

SMBJ5.0(C)A-T to SMBJ440(C)A-T

600Watts

Automotive Transient Voltage Suppressors

PROSEMI offers AEC-Q101 qualified TVS diode device is specially designed to protect sensitive electronic devices from lightning and other transient voltage induced voltage transient events.



Features

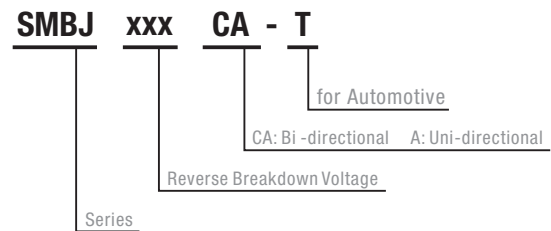
- Low profile package
- Very fast response time
- Unidirectional(A) and Bidirectional(CA) Protection
- AEC-Q101 qualified available
- Excellent Clamping Capability
- Glass Passivated Junction
- Built-in Strain relief



Applications

- I/O Interfaces
- Power lines
- Computers & Consumer Electronics
- Automotive and Telecommunication
- Industrial Electronics

Part Numbering System



Absolute Maximum Rating

| Rating | Symbol | Value | Units |
|---|------------------|--------------------------------|-------|
| Peak Pulse Power ($t_p = 10/1000\mu s$) (see Note1,2&3) | P _{PPM} | 600 | Watts |
| Peak pulse current (10/1000 μs) (see Note2&3) | I _{PPM} | See Electrical Characteristics | A |
| Peak Forward surge current (see Note4&5) | I _{FSM} | 100 | A |
| Power Dissipation on infinite heat sink T _A = 50 °C (Fig5) | P _D | 5.0 | W |
| Operating Junction Temperature range | T _J | -55 ~ +150 | °C |
| Typical Thermal Resistance | R _{θJA} | 100 | °C/W |

Note1: Peak Pulse Power Rating as Pulse Width ,perFig1.

Note2: Peak Pusle Power or Current Derated above T_A=25 °C Per Fig. 2 and Non-Repetitive Current Pulse,Per Fig.3.

Note3: Mounted on 5.0x5.0mm² copper pad to each terminal.

Note4: 8.3ms Single Half Sine Wave or Equivalent Square Wave

Note5: Maximum Forward Surge Current only for Unidirectional Device per Fig6.

