

Description

The SJD series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events. SJD12 package is 50% smaller in footprint when compare to SMA package and delivering one of the low height profiles (1.2mm) in the industry.

Features

- IEC-61000-4-2 ESD 15kV(Air), 8kV (Contact)
- SOD-123FL surface mount package
- Protects one I/O line
- Peak power dissipation of 1000W under 8/20 μ s waveform
- Low leakage current
- Solid-state silicon avalanche technology
- RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270 $^{\circ}$ C
- Flammability rating UL 94V-0
- Meet MSL level1, per J-STD-020



Applications

SJD12 devices are ideal for the protection of I/O interfaces, VCC bus and other vulnerable circuit used in cellular phones, portable devices, business machines, power supplies and other consumer applications.

Maximum Ratings and Characteristics (T_A=25 $^{\circ}$ C)

| Rating | Symbol | Value |
|---|------------------------------------|---------------------------------------|
| Peak pulse power dissipation at 10/1000 μ s waveform (Note1, Note2, Fig.1) | P _{PPM} | 200W |
| Peak pulse power (tp=8/20 μ s waveform) | P _{PPM} | 1000W |
| Peak pulse current of at 10/1000 μ s waveform (Note 1, Fig.3) | I _{PPM} | See Table(A) |
| Steady state power dissipation at T _L =75 $^{\circ}$ C (Fig.5) | P _{M(AV)} | 1.0W |
| Maximum Instantaneous Forward Voltage at 12A for Unidirectional Only | V _F | 3.5V |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6) | I _{FSM} | 20A |
| Operating junction and Storage Temperature Ranges | T _J , T _{STG} | -55 $^{\circ}$ C to +150 $^{\circ}$ C |
| Typical thermal resistance junction to lead | R _{θJL} | 100 $^{\circ}$ C/W |
| Typical thermal resistance junction to ambient | R _{θJA} | 220 $^{\circ}$ C/W |

Notes:1. Non-repetitive current pulse, per Fig.3 and derating above T_A=25 $^{\circ}$ C per Fig.2.

2. Each terminal is surface Mounted on the 5.0mm \times 5.0mm (0.03mm thick) copper pads.

3. 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.

Electrical Characteristics ($T_A=25^\circ\text{C}$)

