



## 400W 36V Uni-directional SMD TVS Diode SMAJ36A Free EMC Laboratory IPP 6.88A

Our Product Introduction

### Basic Information

- Place of Origin: Shenzhen, Guangdong, China
- Brand Name: SOCAY
- Certification: UL, REACH, RoHS, ISO
- Model Number: SMAJ36A
- Minimum Order Quantity: 5000PCS
- Price: Negotiable
- Delivery Time: 5-8 work days



### Product Specification

- SMAJ36A Name: TVS Diodes
- SMAJ36A Package Type: DO-214AC/SMA
- SMAJ36A V<sub>rw</sub>: 36.0V
- SMAJ36A V<sub>br</sub>@I<sub>t</sub> (Min.): 40.00V
- SMAJ36A V<sub>br</sub>@I<sub>t</sub> (Max.): 44.20V
- SMAJ36A I<sub>t</sub>: 1mA
- SMAJ36A V<sub>c</sub>@I<sub>pp</sub>: 58.1V
- SMAJ36A I<sub>pp</sub>: 6.88A
- SMAJ36A I<sub>r</sub>@V<sub>rw</sub>: 5μA
- SMAJ36A Storage Temperature Range: -55 To +150

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## Product Description

### 400W 36V Uni-directional SMD TVS Diode SMAJ36A Free EMC Laboratory IPP 6.88A

**SMD TVS Diode SMAJ36A DATASHEET: [SMAJ\\_v2207.1.pdf](#)**

#### SMD TVS Diode SMAJ36A Features:

SMD TVS Diode SMAJ36A is For surface mounted applications in order to optimize board space

SMD TVS Diode SMAJ36A has Low leakage

SMD TVS Diode SMAJ36A is a Unidirectional unit

SMD TVS Diode SMAJ36A is Glass passivated junction

SMD TVS Diode SMAJ36A has Low inductance

SMD TVS Diode SMAJ36A has Excellent clamping capability

SMD TVS Diode SMAJ36A 's Peak power capability at  $10 \times 1000\mu s$  waveform Repetition rate (duty cycle):0.01% is 400W

SMD TVS Diode SMAJ36A 's Fast response time: typically less than 1.0ps from 0 Volts to VBR min

SMD TVS Diode SMAJ36A 's Typical IR less than  $5\mu A$  above 12V.

SMD TVS Diode SMAJ36A 's High Temperature soldering:  $260^{\circ}C/40$  seconds at terminals

Typical maximum temperature coefficient  $\Delta VBR = 0.1\% \times VBR @ 25^{\circ}C \times \Delta T$

SMD TVS Diode SMAJ36A 's Plastic package has Underwriters Laboratory Flammability 94V-0

Matte tin lead-free Plated

SMD TVS Diode SMAJ36A 's Halogen free and RoHS compliant

Typical failure mode is short from over-specified voltage or current

Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c

SMD TVS Diode SMAJ36A 's IEC-61000-4-2 ESD 15kV(Air), 8kV (Contact)

ESD protection of data lines in accordance with IEC 61000-4-2 (IEC801-2)

SMD TVS Diode SMAJ36A 's EFT protection of data lines in accordance with IEC 61000-4-4 (IEC801-4)

