

**SURFACE MOUNT
UNIDIRECTIONAL AND BIDIRECTIONAL
TRANSIENT VOLTAGE SUPPRESSORS**

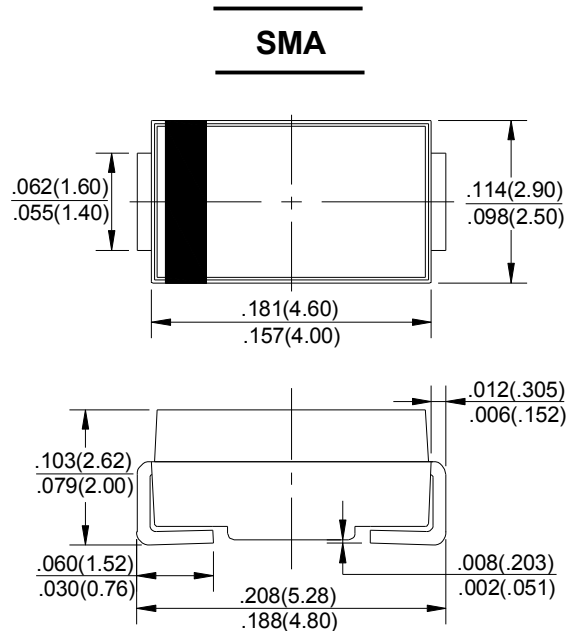
REVERSE VOLTAGE - **5.0 to 170** Volts
POWER DISSIPATION - **400** Watts

FEATURES

- Rating to 200V VBR
- For surface mounted applications
- Reliable low cost construction utilizing molded plastic technique
- Plastic material has UL recognition 94V-0
- Typical IR less than 1 μ A above 10V
- Fast response time: typically less than 1.0ns for Uni-direction, less than 5.0ns for Bi-direction, from 0 Volts to BV min

MECHANICAL DATA

- Case : Molded Plastic
- Polarity: by cathode band denotes uni-directional device
none cathode band denotes bi-directional device
- Weight : 0.002 ounces, 0.053 grams



Dimensions in inches and (millimeters)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified.

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitive load, derate current by 20%

| CHARACTERISTICS | SYMBOL | VALUE | UNIT |
|---|--------------------|--------------|-------|
| Peak Power Dissipation at T _A =25°C TP=1ms (NOTE1,2) | P _{PK} | Minimum 400 | WATTS |
| Peak Forward Surge Current 8.3ms Single Half Sine-Wave Super Imposed on Rated Load (JEDEC Method) | I _{FSM} | 40 | AMPS |
| Steady State Power Dissipation at T _L =75°C | P _{M(AV)} | 1.0 | WATTS |
| Maximum Instantaneous Forward Voltage at 35A for Unidirectional Devices Only (NOTE3) | V _F | 3.5 | VOLTS |
| Operating Temperature Range | T _J | -55 to + 150 | °C |
| Storage Temperature Range | T _{STG} | -55 to + 175 | °C |

NOTES:1. Non-repetitive current pulse, per Fig. 3 and derated above T_A=25°C per Fig. 1.

2. Thermal Resistance junction to Lead.

3. 8.3ms single half-wave duty cycle=4 pulses per minutes maximum (uni-directional units only).

