

SMBJ SERIES



SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS



FEATURES

- * For surface mount application
- * Built-in strain relief
- * Excellent clamping capability
- * Low profile package
- * Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- * Typical I_R less than $1\mu A$ above 10V
- * High temperature soldering guaranteed: $260^\circ C / 10$ seconds at terminals

MECHANICAL DATA

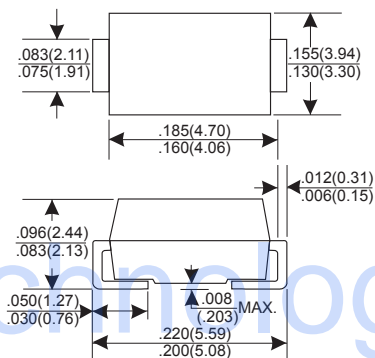
- * Case: Molded plastic
- * Epoxy: UL 94V-0 rate flame retardant
- * Lead: Solderable per MIL-STD-202, method 208 guaranteed
- * Polarity: Color band denotes cathode end except Bidirectional
- * Mounting position: Any
- * Weight: 0.093 grams

VOLTAGE RANGE

5.0 to 170 Volts

600 Watts Peak Power

DO-214AA(SMB)



Dimensions in inches and (millimeters)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating $25^\circ C$ ambient temperature unless otherwise specified.
Single phase half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| RATINGS | SYMBOL | VALUE | UNITS |
|--|----------------|-------------|------------|
| Peak Power Dissipation at $T_A=25^\circ C$, $T_P=1ms$ (NOTE 1) | P_{PK} | Minimum 600 | Watts |
| Peak Forward Surge Current at 8.3ms Single Half Sine-Wave superimposed on rated load (JEDEC method) (NOTE 3) | I_{FSM} | 100 | Amps |
| Maximum Instantaneous Forward Voltage at 35.0A for Unidirectional only | V_F | 3.5 | Volts |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ C$ |

NOTES:

1. Non-repetitive current pulse per Fig. 3 and derated above $T_A=25^\circ C$ per Fig. 2.
2. Mounted on Copper Pad area of $5.0mm^2$ (.013mm Thick) to each terminal.
3. 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum.

DEVICES FOR BIPOLAR APPLICATIONS

1. For Bidirectional use C or CA Suffix for types SMBJ5.0 thru SMBJ170.
2. Electrical characteristics apply in both directions.

RATING AND CHARACTERISTIC CURVES (SMBJ SERIES)