| Part Number | | Device Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage @ I_T | | Test Current | Maximum Clamping Voltage @ I_{PP} | Peak Pulse Current | Reverse Leakage @ V_R |
|--------------|--------------|---------------------|-----|---------------------------|---------------------------|------------------|--------------|-------------------------------------|--------------------|-------------------------|
| Uni. | Bi. | Uni. | Bi. | $V_R(V)$ | $V_{B\ Min.}(V)$ | $V_{B\ Max.}(V)$ | $I_T(mA)$ | $V_C(V)$ | $I_{PP}(A)$ | $I_R(\mu A)$ |
| SJD12A05L01 | SJD12C05L01 | KE | AE | 5 | 6.4 | 7 | 10 | 9.2 | 21.8 | 500 |
| SJD12A06L01 | SJD12C06L01 | KG | AG | 6 | 6.67 | 7.37 | 10 | 10.3 | 19.4 | 400 |
| SJD12A6.5L01 | SJD12C6.5L01 | KK | AK | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 17.9 | 350 |
| SJD12A07L01 | SJD12C07L01 | KM | AM | 7 | 7.78 | 8.6 | 10 | 12.0 | 16.7 | 200 |
| SJD12A7.5L01 | SJD12C7.5L01 | KP | AP | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 15.5 | 100 |
| SJD12A08L01 | SJD12C08L01 | KR | AR | 8 | 8.89 | 9.83 | 1 | 13.6 | 14.7 | 50 |
| SJD12A8.5L01 | SJD12C8.5L01 | KT | AT | 8.5 | 9.44 | 10.4 | 1 | 14.4 | 13.9 | 20 |
| SJD12A09L01 | SJD12C09L01 | KV | AV | 9 | 10 | 11.1 | 1 | 15.4 | 13.0 | 10 |
| SJD12A10L01 | SJD12C10L01 | KX | AX | 10 | 11.1 | 12.3 | 1 | 17.0 | 11.8 | 5 |
| SJD12A11L01 | SJD12C11L01 | KZ | AZ | 11 | 12.2 | 13.5 | 1 | 18.2 | 11.0 | 3 |
| SJD12A12L01 | SJD12C12L01 | LE | BE | 12 | 13.3 | 14.7 | 1 | 19.9 | 10.1 | 1 |
| SJD12A13L01 | SJD12C13L01 | LG | BG | 13 | 14.4 | 15.9 | 1 | 21.5 | 9.3 | 1 |
| SJD12A14L01 | SJD12C14L01 | LK | BK | 14 | 15.6 | 17.2 | 1 | 23.2 | 8.6 | 1 |
| SJD12A15L01 | SJD12C15L01 | LM | BM | 15 | 16.7 | 18.5 | 1 | 24.4 | 8.2 | 1 |
| SJD12A16L01 | SJD12C16L01 | LP | BP | 16 | 17.8 | 19.7 | 1 | 26.0 | 7.7 | 1 |
| SJD12A17L01 | SJD12C17L01 | LR | BR | 17 | 18.9 | 20.9 | 1 | 27.6 | 7.3 | 1 |
| SJD12A18L01 | SJD12C18L01 | LT | BT | 18 | 20 | 22.1 | 1 | 29.2 | 6.9 | 1 |
| SJD12A20L01 | SJD12C20L01 | LV | BV | 20 | 22.2 | 24.5 | 1 | 32.4 | 6.2 | 1 |
| SJD12A22L01 | SJD12C22L01 | LX | BX | 22 | 24.4 | 26.9 | 1 | 35.5 | 5.7 | 1 |
| SJD12A24L01 | SJD12C24L01 | LZ | BZ | 24 | 26.7 | 29.5 | 1 | 38.9 | 5.2 | 1 |
| SJD12A26L01 | SJD12C26L01 | ME | CE | 26 | 28.9 | 31.9 | 1 | 42.1 | 4.8 | 1 |
| SJD12A28L01 | SJD12C28L01 | MG | CG | 28 | 31.1 | 34.4 | 1 | 45.4 | 4.4 | 1 |
| SJD12A30L01 | SJD12C30L01 | MK | CK | 30 | 33.3 | 36.8 | 1 | 48.4 | 4.2 | 1 |
| SJD12A33L01 | SJD12C33L01 | MM | CM | 33 | 36.7 | 40.6 | 1 | 53.3 | 3.8 | 1 |
| SJD12A36L01 | SJD12C36L01 | MP | CP | 36 | 40 | 44.2 | 1 | 58.1 | 3.5 | 1 |

Electrical Characteristics ($T_A=25^{\circ}\text{C}$)