FIG.1-PULSE DERATING CURVE

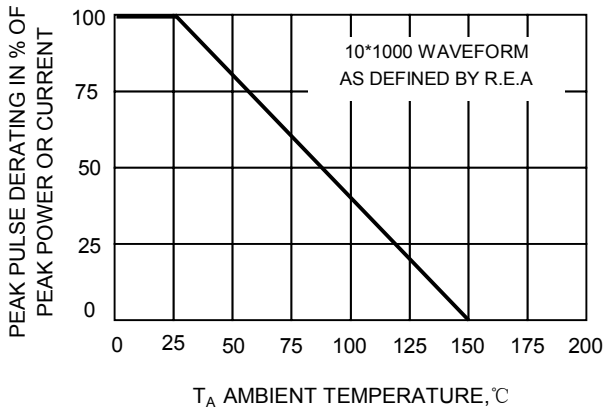


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

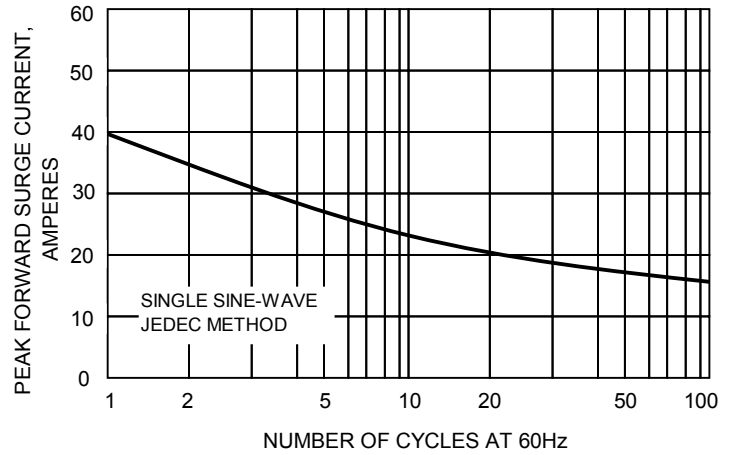


FIG.3-PULSE WAVEFORM

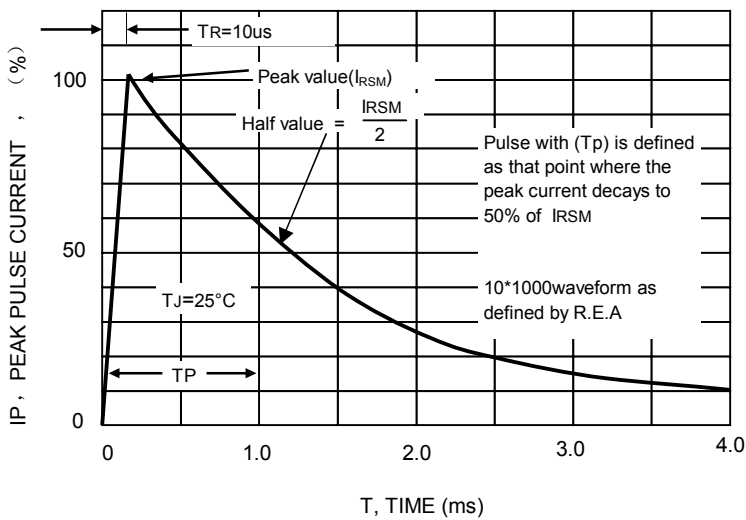


FIG.4-TYPICAL JUNCTION CAPACITANCE

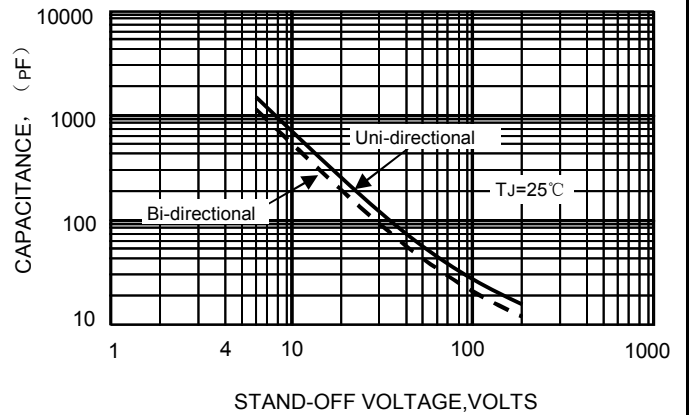


FIG.5-PULSE RATING CURVE

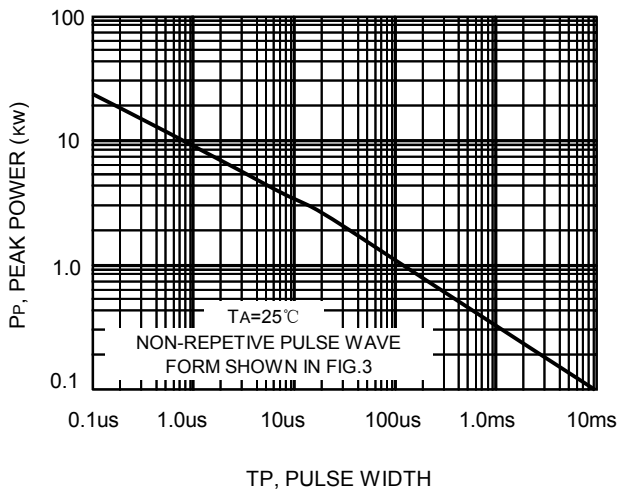
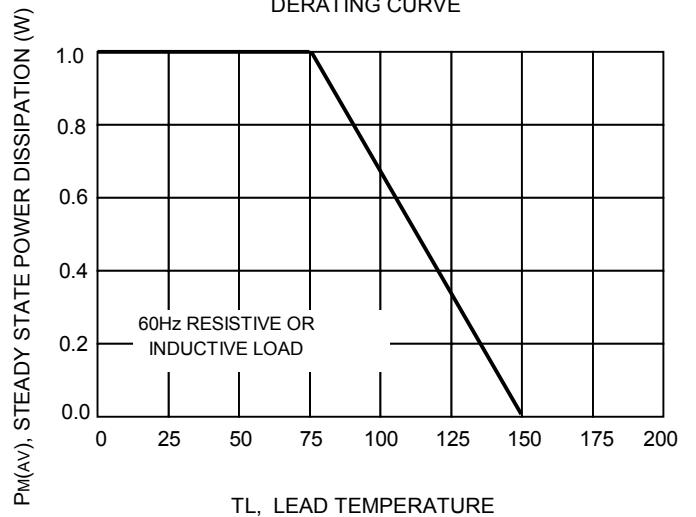