#### Electrical Characteristics ( $T_A=25^{\circ}C$ unless otherwise noted)

| Part Number |           | Marking |    | Reverse Stand-Off Voltage $V_{R0}(V)$ | Breakdown Voltage $V_{BR}$ (V) @1r |       | Test Current $I_T$ (mA) | Maximum Clamping Voltage $V_C$ @ $I_{CP}$ (V) | Maximum Peak Pulse Current $I_{PP}$ (A) | Maximum Reverse Leakage $I_R$ @ $V_{R0}$ ( $\mu A$ ) |
|-------------|-----------|---------|----|---------------------------------------|------------------------------------|-------|-------------------------|-----------------------------------------------|-----------------------------------------|------------------------------------------------------|
| Uni         | Bi        | Uni     | Bi |                                       | MIN                                | MAX   |                         |                                               |                                         |                                                      |
| SMAJ3.3A    | —         | A1      | —  | 3.3                                   | 4.10                               | —     | 1                       | 8.0                                           | 50.00                                   | 600                                                  |
| SMAJ5.0A    | SMAJ5.0CA | AE      | WE | 5.0                                   | 6.40                               | 7.00  | 10                      | 9.2                                           | 43.48                                   | 800                                                  |
| SMAJ6.0A    | SMAJ6.0CA | AG      | WG | 6.0                                   | 6.67                               | 7.37  | 10                      | 10.3                                          | 38.83                                   | 800                                                  |
| SMAJ6.5A    | SMAJ6.5CA | AK      | WK | 6.5                                   | 7.22                               | 7.98  | 10                      | 11.2                                          | 35.71                                   | 500                                                  |
| SMAJ7.0A    | SMAJ7.0CA | AM      | WM | 7.0                                   | 7.78                               | 8.60  | 10                      | 12.0                                          | 33.33                                   | 200                                                  |
| SMAJ7.5A    | SMAJ7.5CA | AP      | WP | 7.5                                   | 8.33                               | 9.21  | 1                       | 12.9                                          | 31.01                                   | 100                                                  |
| SMAJ8.0A    | SMAJ8.0CA | AR      | WR | 8.0                                   | 8.89                               | 9.83  | 1                       | 13.6                                          | 29.41                                   | 50                                                   |
| SMAJ8.5A    | SMAJ8.5CA | AT      | WT | 8.5                                   | 9.44                               | 10.40 | 1                       | 14.4                                          | 27.78                                   | 10                                                   |
| SMAJ9.0A    | SMAJ9.0CA | AV      | WV | 9.0                                   | 10.00                              | 11.10 | 1                       | 15.4                                          | 25.97                                   | 5                                                    |
| SMAJ10A     | SMAJ10CA  | AX      | WX | 10.0                                  | 11.10                              | 12.30 | 1                       | 17.0                                          | 23.53                                   | 5                                                    |
| SMAJ11A     | SMAJ11CA  | AZ      | WZ | 11.0                                  | 12.20                              | 13.60 | 1                       | 18.2                                          | 21.98                                   | 5                                                    |
| SMAJ12A     | SMAJ12CA  | BE      | XE | 12.0                                  | 13.30                              | 14.70 | 1                       | 19.9                                          | 20.10                                   | 5                                                    |
| SMAJ13A     | SMAJ13CA  | BG      | XG | 13.0                                  | 14.40                              | 15.90 | 1                       | 21.5                                          | 18.60                                   | 5                                                    |
| SMAJ14A     | SMAJ14CA  | BK      | XK | 14.0                                  | 15.60                              | 17.20 | 1                       | 23.2                                          | 17.24                                   | 5                                                    |
| SMAJ15A     | SMAJ15CA  | BM      | XM | 15.0                                  | 16.70                              | 18.50 | 1                       | 24.4                                          | 16.39                                   | 5                                                    |
| SMAJ16A     | SMAJ16CA  | BP      | XP | 16.0                                  | 17.80                              | 19.70 | 1                       | 26.0                                          | 15.38                                   | 5                                                    |
| SMAJ17A     | SMAJ17CA  | BR      | XR | 17.0                                  | 18.90                              | 20.90 | 1                       | 27.6                                          | 14.49                                   | 5                                                    |
| SMAJ18A     | SMAJ18CA  | BT      | XT | 18.0                                  | 20.00                              | 22.10 | 1                       | 29.2                                          | 13.70                                   | 5                                                    |
| SMAJ19A     | SMAJ19CA  | BB      | XB | 19.0                                  | 21.10                              | 23.30 | 1                       | 30.8                                          | 13.00                                   | 5                                                    |
| SMAJ20A     | SMAJ20CA  | BV      | XV | 20.0                                  | 22.20                              | 24.50 | 1                       | 32.4                                          | 12.35                                   | 5                                                    |
| SMAJ22A     | SMAJ22CA  | BX      | XX | 22.0                                  | 24.40                              | 26.90 | 1                       | 35.5                                          | 11.27                                   | 5                                                    |
| SMAJ24A     | SMAJ24CA  | BZ      | XZ | 24.0                                  | 26.70                              | 29.50 | 1                       | 38.9                                          | 10.28                                   | 5                                                    |
| SMAJ26A     | SMAJ26CA  | CE      | YE | 26.0                                  | 28.90                              | 31.90 | 1                       | 42.1                                          | 9.50                                    | 5                                                    |
| SMAJ28A     | SMAJ28CA  | CG      | YG | 28.0                                  | 31.10                              | 34.40 | 1                       | 45.4                                          | 8.81                                    | 5                                                    |
| SMAJ30A     | SMAJ30CA  | CK      | YK | 30.0                                  | 33.30                              | 36.80 | 1                       | 48.4                                          | 8.26                                    | 5                                                    |
| SMAJ33A     | SMAJ33CA  | CM      | YM | 33.0                                  | 36.70                              | 40.60 | 1                       | 53.3                                          | 7.50                                    | 5                                                    |
| SMAJ36A     | SMAJ36CA  | CP      | YP | 36.0                                  | 40.00                              | 44.20 | 1                       | 58.1                                          | 6.88                                    | 5                                                    |
| SMAJ40A     | SMAJ40CA  | CR      | YR | 40.0                                  | 44.40                              | 49.10 | 1                       | 64.5                                          | 6.20                                    | 5                                                    |
| SMAJ43A     | SMAJ43CA  | CT      | YT | 43.0                                  | 47.80                              | 52.80 | 1                       | 69.4                                          | 5.76                                    | 5                                                    |

# Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted) (Continue)

| Part Number |           | Marking |    | Reverse Stand-Off Voltage V <sub>RRM</sub> (V) | Breakdown Voltage V <sub>BR</sub> (V) @I <sub>R</sub> |        | Test Current I <sub>T</sub> (mA) | Maximum Clamping Voltage V <sub>C</sub> @I <sub>CV</sub> (V) | Maximum Peak Pulse Current I <sub>PP</sub> (A) | Maximum Reverse Leakage I <sub>R</sub> @V <sub>RRM</sub> (μA) |
|-------------|-----------|---------|----|------------------------------------------------|-------------------------------------------------------|--------|----------------------------------|--------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------|
| Uni         | Bi        | Uni     | Bi |                                                | MIN                                                   | MAX    |                                  |                                                              |                                                |                                                               |
| SMAJ45A     | SMAJ45CA  | CV      | YV | 45.0                                           | 50.00                                                 | 55.30  | 1                                | 72.7                                                         | 5.50                                           | 5                                                             |
| SMAJ48A     | SMAJ48CA  | CX      | YX | 48.0                                           | 53.30                                                 | 58.90  | 1                                | 77.4                                                         | 5.17                                           | 5                                                             |
| SMAJ51A     | SMAJ51CA  | CZ      | YZ | 51.0                                           | 56.70                                                 | 62.70  | 1                                | 82.4                                                         | 4.85                                           | 5                                                             |
| SMAJ54A     | SMAJ54CA  | RE      | ZE | 54.0                                           | 60.00                                                 | 66.30  | 1                                | 87.1                                                         | 4.59                                           | 5                                                             |
| SMAJ58A     | SMAJ58CA  | RG      | ZG | 58.0                                           | 64.40                                                 | 71.20  | 1                                | 93.6                                                         | 4.27                                           | 5                                                             |
| SMAJ60A     | SMAJ60CA  | RK      | ZK | 60.0                                           | 66.70                                                 | 73.70  | 1                                | 96.8                                                         | 4.13                                           | 5                                                             |
| SMAJ64A     | SMAJ64CA  | RM      | ZM | 64.0                                           | 71.10                                                 | 78.60  | 1                                | 103.0                                                        | 3.88                                           | 5                                                             |
| SMAJ70A     | SMAJ70CA  | RP      | ZP | 70.0                                           | 77.80                                                 | 86.00  | 1                                | 113.0                                                        | 3.54                                           | 5                                                             |
| SMAJ75A     | SMAJ75CA  | RR      | ZR | 75.0                                           | 83.30                                                 | 92.10  | 1                                | 121.0                                                        | 3.31                                           | 5                                                             |
| SMAJ78A     | SMAJ78CA  | RT      | ZT | 78.0                                           | 86.70                                                 | 95.80  | 1                                | 126.0                                                        | 3.17                                           | 5                                                             |
| SMAJ80A     | SMAJ80CA  | RB      | ZB | 80.0                                           | 88.80                                                 | 97.60  | 1                                | 129.6                                                        | 3.09                                           | 5                                                             |
| SMAJ85A     | SMAJ85CA  | RV      | ZV | 85.0                                           | 94.40                                                 | 104.00 | 1                                | 137.0                                                        | 2.92                                           | 5                                                             |
| SMAJ90A     | SMAJ90CA  | RX      | ZX | 90.0                                           | 100.00                                                | 111.00 | 1                                | 146.0                                                        | 2.74                                           | 5                                                             |
| SMAJ100A    | SMAJ100CA | RZ      | ZZ | 100.0                                          | 111.00                                                | 123.00 | 1                                | 162.0                                                        | 2.47                                           | 5                                                             |
| SMAJ110A    | SMAJ110CA | SE      | VE | 110.0                                          | 122.00                                                | 135.00 | 1                                | 177.0                                                        | 2.26                                           | 5                                                             |
| SMAJ120A    | SMAJ120CA | SG      | VG | 120.0                                          | 133.00                                                | 147.00 | 1                                | 193.0                                                        | 2.07                                           | 5                                                             |
| SMAJ130A    | SMAJ130CA | SK      | VK | 130.0                                          | 144.00                                                | 159.00 | 1                                | 209.0                                                        | 1.91                                           | 5                                                             |
| SMAJ140A    | SMAJ140CA | SB      | VB | 140.0                                          | 155.00                                                | 171.00 | 1                                | 226.8                                                        | 1.76                                           | 5                                                             |
| SMAJ150A    | SMAJ150CA | SM      | VM | 150.0                                          | 167.00                                                | 185.00 | 1                                | 243.0                                                        | 1.65                                           | 5                                                             |
| SMAJ160A    | SMAJ160CA | SP      | VP | 160.0                                          | 178.00                                                | 197.00 | 1                                | 259.0                                                        | 1.54                                           | 5                                                             |
| SMAJ170A    | SMAJ170CA | SR      | VR | 170.0                                          | 189.00                                                | 209.00 | 1                                | 275.0                                                        | 1.45                                           | 5                                                             |
| SMAJ180A    | SMAJ180CA | ST      | VT | 180.0                                          | 201.00                                                | 220.00 | 1                                | 291.6                                                        | 1.37                                           | 5                                                             |
| SMAJ190A    | SMAJ190CA | SV      | VV | 190.0                                          | 211.00                                                | 232.00 | 1                                | 307.8                                                        | 1.30                                           | 5                                                             |
| SMAJ200A    | SMAJ200CA | SW      | VW | 200.0                                          | 224.00                                                | 247.00 | 1                                | 324.0                                                        | 1.23                                           | 5                                                             |
| SMAJ220A    | SMAJ220CA | SX      | VX | 220.0                                          | 246.00                                                | 272.00 | 1                                | 356.0                                                        | 1.12                                           | 5                                                             |
| SMAJ250A    | SMAJ250CA | SZ      | VZ | 250.0                                          | 279.00                                                | 309.00 | 1                                | 405.0                                                        | 0.99                                           | 5                                                             |
| SMAJ300A    | SMAJ300CA | DE      | HE | 300.0                                          | 335.00                                                | 371.00 | 1                                | 486.0                                                        | 0.82                                           | 5                                                             |
| SMAJ350A    | SMAJ350CA | DG      | HG | 350.0                                          | 391.00                                                | 432.00 | 1                                | 567.0                                                        | 0.71                                           | 5                                                             |
| SMAJ400A    | SMAJ400CA | DK      | HK | 400.0                                          | 447.00                                                | 494.00 | 1                                | 648.0                                                        | 0.62                                           | 5                                                             |
| SMAJ440A    | SMAJ440CA | DM      | HM | 440.0                                          | 492.00                                                | 543.00 | 1                                | 713.0                                                        | 0.56                                           | 5                                                             |

