

Features

- 600W peak pulse power capability at 10/1000µs waveform, repetition rate (duty cycles):0.01%
- Excellent clamping capability
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260°C

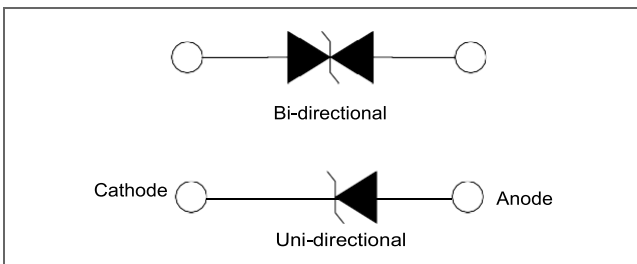
RoHS
Compliant



Applications

TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Function Diagram




| Maximum Ratings and Thermal Characteristics (T _A =25°C unless otherwise noted) | | | |
|---|------------------|------------|------|
| Parameter | Symbol | Value | Unit |
| Peak Pulse Power Dissipation at T _A =25°C by 10/1000µs Waveform (Fig.3) | P _{PPM} | 600 | W |
| Power Dissipation on Infinite Heat Sink at T _L =50°C | P _D | 5 | W |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1) | I _{FSM} | 100 | A |
| Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only(Note 2) | V _F | 3.5 | V |
| Operating Temperature Range | T _J | -55 to 150 | °C |
| Storage Temperature Range | T _{STG} | -55 to 150 | °C |

| AGENCY | AGENCY FILE NUMBER |
|--------|--------------------|
| | Pending |

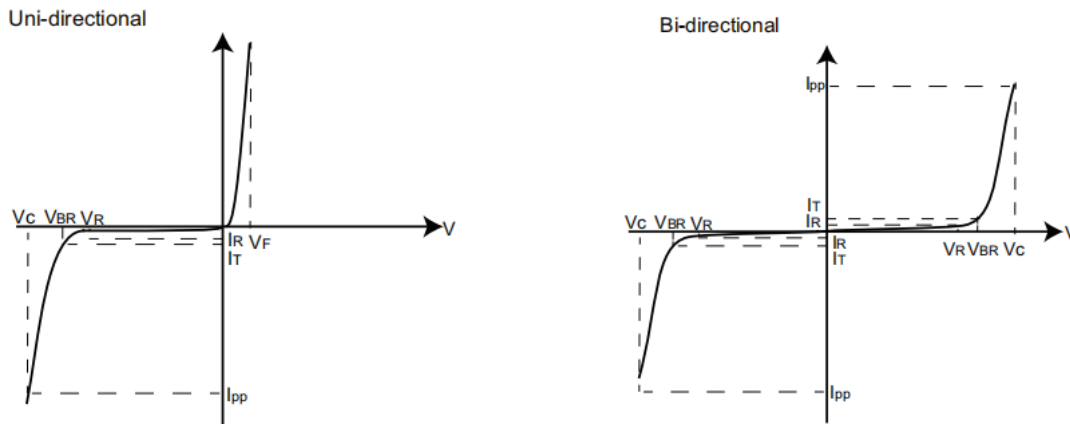
Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Characteristics (T = 25°C unless otherwise noted)