FIG.6-STEADY STATE POWER DERATING CURVE





SMAJ SERIES

| 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) | | | |
| SMAJ5.0 | SMAJ5.0C | HD | TD | 5.0 | 6.40 | 7.30 | 10 | 9.6 | 41.6 | 800/1600 |
| SMAJ5.0A | SMAJ5.0CA | HE | TE | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 43.5 | 800/1600 |
| SMAJ6.0 | SMAJ6.0C | HF | TF | 6.0 | 6.67 | 8.15 | 10 | 11.4 | 35.1 | 800/1600 |
| SMAJ6.0A | SMAJ6.0CA | HG | TG | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 38.8 | 800/1600 |
| SMAJ6.5 | SMAJ6.5C | HH | TH | 6.5 | 7.22 | 8.82 | 10 | 12.3 | 32.5 | 500/1000 |
| SMAJ6.5A | SMAJ6.5CA | HK | TK | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 35.7 | 500/1000 |
| SMAJ7.0 | SMAJ7.0C | HL | TL | 7.0 | 7.78 | 9.51 | 10 | 13.3 | 30.1 | 200/400 |
| SMAJ7.0A | SMAJ7.0CA | HM | TM | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 33.3 | 200/400 |
| SMAJ7.5 | SMAJ7.5C | HN | TN | 7.5 | 8.33 | 10.30 | 1.0 | 14.3 | 28.0 | 100/200 |
| SMAJ7.5A | SMAJ7.5CA | HP | TP | 7.5 | 8.33 | 9.21 | 1.0 | 12.9 | 31.0 | 100/200 |
| SMAJ8.0 | SMAJ8.0C | HQ | TQ | 8.0 | 8.89 | 10.90 | 1.0 | 15.0 | 26.5 | 50/100 |
| SMAJ8.0A | SMAJ8.0CA | HR | TR | 8.0 | 8.89 | 9.83 | 1.0 | 13.6 | 29.4 | 50/100 |
| SMAJ8.5 | SMAJ8.5C | HS | TS | 8.5 | 9.44 | 11.50 | 1.0 | 15.9 | 25.1 | 10/20 |
| SMAJ8.5A | SMAJ8.5CA | HT | TT | 8.5 | 9.44 | 10.40 | 1.0 | 14.4 | 27.7 | 10/20 |
| SMAJ9.0 | SMAJ9.0C | HU | TU | 9.0 | 10.00 | 12.20 | 1.0 | 16.9 | 23.6 | 5/10 |
| SMAJ9.0A | SMAJ9.0CA | HV | TV | 9.0 | 10.00 | 11.10 | 1.0 | 15.4 | 26.0 | 5/10 |
| SMAJ10 | SMAJ10C | HW | TW | 10.0 | 11.10 | 13.60 | 1.0 | 18.8 | 21.2 | 5/10 |
| SMAJ10A | SMAJ10CA | HX | TX | 10.0 | 11.10 | 12.30 | 1.0 | 17.0 | 23.5 | 5/10 |
| SMAJ11 | SMAJ11C | HY | TY | 11.0 | 12.20 | 14.90 | 1.0 | 20.1 | 20.0 | 5.0 |
| SMAJ11A | SMAJ11CA | HZ | TZ | 11.0 | 12.20 | 13.50 | 1.0 | 18.2 | 22.0 | 5.0 |
| SMAJ12 | SMAJ12C | ID | UD | 12.0 | 13.30 | 16.30 | 1.0 | 22.0 | 18.1 | 5.0 |
| SMAJ12A | SMAJ12CA | IE | UE | 12.0 | 13.30 | 14.70 | 1.0 | 19.9 | 20.1 | 5.0 |