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Electrical Characteristics

| Part Number | | Marking | | Reverse Stand Off Voltage | Breakdown Voltage | | Test Current | Maximum Clamping Voltage | Maximum Peak Pulse Current | Maximum Reverse Leakage |
|-------------|-------------|---------|-----|---------------------------|----------------------|-------|--------------|--------------------------|----------------------------|--------------------------|
| Uni | Bi | Uni | Bi | V_R (V) | V_{BR} (V) @ I_T | | I_T (mA) | V_C (V) @ I_{PP} | I_{PP} (A) | I_R (μ A) @ V_R |
| | | | | | Min. | Max. | | | | |
| SMBJ5.0A-T | SMBJ5.0CA-T | KET | AET | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 65.3 | 800 |
| SMBJ6.0A-T | SMBJ6.0CA-T | KGT | AGT | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 58.3 | 800 |
| SMBJ6.5A-T | SMBJ6.5CA-T | KKT | AKT | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 53.6 | 500 |
| SMBJ7.0A-T | SMBJ7.0CA-T | KMT | AMT | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 50.0 | 200 |
| SMBJ7.5A-T | SMBJ7.5CA-T | KPT | APT | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 46.6 | 100 |
| SMBJ8.0A-T | SMBJ8.0CA-T | KRT | ART | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 44.2 | 50 |
| SMBJ8.5A-T | SMBJ8.5CA-T | KTT | ATT | 8.5 | 9.44 | 10.40 | 1 | 14.4 | 41.7 | 20 |
| SMBJ9.0A-T | SMBJ9.0CA-T | KVT | AVT | 9.0 | 10.00 | 11.10 | 1 | 15.4 | 39.0 | 10 |
| SMBJ10A-T | SMBJ10CA-T | KXT | AXT | 10.0 | 11.10 | 12.30 | 1 | 17.0 | 35.3 | 5 |
| SMBJ11A-T | SMBJ11CA-T | KZT | AZT | 11.0 | 12.20 | 13.50 | 1 | 18.2 | 33.0 | 1 |
| SMBJ12A-T | SMBJ12CA-T | LET | BET | 12.0 | 13.30 | 14.70 | 1 | 19.9 | 30.2 | 1 |
| SMBJ13A-T | SMBJ13CA-T | LGT | BGT | 13.0 | 14.40 | 15.90 | 1 | 21.5 | 28.0 | 1 |
| SMBJ14A-T | SMBJ14CA-T | LKT | BKT | 14.0 | 15.60 | 17.20 | 1 | 23.2 | 25.9 | 1 |
| SMBJ15A-T | SMBJ15CA-T | LMT | BMT | 15.0 | 16.70 | 18.50 | 1 | 24.4 | 24.6 | 1 |
| SMBJ16A-T | SMBJ16CA-T | LPT | BPT | 16.0 | 17.80 | 19.70 | 1 | 26.0 | 23.1 | 1 |
| SMBJ17A-T | SMBJ17CA-T | LRT | BRT | 17.0 | 18.90 | 20.90 | 1 | 27.6 | 21.8 | 1 |
| SMBJ18A-T | SMBJ18CA-T | LTT | BTT | 18.0 | 20.00 | 22.10 | 1 | 29.2 | 20.6 | 1 |
| SMBJ20A-T | SMBJ20CA-T | LVT | BVT | 20.0 | 22.20 | 24.50 | 1 | 32.4 | 18.6 | 1 |
| SMBJ22A-T | SMBJ22CA-T | LXT | BXT | 22.0 | 24.40 | 26.90 | 1 | 35.5 | 16.9 | 1 |
| SMBJ24A-T | SMBJ24CA-T | LZT | BZT | 24.0 | 26.70 | 29.50 | 1 | 38.9 | 15.5 | 1 |
| SMBJ26A-T | SMBJ26CA-T | MET | CET | 26.0 | 28.90 | 31.90 | 1 | 42.1 | 14.3 | 1 |
| SMBJ28A-T | SMBJ28CA-T | MGT | CGT | 28.0 | 31.10 | 34.40 | 1 | 45.4 | 13.3 | 1 |
| SMBJ30A-T | SMBJ30CA-T | MKT | CKT | 30.0 | 33.30 | 36.80 | 1 | 48.4 | 12.4 | 1 |
| SMBJ33A-T | SMBJ33CA-T | MMT | CMT | 33.0 | 36.70 | 40.60 | 1 | 53.3 | 11.3 | 1 |
| SMBJ36A-T | SMBJ36CA-T | MPT | CPT | 36.0 | 40.00 | 44.20 | 1 | 58.1 | 10.4 | 1 |
| SMBJ40A-T | SMBJ40CA-T | MRT | CRT | 40.0 | 44.40 | 49.10 | 1 | 64.5 | 9.3 | 1 |
| SMBJ43A-T | SMBJ43CA-T | MTT | CTT | 43.0 | 47.80 | 52.80 | 1 | 69.4 | 8.7 | 1 |
| SMBJ45A-T | SMBJ45CA-T | MVT | CVT | 45.0 | 50.00 | 55.30 | 1 | 72.7 | 8.3 | 1 |
| SMBJ48A-T | SMBJ48CA-T | MXT | CXT | 48.0 | 53.30 | 58.90 | 1 | 77.4 | 7.8 | 1 |
| SMBJ51A-T | SMBJ51CA-T | MZT | CZT | 51.0 | 56.70 | 62.70 | 1 | 82.4 | 7.3 | 1 |
| SMBJ54A-T | SMBJ54CA-T | NET | DET | 54.0 | 60.00 | 66.30 | 1 | 87.1 | 6.9 | 1 |
| SMBJ58A-T | SMBJ58CA-T | NGT | DGT | 58.0 | 64.40 | 71.20 | 1 | 93.6 | 6.5 | 1 |
| SMBJ60A-T | SMBJ60CA-T | NKT | DKT | 60.0 | 66.70 | 73.70 | 1 | 96.8 | 6.2 | 1 |
| SMBJ64A-T | SMBJ64CA-T | NMT | DMT | 64.0 | 71.10 | 78.60 | 1 | 103.0 | 5.9 | 1 |
| SMBJ70A-T | SMBJ70CA-T | NPT | DPT | 70.0 | 77.80 | 86.00 | 1 | 113.0 | 5.3 | 1 |

