

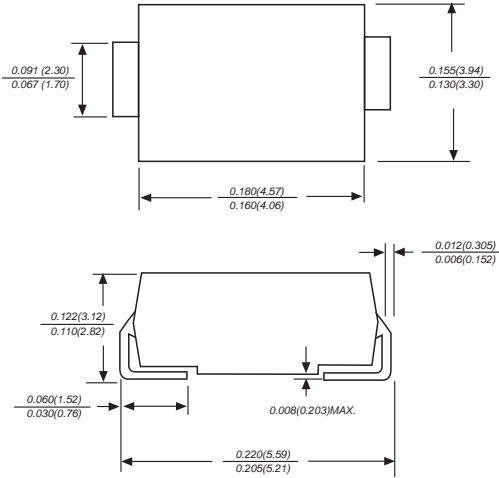


SMBJ5.0 THRU SMBJ170CA

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

Breskdown voltage: 5.0-170 Volts Peak pulse power: 600 Wallts

DO-214AA/SMB



Dimensions in inches and (millimeters)

FEATURE

- ◆ Optimized for LAN protection applications
- ◆ Ideal for ESD protection of data lines in accordance with IEC 1000-4-2(IEC801-2)
- ◆ Ideal for EFT protection of data lines in accordance with IEC1000-4-4(IEC801-2)
- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ◆ Glass passivated junction
- ◆ 600w peak pulse power capability
- ◆ Excellent clamping capability
- ◆ Low incremental surge resistance
- ◆ Fast response time: typically less than 1.0ps from 0v to $V_{(BR)}$ min
- ◆ High temperature soldering guaranteed: 265°C/10S at terminals

MECHANICAL DATA

Case: JEDEC DO-214AA molded plastic body over passivated junction

Terminals: Solder plated , solderable per MIL-STD 750, method 2026

Polarity: Color band denotes cathode except for bidirectional types

Mounting Position: Any

Weight: 0.005 ounce,0.138 grams

DEVICES FOR BIDIRECTIONAL APPLICATIONS

For bidirectional use suffix C or CA for types SMBJ5.0 thru SMBJ170 (e.g. SMBJ5.0C,SMBJ170CA)
Electrical characteristics apply in both directions.

MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| | SYMBOLS | VALUE | UNITS |
|--|----------------------------------|--------------|-------|
| Peak pulse power dissipation with a 10/1000µs wavetorm(NOTE 1,2,FIG.1) | P _{PPM} | Minimum 600 | Watts |
| Peak forward surge current (Note 1,2,3) | I _{FSM} | 100.0 | Amps |
| Peak pulse current with a 10/1000µs waveform(NOTE 1) | I _{PPM} | See Table 1 | Amps |
| Steady state power dissipation (Note 3) | P _{M(AV)} | 5.0 | Watts |
| Maximum instantaneous forward voltage at 50A(Note 3,4) unidirectional only | V _F | 3.5/5.0 | Volts |
| Operating junction and storage temperature range | T _{STG} ,T _J | -55 to + 150 | °C |

- Notes:**
- 1.Non-repetitive current pulse,per Fig.3 and derated above T_A=25°C per Fig.2
 - 2.Mounted on 5.0mm² copper pads to each terminal
 - 3.Measured on 8.3ms single half sine-wine.For uni-directional devices only.
 - 4.V_F=3.5V on SMB-5.0 thru SMB-90 devices and V_F=5.0V on SMB-100 thru SMB-170 devices