| Part Number (Uni) | Part Number (Bi) | Marking | | Reverse Stand off Voltage V _R (Volts) | Breakdown Voltage V _{BR} (Volts) @ I _T | | Test Current I _T (mA) | Maximum Clamping Voltage V _C @ I _{DD} (V) | Maximum Peak Pulse Current I _{pp} (A) | Maximum Reverse Leakage I _R @ V _R (μA) | Agency Approval  |
|----------------------|---------------------|---------|------|---|---|--------|---|---|---|--|---|
| | | UNI | BI | | MIN | MAX | | | | | |
| P6SMB6.8A | P6SMB6.8CA | B06E | B06E | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 58.1 | 1000 | |
| P6SMB7.5A | P6SMB7.5CA | B07F | B07F | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 54.0 | 500 | |
| P6SMB8.2A | P6SMB8.2CA | B08T | B08T | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 50.4 | 200 | |
| P6SMB9.1A | P6SMB9.1CA | B09O | B09O | 7.78 | 8.65 | 9.55 | 1 | 13.4 | 45.5 | 50 | |
| P6SMB10A | P6SMB10CA | B010 | B010 | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 42.1 | 10 | |
| P6SMB11A | P6SMB11CA | B011 | B011 | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 39.1 | 5 | |
| P6SMB12A | P6SMB12CA | B012 | B012 | 10.20 | 11.40 | 12.60 | 1 | 16.7 | 36.5 | 5 | |
| P6SMB13A | P6SMB13CA | B013 | B013 | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 33.5 | 1 | |
| P6SMB15A | P6SMB15CA | B015 | B015 | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 28.8 | 1 | |
| P6SMB16A | P6SMB16CA | B016 | B016 | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 27.1 | 1 | |
| P6SMB18A | P6SMB18CA | B018 | B018 | 15.30 | 17.10 | 18.90 | 1 | 25.5 | 24.2 | 1 | |
| P6SMB20A | P6SMB20CA | B020 | B020 | 17.10 | 19.00 | 21.00 | 1 | 27.7 | 22.0 | 1 | |
| P6SMB22A | P6SMB22CA | B022 | B022 | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 19.9 | 1 | |
| P6SMB24A | P6SMB24CA | B024 | B024 | 20.50 | 22.80 | 25.20 | 1 | 33.2 | 18.4 | 1 | |
| P6SMB27A | P6SMB27CA | B027 | B027 | 23.10 | 25.70 | 28.40 | 1 | 37.5 | 16.3 | 1 | |
| P6SMB30A | P6SMB30CA | B030 | B030 | 25.60 | 28.50 | 31.50 | 1 | 41.4 | 14.7 | 1 | |
| P6SMB33A | P6SMB33CA | B033 | B033 | 28.20 | 31.40 | 34.70 | 1 | 45.7 | 13.3 | 1 | |
| P6SMB36A | P6SMB36CA | B036 | B036 | 30.80 | 34.20 | 37.80 | 1 | 49.9 | 12.2 | 1 | |
| P6SMB39A | P6SMB39CA | B039 | B039 | 33.30 | 37.10 | 41.00 | 1 | 53.9 | 11.3 | 1 | |
| P6SMB43A | P6SMB43CA | B043 | B043 | 36.80 | 40.90 | 45.20 | 1 | 59.3 | 10.3 | 1 | |
| P6SMB47A | P6SMB47CA | B047 | B047 | 40.20 | 44.70 | 49.40 | 1 | 64.8 | 9.4 | 1 | |
| P6SMB51A | P6SMB51CA | B051 | B051 | 43.60 | 48.50 | 53.60 | 1 | 70.1 | 8.7 | 1 | |
