

**SURFACE MOUNT GPP
TRANSIENT VOLTAGE SUPPRESSOR
600 WATT PEAK POWER 5.0 WATTS STEADY STATE**

FEATURES

- * Peak pulse power:600 W (10/1000 μ s),4 kW (8/20 μ s)
- * Plastic package has underwriters laboratory
- * Glass passivated chip construction
- * 600 watt surge capability at 1ms
- * Excellent clamping capability
- * Low zener impedance
- * Fast response time
- * P/N suffix V means AEC-Q101 qualified, e.g:SMBJ5.0V
- * P/N suffix V means Halogen-free

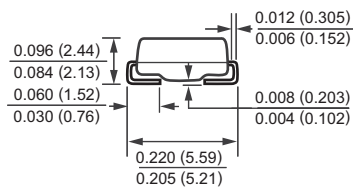
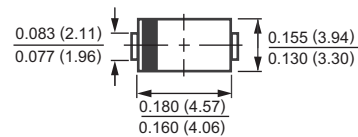
Ratings at 25 °C ambient temperature unless otherwise specified.

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified.



DO-214AA



Dimensions in inches and (millimeters)

DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA suffix for types SMBJ5.0 thru SMBJ550

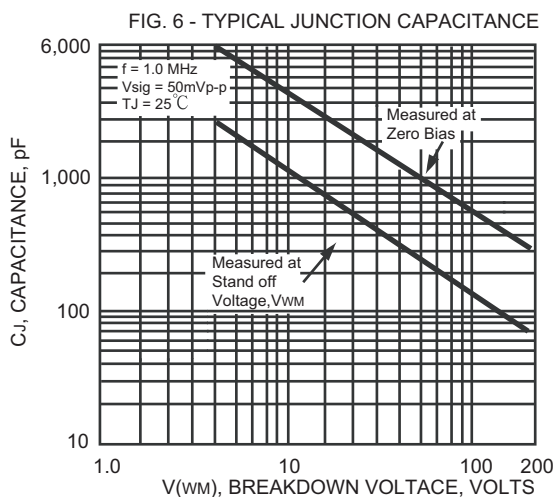
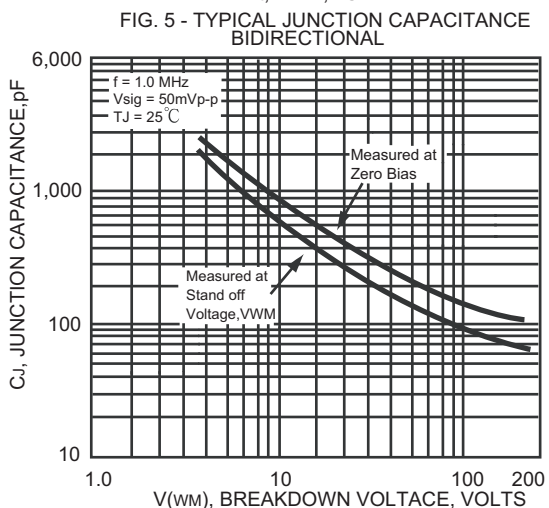
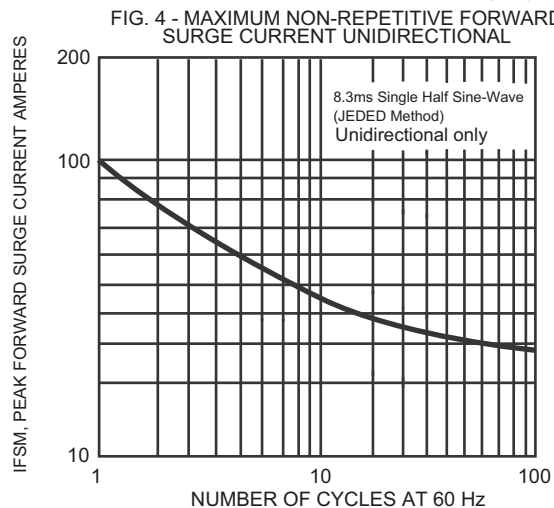
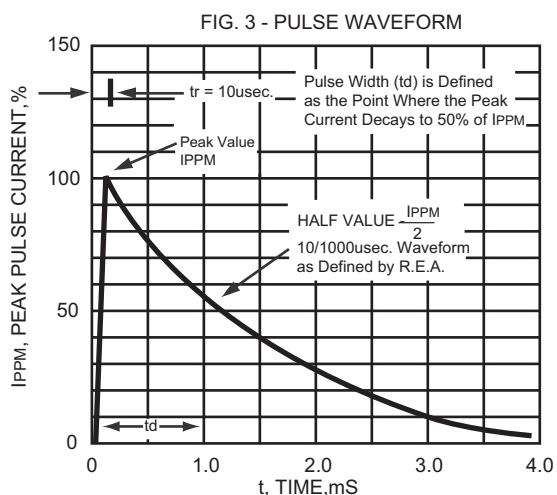
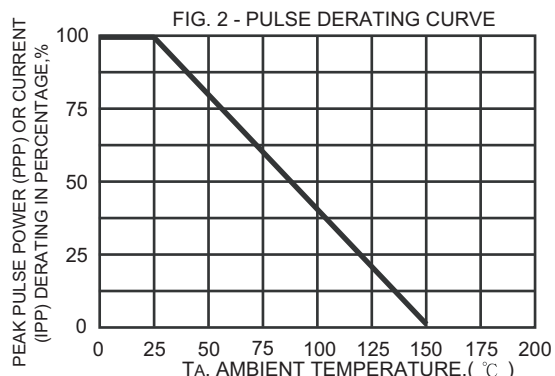
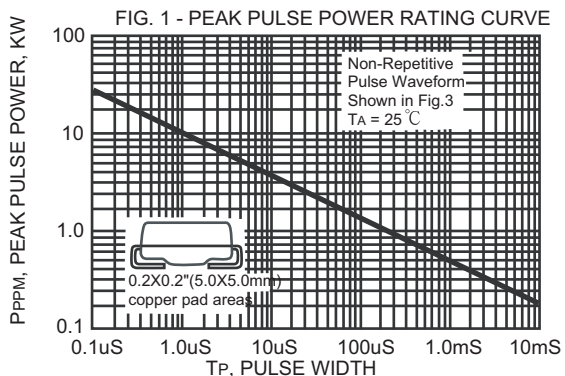
Electrical characteristics apply in both direction