MDD ELECTRONIC

ELECTRICAL CHARACTERISTICS (at TA=25°C unless otherwise noted)

| Device Uni-directional | Device Bi-directional | Device Marking code | | Working Peak Reverse Voltage VRWM (volts) | Breakdown Voltage VBR Volts | | | Maximum Reverse Voltage at IRSM (Clamping Voltage) VRSM (volts) | Maximum Reverse Surge Current IRSM (Amps) | Maximum Reverse Leakage at VRWM IR (µA) |
|------------------------|-----------------------|---------------------|------|--|--------------------------------|--------|----------|--|--|--|
| | | (UNI) | (BI) | | Min(V) | Max(V) | @ IT(mA) | | | |
| SMBJ5.0 | SMBJ5.0C | KD | AD | 5.0 | 6.40 | 7.55 | 10 | 9.6 | 62.5 | 800 |
| SMBJ5.0A | SMBJ5.0CA | KE | AE | 5.0 | 6.40 | 7.25 | 10 | 9.2 | 65.2 | 800 |
| SMBJ6.0 | SMBJ6.0C | KF | AF | 6.0 | 6.67 | 8.45 | 10 | 11.4 | 52.3 | 800 |
| SMBJ6.0A | SMBJ6.0CA | KG | AG | 6.0 | 6.67 | 7.67 | 10 | 10.3 | 58.3 | 800 |
| SMBJ6.5 | SMBJ6.5C | KH | AH | 6.5 | 7.22 | 9.14 | 10 | 12.3 | 48.7 | 500 |
| SMBJ6.5A | SMBJ6.5CA | KK | AK | 6.5 | 7.22 | 8.30 | 10 | 11.2 | 53.6 | 500 |
| SMBJ7.0 | SMBJ7.0C | KL | AL | 7.0 | 7.78 | 9.86 | 10 | 13.3 | 45.1 | 200 |
| SMBJ7.0A | SMBJ7.0CA | KM | AM | 7.0 | 7.78 | 8.95 | 10 | 12.0 | 50.0 | 200 |
| SMBJ7.5 | SMBJ7.5C | KN | AN | 7.5 | 8.33 | 10.80 | 1.0 | 14.3 | 42.0 | 100 |
| SMBJ7.5A | SMBJ7.5CA | KP | AP | 7.5 | 8.33 | 9.58 | 1.0 | 12.9 | 46.5 | 100 |
| SMBJ8.0 | SMBJ8.0C | KQ | AQ | 8.0 | 8.89 | 11.30 | 1.0 | 15.0 | 40.0 | 50 |
| SMBJ8.0A | SMBJ8.0CA | KR | AR | 8.0 | 8.89 | 10.20 | 1.0 | 13.6 | 44.1 | 50 |
| SMBJ8.5 | SMBJ8.5C | KS | AS | 8.5 | 9.44 | 11.90 | 1.0 | 15.9 | 37.7 | 20 |
| SMBJ8.5A | SMBJ8.5CA | KT | AT | 8.5 | 9.44 | 10.80 | 1.0 | 14.4 | 41.7 | 20 |
| SMBJ9.0 | SMBJ9.0C | KU | AU | 9.0 | 10.00 | 12.80 | 1.0 | 16.9 | 35.5 | 10 |
| SMBJ9.0A | SMBJ9.0CA | KV | AV | 9.0 | 10.00 | 11.50 | 1.0 | 15.4 | 39.0 | 10 |
| SMBJ10 | SMBJ10C | KW | AW | 10.0 | 11.10 | 14.10 | 1.0 | 18.8 | 31.9 | 5.0 |
| SMBJ10A | SMBJ10CA | KX | AX | 10.0 | 11.10 | 12.80 | 1.0 | 17.0 | 35.3 | 5.0 |
| SMBJ11 | SMBJ11C | KY | AY | 11.0 | 12.20 | 15.40 | 1.0 | 20.1 | 29.9 | 5.0 |
| SMBJ11A | SMBJ11CA | KZ | AZ | 11.0 | 12.20 | 14.40 | 1.0 | 18.2 | 33.0 | 5.0 |
| SMBJ12 | SMBJ12C | LD | BD | 12.0 | 13.30 | 16.90 | 1.0 | 22.0 | 27.3 | 5.0 |
