

Features

- 5000W 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

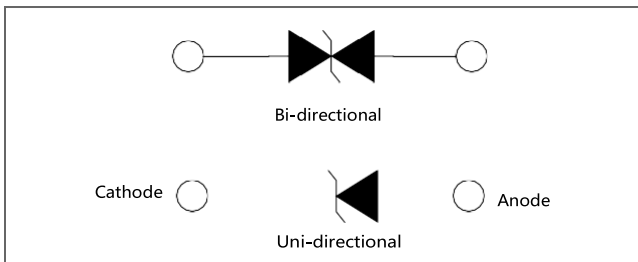
RoHS
Compliant



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} | 5000 | W |
| Power Dissipation on Infinite Heat Sink at T _L =50°C | P _D | 6.5 | W |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1) | I _{FSM} | 300 | A |
| Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only | V _F | 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 |

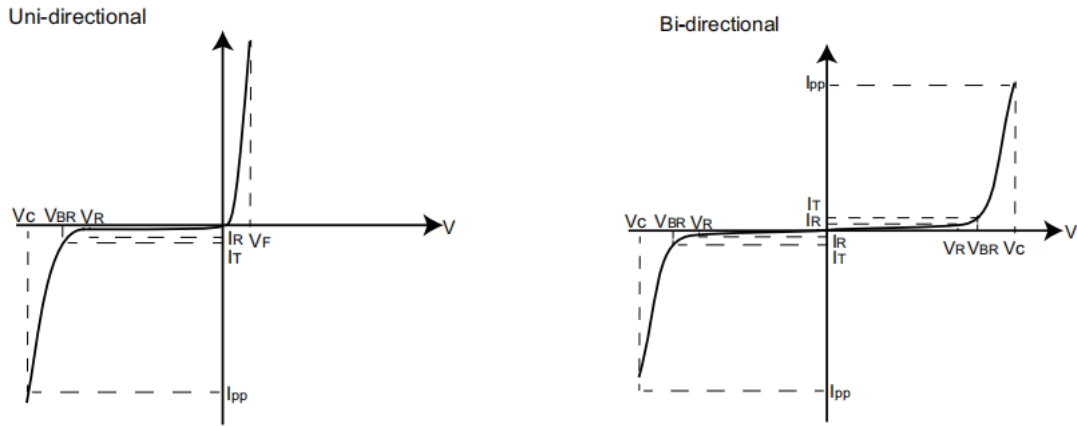
Notes:

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)