## Description

The SMAJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

## Features

- ◆ For surface mounted applications in order to optimize board space
- ◆ Low leakage
- ◆ Uni and Bidirectional unit
- ◆ Glass passivated junction
- ◆ Low inductance
- ◆ Excellent clamping capability
- ◆ 400W Peak power capability at 10 × 1000μs waveform Repetition rate (duty cycle):0.01%
- ◆ Fast response time: typically less than 1.0ps from 0 Volts to V<sub>BR</sub> min
- ◆ Typical I<sub>R</sub> less than 5μA above 12V
- ◆ High Temperature soldering: 260°C/40 seconds at terminals
- ◆ Typical maximum temperature coefficient ΔV<sub>BR</sub> = 0.1% × V<sub>BR</sub>@25°C× ΔT
- ◆ Plastic package has Underwriters Laboratory Flammability 94V-0
- ◆ Matte tin lead-free Plated
- ◆ Halogen free and RoHS compliant
- ◆ Typical failure mode is short from over-specified voltage or current
- ◆ Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c
- ◆ IEC-61000-4-2 ESD 15kV(Air), 8kV (Contact)
- ◆ ESD protection of data lines in accordance with IEC 61000-4-2 (IEC801-2)
- ◆ EFT protection of data lines in accordance with IEC 61000-4-4 (IEC801-4)