MAXIMUM RATINGS (At TA = 25°C unless otherwise noted)

| RATINGS | SYMBOL | VALUE | UNITS |
|---|-----------------------------------|--------------|--------------------|
| Peak Power Dissipation with a 10/1000uS (Note 1,2, Fig.1) | PPPM | Minimum 600 | Watts |
| Peak Pulse Current with a 10/1000uS waveform (Note 1, Fig.3) | I _{PPM} | SEE TABLE 1 | Amps |
| Steady State Power Dissipation at TL = 75°C (Note 2) | P _{M(AV)} | 5.0 | Watts |
| Peak Forward Surge Current 8.3mS single half sine-wave superimposed on rated load (JEDEC method) (Note 2,3) unidirectional only | I _{FSM} | 100 | Amps |
| Typical Current Squared Time | I ² t | 41.5 | A ² Sec |
| Typical Thermal Resistance (Note 1) | R θ JA | 55 | °C/W |
| Typical Thermal Resistance (Note 1) | R θ JL | 5 | °C/W |
| Maximum Instantaneous Forward Voltage at 50A for unidirectional only (Note 3,4) | V _F | SEE NOTE 5 | Volts |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to + 150 | °C |

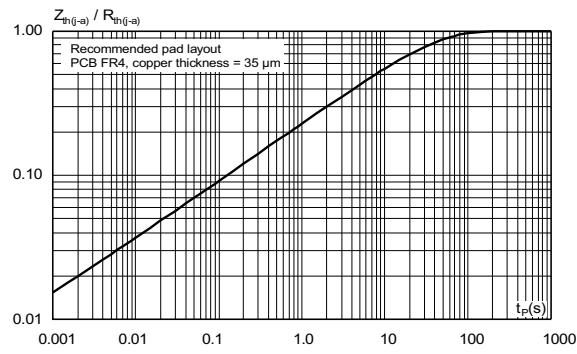
- NOTES : 1. Non-repetitive current pulse, per Fig.3 and derated above TA = 25°C per Fig.2.
 2. Mounted on 0.2 X 0.2" (5.0 X 5.0mm) copper pad to each terminal.
 3. Lead temperature at TL = 25°C
 4. Measured on 8.3mS single half sine-wave duty cycle = 4 pulses per minute maximum.
 5. V_F = 3.5V on TFMBJ-5.0 thru TFMBJ-90 devices and V_F = 5.0V on TFMBJ-100 thru TFMBJ-550 devices.
 6. Thermal Resistance : Mounted on PCB.