| SMBJ12A | SMBJ12CA | LE | BE | 12.0 | 13.30 | 15.30 | 1.0 | 19.9 | 30.2 | 5.0 |
| SMBJ13 | SMBJ13C | LF | BF | 13.0 | 14.40 | 18.20 | 1.0 | 23.8 | 25.2 | 5.0 |
| SMBJ13A | SMBJ13CA | LG | BG | 13.0 | 14.40 | 16.50 | 1.0 | 21.5 | 27.9 | 5.0 |
| SMBJ14 | SMBJ14C | LH | BH | 14.0 | 15.60 | 19.80 | 1.0 | 25.8 | 23.3 | 5.0 |
| SMBJ14A | SMBJ14CA | LK | BK | 14.0 | 15.60 | 17.90 | 1.0 | 23.2 | 25.8 | 5.0 |
| SMBJ15 | SMBJ15C | LL | BL | 15.0 | 16.70 | 21.10 | 1.0 | 26.9 | 22.3 | 5.0 |
| SMBJ15A | SMBJ15CA | LM | BM | 15.0 | 16.70 | 19.20 | 1.0 | 24.4 | 24.0 | 5.0 |
| SMBJ16 | SMBJ16C | LN | BN | 16.0 | 17.80 | 22.60 | 1.0 | 28.8 | 20.8 | 5.0 |
| SMBJ16A | SMBJ16CA | LP | BP | 16.0 | 17.80 | 20.50 | 1.0 | 26.0 | 23.1 | 5.0 |
| SMBJ17 | SMBJ17C | LQ | BP | 17.0 | 18.90 | 23.90 | 1.0 | 30.5 | 19.7 | 5.0 |
| SMBJ17A | SMBJ17CA | LR | BR | 17.0 | 18.90 | 21.70 | 1.0 | 27.6 | 21.7 | 5.0 |
| SMBJ18 | SMBJ18C | LS | BS | 18.0 | 20.00 | 25.30 | 1.0 | 32.2 | 18.6 | 5.0 |
| SMBJ18A | SMBJ18CA | LT | BT | 18.0 | 20.00 | 23.30 | 1.0 | 29.2 | 20.5 | 5.0 |
| SMBJ20 | SMBJ20C | LU | BU | 20.0 | 22.20 | 28.10 | 1.0 | 35.8 | 16.7 | 5.0 |
| SMBJ20A | SMBJ20CA | LV | BV | 20.0 | 22.20 | 25.50 | 1.0 | 32.4 | 18.5 | 5.0 |
| SMBJ22 | SMBJ22C | LW | BW | 22.0 | 24.40 | 30.90 | 1.0 | 39.4 | 15.2 | 5.0 |
| SMBJ22A | SMBJ22CA | LX | BX | 22.0 | 24.40 | 28.00 | 1.0 | 35.5 | 16.9 | 5.0 |
| SMBJ24 | SMBJ24C | LY | BY | 24.0 | 26.70 | 33.80 | 1.0 | 43.0 | 14.0 | 5.0 |
| SMBJ24A | SMBJ24CA | LZ | BZ | 24.0 | 26.70 | 30.70 | 1.0 | 38.9 | 15.4 | 5.0 |
| SMBJ26 | SMBJ26C | MD | CD | 26.0 | 28.90 | 36.80 | 1.0 | 46.6 | 12.4 | 5.0 |
| SMBJ26A | SMBJ26CA | ME | CE | 26.0 | 28.90 | 32.20 | 1.0 | 42.1 | 14.2 | 5.0 |
| SMBJ28 | SMBJ28C | MF | CF | 28.0 | 31.10 | 39.40 | 1.0 | 50.0 | 12.0 | 5.0 |
| SMBJ28A | SMBJ28CA | MG | CG | 28.0 | 31.10 | 35.80 | 1.0 | 45.4 | 13.2 | 5.0 |
| SMBJ30 | SMBJ30C | MH | CH | 30.0 | 33.30 | 42.40 | 1.0 | 53.5 | 11.2 | 5.0 |
| SMBJ30A | SMBJ30CA | MK | CK | 30.0 | 33.30 | 38.30 | 1.0 | 48.4 | 12.4 | 5.0 |
| SMBJ33 | SMBJ33C | ML | CL | 33.0 | 36.70 | 46.90 | 1.0 | 59.0 | 10.2 | 5.0 |
| SMBJ33A | SMBJ33CA | MM | CM | 33.0 | 36.70 | 42.20 | 1.0 | 53.3 | 11.3 | 5.0 |