## Functional Diagram

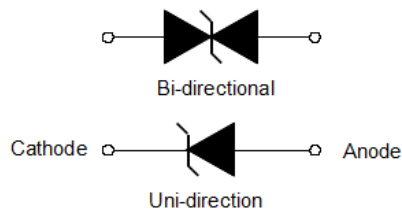


Figure 1 - Peak Pulse Power Rating Curve

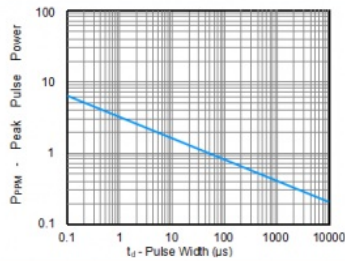


Figure 2 - Pulse Derating Curve

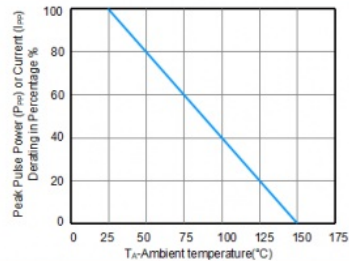


Figure 3 - Pulse Waveform

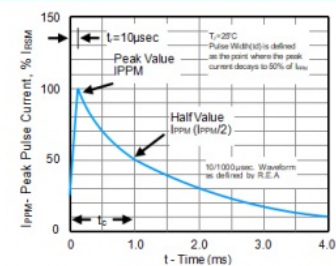


Figure 4 - Typical Junction Capacitance

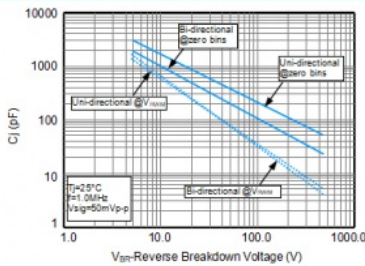


Figure 5 - Steady State Power Derating Curve

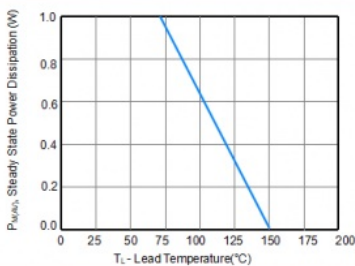
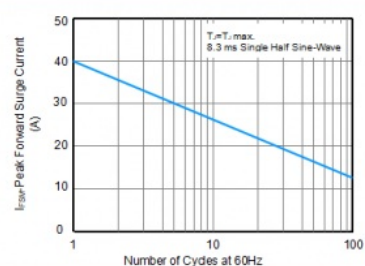
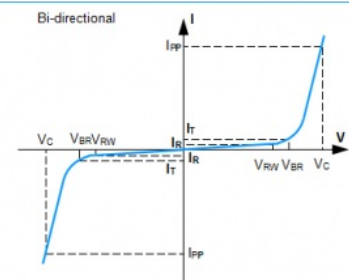
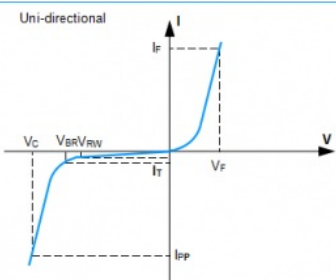


Figure 6 - Maximum Non-Repetitive Surge Current



## I-V Curve Characteristics



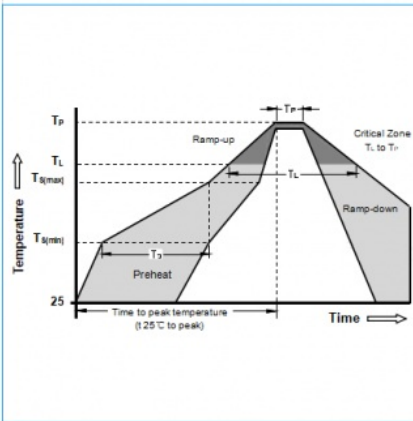
## Physical Specifications

|          |                                                              |
|----------|--------------------------------------------------------------|
| Weight   | 0.002 ounce, 0.061 gram                                      |
| Case     | JEDEC DO-214AC Molded Plastic over glass passivated junction |
| Polarity | Color band denotes cathode except Bipolar                    |
| Terminal | Matte Tin-plated leads, Solderable per JESD22-B102D          |