RATING AND CHARACTERISTIC CURVES (SMBJ5.0 THRU SMBJ550CA)



RATING AND CHARACTERISTIC CURVES (SMBJ5.0 THRU SMBJ550CA)

FIG. 7 - RELATIVE VARIATION OF THERMAL IMPEDANCE
JUNCTION TO AMBIENT VERSUS PULSE DURATION



TRANSIENT VOLTAGE SUPPRESSORS

600W SERIES TVS DIODES / DO-214AA (CASE 3) 600W

| Rectron Industry No. | Rectron House No. | Breakdown Voltage | | | Reverse Stand off Voltage VWM (Volts) | Maximum Reverse Leakage at VWM ID(uA) | Maximum Peak Pulse Current IPPM (Amps) | Maximum Clamping Voltage at IPPM VC (Volts) |
|----------------------|-------------------|-------------------|------|----------|---------------------------------------|---------------------------------------|--|---|
| | | VBR (Volts) | | @IT (mA) | | | | |
| | | MIN. | MAX. | | | | | |
| SMBJ5.0 | TFMBJ5.0 | 6.40 | 7.82 | 10 | 5.0 | 800.0 | 62.5 | 9.6 |
| SMBJ5.0A | TFMBJ5.0A | 6.40 | 7.07 | 10 | 5.0 | 800.0 | 65.2 | 9.2 |
| SMBJ6.0 | TFMBJ6.0 | 6.67 | 8.15 | 10 | 6.0 | 800.0 | 52.6 | 11.4 |
| SMBJ6.0A | TFMBJ6.0A | 6.67 | 7.37 | 10 | 6.0 | 800.0 | 58.3 | 10.3 |
| SMBJ6.5 | TFMBJ6.5 | 7.22 | 8.82 | 10 | 6.5 | 500.0 | 48.8 | 12.3 |
| SMBJ6.5A | TFMBJ6.5A | 7.22 | 7.98 | 10 | 6.5 | 500.0 | 53.6 | 11.2 |
| SMBJ7.0 | TFMBJ7.0 | 7.78 | 9.51 | 10 | 7.0 | 200.0 | 45.1 | 13.3 |
| SMBJ7.0A | TFMBJ7.0A | 7.78 | 8.60 | 10 | 7.0 | 200.0 | 50.0 | 12.0 |
| SMBJ7.5 | TFMBJ7.5 | 8.33 | 10.2 | 1.0 | 7.5 | 100.0 | 42.0 | 14.3 |
| SMBJ7.5A | TFMBJ7.5A | 8.33 | 9.21 | 1.0 | 7.5 | 100.0 | 46.5 | 12.9 |
| SMBJ8.0 | TFMBJ8.0 | 8.89 | 10.9 | 1.0 | 8.0 | 50.0 | 40.0 | 15.0 |
| SMBJ8.0A | TFMBJ8.0A | 8.89 | 9.83 | 1.0 | 8.0 | 50.0 | 44.1 | 13.6 |
| SMBJ8.5 | TFMBJ8.5 | 9.44 | 11.5 | 1.0 | 8.5 | 20.0 | 37.7 | 15.9 |
| SMBJ8.5A | TFMBJ8.5A | 9.44 | 10.4 | 1.0 | 8.5 | 20.0 | 41.7 | 14.4 |
| SMBJ9.0 | TFMBJ9.0 | 10.0 | 12.2 | 1.0 | 9.0 | 10.0 | 35.5 | 16.9 |
| SMBJ9.0A | TFMBJ9.0A | 10.0 | 11.1 | 1.0 | 9.0 | 10.0 | 39.0 | 15.4 |
| SMBJ10 | TFMBJ10 | 11.1 | 13.6 | 1.0 | 10.0 | 5.0 | 31.9 | 18.8 |
| SMBJ10A | TFMBJ10A | 11.1 | 12.3 | 1.0 | 10.0 | 5.0 | 35.3 | 17.0 |
| SMBJ11 | TFMBJ11 | 12.2 | 14.9 | 1.0 | 11.0 | 1.0 | 29.9 | 20.1 |
