

DO-214AA (SMB J-Bend)



Dimensions in inches and (millimeters)

| Agency | Agency File Number |
|--|--------------------|
|  | E521119 |

| PRIMARY CHARACTERISTICS | |
|-------------------------|----------------------------------|
| V _{RWM} | 5.0V to 440V |
| V _{BR} | 6.4V to 543V |
| P _{PPM} | 600W |
| T _J max | 150°C |
| Polarity | Uni-directional & Bi-directional |
| Package | DO-214AA |

FEATURES

- For surface mounted applications in order to optimize board space
- Typical maximum temperature coefficient
 $\Delta V_{BR} = 0.1\% \times V_{BR} @ 25^\circ\text{C} \times \Delta T$
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Excellent clamping capability
- Repetition Rate (duty cycle): 0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to BV
- Meet MSL1 Level, per J-STD-020, LF maximum peak of 260 °C
- Plastic package has Underwriters Laboratory Flammability 94V-0
- Matte Tin Lead-free plated



MECHANICAL DATA

Case: JEDEC DO-214AA. Molded plastic

Terminal: Solderable per MIL-STD-750, Method 2026

Polarity: Color band denoted positive end (cathode) except Bidirectional

DEVICES FOR BIPOLAR APPLICATION

- For Bidirectional use C or CA Suffix for types SMBJ5.0 thru types SMBJ440 (e.g. SMBJ5.0C, SMBJ440CA)
- Electrical characteristics apply in both directions

MAXIMUM RATINGS (25°C ambient temperature unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---------------------------------|----------------|-------|
| Peak Pulse Power Dissipation on 10/1000µs waveform (Note 1, 2) | P _{PPM} | 600 | Watts |
| Peak Pulse Current of on 10/1000µs waveform (Note 1) | I _{PPM} | See Next Table | Amps |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave (Note 2, 3) | I _{FSM} | 100 | Amps |
| Operating junction and Storage Temperature Range | T _J T _{STG} | -55 to +150 | °C |
| Typical Thermal Resistance Junction to Lead | R _{θJL} | 20 | °C/W |
| Typical Thermal Resistance Junction to Ambient | R _{θJA} | 100 | °C/W |

Note

- (1) Non-repetitive current pulse above T_A = 25 °C
- (2) Mounted on 5.0mm x 5.0mm Copper Pads to each terminal
- (3) 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