| P6SMB56A | P6SMB56CA | B056 | B056 | 47.80 | 53.20 | 58.80 | 1 | 77.0 | 7.9 | 1 | |
| P6SMB58A | P6SMB58CA | B058 | B058 | 52.78 | 55.10 | 60.90 | 1 | 79.8 | 7.7 | 1 | |
| P6SMB62A | P6SMB62CA | B062 | B062 | 53.00 | 58.90 | 65.10 | 1 | 85.0 | 7.2 | 1 | |
| P6SMB68A | P6SMB68CA | B068 | B068 | 58.10 | 64.60 | 71.40 | 1 | 92.0 | 6.6 | 1 | |
| P6SMB75A | P6SMB75CA | B075 | B075 | 64.10 | 71.30 | 78.80 | 1 | 103.0 | 5.9 | 1 | |
| P6SMB82A | P6SMB82CA | B082 | B082 | 70.10 | 77.90 | 86.10 | 1 | 113.0 | 5.4 | 1 | |
| P6SMB91A | P6SMB91CA | B091 | B091 | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 4.9 | 1 | |
| P6SMB100A | P6SMB100CA | B100 | B100 | 85.50 | 95.00 | 105.00 | 1 | 137.0 | 4.5 | 1 | |
| P6SMB110A | P6SMB110CA | B110 | B110 | 94.00 | 105.00 | 116.00 | 1 | 152.0 | 4.0 | 1 | |
| P6SMB120A | P6SMB120CA | B120 | B120 | 102.00 | 114.00 | 126.00 | 1 | 165.0 | 3.7 | 1 | |
| P6SMB130A | P6SMB130CA | B130 | B130 | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 3.4 | 1 | |
| P6SMB150A | P6SMB150CA | B150 | B150 | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 2.9 | 1 | |
| P6SMB160A | P6SMB160CA | B160 | B160 | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 2.8 | 1 | |
| P6SMB170A | P6SMB170CA | B170 | B170 | 145.00 | 162.00 | 179.00 | 1 | 234.0 | 2.6 | 1 | |
| P6SMB180A | P6SMB180CA | B180 | B180 | 154.00 | 171.00 | 189.00 | 1 | 246.0 | 2.5 | 1 | |
| P6SMB200A | P6SMB200CA | B200 | B200 | 171.00 | 190.00 | 210.00 | 1 | 274.0 | 2.2 | 1 | |
| P6SMB220A | P6SMB220CA | B220 | B220 | 185.00 | 209.00 | 231.00 | 1 | 328.0 | 1.9 | 1 | |
| P6SMB250A | P6SMB250CA | B250 | B250 | 214.00 | 237.00 | 263.00 | 1 | 344.0 | 1.8 | 1 | |
| P6SMB300A | P6SMB300CA | B300 | B300 | 256.00 | 285.00 | 315.00 | 1 | 414.0 | 1.5 | 1 | |
| P6SMB350A | P6SMB350CA | B350 | B350 | 300.00 | 332.00 | 368.00 | 1 | 482.0 | 1.24 | 1 | |
| P6SMB380A | P6SMB380CA | B380 | B380 | 324.90 | 361.00 | 399.00 | 1 | 524.4 | 1.14 | 1 | |
| P6SMB400A | P6SMB400CA | B400 | B400 | 342.00 | 380.00 | 420.00 | 1 | 548.0 | 1.09 | 1 | |
| P6SMB440A | P6SMB440CA | B440 | B440 | 376.20 | 418.00 | 462.00 | 1 | 607.2 | 0.99 | 1 | |
| P6SMB500A | P6SMB500CA | B500 | B500 | 427.50 | 475.00 | 525.00 | 1 | 690.0 | 0.87 | 1 | |
| P6SMB510A | P6SMB510CA | B510 | B510 | 434.00 | 485.00 | 535.00 | 1 | 698.0 | 0.86 | 1 | |
| P6SMB520A | P6SMB520CA | B520 | B520 | 444.60 | 494.00 | 546.00 | 1 | 717.6 | 0.84 | 1 | |
| P6SMB550A | P6SMB550CA | B550 | B550 | 470.30 | 522.50 | 577.50 | 1 | 759.0 | 0.79 | 1 | |
| P6SMB600A | P6SMB600CA | B600 | B600 | 513.00 | 570.00 | 630.00 | 1 | 828.0 | 0.72 | 1 | |