| SMBJ11A | TFMBJ11A | 12.2 | 13.5 | 1.0 | 11.0 | 1.0 | 33.0 | 18.2 |
| SMBJ12 | TFMBJ12 | 13.3 | 16.3 | 1.0 | 12.0 | 1.0 | 27.3 | 22.0 |
| SMBJ12A | TFMBJ12A | 13.3 | 14.7 | 1.0 | 12.0 | 1.0 | 30.2 | 19.9 |
| SMBJ13 | TFMBJ13 | 14.4 | 17.6 | 1.0 | 13.0 | 1.0 | 25.2 | 23.8 |
| SMBJ13A | TFMBJ13A | 14.4 | 15.9 | 1.0 | 13.0 | 1.0 | 27.9 | 21.5 |
| SMBJ14 | TFMBJ14 | 15.6 | 19.1 | 1.0 | 14.0 | 1.0 | 23.3 | 25.8 |
| SMBJ14A | TFMBJ14A | 15.6 | 17.2 | 1.0 | 14.0 | 1.0 | 25.9 | 23.2 |
| SMBJ15 | TFMBJ15 | 16.7 | 20.4 | 1.0 | 15.0 | 1.0 | 22.3 | 26.9 |
| SMBJ15A | TFMBJ15A | 16.7 | 18.5 | 1.0 | 15.0 | 1.0 | 24.6 | 24.4 |
| SMBJ16 | TFMBJ16 | 17.8 | 21.8 | 1.0 | 16.0 | 1.0 | 20.8 | 28.8 |
| SMBJ16A | TFMBJ16A | 17.8 | 19.7 | 1.0 | 16.0 | 1.0 | 23.1 | 26.0 |
| SMBJ17 | TFMBJ17 | 18.9 | 23.1 | 1.0 | 17.0 | 1.0 | 19.7 | 30.5 |
| SMBJ17A | TFMBJ17A | 18.9 | 20.9 | 1.0 | 17.0 | 1.0 | 21.7 | 27.6 |
| SMBJ18 | TFMBJ18 | 20.0 | 24.4 | 1.0 | 18.0 | 1.0 | 18.6 | 32.2 |
| SMBJ18A | TFMBJ18A | 20.0 | 22.1 | 1.0 | 18.0 | 1.0 | 20.5 | 29.2 |
| SMBJ20 | TFMBJ20 | 22.2 | 27.1 | 1.0 | 20.0 | 1.0 | 16.8 | 35.8 |
| SMBJ20A | TFMBJ20A | 22.2 | 24.5 | 1.0 | 20.0 | 1.0 | 18.5 | 32.4 |
| SMBJ22 | TFMBJ22 | 24.4 | 29.8 | 1.0 | 22.0 | 1.0 | 15.2 | 39.4 |
| SMBJ22A | TFMBJ22A | 24.4 | 26.9 | 1.0 | 22.0 | 1.0 | 16.9 | 35.5 |
| SMBJ24 | TFMBJ24 | 26.7 | 32.6 | 1.0 | 24.0 | 1.0 | 14.0 | 43.0 |
| SMBJ24A | TFMBJ24A | 26.7 | 29.5 | 1.0 | 24.0 | 1.0 | 15.4 | 38.9 |
| SMBJ26 | TFMBJ26 | 28.9 | 35.3 | 1.0 | 26.0 | 1.0 | 12.9 | 46.6 |
| SMBJ26A | TFMBJ26A | 28.9 | 31.9 | 1.0 | 26.0 | 1.0 | 14.3 | 42.1 |
| SMBJ28 | TFMBJ28 | 31.1 | 38.0 | 1.0 | 28.0 | 1.0 | 12.0 | 50.0 |
| SMBJ28A | TFMBJ28A | 31.1 | 34.4 | 1.0 | 28.0 | 1.0 | 13.2 | 45.4 |
| SMBJ30 | TFMBJ30 | 33.3 | 40.7 | 1.0 | 30.0 | 1.0 | 11.2 | 53.5 |
| SMBJ30A | TFMBJ30A | 33.3 | 36.8 | 1.0 | 30.0 | 1.0 | 12.4 | 48.4 |
| SMBJ33 | TFMBJ33 | 36.7 | 44.9 | 1.0 | 33.0 | 1.0 | 10.2 | 59.0 |
| SMBJ33A | TFMBJ33A | 36.7 | 40.6 | 1.0 | 33.0 | 1.0 | 11.3 | 53.3 |
| SMBJ36 | TFMBJ36 | 40.0 | 48.9 | 1.0 | 36.0 | 1.0 | 9.3 | 64.3 |
| SMBJ36A | TFMBJ36A | 40.0 | 44.2 | 1.0 | 36.0 | 1.0 | 10.3 | 58.1 |