FIG.1-PEAK PULSE POWER DERATING CURVE

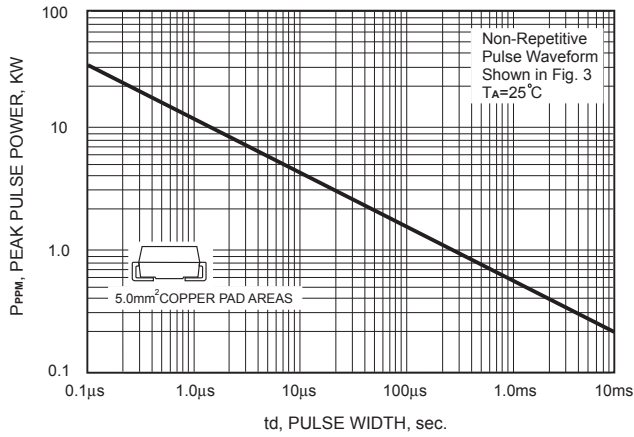


FIG.2-PULSE DERATING CURVE

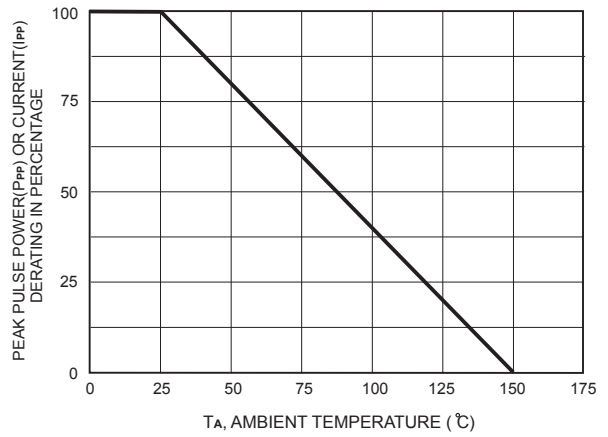


FIG.3-PULSE WAVE FORM



FIG.4-TYPICAL JUNCTION CAPACITANCE

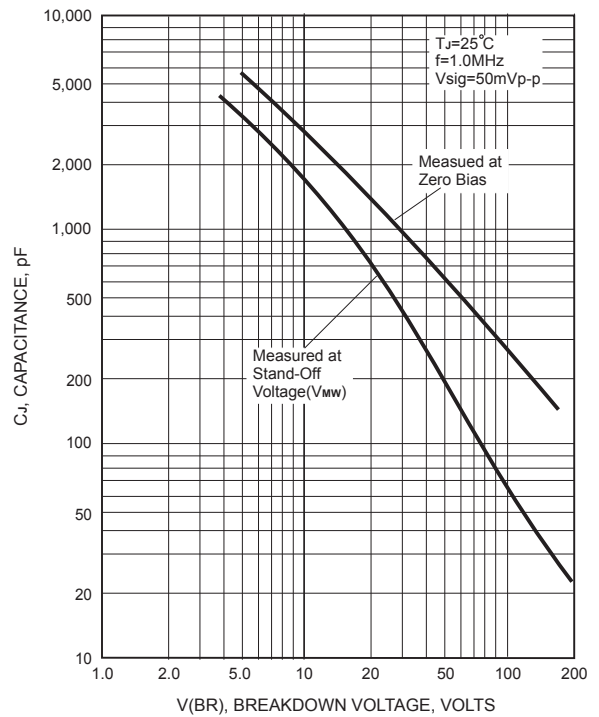
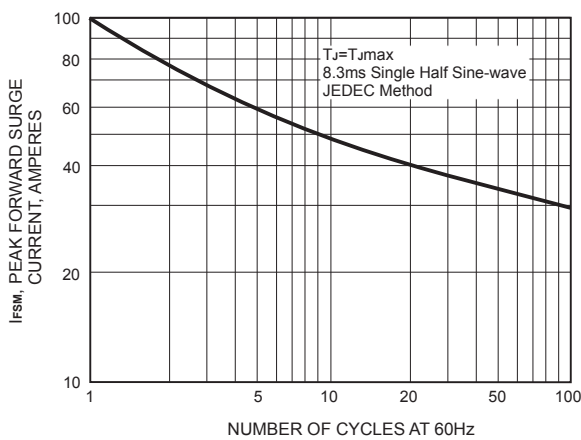