| SMAJ13 | SMAJ13C | IF | UF | 13.0 | 14.40 | 17.60 | 1.0 | 23.8 | 16.8 | 5.0 |
| SMAJ13A | SMAJ13CA | IG | UG | 13.0 | 14.40 | 15.90 | 1.0 | 21.5 | 18.6 | 5.0 |
| SMAJ14 | SMAJ14C | IH | UH | 14.0 | 15.60 | 19.10 | 1.0 | 25.8 | 15.5 | 5.0 |
| SMAJ14A | SMAJ14CA | IK | UK | 14.0 | 15.60 | 17.20 | 1.0 | 23.2 | 17.2 | 5.0 |
| SMAJ15 | SMAJ15C | IL | UL | 15.0 | 16.70 | 20.40 | 1.0 | 26.9 | 14.8 | 5.0 |
| SMAJ15A | SMAJ15CA | IM | UM | 15.0 | 16.70 | 18.50 | 1.0 | 24.4 | 16.4 | 5.0 |
| SMAJ16 | SMAJ16C | IN | UN | 16.0 | 17.80 | 21.80 | 1.0 | 28.8 | 13.8 | 5.0 |
| SMAJ16A | SMAJ16CA | IP | UP | 16.0 | 17.80 | 19.70 | 1.0 | 26.0 | 15.3 | 5.0 |
| SMAJ17 | SMAJ17C | IQ | UQ | 17.0 | 18.90 | 23.10 | 1.0 | 30.5 | 13.1 | 5.0 |
| SMAJ17A | SMAJ17CA | IR | UR | 17.0 | 18.90 | 20.90 | 1.0 | 27.6 | 14.5 | 5.0 |
| SMAJ18 | SMAJ18C | IS | US | 18.0 | 20.00 | 24.40 | 1.0 | 32.2 | 12.4 | 5.0 |
| SMAJ18A | SMAJ18CA | IT | UT | 18.0 | 20.00 | 22.10 | 1.0 | 29.2 | 13.7 | 5.0 |
| SMAJ20 | SMAJ20C | IU | UU | 20.0 | 22.20 | 27.10 | 1.0 | 35.8 | 11.1 | 5.0 |
| SMAJ20A | SMAJ20CA | IV | UV | 20.0 | 22.20 | 24.50 | 1.0 | 32.4 | 12.3 | 5.0 |
| SMAJ22 | SMAJ22C | IW | UW | 22.0 | 24.40 | 29.80 | 1.0 | 39.4 | 10.1 | 5.0 |
| SMAJ22A | SMAJ22CA | IX | UX | 22.0 | 24.40 | 26.90 | 1.0 | 35.5 | 11.2 | 5.0 |
| SMAJ24 | SMAJ24C | IY | UY | 24.0 | 26.70 | 32.60 | 1.0 | 43.0 | 9.3 | 5.0 |
| SMAJ24A | SMAJ24CA | IZ | UZ | 24.0 | 26.70 | 29.50 | 1.0 | 38.9 | 10.3 | 5.0 |
| SMAJ26 | SMAJ26C | JD | VD | 26.0 | 28.90 | 35.30 | 1.0 | 46.6 | 8.6 | 5.0 |
| SMAJ26A | SMAJ26CA | JE | VE | 26.0 | 28.90 | 31.90 | 1.0 | 42.1 | 9.5 | 5.0 |
| SMAJ28 | SMAJ28C | JF | VF | 28.0 | 31.10 | 38.00 | 1.0 | 50.0 | 8.0 | 5.0 |
| SMAJ28A | SMAJ28CA | JG | VG | 28.0 | 31.10 | 34.40 | 1.0 | 45.4 | 8.8 | 5.0 |
| SMAJ30 | SMAJ30C | JH | VH | 30.0 | 33.30 | 40.70 | 1.0 | 53.5 | 7.5 | 5.0 |
| SMAJ30A | SMAJ30CA | JK | VK | 30.0 | 33.30 | 36.80 | 1.0 | 48.4 | 8.3 | 5.0 |
| SMAJ33 | SMAJ33C | JL | VL | 33.0 | 36.70 | 44.90 | 1.0 | 59.0 | 6.8 | 5.0 |
| SMAJ33A | SMAJ33CA | JM | VM | 33.0 | 36.70 | 40.60 | 1.0 | 53.3 | 7.5 | 5.0 |