I-V Curve Characteristics



P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation

V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation

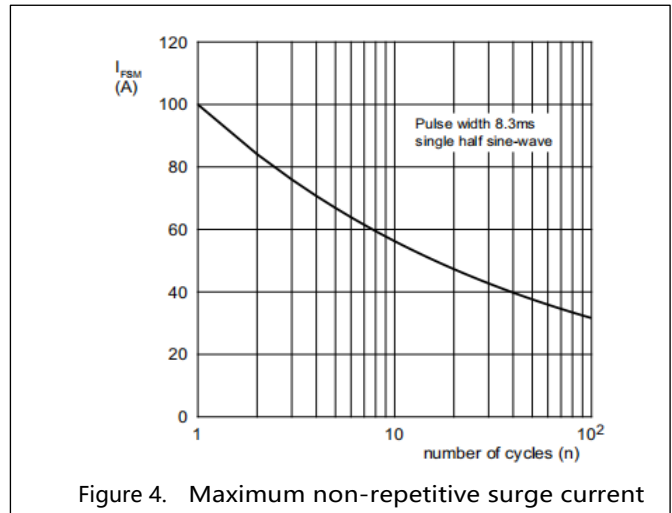
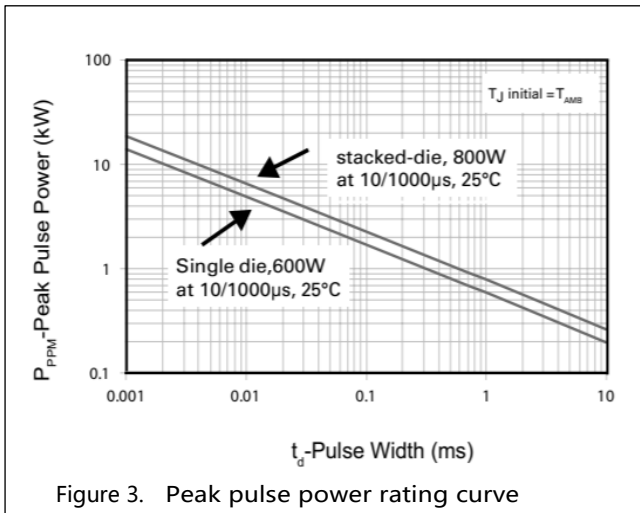
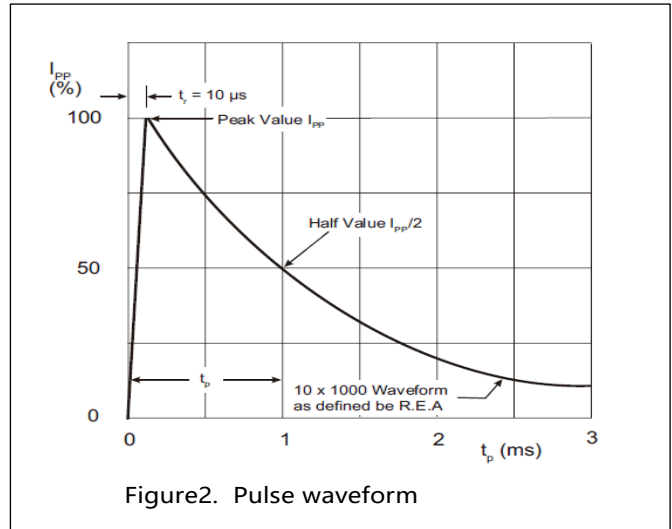
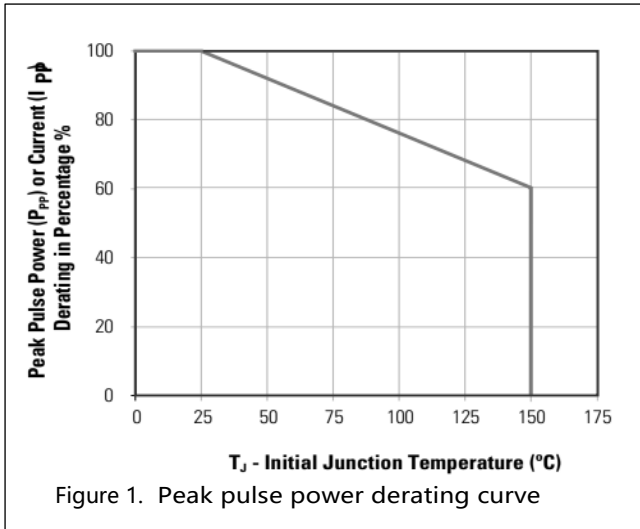
V_{BR} Breakdown Voltage -- Maximum voltage that flows through the TVS at a specified test current (I_T)

V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R Reverse Leakage Current -- Current measured at V_R