TRANSIENT VOLTAGE SUPPRESSORS

600W SERIES TVS DIODES / DO-214AA (CASE 3) 600W

| Rectron Industry No. | Rectron House No. | Breakdown Voltage | | | Reverse Stand off Voltage VWM (Volts) | Maximum Reverse Leakage at VWM ID(uA) | Maximum Peak Pulse Current IPPM (Amps) | Maximum Clamping Voltage at IPPM VC (Volts) |
|----------------------|-------------------|-------------------|------|----------|---------------------------------------|---------------------------------------|--|---|
| | | VBR (Volts) | | @IT (mA) | | | | |
| | | MIN. | MAX. | | | | | |
| SMBJ40 | TFMBJ40 | 44.4 | 54.3 | 1.0 | 40 | 1.0 | 71.4 | |
| SMBJ40A | TFMBJ40A | 44.4 | 49.1 | 1.0 | 40 | 1.0 | 64.5 | |
| SMBJ43 | TFMBJ43 | 47.8 | 58.4 | 1.0 | 43 | 1.0 | 76.7 | |
| SMBJ43A | TFMBJ43A | 47.8 | 52.8 | 1.0 | 43 | 1.0 | 69.4 | |
| SMBJ45 | TFMBJ45 | 50.0 | 61.1 | 1.0 | 45 | 1.0 | 80.3 | |
| SMBJ45A | TFMBJ45A | 50.0 | 55.3 | 1.0 | 45 | 1.0 | 72.7 | |
| SMBJ48 | TFMBJ48 | 53.3 | 65.1 | 1.0 | 48 | 1.0 | 85.5 | |
| SMBJ48A | TFMBJ48A | 53.3 | 58.9 | 1.0 | 48 | 1.0 | 77.4 | |
| SMBJ51 | TFMBJ51 | 56.7 | 69.3 | 1.0 | 51 | 1.0 | 91.1 | |
| SMBJ51A | TFMBJ51A | 56.7 | 62.7 | 1.0 | 51 | 1.0 | 82.4 | |
| SMBJ54 | TFMBJ54 | 60.0 | 73.3 | 1.0 | 54 | 1.0 | 96.3 | |
| SMBJ54A | TFMBJ54A | 60.0 | 66.3 | 1.0 | 54 | 1.0 | 87.1 | |
| SMBJ58 | TFMBJ58 | 64.4 | 78.7 | 1.0 | 58 | 1.0 | 103 | |
| SMBJ58A | TFMBJ58A | 64.4 | 71.2 | 1.0 | 58 | 1.0 | 93.6 | |
| SMBJ60 | TFMBJ60 | 66.7 | 81.5 | 1.0 | 60 | 1.0 | 107 | |
| SMBJ60A | TFMBJ60A | 66.7 | 73.7 | 1.0 | 60 | 1.0 | 96.8 | |
| SMBJ64 | TFMBJ64 | 71.1 | 86.9 | 1.0 | 64 | 1.0 | 114 | |
| SMBJ64A | TFMBJ64A | 71.1 | 78.6 | 1.0 | 64 | 1.0 | 103 | |
| SMBJ70 | TFMBJ70 | 77.8 | 95.1 | 1.0 | 70 | 1.0 | 125 | |
| SMBJ70A | TFMBJ70A | 77.8 | 86.0 | 1.0 | 70 | 1.0 | 113 | |
| SMBJ75 | TFMBJ75 | 83.3 | 102 | 1.0 | 75 | 1.0 | 134 | |
| SMBJ75A | TFMBJ75A | 83.3 | 92.1 | 1.0 | 75 | 1.0 | 121 | |
| SMBJ78 | TFMBJ78 | 86.7 | 106 | 1.0 | 78 | 1.0 | 139 | |
| SMBJ78A | TFMBJ78A | 86.7 | 95.8 | 1.0 | 78 | 1.0 | 126 | |
| SMBJ85 | TFMBJ85 | 94.4 | 115 | 1.0 | 85 | 1.0 | 151 | |
| SMBJ85A | TFMBJ85A | 94.4 | 104 | 1.0 | 85 | 1.0 | 137 | |
| SMBJ90 | TFMBJ90 | 100 | 122 | 1.0 | 90 | 1.0 | 160 | |
| SMBJ90A | TFMBJ90A | 100 | 111 | 1.0 | 90 | 1.0 | 146 | |
| SMBJ100 | TFMBJ100 | 111 | 136 | 1.0 | 100 | 1.0 | 179 | |
| SMBJ100A | TFMBJ100A | 111 | 123 | 1.0 | 100 | 1.0 | 162 | |
| SMBJ110 | TFMBJ110 | 122 | 149 | 1.0 | 110 | 1.0 | 196 | |
| SMBJ110A | TFMBJ110A | 122 | 135 | 1.0 | 110 | 1.0 | 177 | |
| SMBJ120 | TFMBJ120 | 133 | 163 | 1.0 | 120 | 1.0 | 214 | |
| SMBJ120A | TFMBJ120A | 133 | 147 | 1.0 | 120 | 1.0 | 193 | |
| SMBJ130 | TFMBJ130 | 144 | 176 | 1.0 | 130 | 1.0 | 231 | |
| SMBJ130A | TFMBJ130A | 144 | 159 | 1.0 | 130 | 1.0 | 209 | |
| SMBJ150 | TFMBJ150 | 167 | 204 | 1.0 | 150 | 1.0 | 268 | |
| SMBJ150A | TFMBJ150A | 167 | 185 | 1.0 | 150 | 1.0 | 243 | |
| SMBJ160 | TFMBJ160 | 178 | 218 | 1.0 | 160 | 1.0 | 287 | |
| SMBJ160A | TFMBJ160A | 178 | 197 | 1.0 | 160 | 1.0 | 259 | |
| SMBJ170 | TFMBJ170 | 189 | 231 | 1.0 | 170 | 1.0 | 304 | |
| SMBJ170A | TFMBJ170A | 189 | 209 | 1.0 | 170 | 1.0 | 275 | |