SMAJ SERIES



| Device Uni-directional | Device Bi-directional | Device Marking code | | Working Peak Reverse Voltage V _{RWM} (volts) | Breakdown Voltage VBR Volts | | | Maximum Reverse Voltage at I _{RSM} (Clamping Voltage) V _{RSM} (volts) | Maximum Reverse Surge Current I _{RSM} (Amps) | Maximum Reverse Leakage at V _{RWM} I _R (μA) |
|------------------------|-----------------------|---------------------|------|--|-----------------------------|--------|----------|--|--|--|
| | | (UNI) | (BI) | | Min(V) | Max(V) | @ IT(mA) | | | |
| SMAJ36 | SMAJ36C | JN | VN | 36.0 | 40.0 | 48.9 | 1.0 | 64.3 | 6.2 | 5.0 |
| SMAJ36A | SMAJ36CA | JP | VP | 36.0 | 40.0 | 44.2 | 1.0 | 58.1 | 6.9 | 5.0 |
| SMAJ40 | SMAJ40C | JQ | VQ | 40.0 | 44.4 | 54.3 | 1.0 | 71.4 | 5.6 | 5.0 |
| SMAJ40A | SMAJ40CA | JR | VR | 40.0 | 44.4 | 49.1 | 1.0 | 64.5 | 6.2 | 5.0 |
| SMAJ43 | SMAJ43C | JS | VS | 43.0 | 47.8 | 58.4 | 1.0 | 76.7 | 5.2 | 5.0 |
| SMAJ43A | SMAJ43CA | JT | VT | 43.0 | 47.8 | 52.8 | 1.0 | 69.4 | 5.7 | 5.0 |
| SMAJ45 | SMAJ45C | JU | VU | 45.0 | 50.0 | 61.1 | 1.0 | 80.3 | 5.0 | 5.0 |
| SMAJ45A | SMAJ45CA | JV | VV | 45.0 | 50.0 | 55.3 | 1.0 | 72.7 | 5.5 | 5.0 |
| SMAJ48 | SMAJ48C | JW | VW | 48.0 | 53.3 | 65.1 | 1.0 | 85.5 | 4.7 | 5.0 |
| SMAJ48A | SMAJ48CA | JX | VX | 48.0 | 53.3 | 58.9 | 1.0 | 77.4 | 5.2 | 5.0 |
| SMAJ51 | SMAJ51C | JY | VY | 51.0 | 56.7 | 69.3 | 1.0 | 91.1 | 4.4 | 5.0 |
| SMAJ51A | SMAJ51CA | JZ | VZ | 51.0 | 56.7 | 62.7 | 1.0 | 82.4 | 4.9 | 5.0 |
| SMAJ54 | SMAJ54C | RD | WD | 54.0 | 60.0 | 73.3 | 1.0 | 96.3 | 4.2 | 5.0 |
| SMAJ54A | SMAJ54CA | RE | WE | 54.0 | 60.0 | 66.3 | 1.0 | 87.1 | 4.6 | 5.0 |
| SMAJ58 | SMAJ58C | RF | WF | 58.0 | 64.4 | 78.7 | 1.0 | 103.0 | 3.9 | 5.0 |
| SMAJ58A | SMAJ58CA | RG | WG | 58.0 | 64.4 | 71.2 | 1.0 | 93.6 | 4.3 | 5.0 |
| SMAJ60 | SMAJ60C | RH | WH | 60.0 | 66.7 | 81.5 | 1.0 | 107.0 | 3.7 | 5.0 |
| SMAJ60A | SMAJ60CA | RK | WK | 60.0 | 66.7 | 73.7 | 1.0 | 96.8 | 4.1 | 5.0 |
| SMAJ64 | SMAJ64C | RL | WL | 64.0 | 71.1 | 86.4 | 1.0 | 114.0 | 3.5 | 5.0 |
| SMAJ64A | SMAJ64CA | RM | WM | 64.0 | 71.1 | 78.6 | 1.0 | 103.0 | 3.9 | 5.0 |
| SMAJ70 | SMAJ70C | RN | WN | 70.0 | 77.8 | 95.1 | 1.0 | 125.0 | 3.2 | 5.0 |