ELECTRICAL CHARACTERISTICS

| PART NUMBER | | MARKING CODE | | TEST CURRENT IT (mA) | BREAKDOWN VOLTAGE VBR(V) @IT | | REVERSE STAND-OFF VOLTAGE V _{RWM} (V) | MAXIMUM CLAMPING VOLTAGE @I _{pp} V _c (V) | MAXIMUM PEAK PULSE CURRENT I _{pp} (A) | MAXIMUM REVERSE LEAKAGE @ V _{RWM} I _r (μA) |
|-------------|-----------|--------------|----|----------------------|------------------------------|--------|--|--|--|--|
| UNI- POLAR | BI-POLAR | UNI | BI | | MIN | MAX | | | | |
| SMBJ5.0A | SMBJ5.0CA | KE | AE | 10 | 6.40 | 7.00 | 5.0 | 9.2 | 67.20 | 800.0 |
| SMBJ6.0A | SMBJ6.0CA | KG | AG | 10 | 6.67 | 7.37 | 6.0 | 10.3 | 60.00 | 800.0 |
| SMBJ6.5A | SMBJ6.5CA | KK | AK | 10 | 7.22 | 7.98 | 6.5 | 11.2 | 55.20 | 500.0 |
| SMBJ7.0A | SMBJ7.0CA | KM | AM | 10 | 7.78 | 8.60 | 7.0 | 12.0 | 51.50 | 200.0 |
| SMBJ7.5A | SMBJ7.5CA | KP | AP | 1 | 8.33 | 9.21 | 7.5 | 12.9 | 47.90 | 100.0 |
| SMBJ8.0A | SMBJ8.0CA | KR | AR | 1 | 8.89 | 9.83 | 8.0 | 13.6 | 45.40 | 50.0 |
| SMBJ8.5A | SMBJ8.5CA | KT | AT | 1 | 9.44 | 10.40 | 8.5 | 14.4 | 42.90 | 20.0 |
| SMBJ9.0A | SMBJ9.0CA | KV | AV | 1 | 10.00 | 11.10 | 9.0 | 15.4 | 40.10 | 10.0 |
| SMBJ10A | SMBJ10CA | KX | AX | 1 | 11.10 | 12.30 | 10.0 | 17.0 | 36.40 | 5.0 |
| SMBJ11A | SMBJ11CA | KZ | AZ | 1 | 12.20 | 13.50 | 11.0 | 18.2 | 34.00 | 1.0 |
| SMBJ12A | SMBJ12CA | LE | BE | 1 | 13.30 | 14.70 | 12.0 | 19.9 | 31.10 | 1.0 |
| SMBJ13A | SMBJ13CA | LG | BG | 1 | 14.40 | 15.90 | 13.0 | 21.5 | 28.70 | 1.0 |
| SMBJ14A | SMBJ14CA | LK | BK | 1 | 15.60 | 17.20 | 14.0 | 23.2 | 26.60 | 1.0 |
| SMBJ15A | SMBJ15CA | LM | BM | 1 | 16.70 | 18.50 | 15.0 | 24.4 | 25.30 | 1.0 |
| SMBJ16A | SMBJ16CA | LP | BP | 1 | 17.80 | 19.70 | 16.0 | 26.0 | 23.80 | 1.0 |
| SMBJ17A | SMBJ17CA | LR | BR | 1 | 18.90 | 20.90 | 17.0 | 27.6 | 22.40 | 1.0 |
| SMBJ18A | SMBJ18CA | LT | BT | 1 | 20.00 | 22.10 | 18.0 | 29.2 | 21.20 | 1.0 |
| SMBJ20A | SMBJ20CA | LV | BV | 1 | 22.20 | 24.50 | 20.0 | 32.4 | 19.10 | 1.0 |
| SMBJ22A | SMBJ22CA | LX | BX | 1 | 24.40 | 26.90 | 22.0 | 35.5 | 17.40 | 1.0 |
| SMBJ24A | SMBJ24CA | LZ | BZ | 1 | 26.70 | 29.50 | 24.0 | 38.9 | 15.90 | 1.0 |
| SMBJ26A | SMBJ26CA | ME | CE | 1 | 28.90 | 31.90 | 26.0 | 42.1 | 14.70 | 1.0 |
| SMBJ28A | SMBJ28CA | MG | CG | 1 | 31.10 | 34.40 | 28.0 | 45.4 | 13.60 | 1.0 |
| SMBJ30A | SMBJ30CA | MK | CK | 1 | 33.30 | 36.80 | 30.0 | 48.4 | 12.80 | 1.0 |
| SMBJ33A | SMBJ33CA | MM | CM | 1 | 36.70 | 40.60 | 33.0 | 53.3 | 11.60 | 1.0 |
| SMBJ36A | SMBJ36CA | MP | CP | 1 | 40.00 | 44.20 | 36.0 | 58.1 | 10.60 | 1.0 |
| SMBJ40A | SMBJ40CA | MR | CR | 1 | 44.40 | 49.10 | 40.0 | 64.5 | 9.60 | 1.0 |
| SMBJ43A | SMBJ43CA | MT | CT | 1 | 47.80 | 52.80 | 43.0 | 69.4 | 8.90 | 1.0 |
| SMBJ45A | SMBJ45CA | MV | CV | 1 | 50.00 | 55.30 | 45.0 | 72.7 | 8.50 | 1.0 |
| SMBJ48A | SMBJ48CA | MX | CX | 1 | 53.30 | 58.90 | 48.0 | 77.4 | 8.00 | 1.0 |
| SMBJ51A | SMBJ51CA | MZ | CZ | 1 | 56.70 | 62.70 | 51.0 | 82.4 | 7.50 | 1.0 |
| SMBJ54A | SMBJ54CA | NE | DE | 1 | 60.00 | 66.30 | 54.0 | 87.1 | 7.10 | 1.0 |