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Electrical Characteristics (continued)

| Part Number | | Marking | | Reverse Stand Off Voltage V_R (V) | Breakdown Voltage | | Test Current I_T (mA) | Maximum Clamping Voltage V_C (V) @ I_{PP} | Maximum Peak Pulse Current I_{PP} (A) | Maximum Reverse Leakage I_R (μ A) @ V_R |
|-------------|-------------|---------|-----|--|------------------------------|--------|----------------------------|--|--|---|
| Uni | Bi | Uni | Bi | | V_{BR} (V) @ I_T Min. | Max. | | | | |
| SMBJ75A-T | SMBJ75CA-T | NRT | DRT | 75.0 | 83.30 | 92.10 | 1 | 121.0 | 5.0 | 1 |
| SMBJ78A-T | SMBJ78CA-T | NTT | DTT | 78.0 | 86.70 | 95.80 | 1 | 126.0 | 4.8 | 1 |
| SMBJ85A-T | SMBJ85CA-T | NVT | DVT | 85.0 | 94.40 | 104.00 | 1 | 137.0 | 4.4 | 1 |
| SMBJ90A-T | SMBJ90CA-T | NXT | DXT | 90.0 | 100.00 | 111.00 | 1 | 146.0 | 4.1 | 1 |
| SMBJ100A-T | SMBJ100CA-T | NZT | DZT | 100.0 | 111.00 | 123.00 | 1 | 162.0 | 3.7 | 1 |
| SMBJ110A-T | SMBJ110CA-T | PET | EET | 110.0 | 122.00 | 135.00 | 1 | 177.0 | 3.4 | 1 |
| SMBJ120A-T | SMBJ120CA-T | PGT | EGT | 120.0 | 133.00 | 147.00 | 1 | 193.0 | 3.1 | 1 |
| SMBJ130A-T | SMBJ130CA-T | PKT | EKT | 130.0 | 144.00 | 159.00 | 1 | 209.0 | 2.9 | 1 |
| SMBJ150A-T | SMBJ150CA-T | PMT | EMT | 150.0 | 167.00 | 185.00 | 1 | 243.0 | 2.5 | 1 |
| SMBJ160A-T | SMBJ160CA-T | PPT | EPT | 160.0 | 178.00 | 197.00 | 1 | 259.0 | 2.3 | 1 |
| SMBJ170A-T | SMBJ170CA-T | PRT | ERT | 170.0 | 189.00 | 209.00 | 1 | 275.0 | 2.2 | 1 |
| SMBJ180A-T | SMBJ180CA-T | PTT | ETT | 180.0 | 201.00 | 222.00 | 1 | 292.0 | 2.1 | 1 |
| SMBJ188A-T | SMBJ188CA-T | PBT | EBT | 188.0 | 209.00 | 231.00 | 1 | 304.0 | 2.0 | 1 |
| SMBJ200A-T | SMBJ200CA-T | PVT | EVT | 200.0 | 224.00 | 247.00 | 1 | 324.0 | 1.9 | 1 |
| SMBJ220A-T | SMBJ220CA-T | PXT | EXT | 220.0 | 246.00 | 272.00 | 1 | 356.0 | 1.7 | 1 |
| SMBJ250A-T | SMBJ250CA-T | PZT | EZT | 250.0 | 279.00 | 309.00 | 1 | 405.0 | 1.5 | 1 |
| SMBJ300A-T | SMBJ300CA-T | QET | FET | 300.0 | 335.00 | 371.00 | 1 | 486.0 | 1.3 | 1 |
| SMBJ350A-T | SMBJ350CA-T | QGT | FGT | 350.0 | 391.00 | 432.00 | 1 | 567.0 | 1.1 | 1 |
| SMBJ400A-T | SMBJ400CA-T | QKT | FKT | 400.0 | 447.00 | 494.00 | 1 | 648.0 | 0.9 | 1 |
| SMBJ440A-T | SMBJ440CA-T | QMT | FMT | 440.0 | 492.00 | 543.00 | 1 | 713.0 | 0.9 | 1 |