ELECTRICAL CHARACTERISTICS (at TA=25°C unless otherwise noted)

| Device Uni-directional | Device Bi-directional | Device Marking code | | Working Peak Reverse Voltage | Breakdown Voltage VBR Volts | | | Maximum Reverse Voltage at IRSM (Clamping Voltage) | Maximum Reverse Surge Current | Maximum Reverse Leakage at VRWM |
|------------------------|-----------------------|---------------------|------|------------------------------|-----------------------------|--------|--------|--|-------------------------------|---------------------------------|
| | | (UNI) | (BI) | | VRWM (volts) | Min(V) | Max(V) | | | |
| SMBJ36 | SMBJ36C | MN | CN | 36.0 | 40.0 | 50.7 | 1.0 | 64.3 | 9.3 | 5.0 |
| SMBJ36A | SMBJ36CA | MP | CP | 36.0 | 40.0 | 46.0 | 1.0 | 58.1 | 10.3 | 5.0 |
| SMBJ40 | SMBJ40C | MQ | CQ | 40.0 | 44.4 | 56.3 | 1.0 | 71.4 | 8.4 | 5.0 |
| SMBJ40A | SMBJ40CA | MR | CR | 40.0 | 44.4 | 51.1 | 1.0 | 64.5 | 9.3 | 5.0 |
| SMBJ43 | SMBJ43C | MS | CS | 43.0 | 47.8 | 60.5 | 1.0 | 76.7 | 7.8 | 5.0 |
| SMBJ43A | SMBJ43CA | MT | CT | 43.0 | 47.8 | 54.9 | 1.0 | 69.4 | 8.6 | 5.0 |
| SMBJ45 | SMBJ45C | MU | CU | 45.0 | 50.0 | 63.3 | 1.0 | 80.3 | 7.5 | 5.0 |
| SMBJ45A | SMBJ45CA | MV | CV | 45.0 | 50.0 | 57.5 | 1.0 | 72.7 | 8.3 | 5.0 |
| SMBJ48 | SMBJ48C | MW | CW | 48.0 | 53.3 | 67.5 | 1.0 | 85.5 | 7.0 | 5.0 |
| SMBJ48A | SMBJ48CA | MX | CX | 48.0 | 53.3 | 61.3 | 1.0 | 77.4 | 7.7 | 5.0 |
| SMBJ51 | SMBJ51C | MY | CY | 51.0 | 56.7 | 71.8 | 1.0 | 91.1 | 6.6 | 5.0 |
| SMBJ51A | SMBJ51CA | MZ | CZ | 51.0 | 56.7 | 65.2 | 1.0 | 82.4 | 7.3 | 5.0 |
| SMBJ54 | SMBJ54C | ND | DD | 54.0 | 60.0 | 76.0 | 1.0 | 96.3 | 6.2 | 5.0 |
| SMBJ54A | SMBJ54CA | NE | DE | 54.0 | 60.0 | 69.0 | 1.0 | 87.1 | 6.9 | 5.0 |
| SMBJ58 | SMBJ58C | NF | DF | 58.0 | 64.4 | 81.6 | 1.0 | 103.0 | 5.8 | 5.0 |
| SMBJ58A | SMBJ58CA | NG | DG | 58.0 | 64.4 | 74.6 | 1.0 | 93.6 | 6.4 | 5.0 |
| SMBJ60 | SMBJ60C | NH | DH | 60.0 | 66.7 | 84.5 | 1.0 | 107.0 | 5.6 | 5.0 |
| SMBJ60A | SMBJ60CA | NK | DK | 60.0 | 66.7 | 76.7 | 1.0 | 96.8 | 6.2 | 5.0 |
| SMBJ64 | SMBJ64C | NL | DL | 64.0 | 71.1 | 90.1 | 1.0 | 114.0 | 5.3 | 5.0 |