| Part Number | | Device Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage @ I_T | | Test Current | Maximum Clamping Voltage @ I_{PP} | Peak Pulse Current | Reverse Leakage @ V_R |
|--------------|--------------|---------------------|-----|---------------------------|---------------------------|------------------|--------------|-------------------------------------|--------------------|-------------------------|
| Uni. | Bi. | Uni. | Bi. | $V_R(V)$ | $V_{B\ Min.}(V)$ | $V_{B\ Max.}(V)$ | $I_T(mA)$ | $V_C(V)$ | $I_{PP}(A)$ | $I_R(\mu A)$ |
| SJD12A40L01 | SJD12C40L01 | MR | CR | 40 | 44.4 | 49.1 | 1 | 64.5 | 3.1 | 1 |
| SJD12A43L01 | SJD12C43L01 | MT | CT | 43 | 47.8 | 52.8 | 1 | 69.4 | 2.9 | 1 |
| SJD12A45L01 | SJD12C45L01 | MV | CV | 45 | 50 | 55.3 | 1 | 72.7 | 2.8 | 1 |
| SJD12A48L01 | SJD12C48L01 | MX | CX | 48 | 53.3 | 58.9 | 1 | 77.4 | 2.6 | 1 |
| SJD12A51L01 | SJD12C51L01 | MZ | CZ | 51 | 56.7 | 62.7 | 1 | 82.4 | 2.5 | 1 |
| SJD12A54L01 | SJD12C54L01 | NE | DE | 54 | 60 | 66.3 | 1 | 87.1 | 2.3 | 1 |
| SJD12A58L01 | SJD12C58L01 | NG | DG | 58 | 64.4 | 71.2 | 1 | 93.6 | 2.2 | 1 |
| SJD12A60L01 | SJD12C60L01 | NK | DK | 60 | 66.7 | 73.7 | 1 | 96.8 | 2.1 | 1 |
| SJD12A64L01 | SJD12C64L01 | NM | DM | 64 | 71.1 | 78.6 | 1 | 103.0 | 2.0 | 1 |
| SJD12A70L01 | SJD12C70L01 | NP | DP | 70 | 77.8 | 86 | 1 | 113.0 | 1.8 | 1 |
| SJD12A75L01 | SJD12C75L01 | NR | DR | 75 | 83.3 | 92.1 | 1 | 121.0 | 1.7 | 1 |
| SJD12A78L01 | SJD12C78L01 | NT | DT | 78 | 86.7 | 95.8 | 1 | 126.0 | 1.6 | 1 |
| SJD12A85L01 | SJD12C85L01 | NV | DV | 85 | 94.4 | 104 | 1 | 137.0 | 1.5 | 1 |
| SJD12A90L01 | SJD12C90L01 | NX | DX | 90 | 100 | 111 | 1 | 146.0 | 1.4 | 1 |
| SJD12A100L01 | SJD12C100L01 | NZ | DZ | 100 | 111 | 123 | 1 | 162.0 | 1.3 | 1 |
| SJD12A110L01 | SJD12C110L01 | PE | EE | 110 | 122 | 135 | 1 | 177.0 | 1.2 | 1 |
| SJD12A120L01 | SJD12C120L01 | PG | EG | 120 | 133 | 147 | 1 | 193.0 | 1.1 | 1 |
| SJD12A130L01 | SJD12C130L01 | PK | EK | 130 | 144 | 159 | 1 | 209.0 | 1.0 | 1 |
| SJD12A150L01 | SJD12C150L01 | PM | EM | 150 | 167 | 185 | 1 | 243.0 | 0.8 | 1 |
| SJD12A160L01 | SJD12C160L01 | PP | EP | 160 | 178 | 197 | 1 | 259.0 | 0.8 | 1 |
| SJD12A170L01 | SJD12C170L01 | PR | ER | 170 | 189 | 209 | 1 | 275.0 | 0.8 | 1 |

Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$)