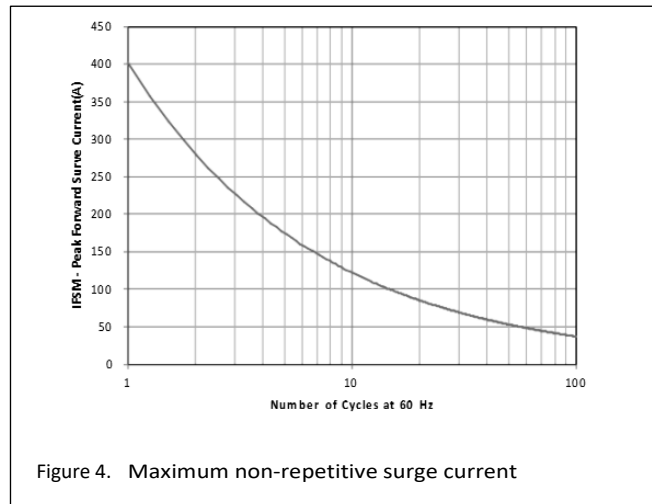
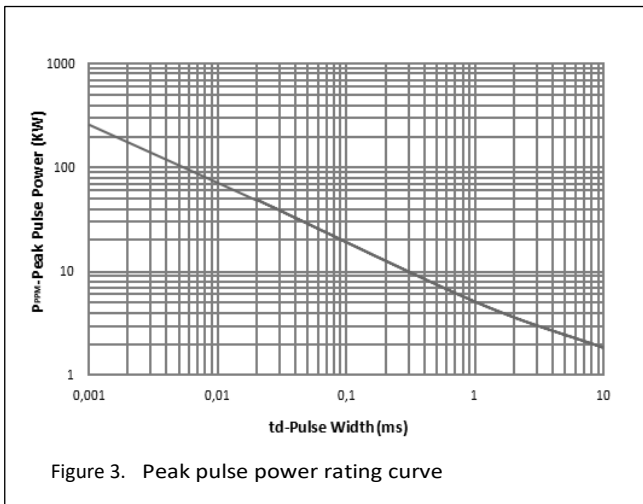
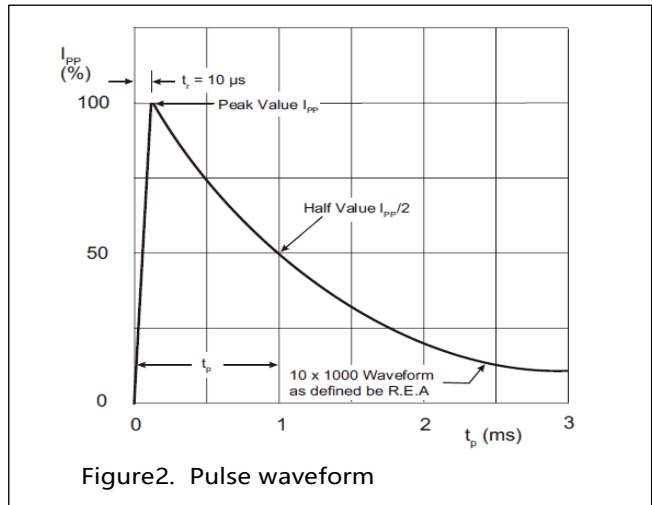
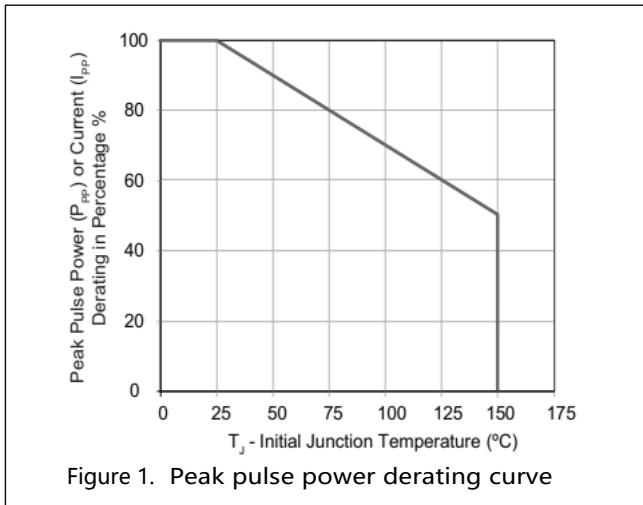
| Part Number (Uni) | Part Number (Bi) | Key Marking | | Reverse Stand off Voltage V _R (Volts) | Breakdown Voltage V _{BR} (Volts) @ I _T | | Test Current I _T (mA) | Maximum Clamping Voltage V _C @ I _{DN} (V) | Maximum Peak Pulse Current I _{pp} (A) 10/1000uS | Maximum Clamping Voltage V _C @ I _{DN} (V) | Maximum Peak Pulse Current I _{pp} (A) 8/20uS | Maximum Reverse Leakage I _R @ V _R (μA) |
|----------------------|---------------------|-------------|-------|---|--|-------|---|---|---|---|---|--|
| | | UNI | BI | | MIN | MAX | | | | | | |
| 5.0SMDJ12A | 5.0SMDJ12CA | 5D012 | 5D012 | 12.0 | 13.3 | 14.7 | 10 | 19.9 | 252.0 | 25.7 | 1890.0 | 800 |
| 5.0SMDJ13A | 5.0SMDJ13CA | 5D013 | 5D013 | 13.0 | 14.4 | 15.9 | 10 | 21.5 | 233.0 | 27.8 | 1747.5 | 500 |
| 5.0SMDJ14A | 5.0SMDJ14CA | 5D014 | 5D014 | 14.0 | 15.6 | 17.2 | 10 | 23.2 | 216.0 | 30.0 | 1620.0 | 200 |
| 5.0SMDJ15A | 5.0SMDJ15CA | 5D015 | 5D015 | 15.0 | 16.7 | 18.5 | 1 | 24.4 | 205.0 | 31.5 | 1537.5 | 100 |
| 5.0SMDJ16A | 5.0SMDJ16CA | 5D016 | 5D016 | 16.0 | 17.8 | 19.7 | 1 | 26.0 | 193.0 | 33.6 | 1447.5 | 50 |
| 5.0SMDJ17A | 5.0SMDJ17CA | 5D017 | 5D017 | 17.0 | 18.9 | 20.9 | 1 | 27.6 | 181.0 | 35.7 | 1357.5 | 20 |
| 5.0SMDJ18A | 5.0SMDJ18CA | 5D018 | 5D018 | 18.0 | 20.0 | 22.1 | 1 | 29.2 | 172.0 | 37.7 | 1290.0 | 10 |
| 5.0SMDJ20A | 5.0SMDJ20CA | 5D020 | 5D020 | 20.0 | 22.2 | 24.5 | 1 | 32.4 | 155.0 | 41.9 | 850.0 | 5 |