V_F Forward Voltage Drop for Uni-directional

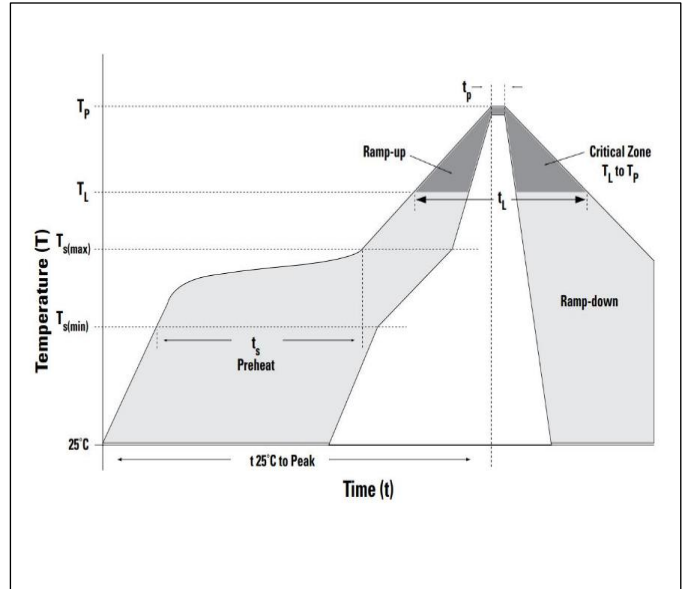
Ratings and Characteristic Curves (T = 25°C unless otherwise noted)



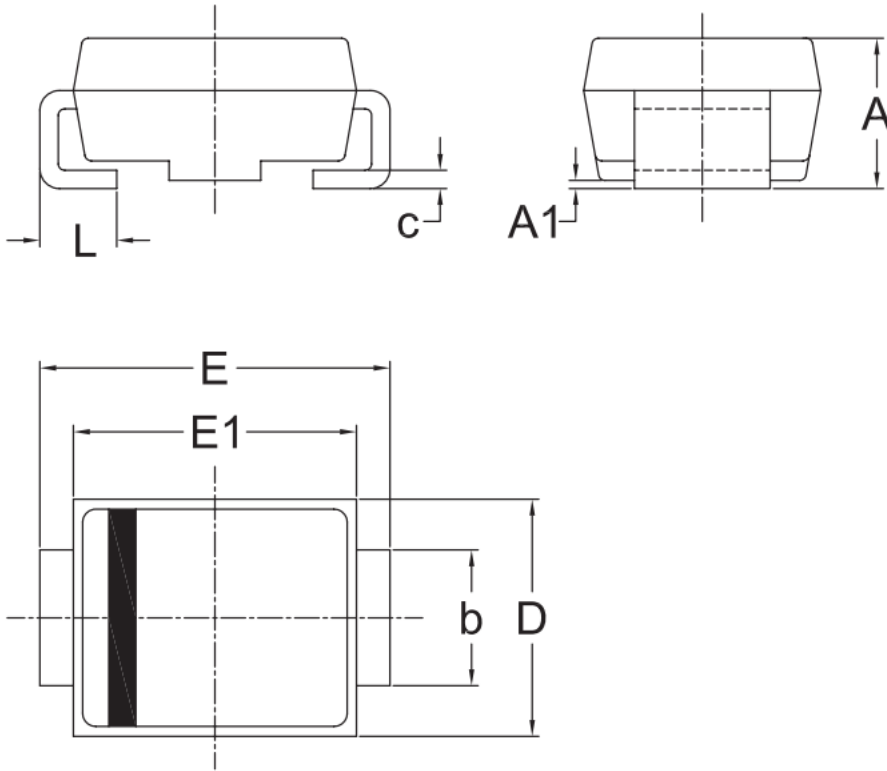
| | | |
|--|------------------------------------|-------------------------|
| Reflow Condition | | Lead-free assembly |
| Pre Heat | - Temperature Min ($T_{s(min)}$) | 150°C |
| | - Temperature Max ($T_{s(max)}$) | 200°C |
| | - Time (min to max) (t_s) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp (T_A) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_A - Ramp-up Rate | | 3°C/second max |
| Reflow | - Temperature (T_A) (Liquidus) | 217°C |
| | - Time (min to max) (t_s) | 60 – 150 seconds |
| Peak Temperature (T_p) | | 260 ^{+0/-5} °C |
| Time within 5°C of actual peak Temperature (t_p) | | 20 – 40 seconds |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature (T_p) | | 8 minutes Max. |
| Do not exceed | | 260°C |

