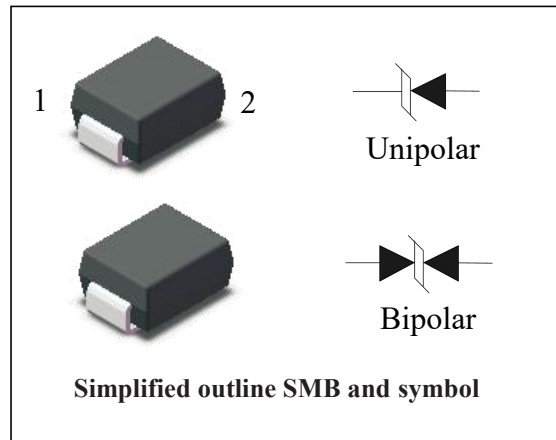


Power Transient Voltage Suppressor

Features

- 600 watts Peak Pulse Power (10/1000 μ s)
- Unidirectional and Bidirectional Protection
- Fast Response Time : Typically < 1ns
- Excellent Clamping Capability
- Built-in Strain relief
- Low inductance
- IEC 61000-4-2 (ESD) \pm 30kV(air), \pm 30kV(contact)
- MSL: Level 1



Mechanical Characteristics

- Case: JEDEC DO-214AA package
- Molding compound flammability rating: UL 94V-0
- Packaging : Tape and Reel per EIA 481
- RoHS & UL497B Compliant
- Approx:Weight: 0.1g / 0.0034oz

Applications

- I/O Interfaces
- Power lines
- Telecommunication
- Computers & Consumer Electronics
- Industrial/Consumer Electronics

| Absolute Maximum Rating(Ratings at 25 °C ambient temperature unless otherwise specified.) | | | |
|---|------------------|--------------------------------|-------|
| Rating | Symbol | Value | Units |
| Peak Pulse Power (tp =10/1000 μ s) (see Note1,2& 3) | P _{PPM} | 600 | Watts |
| Peak pulse current (10/1000 μ s) (see Note2&3) | I _{PPM} | See Electrical Characteristics | A |
| Peak forward surge current (see Note4&5) | I _{FSM} | 100 | A |
| Power dissipation on infinite heat sink TL = 50 °C (Fig5) | P _D | 5.0 | W |
| Operating junction temperature range | T _J | -65 to + 150 | °C |
| Storage temperature range | T _{STG} | -65 to + 150 | °C |

Note1: Peak Pulse Power Rating as Pulse Width ,per Fig1.

Note2: Peak Pulse Power or Current Derated above TA=25°C Per Fig. 2 and Non-Repetitive Current Pulse, Per Fig.3.

Note3: Mounted on 5.0x5.0mm² copper pad to each terminal.

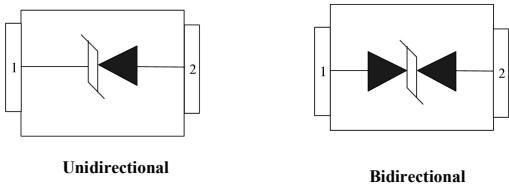
Note4: 8.3ms Single Half Sine Wave or Equivalent Square Wave.

Note5: Maximum Forward Surge Current only for Unidirectional Device per Fig6.