| 5.0SMDJ22A | 5.0SMDJ22CA | 5D022 | 5D022 | 22.0 | 24.4 | 26.9 | 1 | 35.5 | 141.0 | 45.9 | 1057.5 | 5 |
| 5.0SMDJ24A | 5.0SMDJ24CA | 5D024 | 5D024 | 24.0 | 26.7 | 29.5 | 1 | 38.9 | 129.0 | 50.3 | 967.5 | 5 |
| 5.0SMDJ26A | 5.0SMDJ26CA | 5D026 | 5D026 | 26.0 | 28.9 | 31.9 | 1 | 42.1 | 119.0 | 54.4 | 892.5 | 5 |
| 5.0SMDJ28A | 5.0SMDJ28CA | 5D028 | 5D028 | 28.0 | 31.1 | 34.4 | 1 | 45.4 | 110.0 | 58.7 | 825.0 | 5 |
| 5.0SMDJ30A | 5.0SMDJ30CA | 5D030 | 5D030 | 30.0 | 33.3 | 36.8 | 1 | 48.4 | 103.0 | 62.5 | 772.5 | 5 |
| 5.0SMDJ33A | 5.0SMDJ33CA | 5D033 | 5D033 | 33.0 | 36.7 | 40.6 | 1 | 53.3 | 93.9 | 68.9 | 704.3 | 5 |
| 5.0SMDJ36A | 5.0SMDJ36CA | 5D036 | 5D036 | 36.0 | 40.0 | 44.2 | 1 | 58.1 | 86.1 | 75.1 | 645.8 | 5 |
| 5.0SMDJ40A | 5.0SMDJ40CA | 5D040 | 5D040 | 40.0 | 44.4 | 49.1 | 1 | 64.5 | 77.6 | 83.3 | 582.0 | 5 |
| 5.0SMDJ43A | 5.0SMDJ43CA | 5D043 | 5D043 | 43.0 | 47.8 | 52.8 | 1 | 69.4 | 72.1 | 89.7 | 540.8 | 5 |
| 5.0SMDJ45A | 5.0SMDJ45CA | 5D045 | 5D045 | 45.0 | 50.0 | 55.3 | 1 | 72.7 | 68.8 | 93.9 | 516.0 | 5 |
| 5.0SMDJ48A | 5.0SMDJ48CA | 5D048 | 5D048 | 48.0 | 53.3 | 58.9 | 1 | 77.4 | 64.7 | 100.0 | 485.3 | 5 |
| 5.0SMDJ51A | 5.0SMDJ51CA | 5D051 | 5D051 | 51.0 | 56.7 | 62.7 | 1 | 82.4 | 60.7 | 106.5 | 455.3 | 5 |
| 5.0SMDJ54A | 5.0SMDJ54CA | 5D054 | 5D054 | 54.0 | 60.0 | 66.3 | 1 | 87.1 | 57.5 | 112.5 | 431.3 | 5 |
| 5.0SMDJ58A | 5.0SMDJ58CA | 5D058 | 5D058 | 58.0 | 64.4 | 71.2 | 1 | 93.6 | 53.5 | 120.9 | 401.3 | 5 |
| 5.0SMDJ60A | 5.0SMDJ60CA | 5D060 | 5D060 | 60.0 | 66.7 | 73.7 | 1 | 96.8 | 51.7 | 125.1 | 387.8 | 5 |