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Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

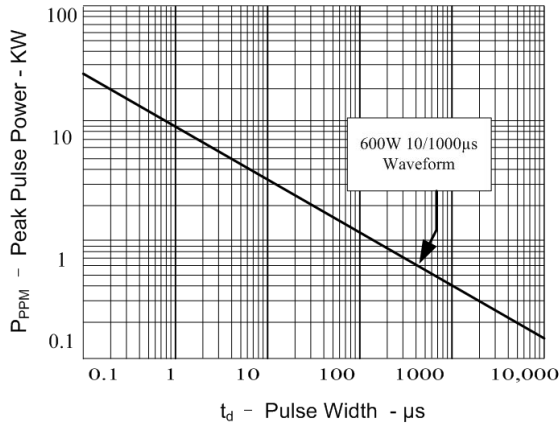


Figure 2: Pulse Derating Curve

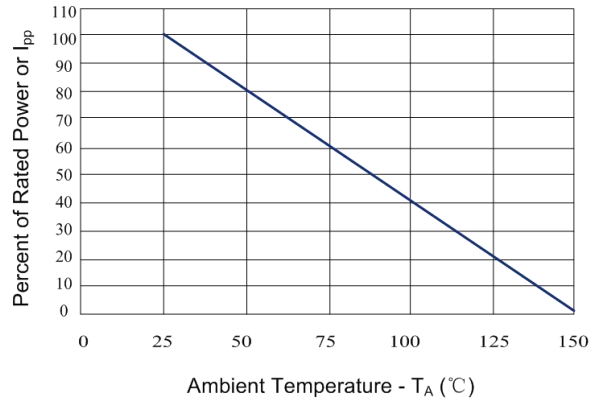


Figure 3: Pulse Waveform

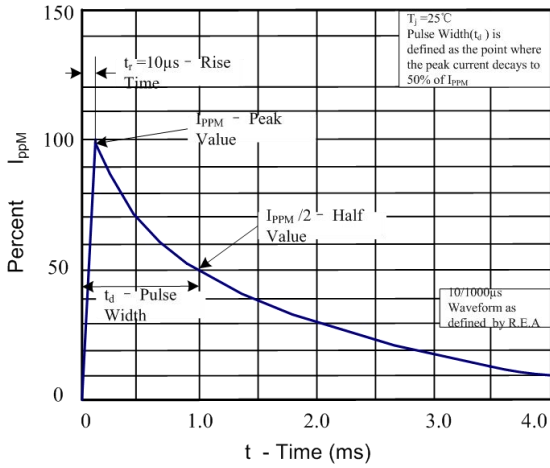


Figure 4: Typical Junction Capacitance

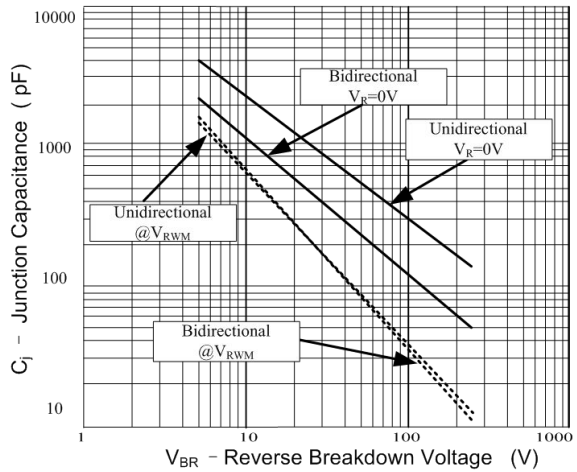


Figure 5: Steady State Power Dissipation Derating Curve

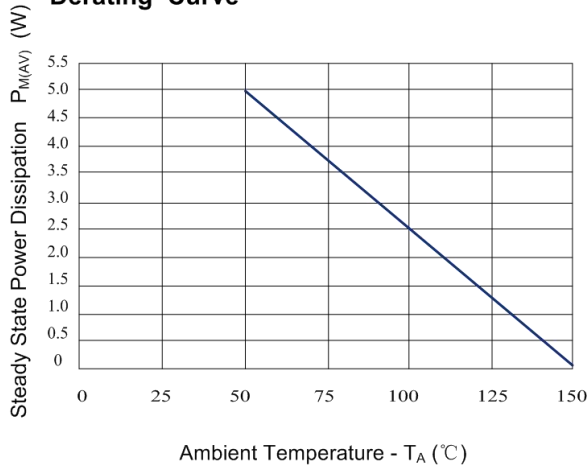
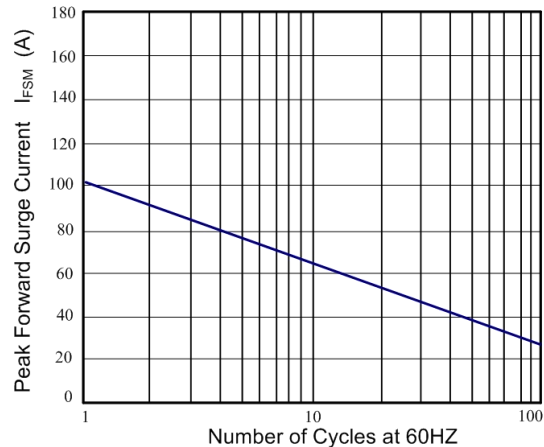


Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional

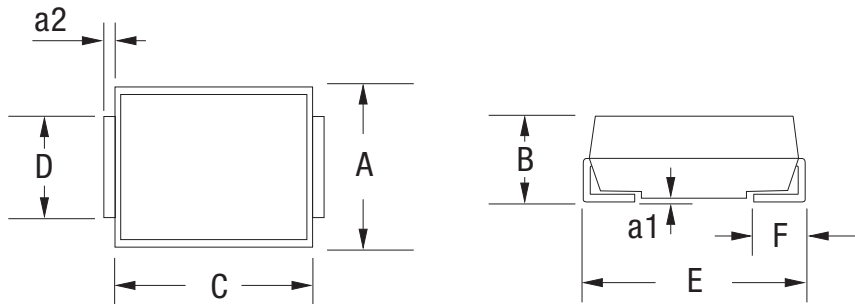


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Dimension (Unit: mm)



| A | | B | | C | | D | | E | | F | | a1 | | a2 | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|
| Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| 3.300 | 3.940 | 2.050 | 2.450 | 4.050 | 4.650 | 1.800 | 2.200 | 5.080 | 5.590 | 0.760 | 1.520 | - | 0.203 | 0.152 | 0.305 |

Packaging

- Quantity: 3,000pcs
- 12mm wide tape on 330mm(13 inch) diameter reel –specification EIA Standard 481.

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