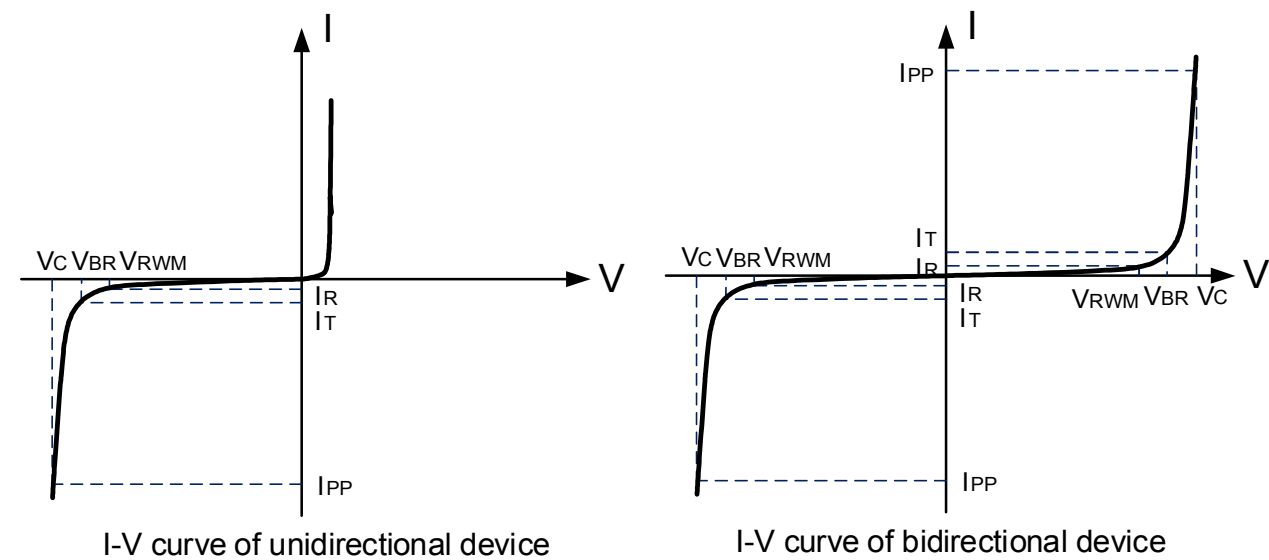
Note6: Peak pulse power waveform is 10/1000 μ S.

Note7: P.C.B. mounted with 1.5" X 1.5" (3.81 X 3.81 cm) copper pad areas.

Pin Configuration



Electrical Characteristics (Tc=25°C Unless otherwise specified)



| Part Number | | Marking Code | | Reverse Stand off Voltage (Volts) | Breakdown Voltage VBR@IT (Volts) | | Test Current IT (mA) | Reverse Leakage (µA) | Max. Clamp Voltage (Volts) | Peak Pulse Current (Amps) |
|-------------|-----------|--------------|----|-----------------------------------|----------------------------------|------|----------------------|----------------------|----------------------------|---------------------------|
| | | | | | Min | Max | | IR @ VRWM | VC @ IPP | IPP |
| Uni | Bi | Uni | Bi | V | V | V | mA | µA | V | A |
| SMBJ5.0A | SMBJ5.0CA | KE | AE | 5 | 6.4 | 7 | 10 | 800 | 9.2 | 65.3 |
| SMBJ6.0A | SMBJ6.0CA | KG | AG | 6 | 6.67 | 7.37 | 10 | 800 | 10.3 | 58.3 |
| SMBJ6.5A | SMBJ6.5CA | KK | AK | 6.5 | 7.22 | 7.98 | 10 | 500 | 11.2 | 53.6 |
| SMBJ7.0A | SMBJ7.0CA | KM | AM | 7 | 7.78 | 8.6 | 10 | 200 | 12 | 50 |
| SMBJ7.5A | SMBJ7.5CA | KP | AP | 7.5 | 8.33 | 9.21 | 1 | 100 | 12.9 | 46.6 |
| SMBJ8.0A | SMBJ8.0CA | KR | AR | 8 | 8.89 | 9.83 | 1 | 50 | 13.6 | 44.2 |