| 5.0SMDJ64A | 5.0SMDJ64CA | 5D064 | 5D064 | 64.0 | 71.1 | 78.6 | 1 | 103.0 | 48.6 | 133.1 | 364.5 | 5 |
| 5.0SMDJ70A | 5.0SMDJ70CA | 5D070 | 5D070 | 70.0 | 77.8 | 86.0 | 1 | 113.0 | 44.3 | 146.0 | 332.3 | 5 |
| 5.0SMDJ75A | 5.0SMDJ75CA | 5D075 | 5D075 | 75.0 | 83.3 | 92.1 | 1 | 121.0 | 41.4 | 156.3 | 310.5 | 5 |
| 5.0SMDJ78A | 5.0SMDJ78CA | 5D078 | 5D078 | 78.0 | 86.7 | 95.8 | 1 | 126.0 | 39.7 | 162.8 | 297.8 | 5 |
| 5.0SMDJ85A | 5.0SMDJ85CA | 5D085 | 5D085 | 85.0 | 94.4 | 104.0 | 1 | 137.0 | 36.5 | 177.0 | 273.8 | 5 |
| 5.0SMDJ90A | 5.0SMDJ90CA | 5D090 | 5D090 | 90.0 | 100.0 | 111.0 | 1 | 146.0 | 34.3 | 188.6 | 257.3 | 5 |
| 5.0SMDJ100A | 5.0SMDJ100CA | 5D100 | 5D100 | 100.0 | 111.0 | 123.0 | 1 | 162.0 | 30.9 | 209.3 | 231.8 | 5 |
| 5.0SMDJ110A | 5.0SMDJ110CA | 5D110 | 5D110 | 110.0 | 122.0 | 135.0 | 1 | 177.0 | 28.3 | 228.7 | 212.3 | 5 |
| 5.0SMDJ120A | 5.0SMDJ120CA | 5D120 | 5D120 | 120.0 | 133.0 | 147.0 | 1 | 193.0 | 26.0 | 249.4 | 195.0 | 5 |
| 5.0SMDJ130A | 5.0SMDJ130CA | 5D130 | 5D130 | 130.0 | 144.0 | 159.0 | 1 | 209.0 | 24.0 | 270.0 | 180.0 | 5 |
| 5.0SMDJ140A | 5.0SMDJ140CA | 5D140 | 5D140 | 140.0 | 156.0 | 172.0 | 1 | 226.1 | 22.2 | 292.1 | 166.5 | 5 |
| 5.0SMDJ150A | 5.0SMDJ150CA | 5D150 | 5D150 | 150.0 | 167.0 | 185.0 | 1 | 243.0 | 20.6 | 314.0 | 154.5 | 5 |
| 5.0SMDJ160A | 5.0SMDJ160CA | 5D160 | 5D160 | 160.0 | 178.0 | 197.0 | 1 | 259.0 | 19.3 | 334.6 | 144.8 | 5 |
| 5.0SMDJ170A | 5.0SMDJ170CA | 5D170 | 5D170 | 170.0 | 189.0 | 209.0 | 1 | 275.0 | 18.2 | 355.3 | 136.5 | 5 |