- Notes :
1. VBR measured after IT applied for 300ms. IT = square pulse or equivalent.
 2. For bidirectional use C or CA suffixs for all types (ex. SMBJ5.0C,SMBJ170CA) electrical characteristics apply in both directions.
 3. For bidirectional types having VWM of 10 volts and less, the ID limit is doubled.
 4. All devices UL listed file# E211196.



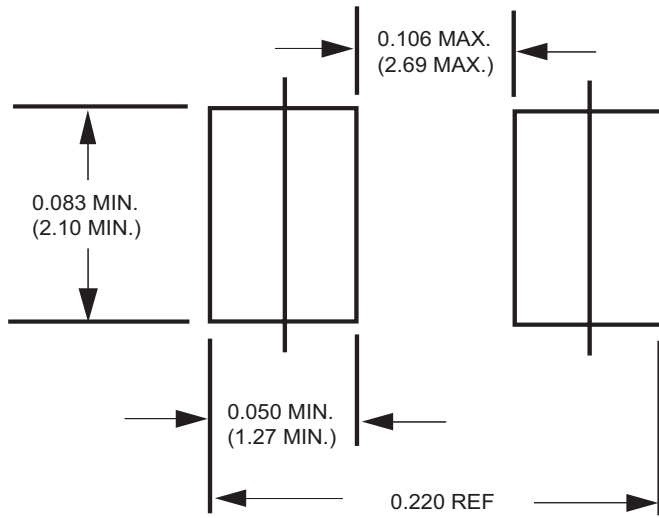
TRANSIENT VOLTAGE SUPPRESSORS

600W SERIES TVS DIODES / DO-214AA (CASE 3) 600W

| Rectron Industry No. | Rectron House No. | Breakdown Voltage | | | Reverse Stand off Voltage V_{WM} (Volts) | Maximum Reverse Leakage at V_{WM} I_D (μ A) | Maximum Peak Pulse Current IPPM (Amps) | Maximum Clamping Voltage at IPPM V_C (Volts) |
|----------------------|-------------------|-------------------|------|-------------|--|--|--|--|
| | | V_{BR} (Volts) | | $@I_T$ (mA) | | | | |
| | | MIN. | MAX. | | | | | |
| SMBJ180A | TFMBJ180A | 201 | 222 | 1.0 | 180 | 1.0 | 292 | |
| SMBJ190A | TFMBJ190A | 209 | 243 | 1.0 | 190 | 1.0 | 308 | |
| SMBJ200A | TFMBJ200A | 224 | 247 | 1.0 | 200 | 1.0 | 324 | |
| SMBJ210A | TFMBJ210A | 231 | 268 | 1.0 | 210 | 1.0 | 340 | |
| SMBJ220A | TFMBJ220A | 246 | 272 | 1.0 | 220 | 1.0 | 358 | |
| SMBJ250A | TFMBJ250A | 279 | 309 | 1.0 | 250 | 1.0 | 405 | |
| SMBJ300A | TFMBJ300A | 335 | 371 | 1.0 | 300 | 1.0 | 486 | |
| SMBJ350A | TFMBJ350A | 391 | 432 | 1.0 | 350 | 1.0 | 567 | |
| SMBJ400A | TFMBJ400A | 447 | 494 | 1.0 | 400 | 1.0 | 648 | |
| SMBJ440A | TFMBJ440A | 492 | 543 | 1.0 | 440 | 1.0 | 713 | |
| SMBJ480A | TFMBJ480A | 536 | 593 | 1.0 | 480 | 1.0 | 750 | |
| SMBJ520A | TFMBJ520A | 578 | 640 | 1.0 | 520 | 1.0 | 762 | |
| SMBJ550A | TFMBJ550A | 615 | 680 | 1.0 | 550 | 1.0 | 860 | |