| SMBJ64A | SMBJ64CA | NM | DM | 64.0 | 71.1 | 81.8 | 1.0 | 103.0 | 5.8 | 5.0 |
| SMBJ70 | SMBJ70C | NN | DN | 70.0 | 77.8 | 98.6 | 1.0 | 125.0 | 4.8 | 5.0 |
| SMBJ70A | SMBJ70CA | NP | DP | 70.0 | 77.8 | 89.5 | 1.0 | 113.0 | 5.3 | 5.0 |
| SMBJ75 | SMBJ75C | NQ | DQ | 75.0 | 83.3 | 106.0 | 1.0 | 134.0 | 4.5 | 5.0 |
| SMBJ75A | SMBJ75CA | NR | DR | 75.0 | 83.3 | 95.8 | 1.0 | 121.0 | 4.9 | 5.0 |
| SMBJ78 | SMBJ78C | NS | DS | 78.0 | 86.7 | 110.0 | 1.0 | 139.0 | 4.3 | 5.0 |
| SMBJ78A | SMBJ78CA | NT | DT | 78.0 | 86.7 | 99.7 | 1.0 | 126.0 | 4.7 | 5.0 |
| SMBJ85 | SMBJ85C | NU | DU | 85.0 | 94.4 | 119.2 | 1.0 | 151.0 | 3.9 | 5.0 |
| SMBJ85A | SMBJ85CA | NV | DV | 85.0 | 94.4 | 108.2 | 1.0 | 137.0 | 4.4 | 5.0 |
| SMBJ90 | SMBJ90C | NW | DW | 90.0 | 100.0 | 126.5 | 1.0 | 160.0 | 3.8 | 5.0 |
| SMBJ90A | SMBJ90CA | NX | DX | 90.0 | 100.0 | 115.5 | 1.0 | 146.0 | 4.1 | 5.0 |
| SMBJ100 | SMBJ100C | NY | DY | 100.0 | 111.0 | 141.0 | 1.0 | 179.0 | 3.4 | 5.0 |
| SMBJ100A | SMBJ100CA | NZ | DZ | 100.0 | 111.0 | 128.0 | 1.0 | 162.0 | 3.7 | 5.0 |
| SMBJ110 | SMBJ110C | PD | ED | 110.0 | 122.0 | 154.0 | 1.0 | 196.0 | 3.0 | 5.0 |
| SMBJ110A | SMBJ110CA | PE | EE | 110.0 | 122.0 | 140.0 | 1.0 | 177.0 | 3.4 | 5.0 |
| SMBJ120 | SMBJ120C | PF | EF | 120.0 | 133.0 | 169.0 | 1.0 | 214.0 | 2.8 | 5.0 |
| SMBJ120A | SMBJ120CA | PG | EG | 120.0 | 133.0 | 153.0 | 1.0 | 193.0 | 3.1 | 5.0 |
| SMBJ130 | SMBJ130C | PH | EH | 130.0 | 144.0 | 182.0 | 1.0 | 231.0 | 2.6 | 5.0 |
| SMBJ130A | SMBJ130CA | PK | EK | 130.0 | 144.0 | 165.0 | 1.0 | 209.0 | 2.9 | 5.0 |
| SMBJ150 | SMBJ150C | PL | EL | 150.0 | 167.0 | 211.5 | 1.0 | 268.0 | 2.2 | 5.0 |
| SMBJ150A | SMBJ150CA | PM | EM | 150.0 | 167.0 | 192.0 | 1.0 | 243.0 | 2.5 | 5.0 |
| SMBJ160 | SMBJ160C | PN | EN | 160.0 | 178.0 | 226.0 | 1.0 | 287.0 | 2.1 | 5.0 |
| SMBJ160A | SMBJ160CA | PP | EP | 160.0 | 178.0 | 205.0 | 1.0 | 259.0 | 2.3 | 5.0 |
| SMBJ170 | SMBJ170C | PQ | EQ | 170.0 | 189.0 | 239.5 | 1.0 | 304.0 | 2.0 | 5.0 |
| SMBJ170A | SMBJ170CA | PR | ER | 170.0 | 189.0 | 217.5 | 1.0 | 275.0 | 2.2 | 5.0 |