Soldering Parameters

Soldering profile



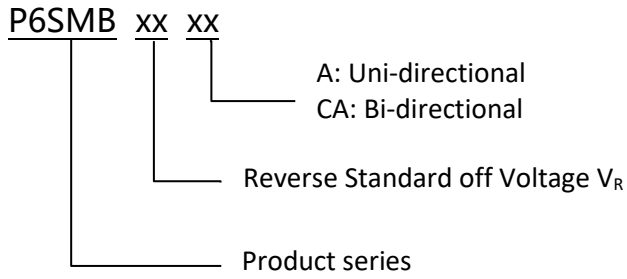
Dimensions



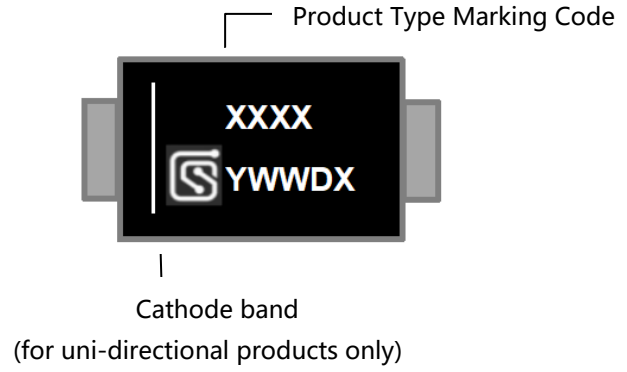
| UNIT | A | A1 | b | c | D | E | E1 | L | |
|------|-----|------|------|------|------|------|------|------|------|
| mm | Max | 2.50 | 0.30 | 2.15 | 0.25 | 3.75 | 5.54 | 4.65 | 1.50 |
| | Min | 2.00 | 0.00 | 1.85 | 0.15 | 3.45 | 5.04 | 4.35 | 0.80 |

Remark: Dimensions D and E1 do not include mold flash & gate remain.

Part Numbering



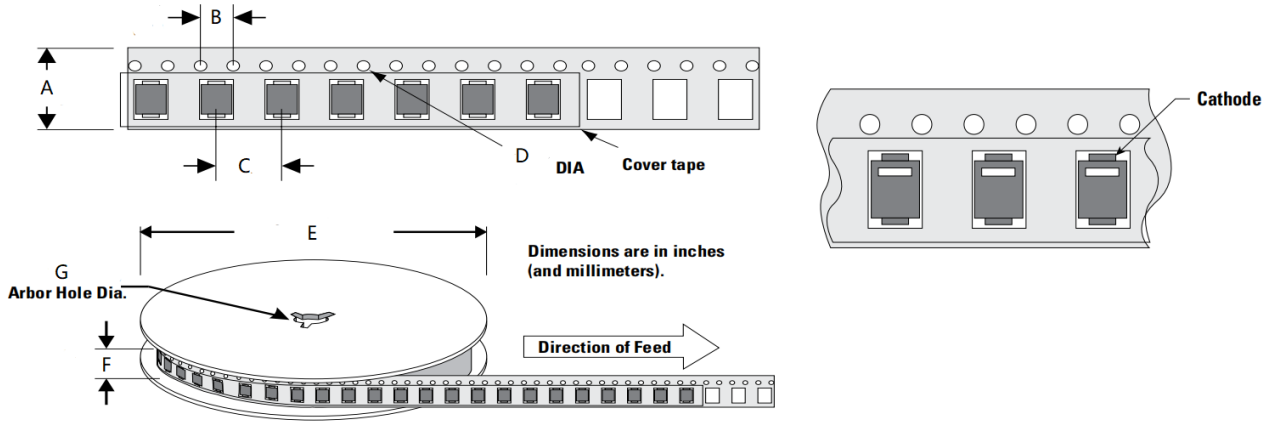
Part Marking



Packing

| Part number | Package name | Small packing quantity | Packing method |
|-------------|--------------|------------------------|----------------|
| P6SMBXXXX | DO-214AA | 3000 | Tape & Reel |

Tape and Reel Specification



| Symbol | Millimeter |
|--------|-------------|
| A | 12.00±0.10 |
| B | 4.00±0.10 |
| C | 8.00±0.10 |
| D | 1.55±0.05 |
| E | 330.20±2.00 |
| F | 15.70±2.00 |
| G | 13.30±0.30 |

Revision history of Specification

| Version | Change Items | Effective Date |
|---------|--------------------------------------|----------------|
| 1.0 | Initial Release | 13-July-2021 |
| 1.1 | Modified Temperature Range & Details | 16-August-2021 |

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