| SMBJ8.5A | SMBJ8.5CA | KT | AT | 8.5 | 9.44 | 10.4 | 1 | 20 | 14.4 | 41.7 |
| SMBJ9.0A | SMBJ9.0CA | KV | AV | 9 | 10 | 11.1 | 1 | 10 | 15.4 | 39 |
| SMBJ10A | SMBJ10CA | KX | AX | 10 | 11.1 | 12.3 | 1 | 5 | 17 | 35.3 |
| SMBJ11A | SMBJ11CA | KZ | AZ | 1 | 12.2 | 13.5 | 1 | 1 | 18.2 | 33 |
| SMBJ12A | SMBJ12CA | LE | BE | 12 | 13.3 | 14.7 | 1 | 1 | 19.9 | 30.2 |
| SMBJ13A | SMBJ13CA | LG | BG | 13 | 14.4 | 15.9 | 1 | 1 | 21.5 | 28 |
| SMBJ14A | SMBJ14CA | LK | BK | 14 | 15.6 | 17.2 | 1 | 1 | 23.2 | 25.9 |
| SMBJ15A | SMBJ15CA | LM | BM | 15 | 16.7 | 18.5 | 1 | 1 | 24.4 | 24.6 |
| SMBJ16A | SMBJ16CA | LP | BP | 16 | 17.8 | 19.7 | 1 | 1 | 26 | 23.1 |
| SMBJ17A | SMBJ17CA | LR | BR | 17 | 18.9 | 20.9 | 1 | 1 | 27.6 | 21.8 |
| SMBJ18A | SMBJ18CA | LT | BT | 18 | 20 | 22.1 | 1 | 1 | 29.2 | 20.6 |
| SMBJ20A | SMBJ20CA | LV | BV | 20 | 22.2 | 24.5 | 1 | 1 | 32.4 | 18.6 |
| SMBJ22A | SMBJ22CA | LX | BX | 22 | 24.4 | 26.9 | 1 | 1 | 35.5 | 16.9 |
| SMBJ24A | SMBJ24CA | LZ | BZ | 24 | 26.7 | 29.5 | 1 | 1 | 38.9 | 15.5 |
| SMBJ26A | SMBJ26CA | ME | CE | 26 | 28.9 | 31.9 | 1 | 1 | 42.1 | 14.3 |
| SMBJ28A | SMBJ28CA | MG | CG | 28 | 31.1 | 34.4 | 1 | 1 | 45.4 | 13.3 |
| SMBJ30A | SMBJ30CA | MK | CK | 30 | 33.3 | 36.8 | 1 | 1 | 48.4 | 12.4 |