| SMAJ70A | SMAJ70CA | RP | WP | 70.0 | 77.8 | 86.0 | 1.0 | 113.0 | 3.5 | 5.0 |
| SMAJ75 | SMAJ75C | RQ | WQ | 75.0 | 83.3 | 102.0 | 1.0 | 134.0 | 3.0 | 5.0 |
| SMAJ75A | SMAJ75CA | RR | WR | 75.0 | 83.3 | 92.1 | 1.0 | 121.0 | 3.3 | 5.0 |
| SMAJ78 | SMAJ78C | RS | WS | 78.0 | 86.7 | 106.0 | 1.0 | 139.0 | 2.9 | 5.0 |
| SMAJ78A | SMAJ78CA | RT | WT | 78.0 | 86.7 | 95.8 | 1.0 | 126.0 | 3.2 | 5.0 |
| SMAJ85 | SMAJ85C | RU | WU | 85.0 | 94.4 | 115.0 | 1.0 | 151.0 | 2.6 | 5.0 |
| SMAJ85A | SMAJ85CA | RV | WV | 85.0 | 94.4 | 104.0 | 1.0 | 137.0 | 2.9 | 5.0 |
| SMAJ90 | SMAJ90C | RW | WW | 90.0 | 100.0 | 122.0 | 1.0 | 160.0 | 2.5 | 5.0 |
| SMAJ90A | SMAJ90CA | RX | WX | 90.0 | 100.0 | 111.0 | 1.0 | 146.0 | 2.7 | 5.0 |
| SMAJ100 | SMAJ100C | RY | WY | 100.0 | 111.0 | 136.0 | 1.0 | 179.0 | 2.2 | 5.0 |
| SMAJ100A | SMAJ100CA | RZ | WZ | 100.0 | 111.0 | 123.0 | 1.0 | 162.0 | 2.5 | 5.0 |
| SMAJ110 | SMAJ110C | SD | XD | 110.0 | 122.0 | 149.0 | 1.0 | 196.0 | 2.0 | 5.0 |
| SMAJ110A | SMAJ110CA | SE | XE | 110.0 | 122.0 | 135.0 | 1.0 | 177.0 | 2.3 | 5.0 |
| SMAJ120 | SMAJ120C | SF | XF | 120.0 | 133.0 | 163.0 | 1.0 | 214.0 | 1.9 | 5.0 |
| SMAJ120A | SMAJ120CA | SG | XG | 120.0 | 133.0 | 147.0 | 1.0 | 193.0 | 2.0 | 5.0 |
| SMAJ130 | SMAJ130C | SH | XH | 130.0 | 144.0 | 176.0 | 1.0 | 231.0 | 1.7 | 5.0 |
| SMAJ130A | SMAJ130CA | SK | XK | 130.0 | 144.0 | 159.0 | 1.0 | 209.0 | 1.9 | 5.0 |
| SMAJ150 | SMAJ150C | SL | XL | 150.0 | 167.0 | 204.0 | 1.0 | 268.0 | 1.5 | 5.0 |
| SMAJ150A | SMAJ150CA | SM | XM | 150.0 | 167.0 | 185.0 | 1.0 | 243.0 | 1.6 | 5.0 |
| SMAJ160 | SMAJ160C | SN | XN | 160.0 | 178.0 | 218.0 | 1.0 | 287.0 | 1.4 | 5.0 |
| SMAJ160A | SMAJ160CA | SP | XP | 160.0 | 178.0 | 197.0 | 1.0 | 259.0 | 1.5 | 5.0 |
| SMAJ170 | SMAJ170C | SQ | XQ | 170.0 | 189.0 | 231.0 | 1.0 | 304.0 | 1.3 | 5.0 |
| SMAJ170A | SMAJ170CA | SR | XR | 170.0 | 189.0 | 209.0 | 1.0 | 275.0 | 1.4 | 5.0 |

NOTE: For bidirectional use C or CA suffix for types SMAJ5.0 thru types SMAJ170(ex. SMAJ5.0C, SMAJ170CA).

Electrical characteristics apply in both directions.

The later codes(/TD thru /XR) denote by bidirectional material.