- Notes :
1. V_{BR} measured after I_T applied for 300ms. I_T = square pulse or equivalent.
 2. For bidirectional use C or CA suffixs for all types (ex. SMBJ5.0C,SMBJ170CA) electrical characteristics apply in both directions.
 3. For bidirectional types having V_{WM} of 10 volts and less, the I_D limit is doubled.
 4. All devices UL listed file# E211196.

Mounting Pad Layout



Dimensions in inches and (millimeters)

REEL TAPING SPECIFICATIONS FOR SURFACE MOUNT DEVICES-FLAT MELF (SMA/SMB/SMC)

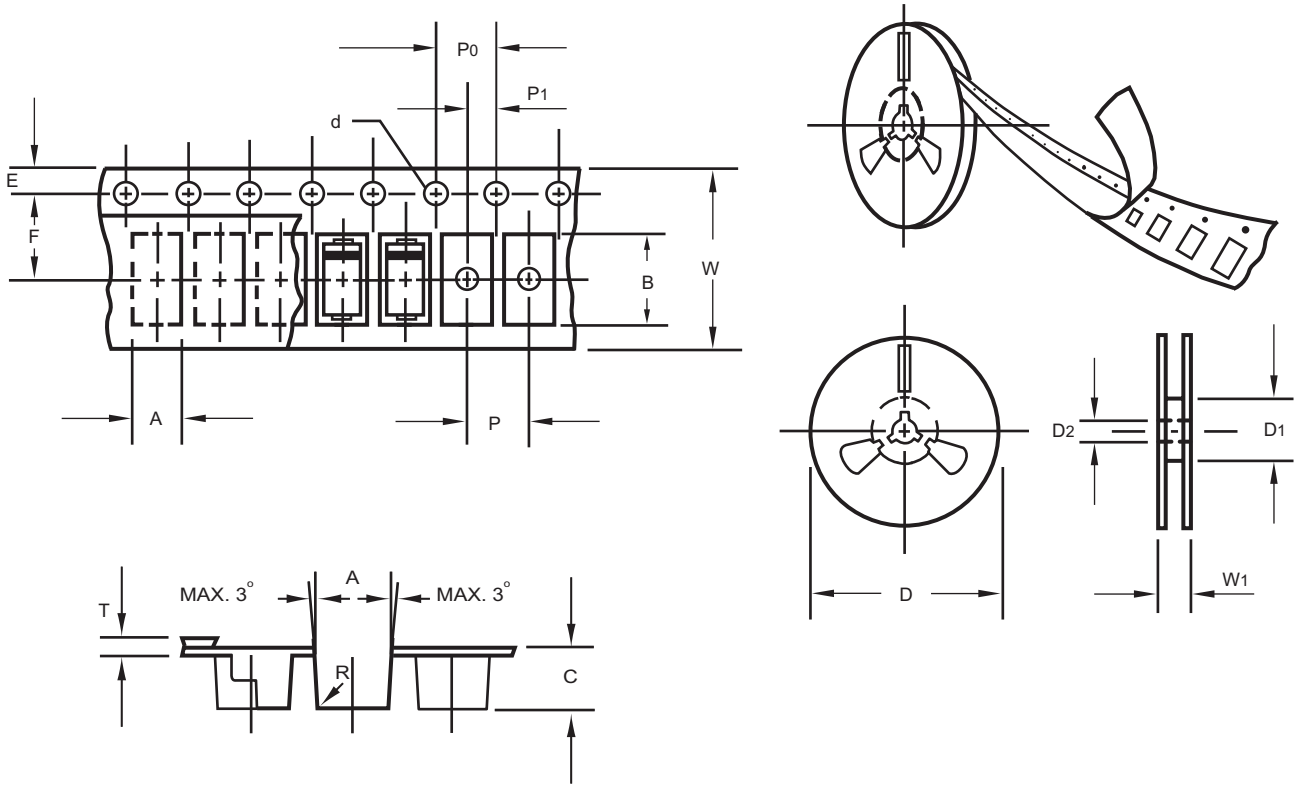


Fig.: Configuration of FLAT MELF TAPING
(SMA/SMB/SMC)