| SMBJ58A | SMBJ58CA | NG | DG | 1 | 64.40 | 71.20 | 58.0 | 93.6 | 6.60 | 1.0 |
| SMBJ60A | SMBJ60CA | NK | DK | 1 | 66.70 | 73.70 | 60.0 | 96.8 | 6.40 | 1.0 |
| SMBJ64A | SMBJ64CA | NM | DM | 1 | 71.10 | 78.60 | 64.0 | 103.0 | 6.00 | 1.0 |
| SMBJ70A | SMBJ70CA | NP | DP | 1 | 77.80 | 86.00 | 70.0 | 113.0 | 5.50 | 1.0 |
| SMBJ75A | SMBJ75CA | NR | DR | 1 | 83.30 | 92.10 | 75.0 | 121.0 | 5.10 | 1.0 |
| SMBJ78A | SMBJ78CA | NT | DT | 1 | 86.70 | 95.80 | 78.0 | 126.0 | 4.90 | 1.0 |
| SMBJ85A | SMBJ85CA | NV | DV | 1 | 94.40 | 104.00 | 85.0 | 137.0 | 4.50 | 1.0 |
| SMBJ90A | SMBJ90CA | NX | DX | 1 | 100.00 | 111.00 | 90.0 | 146.0 | 4.20 | 1.0 |
| SMBJ100A | SMBJ100CA | NZ | DZ | 1 | 111.00 | 123.00 | 100.0 | 162.0 | 3.80 | 1.0 |
| SMBJ110A | SMBJ110CA | PE | EE | 1 | 122.00 | 135.00 | 110.0 | 177.0 | 3.50 | 1.0 |
| SMBJ120A | SMBJ120CA | PG | EG | 1 | 133.00 | 147.00 | 120.0 | 193.0 | 3.20 | 1.0 |
| SMBJ130A | SMBJ130CA | PK | EK | 1 | 144.00 | 159.00 | 130.0 | 209.0 | 3.00 | 1.0 |
| SMBJ150A | SMBJ150CA | PM | EM | 1 | 167.00 | 185.00 | 150.0 | 243.0 | 2.50 | 1.0 |
| SMBJ160A | SMBJ160CA | PP | EP | 1 | 178.00 | 197.00 | 160.0 | 259.0 | 2.35 | 1.0 |
| SMBJ170A | SMBJ170CA | PR | ER | 1 | 189.00 | 209.00 | 170.0 | 275.0 | 2.20 | 1.0 |
| SMBJ180A | SMBJ180CA | PT | ET | 1 | 201.00 | 222.00 | 180.0 | 292.0 | 2.10 | 1.0 |
| SMBJ200A | SMBJ200CA | PV | EV | 1 | 224.00 | 247.00 | 200.0 | 324.0 | 1.90 | 1.0 |
| SMBJ220A | SMBJ220CA | PX | EX | 1 | 246.00 | 272.00 | 220.0 | 356.0 | 1.70 | 1.0 |
| SMBJ250A | SMBJ250CA | PZ | EZ | 1 | 279.00 | 309.00 | 250.0 | 405.0 | 1.50 | 1.0 |
| SMBJ300A | SMBJ300CA | QE | FE | 1 | 335.00 | 371.00 | 300.0 | 486.0 | 1.30 | 1.0 |
| SMBJ350A | SMBJ350CA | QG | FG | 1 | 391.00 | 432.00 | 350.0 | 567.0 | 1.10 | 1.0 |
| SMBJ400A | SMBJ400CA | QK | FK | 1 | 447.00 | 494.00 | 400.0 | 648.0 | 0.93 | 1.0 |
| SMBJ440A | SMBJ440CA | QM | FM | 1 | 492.00 | 543.00 | 440.0 | 713.0 | 0.90 | 1.0 |

For bidirectional type having V_{rwm} of 10 volts and less, the I_r limit is double

RATINGS AND CHARACTERISTICS CURVES (T_A = 25°C unless otherwise noted)

Peak Pulse Power Rating



Pulse Derating Curve



Pulse Waveform



Typical Junction Capacitance



Steady State Power Derating Curve



Maximum Non-repetitive Forward Surge current uni-directional only



Ordering Information

| Part Number | Quantity | Packing Option | Component Package | Packing Specification |
|-------------|----------|-----------------------------|-------------------|-----------------------|
| SMBJxxxA | 3000 | Tape & Reel - 12mm/13" tape | DO-214AA | EIA STD RS-481 |



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Note: Green Product means Pb-free, RoHS and Halogens free compliant.

| Part Number | Part Marking |
|--|---|
| <p>SMBJ XXX C A</p> <ul style="list-style-type: none"> SERIES V_r VOLTAGE BI-DIRECTIONAL Narrow V_r VOLTAGE TOLERANCE | <p>Cathode Band</p> <p>Logo</p> <p>Marking Code Date Code</p> |

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