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

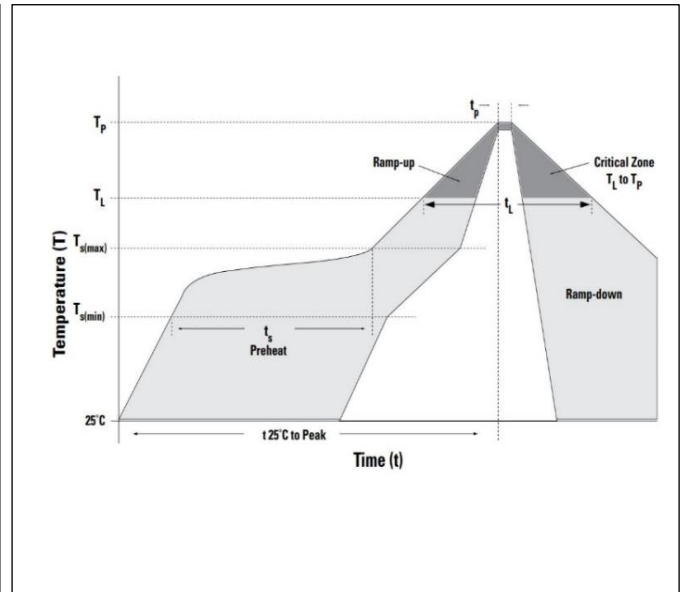
Ratings and Characteristic Curves (T = 25°C unless otherwise noted)



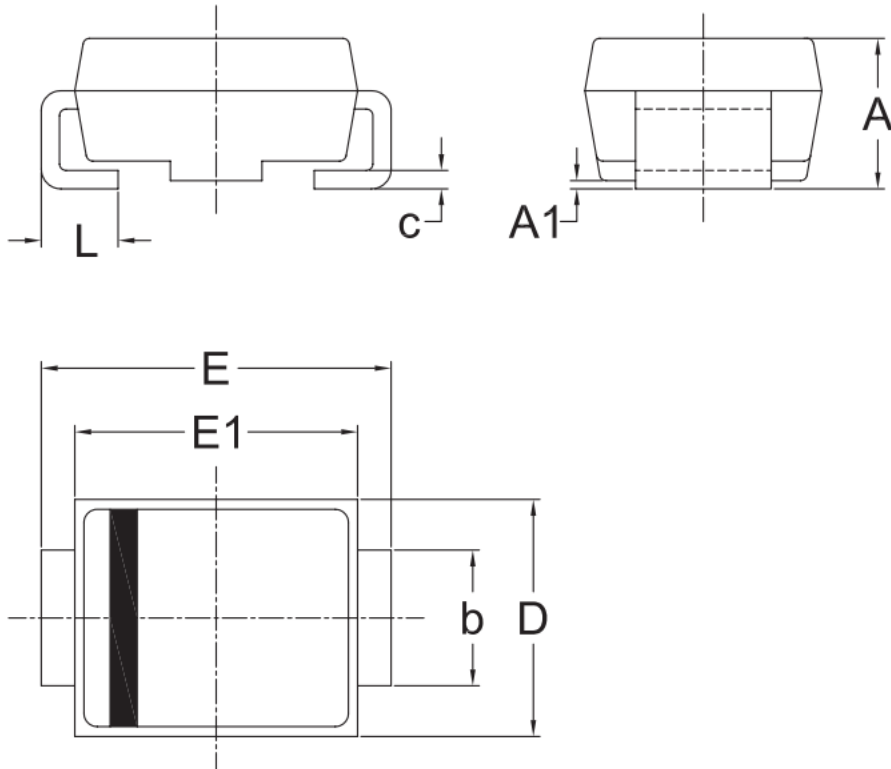
Soldering Parameters

Soldering profile

| | | |
|--|------------------------------------|-------------------------|
| 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 |