- NOTES:**
1. V_{BR} measured after I_T applied for 300μs, I_T=square wave pulse or equivalent
 2. Surge current waveform per Fig.3 and derated per Fig.2
 3. For bidirectional types having V_{WM} of 10 volts and less, the I_D limit is doubled
 4. All items and symbols are consistent with ANSI/IEEE C62.35

RATINGS AND CHARACTERISTIC CURVES SMBJ5.0 THUR 170CA

FIG. 1-PEAK PULSE POWER RATING CURVE

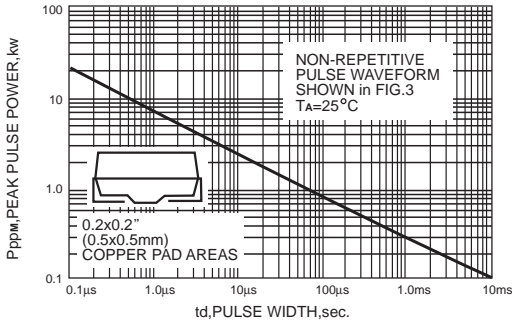


FIG. 2-PULSE DERATING CURVE

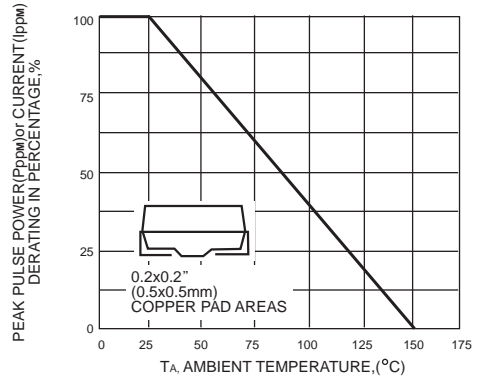


FIG. 3-PULSE WAVEFORM



FIG. 4-TYPICAL JUNCTIONAL CAPACITANCE UNIDIRECTIONAL

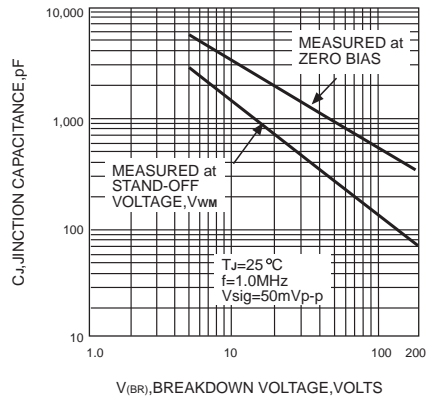
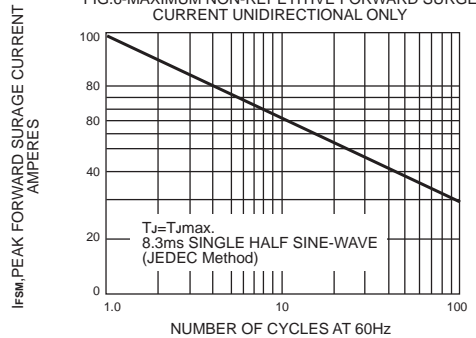


FIG. 5-STEADY STATE POWER DERATING CURVE



FIG. 6-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY



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