Figure 1. Peak Pulse Power Rating Curve

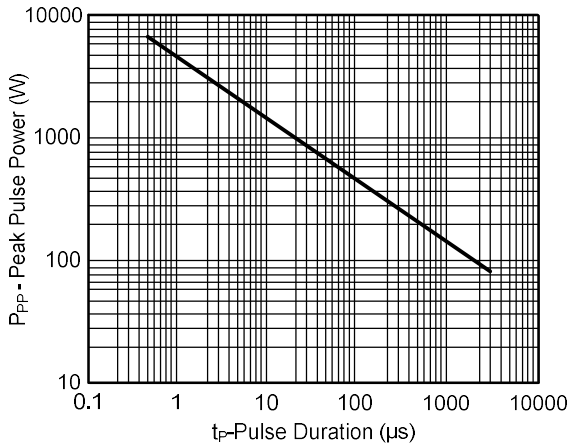


Figure 2. Pulse Derating Curve

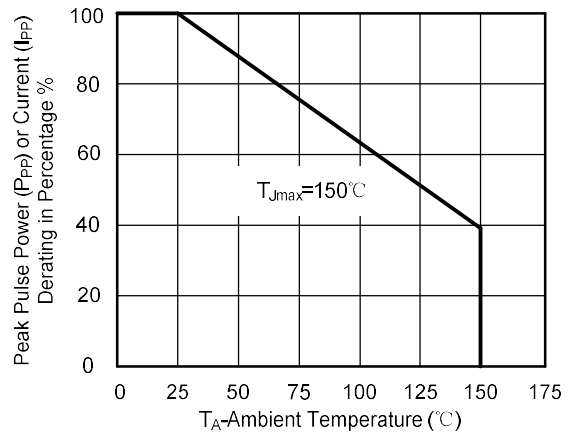


Figure 3. Pulse Waveform

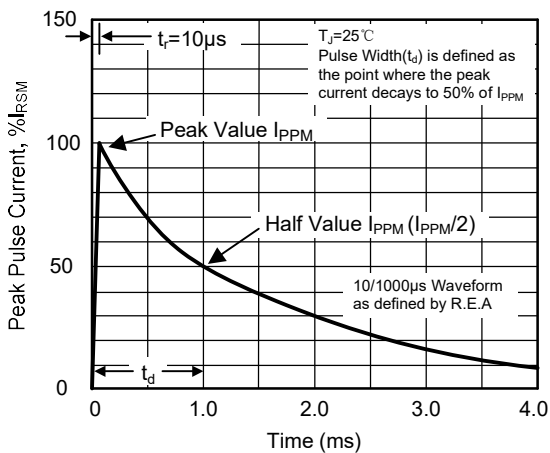