| ITEM | SYMBOL | DO214AC (SMA) mm(inch) | DO214AA (SMB) mm(inch) | DO214AB (SMC) mm(inch) |
|------------------------|--------|---------------------------|---------------------------|---------------------------|
| Carrier width | A | 2.6 ± 0.15 (.102 ± .006) | 3.65 ± 0.1 (.144 ± .004) | 6.0 ± 0.1 (.236 ± .004) |
| Carrier length | B | 5.15 ± 0.15 (.203 ± .006) | 5.69 ± 0.1 (.224 ± .004) | 8.30 ± 0.1 (.327 ± .004) |
| Carrier depth | C | 2.3 ± 0.15 (.091 ± .006) | 2.67 ± 0.1 (.105 ± .004) | 2.5 ± 0.1 (.098 ± .004) |
| Sprocket hole | d | 1.5 ± 0.1 (.059 ± .004) | 1.5 ± 0.1 (.059 ± .004) | 1.5 ± 0.1 (.059 ± .004) |
| Reel outside diameter | D | 178 ± 2.0 (7.0 ± .079) | 178 ± 2.0 (7.0 ± .079) | 178 ± 2.0 (7.0 ± .079) |
| Reel inner diameter | D1 | 50 Min. | 50 Min. | 50 Min. |
| Feed hole diameter | D2 | 13 ± 0.5 (.512 ± .020) | 13 ± 0.5 (.512 ± .020) | 13 ± 0.5 (.512 ± .020) |
| Sprocket hole position | E | 1.5 ± 0.1 (.059 ± .004) | 1.5 ± 0.1 (.059 ± .004) | 1.5 ± 0.1 (.059 ± .004) |
| Punch hole position | F | 5.65 ± 0.05 (.222 ± .002) | 5.65 ± 0.05 (.222 ± .002) | 7.65 ± 0.05 (.301 ± .002) |
| Punch hole pitch | P | 4.0 ± 0.1 (.157 ± .004) | 8.0 ± 0.1 (.315 ± .004) | 8.0 ± 0.1 (.315 ± .004) |
| Sprocket hole pitch | P0 | 4.0 ± 0.1 (.157 ± .004) | 4.0 ± 0.1 (.157 ± .004) | 4.0 ± 0.1 (.157 ± .004) |
| Embossment center | P1 | 2.0 ± 0.1 (.079 ± .004) | 2.0 ± 0.1 (.079 ± .004) | 4.0 ± 0.1 (.157 ± .004) |
| Total tape thickness | T | 0.30 ± .05 (.012 ± .002) | 0.6 Max. | 0.6 Max. |
| Tape width | W | 12.0 ± 0.2 (.472 ± .008) | 12.0 ± 0.2 (.472 ± .008) | 16.0 ± 0.2 (.630 ± .008) |
| Reel width | W1 | 16.8 ± 2.0 (.661 ± .079) | 16.8 ± 2.0 (.661 ± .079) | 24.0 ± 2.0 (.945 ± .079) |

Notes: 1.Devices are packed in accordance with EIA standard RS-481-A and specification given above.
2.Available on 7 inch (1500 ct.) or 13 inch (5000 ct.) diameter reels.

PACKAGING OF DIODE AND BRIDGE RECTIFIERS

REEL PACK

| PACKAGE | PACKING CODE | EA PER REEL | EA PER INNER BOX | COMPONENT SPACE (mm) | TAPE SPACE (mm) | REEL DIA (mm) | CARTON SIZE (mm) | EA PER CARTON | GROSS WEIGHT(Kg) |
|---------|--------------|-------------|------------------|----------------------|-----------------|---------------|------------------|---------------|------------------|
| SMB | -W/-T | 3,000 | 6,000 | --- | --- | 330 | 360*355*360 | 48,000 | 13.90 |



Attachment information about SMBJXXX

1. Internal Circuit



2. Marking on the body