| | | | | | | | | | | |
|----------|-----------|----|----|-----|------|------|---|---|------|------|
| SMBJ33A | SMBJ33CA | MM | CM | 33 | 36.7 | 40.6 | 1 | 1 | 53.3 | 11.3 |
| SMBJ36A | SMBJ36CA | MP | CP | 36 | 40 | 44.2 | 1 | 1 | 58.1 | 10.4 |
| SMBJ40A | SMBJ40CA | MR | CR | 40 | 44.4 | 49.1 | 1 | 1 | 64.5 | 9.3 |
| SMBJ43A | SMBJ43CA | MT | CT | 43 | 47.8 | 52.8 | 1 | 1 | 69.4 | 8.7 |
| SMBJ45A | SMBJ45CA | MV | CV | 45 | 50 | 55.3 | 1 | 1 | 72.7 | 8.3 |
| SMBJ48A | SMBJ48CA | MX | CX | 48 | 53.3 | 58.9 | 1 | 1 | 77.4 | 7.8 |
| SMBJ51A | SMBJ51CA | MZ | CZ | 51 | 56.7 | 62.7 | 1 | 1 | 82.4 | 7.3 |
| SMBJ54A | SMBJ54CA | NE | DE | 54 | 60 | 66.3 | 1 | 1 | 87.1 | 6.9 |
| SMBJ58A | SMBJ58CA | NG | DG | 58 | 64.4 | 71.2 | 1 | 1 | 93.6 | 6.5 |
| SMBJ60A | SMBJ60CA | NK | DK | 60 | 66.7 | 73.7 | 1 | 1 | 96.8 | 6.2 |
| SMBJ64A | SMBJ64CA | NM | DM | 64 | 71.1 | 78.6 | 1 | 1 | 103 | 5.9 |
| SMBJ70A | SMBJ70CA | NP | DP | 70 | 77.8 | 86 | 1 | 1 | 113 | 5.3 |
| SMBJ75A | SMBJ75CA | NR | DR | 75 | 83.3 | 92.1 | 1 | 1 | 121 | 5 |
| SMBJ78A | SMBJ78CA | NT | DT | 78 | 86.7 | 95.8 | 1 | 1 | 126 | 4.8 |
| SMBJ85A | SMBJ85CA | NV | DV | 85 | 94.4 | 104 | 1 | 1 | 137 | 4.4 |
| SMBJ90A | SMBJ90CA | NX | DX | 90 | 100 | 111 | 1 | 1 | 146 | 4.1 |
| SMBJ100A | SMBJ100CA | NZ | DZ | 100 | 111 | 123 | 1 | 1 | 162 | 3.7 |
| SMBJ110A | SMBJ110CA | PE | EE | 110 | 122 | 135 | 1 | 1 | 177 | 3.4 |
| SMBJ120A | SMBJ120CA | PG | EG | 120 | 133 | 147 | 1 | 1 | 193 | 3.1 |
| SMBJ130A | SMBJ130CA | PK | EK | 130 | 144 | 159 | 1 | 1 | 209 | 2.9 |
| SMBJ150A | SMBJ150CA | PM | EM | 150 | 167 | 185 | 1 | 1 | 243 | 2.5 |
| SMBJ160A | SMBJ160CA | PP | EP | 160 | 178 | 197 | 1 | 1 | 259 | 2.3 |
| SMBJ170A | SMBJ170CA | PR | ER | 170 | 189 | 209 | 1 | 1 | 275 | 2.2 |
| SMBJ180A | SMBJ180CA | PT | ET | 180 | 201 | 222 | 1 | 1 | 292 | 2.1 |
| SMBJ188A | SMBJ188CA | PB | EB | 188 | 209 | 231 | 1 | 1 | 304 | 2 |
| SMBJ200A | SMBJ200CA | PV | EV | 200 | 224 | 247 | 1 | 1 | 324 | 1.9 |
| SMBJ220A | SMBJ220CA | PX | EX | 220 | 246 | 272 | 1 | 1 | 356 | 1.7 |
| SMBJ250A | SMBJ250CA | PZ | EZ | 250 | 279 | 309 | 1 | 1 | 405 | 1.5 |
| SMBJ300A | SMBJ300CA | QE | FE | 300 | 335 | 371 | 1 | 1 | 486 | 1.3 |
| SMBJ350A | SMBJ350CA | QG | FG | 350 | 391 | 432 | 1 | 1 | 567 | 1.1 |
| SMBJ400A | SMBJ400CA | QK | FK | 400 | 447 | 494 | 1 | 1 | 648 | 0.9 |
| SMBJ440A | SMBJ440CA | QM | FM | 440 | 492 | 543 | 1 | 1 | 713 | 0.9 |

Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

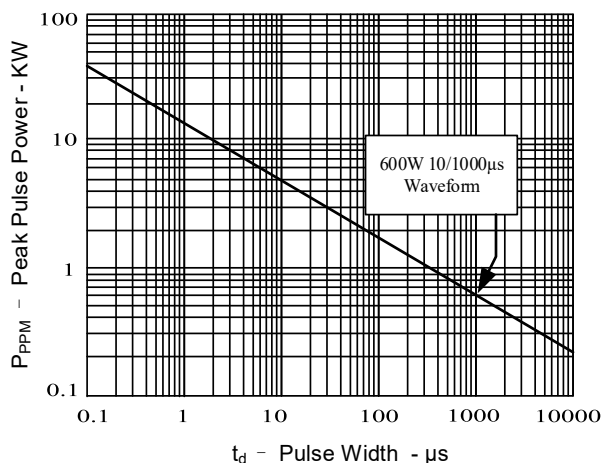


Figure 2: Pulse Derating Curve

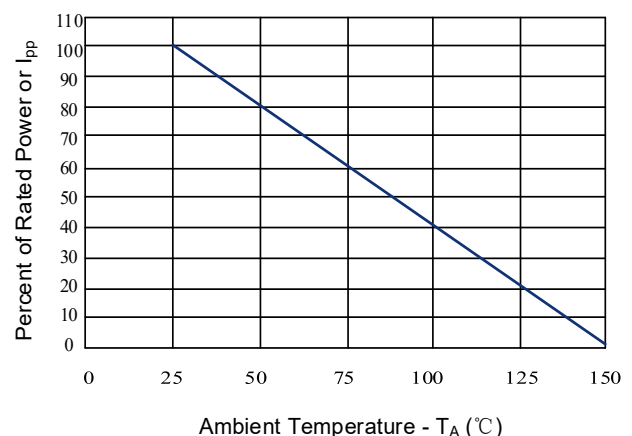


Figure 3: Pulse Waveform

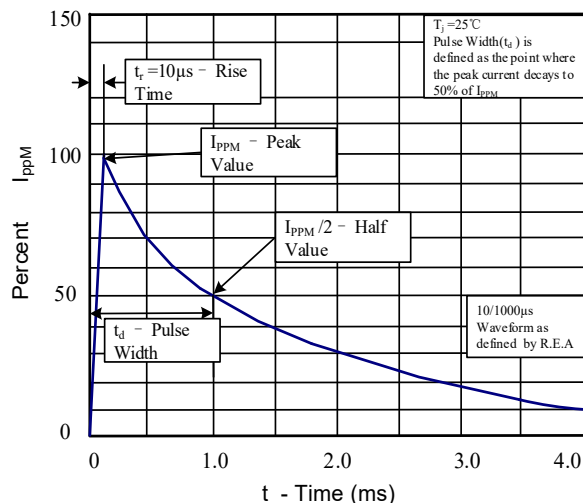


Figure 4: Typical Junction Capacitance

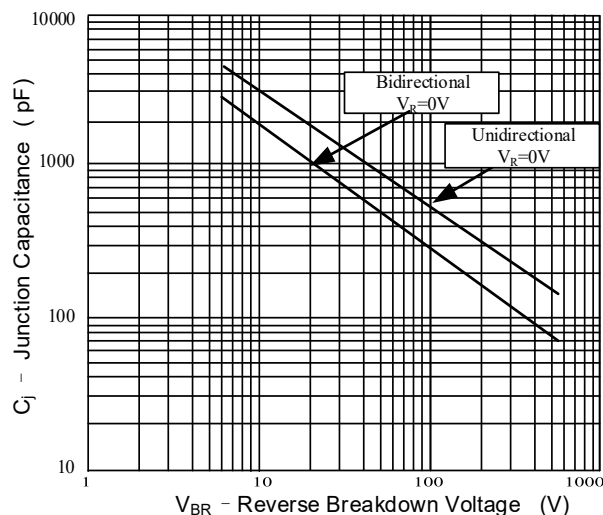


Figure 5: Steady State Power Dissipation Derating Curve

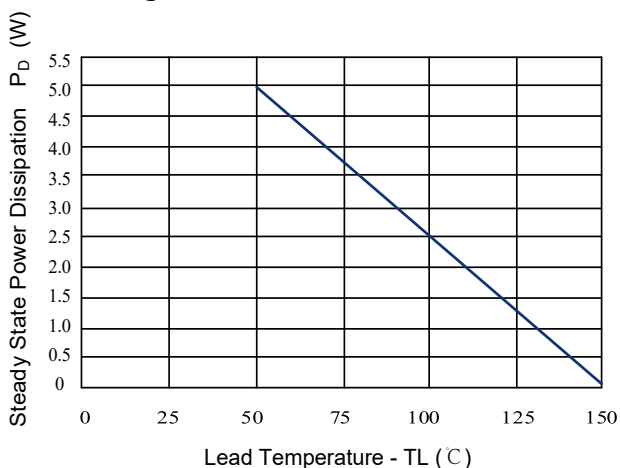
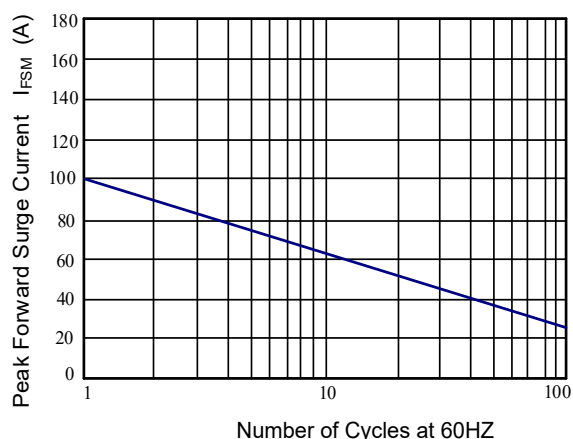


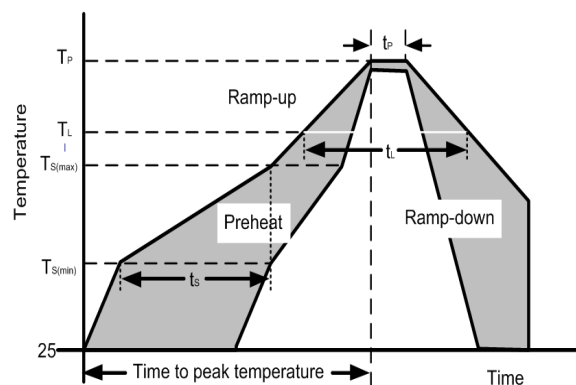
Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional



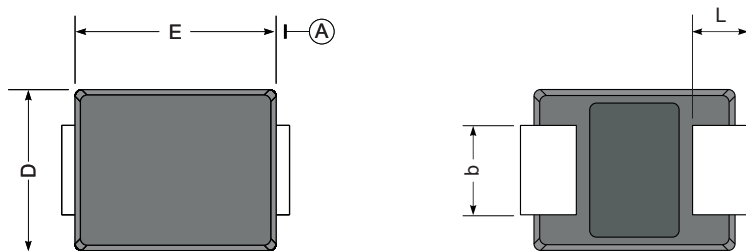
Note: The above typical parameters or typical characteristics are only indicative and do not make specific guarantees. If detailed values are required, additional communication and provision are required.

Soldering Parameters

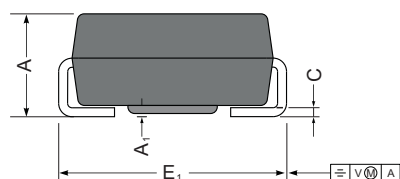
| Reflow Condition | | |
|---|----------------------------------|--------------------|
| Pre Heat | Temperature min ($T_{s(min)}$) | 150 $^\circ C$ |
| | Temperature max ($T_{s(max)}$) | 200 $^\circ C$ |
| | Time (min to max) (t_s) | 60-190 s |
| Average ramp up rate (Liquidus Temp) (T_L) to peak | | 3 $^\circ C/s$ max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3 $^\circ C/s$ max |
| Reflow | Temperature (T_L) (Liquidus) | 217 $^\circ C$ |
| | Temperature (t_L) | 60-150 s |
| Peak Temperature (T_P) | | 260 $^{+0/-5} C$ |
| Time within 5 $^\circ C$ of actual peak Temperature (t_p) | | 20-40 s |
| Ramp-down Rate | | 5 $^\circ C/s$ max |
| Time 25 $^\circ C$ to peak Temperature (T_P) | | 8 minutes max |
| Do not exceed | | 260 $^\circ C$ |



Outline Drawing – SMB(DO-214AA)

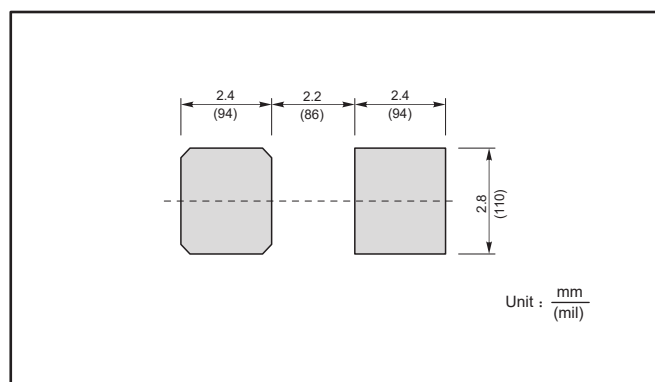


SMB mechanical data



| UNIT | | A | E | D | E ₁ | A ₁ | L | C | b |
|------|-----|------|------|------|----------------|----------------|-----|-------|------|
| mm | max | 2.44 | 4.70 | 3.94 | 5.59 | 0.20 | 1.5 | 0.305 | 2.11 |
| | min | 2.13 | 4.06 | 3.3 | 5.08 | 0.05 | 0.8 | 0.152 | 1.91 |
| mil | max | 96 | 185 | 155 | 220 | 7.9 | 59 | 12 | 83 |
| | min | 84 | 160 | 130 | 200 | 2.0 | 32 | 6 | 75 |