Figure 4. Typical Junction Capacitance

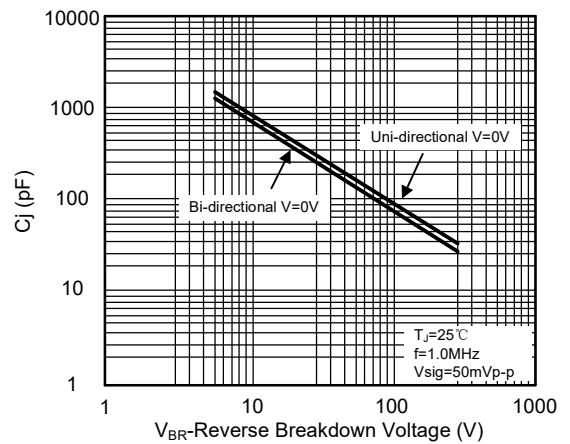


Figure 5. Steady State Power Dissipation Derating Curve

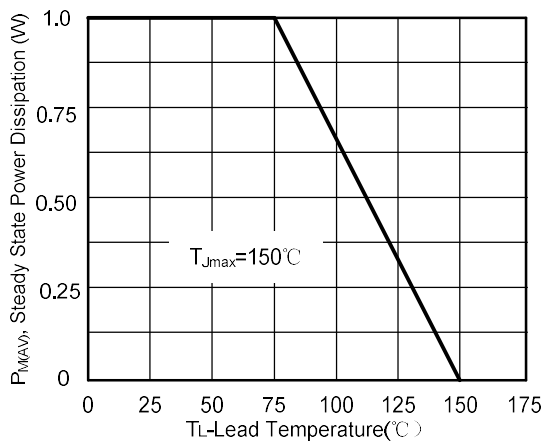
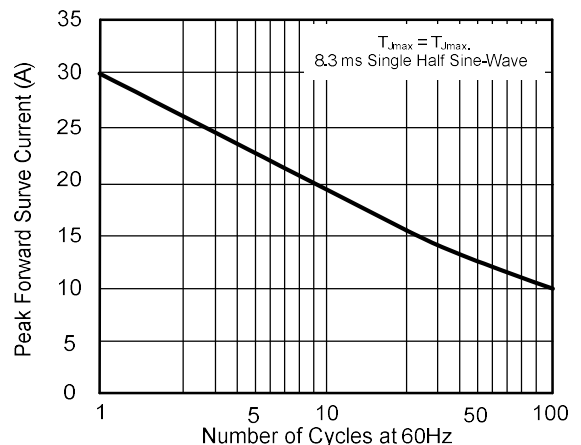
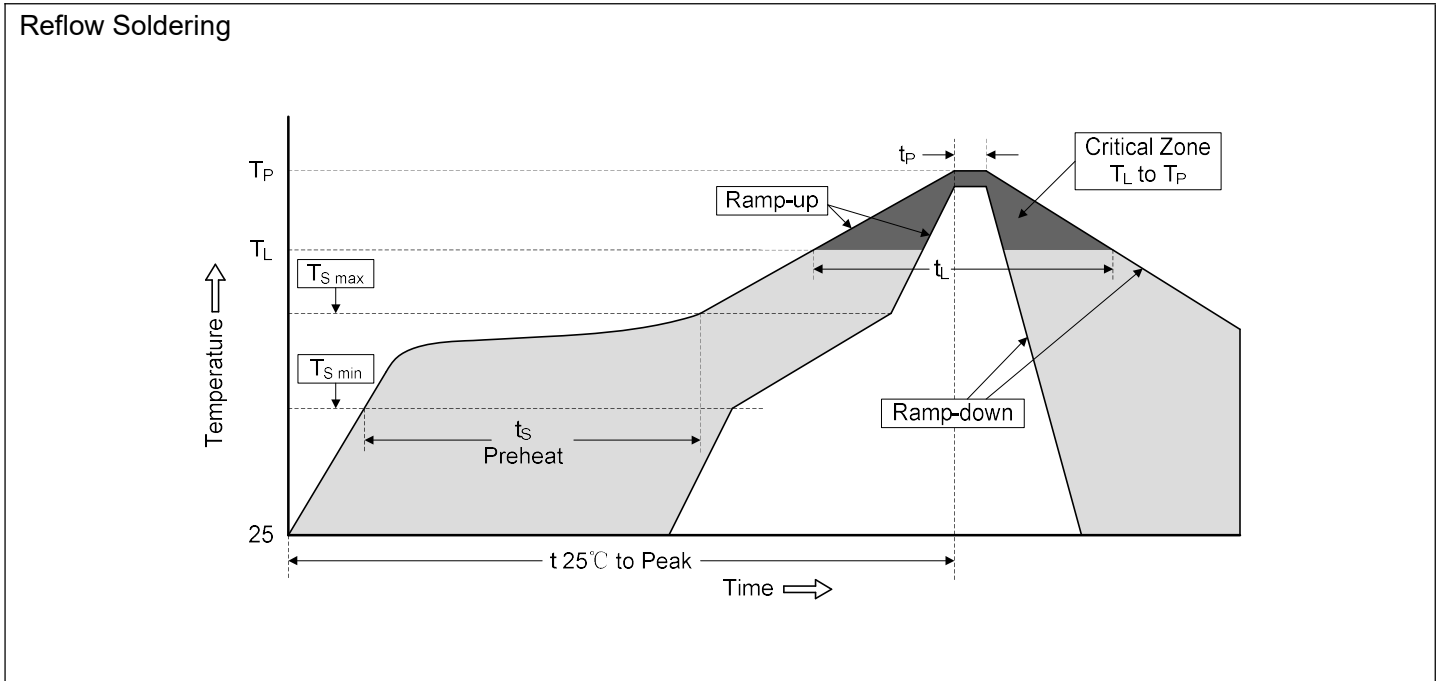