## Environmental Specifications

|                    |             |
|--------------------|-------------|
| Temperature Cycle  | JESD22-A104 |
| Pressure Cooker    | JESD22-A102 |
| High Temp. Storage | JESD22-A103 |
| HTRB               | JESD22-A108 |
| Thermal Shock      | JESD22-A106 |

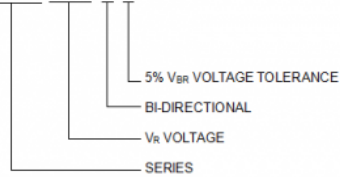
## Soldering Parameters



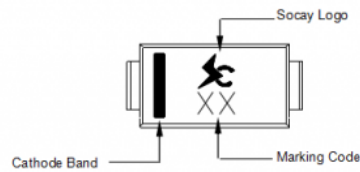
| Reflow Condition                                     |                                    | Lead-free assembly |
|------------------------------------------------------|------------------------------------|--------------------|
| Pre Heat                                             | -Temperature Min ( $T_{s(min)}$ )  | 150°C              |
|                                                      | -Temperature Max ( $T_{s(max)}$ )  | 200°C              |
|                                                      | -Time (min to max) ( $T_s$ )       | 60 -180 Seconds    |
| Average ramp up rate (Liquidus Temp $T_L$ to peak)   |                                    | 3°C/second max     |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                 |                                    | 3°C/second max     |
| Reflow                                               | - Temperature ( $T_L$ ) (Liquidus) | 217°C              |
|                                                      | - Time (min to max) ( $T_L$ )      | 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                                        |                                    | 280°C              |

## Part Numbering

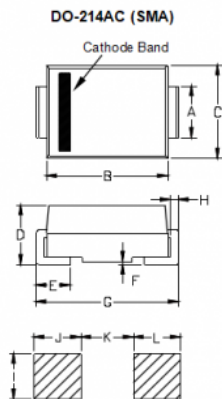
**SMA J x x x CA**



## Part Marking



## Dimensions

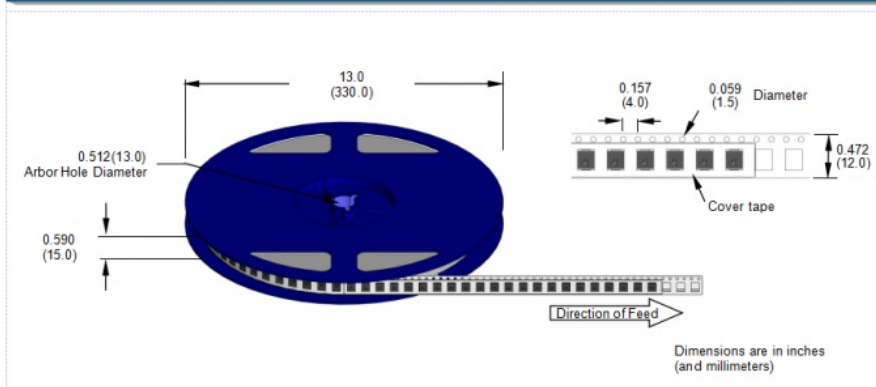


| Dimensions | Inches |       | Millimeters |       |
|------------|--------|-------|-------------|-------|
|            | Min    | Max   | Min         | Max   |
| A          | 0.049  | 0.065 | 1.25        | 1.65  |
| B          | 0.156  | 0.183 | 3.95        | 4.65  |
| C          | 0.093  | 0.112 | 2.35        | 2.85  |
| D          | 0.078  | 0.095 | 1.98        | 2.41  |
| E          | 0.030  | 0.060 | 0.76        | 1.52  |
| F          | -      | 0.008 | -           | 0.203 |
| G          | 0.185  | 0.209 | 4.70        | 5.30  |
| H          | 0.006  | 0.012 | 0.15        | 0.31  |
| I          | 0.067  | -     | 1.70        | -     |
| J          | 0.082  | -     | 2.10        | -     |
| K          | -      | 0.090 | -           | 2.30  |
| L          | 0.082  | -     | 2.10        | -     |

## Packaging

| Part Number | Component Package | Reel (pcs) | Per Carton (pcs) | Packaging Option          | Reel Diameters (mm) |
|-------------|-------------------|------------|------------------|---------------------------|---------------------|
| SMAJXXXXX   | DO-214AC (SMA)    | 5000       | 80000            | Tape & Reel -15mm/13"tape | 330.0               |

## Tape and Reel Specifications





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