FIG.5-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT



600 Watt Surface Mount TVS

| PART NUMBER ADD C FOR BI-DIRECTIONAL | REVERSE STAND-OFF VOLTAGE VRWM (V) | BREAKDOWN VOLTAGE VBR (V) MIN. @IT | BREAKDOWN VOLTAGE VBR (V) MAX. @IT | TEST CURRENT IT (mA) | MAXIMUM CLAMPING VOLTAGE @Ipp Vc (V) | PEAK PULSE CURRENT Ipp (A) | REVERSE LEAKAGE @ VRWM IR(μA) | MARKING CODE | |
|---|---------------------------------------|---------------------------------------|---------------------------------------|----------------------|--------------------------------------|----------------------------|-------------------------------|--------------|----|
| | | | | | | | | UNI | BI |
| SMBJ5.0(C) | 5.0 | 6.40 | 7.55 | 10 | 9.6 | 62.5 | 800 | KD | AD |
| SMBJ5.0(C)A | 5.0 | 6.40 | 7.25 | 10 | 9.2 | 65.2 | 800 | KE | AE |
| SMBJ6.0(C) | 6.0 | 6.67 | 8.45 | 10 | 11.4 | 52.6 | 800 | KF | AF |
| SMBJ6.0(C)A | 6.0 | 6.67 | 7.67 | 10 | 10.3 | 58.3 | 800 | KG | AD |
| SMBJ6.5(C) | 6.5 | 7.22 | 9.14 | 10 | 12.3 | 48.7 | 500 | KH | AH |
| SMBJ6.5(C)A | 6.5 | 7.22 | 8.30 | 10 | 11.2 | 53.6 | 500 | KK | AK |
| SMBJ7.0(C) | 7.0 | 7.78 | 9.86 | 10 | 13.3 | 45.1 | 200 | KL | AL |
| SMBJ7.0(C)A | 7.0 | 7.78 | 8.95 | 10 | 12.0 | 50.0 | 200 | KM | AM |
| SMBJ7.5(C) | 7.5 | 8.33 | 10.67 | 1 | 14.3 | 42.0 | 100 | KN | AN |
| SMBJ7.5(C)A | 7.5 | 8.33 | 9.58 | 1 | 12.9 | 46.5 | 100 | KP | AP |
| SMBJ8.0(C) | 8.0 | 8.89 | 11.30 | 1 | 15.0 | 40.0 | 50 | KQ | AQ |
| SMBJ8.0(C)A | 8.0 | 8.89 | 10.23 | 1 | 13.6 | 44.1 | 50 | KR | AR |
| SMBJ8.5(C) | 8.5 | 9.44 | 11.92 | 1 | 15.9 | 37.7 | 10 | KS | AS |
| SMBJ8.5(C)A | 8.5 | 9.44 | 10.82 | 1 | 14.4 | 41.7 | 10 | KT | AT |
| SMBJ9.0(C) | 9.0 | 10.0 | 12.60 | 1 | 16.9 | 35.5 | 5 | KU | AU |
| SMBJ9.0(C)A | 9.0 | 10.0 | 11.50 | 1 | 15.4 | 39.0 | 5 | KV | AV |
| SMBJ10(C) | 10 | 11.1 | 14.10 | 1 | 18.8 | 31.9 | 5 | KW | AW |
| SMBJ10(C)A | 10 | 11.1 | 12.80 | 1 | 17.0 | 35.3 | 5 | KX | AX |
| SMBJ11(C) | 11 | 12.2 | 15.40 | 1 | 20.1 | 29.9 | 5 | KY | AY |
| SMBJ11(C)A | 11 | 12.2 | 14.00 | 1 | 18.2 | 33.0 | 5 | KZ | AZ |
| SMBJ12(C) | 12 | 13.3 | 16.90 | 1 | 22.0 | 27.3 | 5 | LD | BD |
| SMBJ12(C)A | 12 | 13.3 | 15.30 | 1 | 19.9 | 30.2 | 5 | LE | BE |
| SMBJ13(C) | 13 | 14.4 | 18.20 | 1 | 23.8 | 25.2 | 5 | LF | BF |
| SMBJ13(C)A | 13 | 14.4 | 16.50 | 1 | 21.5 | 27.9 | 5 | LG | BG |
| SMBJ14(C) | 14 | 15.6 | 19.80 | 1 | 25.8 | 23.3 | 5 | LH | BH |
| SMBJ14(C)A | 14 | 15.6 | 17.90 | 1 | 23.2 | 25.8 | 5 | LK | BK |