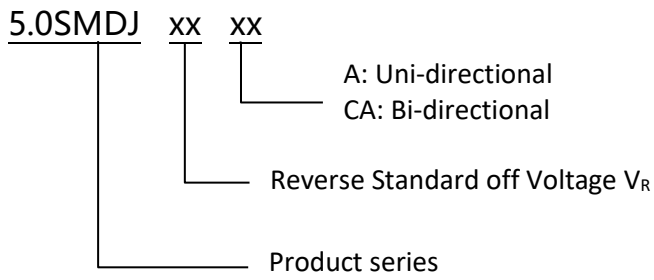
Dimensions



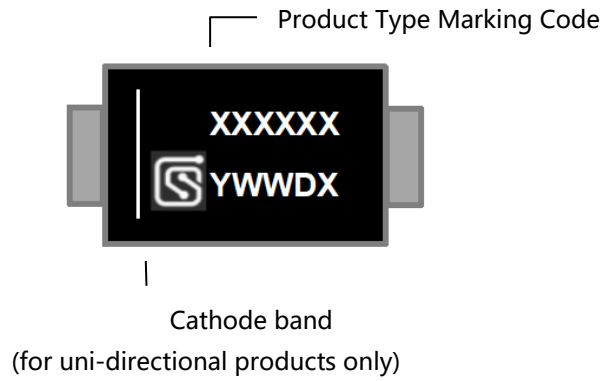
| UNIT | | A | A1 | b | c | D | E | E1 | L |
|------|-----|------|------|------|------|------|------|------|------|
| mm | Max | 2.83 | 0.30 | 3.10 | 0.25 | 6.15 | 8.15 | 7.05 | 1.60 |
| | Min | 2.33 | 0.00 | 2.80 | 0.15 | 5.85 | 7.65 | 6.75 | 0.90 |

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

Part Numbering



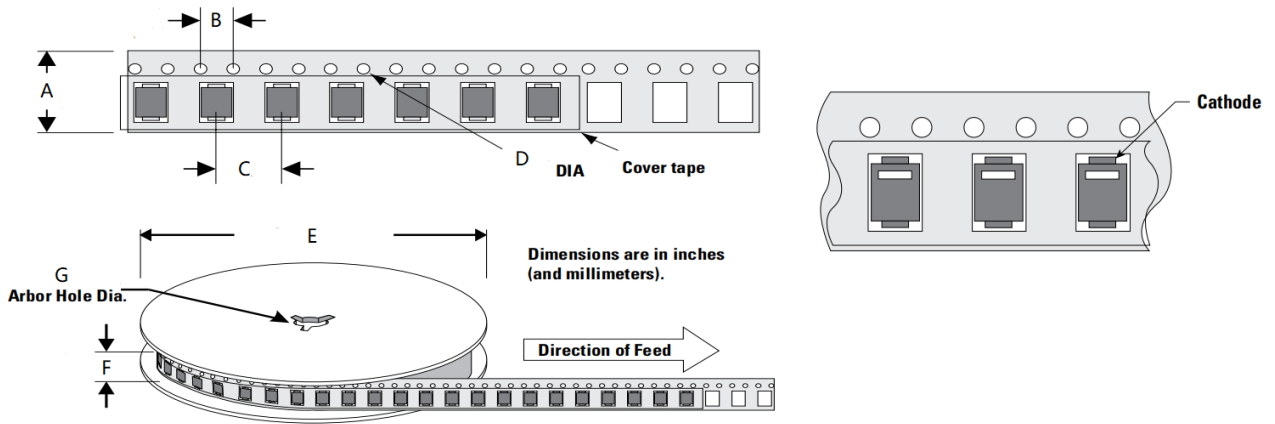
Part Marking



Packing

| Part number | Package name | Small packing quantity | Packing method |
|-------------|--------------|------------------------|----------------|
| 5.0SMDJXXXX | DO-214AB | 3000 | Tape & Reel |

Tape and Reel Specification



| Symbol | Millimeter |
|--------|-------------|
| A | 16.00±0.10 |
| B | 4.00±0.10 |
| C | 8.00±0.10 |
| D | 1.55±0.05 |
| E | 330.20±2.00 |
| F | 19.70±2.00 |
| G | 13.30±0.30 |

Revision history of Specification

| Version | Change Items | Effective Date |
|---------|-----------------|----------------|
| 1.0 | Initial Release | 13-Aug-2021 |

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