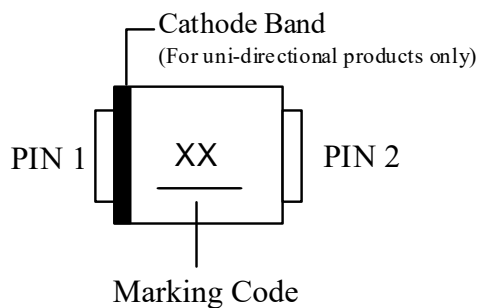
The recommended mounting pad size



Package Information

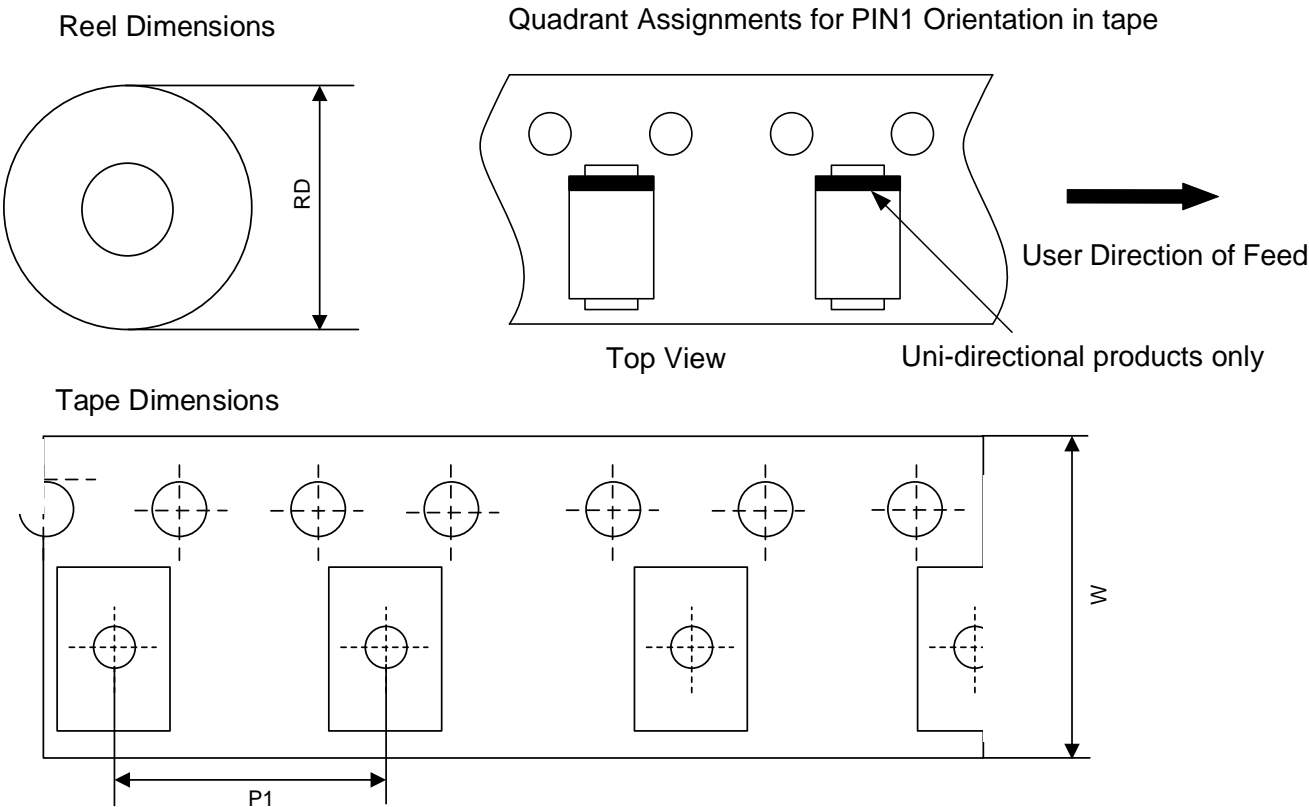
| Package Type | Description | Quantity (pcs) | Standard |
|---------------|----------------------------|----------------|-----------|
| SMB(DO-214AA) | Tape & Reel -12mm/13" tape | 3000 | EIA-481-D |

Part Marking System




Tape and Reel Information

| | | |
|----|---|---------|
| RD | Reel Dimensions | 13 inch |
| W | Overall width of the carrier tape | 12 mm |
| P1 | Pitch between successive cavity centers | 8 mm |



Contact Information

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For additional information, please contact your local Sales Representative.
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