| SMBJ15(C) | 15 | 16.7 | 21.10 | 1 | 26.9 | 22.3 | 5 | LL | BL |
| SMBJ15(C)A | 15 | 16.7 | 19.20 | 1 | 24.4 | 24.0 | 5 | LM | BM |
| SMBJ16(C) | 16 | 17.8 | 22.60 | 1 | 28.8 | 20.8 | 5 | LN | BN |
| SMBJ16(C)A | 16 | 17.8 | 20.50 | 1 | 26.0 | 23.1 | 5 | LP | BP |
| SMBJ17(C) | 17 | 18.9 | 23.90 | 1 | 30.5 | 19.7 | 5 | LQ | BQ |
| SMBJ17(C)A | 17 | 18.9 | 21.70 | 1 | 27.6 | 21.7 | 5 | LR | BR |
| SMBJ18(C) | 18 | 20.0 | 25.30 | 1 | 32.2 | 18.6 | 5 | LS | BS |
| SMBJ18(C)A | 18 | 20.0 | 23.30 | 1 | 29.2 | 20.5 | 5 | LT | BT |
| SMBJ20(C) | 20 | 22.2 | 28.10 | 1 | 35.8 | 16.7 | 5 | LU | BU |
| SMBJ20(C)A | 20 | 22.2 | 25.50 | 1 | 32.4 | 18.5 | 5 | LV | BV |
| SMBJ22(C) | 22 | 24.4 | 30.90 | 1 | 39.4 | 15.2 | 5 | LW | BW |
| SMBJ22(C)A | 22 | 24.4 | 28.00 | 1 | 35.5 | 16.9 | 5 | LX | BX |
| SMBJ24(C) | 24 | 26.7 | 33.80 | 1 | 43.0 | 14.0 | 5 | LY | BY |
| SMBJ24(C)A | 24 | 26.7 | 30.70 | 1 | 38.9 | 15.4 | 5 | LZ | BZ |
| SMBJ26(C) | 26 | 28.9 | 36.60 | 1 | 46.6 | 12.4 | 5 | MD | CD |
| SMBJ26(C)A | 26 | 28.9 | 33.20 | 1 | 42.1 | 14.2 | 5 | ME | CE |
| SMBJ28(C) | 28 | 31.1 | 39.40 | 1 | 50.0 | 12.0 | 5 | MF | CF |
| SMBJ28(C)A | 28 | 31.1 | 35.80 | 1 | 45.4 | 13.2 | 5 | MG | CG |
| SMBJ30(C) | 30 | 33.3 | 42.20 | 1 | 53.5 | 11.2 | 5 | MH | CH |
| SMBJ30(C)A | 30 | 33.3 | 38.30 | 1 | 48.4 | 12.4 | 5 | MK | CK |
| SMBJ33(C) | 33 | 36.7 | 46.50 | 1 | 59.0 | 10.2 | 5 | ML | CL |
| SMBJ33(C)A | 33 | 36.7 | 42.20 | 1 | 53.3 | 11.3 | 5 | MM | CM |
| SMBJ36(C) | 36 | 40.0 | 50.70 | 1 | 64.3 | 9.3 | 5 | MN | CN |
| SMBJ36(C)A | 36 | 40.0 | 46.00 | 1 | 58.1 | 10.3 | 5 | MP | CP |
| SMBJ40(C) | 40 | 44.4 | 56.30 | 1 | 71.4 | 8.4 | 5 | MQ | CQ |
| SMBJ40(C)A | 40 | 44.4 | 51.10 | 1 | 64.5 | 9.3 | 5 | MR | CR |
| SMBJ43(C) | 43 | 47.8 | 60.50 | 1 | 76.7 | 7.8 | 5 | MS | CS |
| SMBJ43(C)A | 43 | 47.8 | 54.90 | 1 | 69.4 | 8.6 | 5 | MT | CT |
| SMBJ45(C) | 45 | 50.0 | 63.30 | 1 | 80.3 | 7.5 | 5 | MU | CU |
| SMBJ45(C)A | 45 | 50.0 | 57.50 | 1 | 72.7 | 8.3 | 5 | MV | CV |
| SMBJ48(C) | 48 | 53.3 | 67.50 | 1 | 85.5 | 7.0 | 5 | MW | CW |
| SMBJ48(C)A | 48 | 53.3 | 61.30 | 1 | 77.4 | 7.7 | 5 | MX | CX |
| SMBJ51(C) | 51 | 56.7 | 71.80 | 1 | 91.1 | 6.6 | 5 | MY | CY |
| SMBJ51(C)A | 51 | 56.7 | 65.20 | 1 | 82.4 | 7.3 | 5 | MZ | CZ |
| SMBJ54(C) | 54 | 60.0 | 76.00 | 1 | 96.3 | 6.2 | 5 | ND | DD |
| SMBJ54(C)A | 54 | 60.0 | 69.00 | 1 | 87.1 | 6.9 | 5 | NE | DE |
| SMBJ58(C) | 58 | 64.4 | 81.60 | 1 | 103 | 5.8 | 5 | NF | DF |
| SMBJ58(C)A | 58 | 64.4 | 74.10 | 1 | 93.6 | 6.4 | 5 | NG | DG |

