | 600 | 5.2 | 6 | 10 | 8.0 | 75.00 |
| SMBJ5.0A | SMBJ5.0CA | 5.0 | 800 | 6.40 | 7.00 | 10 | 9.2 | 65.22 |
| SMBJ6.0A | SMBJ6.0CA | 6.0 | 800 | 6.67 | 7.37 | 10 | 10.3 | 58.26 |
| SMBJ6.5A | SMBJ6.5CA | 6.5 | 500 | 7.22 | 7.98 | 10 | 11.2 | 53.58 |
| SMBJ7.0A | SMBJ7.0CA | 7.0 | 200 | 7.78 | 8.60 | 10 | 12.0 | 50.00 |
| SMBJ7.5A | SMBJ7.5CA | 7.5 | 100 | 8.33 | 9.21 | 1 | 12.9 | 46.52 |
| SMBJ8.0A | SMBJ8.0CA | 8.0 | 50 | 8.89 | 9.83 | 1 | 13.6 | 44.12 |
| SMBJ8.5A | SMBJ8.5CA | 8.5 | 20 | 9.44 | 10.40 | 1 | 14.4 | 41.67 |
| SMBJ9.0A | SMBJ9.0CA | 9.0 | 10 | 10.00 | 11.10 | 1 | 15.4 | 38.97 |
| SMBJ10A | SMBJ10CA | 10.0 | 5 | 11.10 | 12.30 | 1 | 17.0 | 35.30 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SMBJ11A | SMBJ11CA | 11.0 | 1 | 12.20 | 13.50 | 1 | 18.2 | 32.97 |
| SMBJ12A | SMBJ12CA | 12.0 | 1 | 13.30 | 14.70 | 1 | 19.9 | 30.16 |
| SMBJ13A | SMBJ13CA | 13.0 | 1 | 14.40 | 15.90 | 1 | 21.5 | 27.91 |
| SMBJ14A | SMBJ14CA | 14.0 | 1 | 15.60 | 17.20 | 1 | 23.2 | 25.87 |
| SMBJ15A | SMBJ15CA | 15.0 | 1 | 16.70 | 18.50 | 1 | 24.4 | 24.60 |
| SMBJ16A | SMBJ16CA | 16.0 | 1 | 17.80 | 19.70 | 1 | 26.0 | 23.08 |
| SMBJ17A | SMBJ17CA | 17.0 | 1 | 18.90 | 20.90 | 1 | 27.6 | 21.74 |
| SMBJ18A | SMBJ18CA | 18.0 | 1 | 20.00 | 22.10 | 1 | 29.2 | 20.55 |
| SMBJ20A | SMBJ20CA | 20.0 | 1 | 22.20 | 24.50 | 1 | 32.4 | 18.52 |
| SMBJ22A | SMBJ22CA | 22.0 | 1 | 24.40 | 26.90 | 1 | 35.5 | 16.91 |
| SMBJ24A | SMBJ24CA | 24.0 | 1 | 26.70 | 29.50 | 1 | 38.9 | 15.43 |
| SMBJ26A | SMBJ26CA | 26.0 | 1 | 28.90 | 31.90 | 1 | 42.1 | 14.26 |
| SMBJ28A | SMBJ28CA | 28.0 | 1 | 31.10 | 34.40 | 1 | 45.4 | 13.22 |
| SMBJ30A | SMBJ30CA | 30.0 | 1 | 33.30 | 36.80 | 1 | 48.4 | 12.40 |
| SMBJ33A | SMBJ33CA | 33.0 | 1 | 36.70 | 40.60 | 1 | 53.3 | 11.26 |
| SMBJ36A | SMBJ36CA | 36.0 | 1 | 40.00 | 44.20 | 1 | 58.1 | 10.33 |
| SMBJ40A | SMBJ40CA | 40.0 | 1 | 44.40 | 49.10 | 1 | 64.5 | 9.31 |
| SMBJ43A | SMBJ43CA | 43.0 | 1 | 47.80 | 52.80 | 1 | 69.4 | 8.65 |
| SMBJ45A | SMBJ45CA | 45.0 | 1 | 50.00 | 55.30 | 1 | 72.7 | 8.26 |
| SMBJ48A | SMBJ48CA | 48.0 | 1 | 53.30 | 58.90 | 1 | 77.4 | 7.76 |
| SMBJ51A | SMBJ51CA | 51.0 | 1 | 56.70 | 62.70 | 1 | 82.4 | 7.29 |
| SMBJ54A | SMBJ54CA | 54.0 | 1 | 60.00 | 66.30 | 1 | 87.1 | 6.89 |
| SMBJ58A | SMBJ58CA | 58.0 | 1 | 64.40 | 71.20 | 1 | 93.6 | 6.42 |
| SMBJ60A | SMBJ60CA | 60.0 | 1 | 66.70 | 73.70 | 1 | 96.8 | 6.20 |
| SMBJ64A | SMBJ64CA | 64.0 | 1 | 71.10 | 78.60 | 1 | 103.0 | 5.83 |
| SMBJ70A | SMBJ70CA | 70.0 | 1 | 77.80 | 86.00 | 1 | 113.0 | 5.31 |
| SMBJ75A | SMBJ75CA | 75.0 | 1 | 83.30 | 92.10 | 1 | 121.0 | 4.96 |
| SMBJ78A | SMBJ78CA | 78.0 | 1 | 86.70 | 95.80 | 1 | 126.0 | 4.77 |
| SMBJ85A | SMBJ85CA | 85.0 | 1 | 94.40 | 104.0 | 1 | 137.0 | 4.38 |
| SMBJ90A | SMBJ90CA | 90.0 | 1 | 100.0 | 111.0 | 1 | 146.0 | 4.11 |
| SMBJ100A | SMBJ100CA | 100.0 | 1 | 111.0 | 123.0 | 1 | 162.0 | 3.71 |
| SMBJ110A | SMBJ110CA | 110.0 | 1 | 122.0 | 135.0 | 1 | 177.0 | 3.39 |
| SMBJ120A | SMBJ120CA | 120.0 | 1 | 133.0 | 147.0 | 1 | 193.0 | 3.11 |
| SMBJ130A | SMBJ130CA | 130.0 | 1 | 144.0 | 159.0 | 1 | 209.0 | 2.88 |
| SMBJ150A | SMBJ150CA | 150.0 | 1 | 167.0 | 185.0 | 1 | 243.0 | 2.47 |
| SMBJ160A | SMBJ160CA | 160.0 | 1 | 178.0 | 197.0 | 1 | 259.0 | 2.32 |
| SMBJ170A | SMBJ170CA | 170.0 | 1 | 189.0 | 209.0 | 1 | 275.0 | 2.19 |
| SMBJ180A | SMBJ180CA | 180.0 | 1 | 201.0 | 222.0 | 1 | 292.0 | 2.06 |
| SMBJ190A | SMBJ190CA | 190.0 | 1 | 209.0 | 233.0 | 1 | 308.0 | 1.96 |
| SMBJ200A | SMBJ200CA | 200.0 | 1 | 224.0 | 247.0 | 1 | 324.0 | 1.86 |
| SMBJ210A | SMBJ210CA | 210.0 | 1 | 237.0 | 263.0 | 1 | 340.0 | 1.79 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SMBJ220A | SMBJ220CA | 220.0 | 1 | 246.0 | 272.0 | 1 | 356.0 | 1.69 |
| SMBJ250A | SMBJ250CA | 250.0 | 1 | 279.0 | 309.0 | 1 | 405.0 | 1.49 |
| SMBJ300A | SMBJ300CA | 300.0 | 1 | 335.0 | 371.0 | 1 | 486.0 | 1.24 |
| SMBJ350A | SMBJ350CA | 350.0 | 1 | 391.0 | 432.0 | 1 | 567.0 | 1.06 |
| SMBJ400A | SMBJ400CA | 400.0 | 1 | 447.0 | 494.0 | 1 | 648.0 | 0.93 |
| SMBJ440A | SMBJ440CA | 440.0 | 1 | 492.0 | 543.0 | 1 | 713.0 | 0.85 |