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

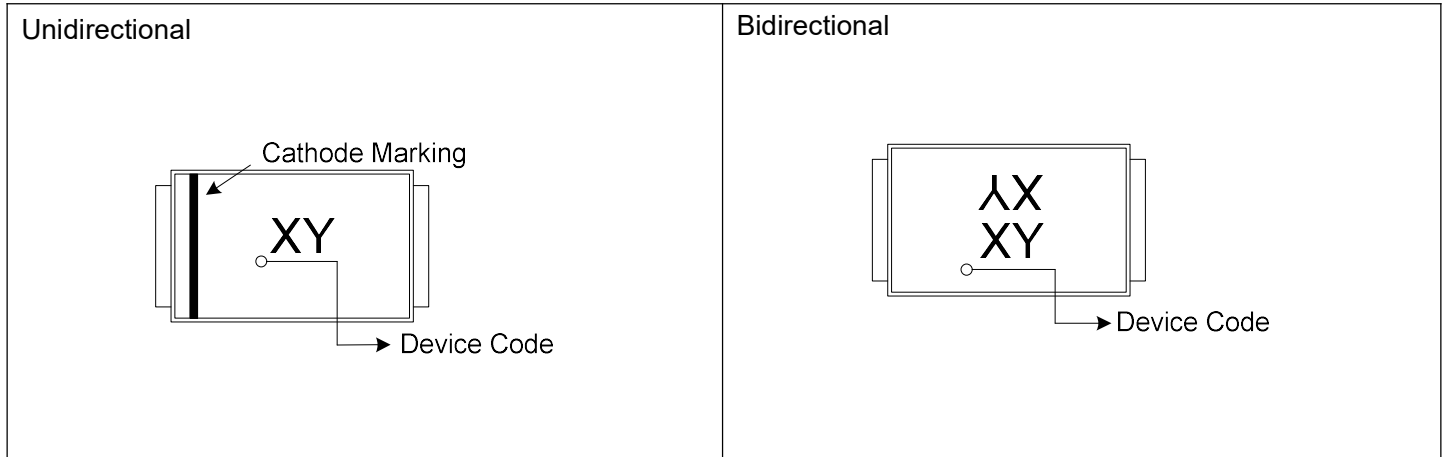


Soldering Parameters

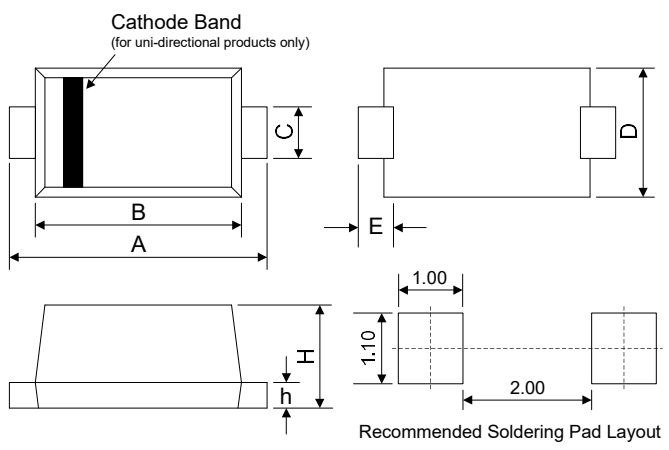


| Profile Feature | Pb-Free Assembly |
|---|----------------------------------|
| Average ramp-up rate (T_L to T_P) | 3°C/second max. |
| Preheat <ul style="list-style-type: none"> -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s) | 150°C 200°C 60-180 seconds |
| $T_{S\ max}$ to T_L <ul style="list-style-type: none"> -Ramp-up Rate | 3°C/second max. |
| Time maintained above: <ul style="list-style-type: none"> -Temperature (T_L) -Time (t_L) | 217°C 60-150 seconds |
| Peak Temperature (T_P) | 260°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 | 8 minutes max. |

Marking Code

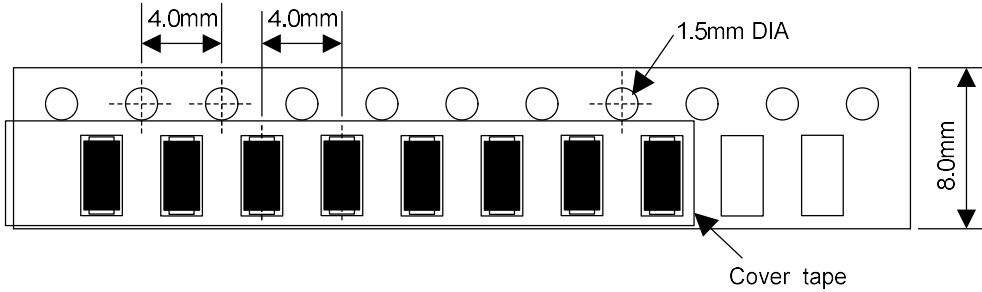


Dimensions (SOD-123FL)

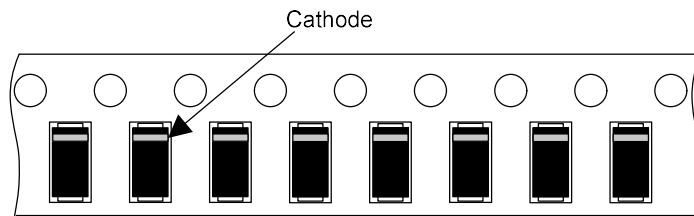
| | | | | |
|---|-------------|------|-----------|-------|
|  | Millimeters | | Inches | |
| | Symbol | Min. | Max. | Min. |
| A | 3.50 | 3.90 | 0.138 | 0.154 |
| B | 2.60 | 3.00 | 0.102 | 0.118 |
| C | 0.75 | 1.10 | 0.030 | 0.043 |
| D | 1.60 | 2.00 | 0.063 | 0.079 |
| E | 0.80Typ. | | 0.031Typ. | |
| H | 0.90 | 1.35 | 0.035 | 0.053 |
| h | 0.12 | 0.22 | 0.005 | 0.009 |

Packaging Specification

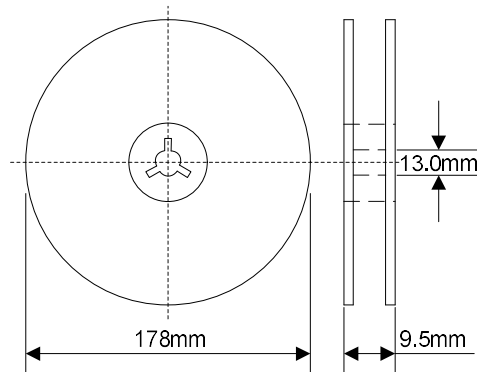
Tape



For Uni-Devices



7 Inches Reel



Quantity: 3000pcs/reel

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