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|---|---|---------------------------------|----------|-------------------------------|---|-------------------------------------|--|-----------------|----|
| | | MIN. @IT | MAX. @IT | | | | | UNI | BI |
| See Note 1 | | | | | | | | | |
| SMBJ60(C) | 60 | 66.7 | 84.5 | 1 | 107 | 5.6 | 5 | NH | DH |
| SMBJ60(C)A | 60 | 66.7 | 76.7 | 1 | 96.8 | 6.2 | 5 | NK | DK |
| SMBJ64(C) | 64 | 71.1 | 90.1 | 1 | 114 | 5.3 | 5 | NL | DL |
| SMBJ64(C)A | 64 | 71.1 | 81.8 | 1 | 103 | 5.8 | 5 | NM | DM |
| SMBJ70(C) | 70 | 77.8 | 98.6 | 1 | 125 | 4.8 | 5 | NN | DN |
| SMBJ70(C)A | 70 | 77.8 | 89.5 | 1 | 113 | 5.3 | 5 | NP | DP |
| SMBJ75(C) | 75 | 83.3 | 105.7 | 1 | 134 | 4.5 | 5 | NQ | DQ |
| SMBJ75(C)A | 75 | 83.3 | 95.8 | 1 | 121 | 4.9 | 5 | NR | DR |
| SMBJ78(C) | 78 | 86.7 | 109.8 | 1 | 139 | 4.3 | 5 | NS | DS |
| SMBJ78(C)A | 78 | 86.7 | 99.7 | 1 | 126 | 4.7 | 5 | NT | DT |
| SMBJ85(C) | 85 | 94.4 | 119.2 | 1 | 151 | 3.9 | 5 | NU | DU |
| SMBJ85(C)A | 85 | 94.4 | 108.2 | 1 | 137 | 4.4 | 5 | NV | DV |
| SMBJ90(C) | 90 | 100 | 126.5 | 1 | 160 | 3.8 | 5 | NW | DW |
| SMBJ90(C)A | 90 | 100 | 115.5 | 1 | 146 | 4.1 | 5 | NX | DX |
| SMBJ100(C) | 100 | 111 | 141.0 | 1 | 179 | 3.4 | 5 | NY | DY |
| SMBJ100(C)A | 100 | 111 | 128.0 | 1 | 162 | 3.7 | 5 | NZ | DZ |
| SMBJ110(C) | 110 | 122 | 154.5 | 1 | 196 | 3.0 | 5 | PD | ED |
| SMBJ110(C)A | 110 | 122 | 140.5 | 1 | 177 | 3.4 | 5 | PE | EE |
| SMBJ120(C) | 120 | 133 | 169.0 | 1 | 214 | 2.8 | 5 | PF | EF |
| SMBJ120(C)A | 120 | 133 | 153.0 | 1 | 193 | 3.1 | 5 | PG | EG |
| SMBJ130(C) | 130 | 144 | 182.5 | 1 | 231 | 2.6 | 5 | PH | EH |
| SMBJ130(C)A | 130 | 144 | 165.5 | 1 | 209 | 2.9 | 5 | PK | EK |
| SMBJ150(C) | 150 | 167 | 211.5 | 1 | 268 | 2.2 | 5 | PL | EL |
| SMBJ150(C)A | 150 | 167 | 192.5 | 1 | 243 | 2.5 | 5 | PM | EM |
| SMBJ160(C) | 160 | 178 | 226.0 | 1 | 287 | 2.1 | 5 | PN | EN |
| SMBJ160(C)A | 160 | 178 | 205.0 | 1 | 259 | 2.3 | 5 | PP | EP |
| SMBJ170(C) | 160 | 189 | 239.5 | 1 | 304 | 2.0 | 5 | PQ | EQ |
| SMBJ170(C)A | 170 | 189 | 217.5 | 1 | 275 | 2.2 | 5 | PR | ER |