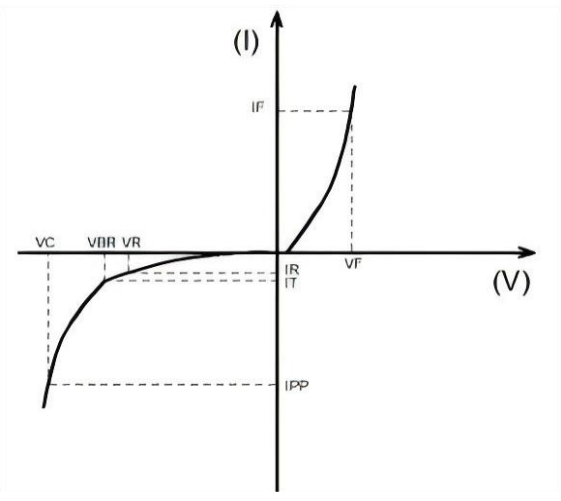
Notes：

① Surge waveform: 10/1000μs
VR: Stand-off Voltage -- Maximum voltage that can be applied
VBR: Breakdown Voltage
VC: Clamping Voltage -- Peak voltage measured across the suppressor at a specified Ipp
IR: Reverse Leakage Current

| Symbol | Parameter |
|---|---|
| $I_F$ | Mean Forward Current |
| $V_F$ | Maximum Forward Voltage @IF |
| $V_R$ | Peak Reverse Working Voltage |
| $I_R$ | Reverse Leakage Current @ VR |
| $V_{BR}$ | Breakdown Voltage @ IT |
| $I_T$ | Test Current |
| $I_{PP}$ | Maximum Reverse Peak Pulse Current |
| $V_C$ | Clamping Voltage @ IPP |

## TYPICAL CHARACTERISTICS CURVES

**Fig1：V-i cure characteristics**



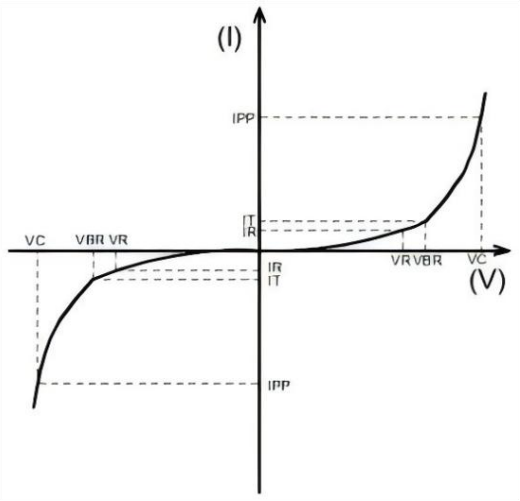



**Fig2:Pulse derating curve**

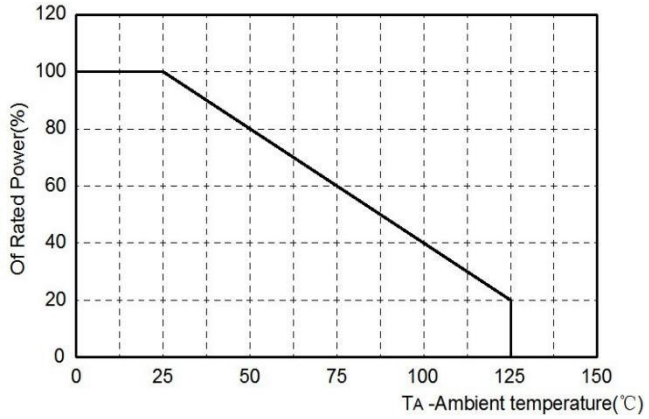



**Fig3: Pulse waveform**

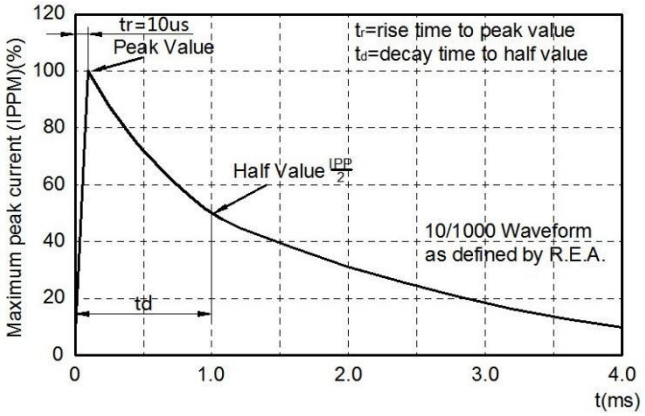



**Fig4:Peak Pulse Power Rating Curve**

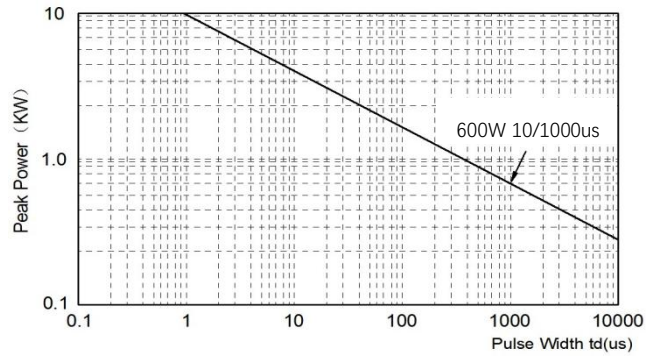
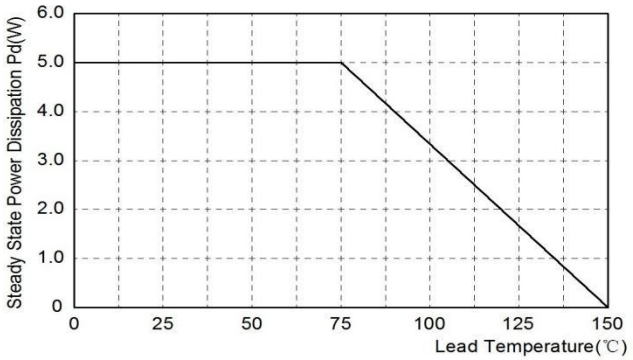
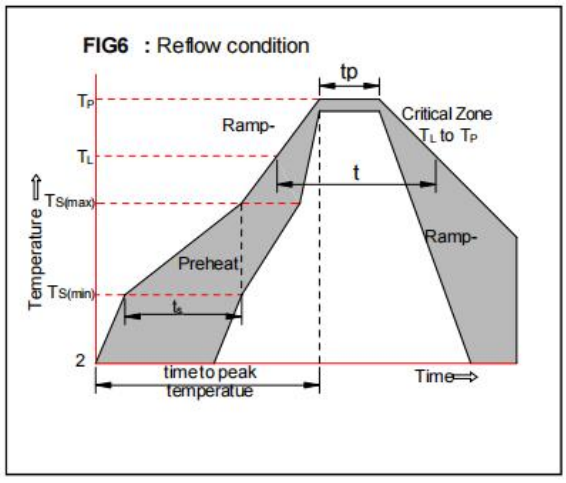



**Fig5: Steady State Power Dissipation**

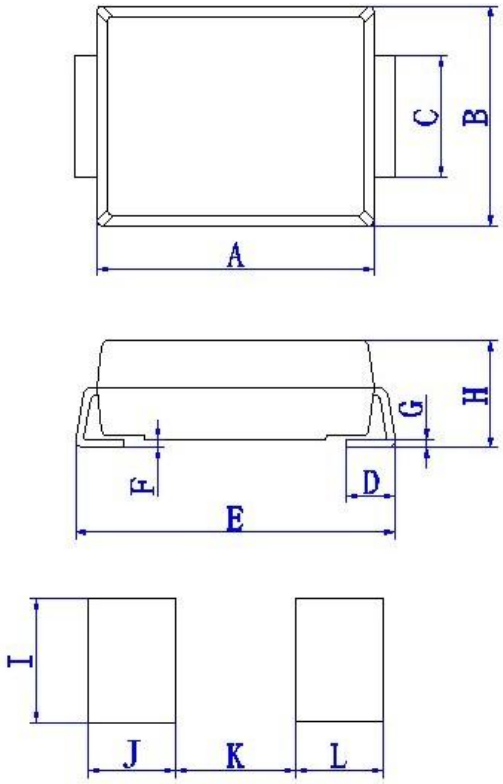



## Soldering parameters

| Reflow Condition | | Pb-Free assembly (see as bellow) |
|---|---|---|
| Pre Heat | Temperature Min ($T_{s(min)}$) | +150℃ |
| | Temperature Max($T_{s(max)}$) | +200℃ |
| | Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp ($T_L$) to peak) | | 3℃/sec. Max |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate | | 3℃/sec. Max |
| Reflow | Temperature($T_L$)(Liquid us) | +217℃ |
| | Temperature($t_L$) | 60-150 secs. |
| Peak Temp ($T_p$) | | +260(+0/-5)℃ |
| Time within 5℃of actual Peak Temp ($t_p$) | | 30 secs. Max |
| Ramp-down Rate | | 6℃/sec. Max |
| Time 25℃ to Peak Temp ($T_P$) | | 8 min. Max |
| Do not exceed | | +260℃ |



## PACKAGE OUTLINES




| Ref.(mm) | Millimeters | |
|---|---|---|
| | Min. | Max. |
| A | 4.22 | 4.70 |
| B | 3.4 | 3.94 |
| C | 1.9 | 2.1 |
| D | 0.90 | 1.42 |
| E | 5.21 | 5.59 |
| F | 0 | 0.23 |
| G | 0.15 | 0.25 |
| H | 1.95 | 2.60 |
| I | 2.30 | |
| J | 1.50 | |
| K | | 2.80 |
| L | 1.50 | |

***Important Usage Information and Disclaimer**

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