



## 1500W Surface Mount TVS Diodes Transient Voltage Suppressor SMCJ5.0A 5.0V

Our Product Introduction

### Basic Information

- Place of Origin: Shenzhen, Guangdong, China
- Brand Name: SOCAY
- Certification: UL, REACH, RoHS, ISO
- Model Number: SMCJ5.0A
- Minimum Order Quantity: 3000PCS
- Price: Negotiable
- Delivery Time: 5-8 work days



### Product Specification

- Product Name: TVS Diodes
- Package Type: DO-214AB/SMC
- V<sub>rw</sub>: 5.0V
- V<sub>br@It</sub> (Min.): 6.40V
- V<sub>br@It</sub> (Max.): 7.00V
- I<sub>t</sub>: 10mA
- V<sub>c@Ipp</sub>: 9.2V
- I<sub>pp</sub>: 163.04A
- I<sub>r@Vrw</sub>: 1000μA
- Storage Temperature Range: -55 To +150
- Highlight: **1500W TVS Diodes, TVS Diodes 5.0V, 1500W TVS Transient Voltage Suppressor**

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## Product Description

1500W Surface Mount TVS SMCJ5.0A, 1000µA IR VRWM 5.0V Transient Voltage Suppressor

**DATASHEET:** [SMCJ\\_v2107.1 .pdf](#)

### Description:

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

| Part Number |           | Marking |     | Reverse Stand-Off Voltage $V_{RWM}$ (V) | Breakdown Voltage $V_{BR}$ (V) @ $I_T$ |       | Test Current $I_T$ (mA) | Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V) | Maximum Peak Pulse Current $I_{PP}$ (A) | Maximum Reverse Leakage $I_R$ @ $V_{RWM}$ (µA) |
|-------------|-----------|---------|-----|-----------------------------------------|----------------------------------------|-------|-------------------------|-----------------------------------------------|-----------------------------------------|------------------------------------------------|
| Uni         | Bi        | Uni     | Bi  |                                         | MIN                                    | MAX   |                         |                                               |                                         |                                                |
| SMCJ5.0A    | SMCJ5.0CA | GDE     | BDE | 5.0                                     | 6.40                                   | 7.00  | 10                      | 9.2                                           | 163.04                                  | 1000                                           |
| SMCJ6.0A    | SMCJ6.0CA | GDG     | BDG | 6.0                                     | 6.67                                   | 7.37  | 10                      | 10.3                                          | 145.63                                  | 1000                                           |
| SMCJ6.5A    | SMCJ6.5CA | GDK     | BDK | 6.5                                     | 7.22                                   | 7.98  | 10                      | 11.2                                          | 133.93                                  | 500                                            |
| SMCJ7.0A    | SMCJ7.0CA | GDM     | BDM | 7.0                                     | 7.78                                   | 8.60  | 10                      | 12.0                                          | 125.00                                  | 200                                            |
| SMCJ7.5A    | SMCJ7.5CA | GDP     | BDP | 7.5                                     | 8.33                                   | 9.21  | 1                       | 12.9                                          | 116.28                                  | 100                                            |
| SMCJ8.0A    | SMCJ8.0CA | GDR     | BDR | 8.0                                     | 8.89                                   | 9.83  | 1                       | 13.6                                          | 110.29                                  | 50                                             |
| SMCJ8.5A    | SMCJ8.5CA | GDT     | BDT | 8.5                                     | 9.44                                   | 10.40 | 1                       | 14.4                                          | 104.17                                  | 20                                             |
| SMCJ9.0A    | SMCJ9.0CA | GDV     | BDV | 9.0                                     | 10.00                                  | 11.10 | 1                       | 15.4                                          | 97.40                                   | 10                                             |
| SMCJ10A     | SMCJ10CA  | GDX     | BDX | 10.0                                    | 11.10                                  | 12.30 | 1                       | 17.0                                          | 88.24                                   | 5                                              |
| SMCJ11A     | SMCJ11CA  | GDZ     | BDZ | 11.0                                    | 12.20                                  | 13.50 | 1                       | 18.2                                          | 82.42                                   | 5                                              |
| SMCJ12A     | SMCJ12CA  | GEE     | BEE | 12.0                                    | 13.30                                  | 14.70 | 1                       | 19.9                                          | 75.38                                   | 5                                              |
| SMCJ13A     | SMCJ13CA  | GEG     | BEG | 13.0                                    | 14.40                                  | 15.90 | 1                       | 21.5                                          | 69.77                                   | 5                                              |
| SMCJ14A     | SMCJ14CA  | GEK     | BEK | 14.0                                    | 15.60                                  | 17.20 | 1                       | 23.2                                          | 64.66                                   | 5                                              |
| SMCJ15A     | SMCJ15CA  | GEM     | BEM | 15.0                                    | 16.70                                  | 18.50 | 1                       | 24.4                                          | 61.48                                   | 5                                              |
| SMCJ16A     | SMCJ16CA  | GEP     | BEP | 16.0                                    | 17.80                                  | 19.70 | 1                       | 26.0                                          | 57.69                                   | 5                                              |
| SMCJ17A     | SMCJ17CA  | GER     | BER | 17.0                                    | 18.90                                  | 20.90 | 1                       | 27.6                                          | 54.35                                   | 5                                              |
| SMCJ18A     | SMCJ18CA  | GET     | BET | 18.0                                    | 20.00                                  | 22.10 | 1                       | 29.2                                          | 51.37                                   | 5                                              |
| SMCJ19A     | SMCJ19CA  | GEB     | BEB | 19.0                                    | 21.10                                  | 23.30 | 1                       | 30.8                                          | 48.73                                   | 5                                              |
| SMCJ20A     | SMCJ20CA  | GEV     | BEV | 20.0                                    | 22.20                                  | 24.50 | 1                       | 32.4                                          | 46.30                                   | 5                                              |
| SMCJ22A     | SMCJ22CA  | GEX     | BEX | 22.0                                    | 24.40                                  | 26.90 | 1                       | 35.5                                          | 42.25                                   | 5                                              |
| SMCJ24A     | SMCJ24CA  | GEZ     | BEZ | 24.0                                    | 26.70                                  | 29.50 | 1                       | 38.9                                          | 38.56                                   | 5                                              |
| SMCJ26A     | SMCJ26CA  | GFE     | BFE | 26.0                                    | 28.90                                  | 31.90 | 1                       | 42.1                                          | 35.63                                   | 5                                              |
| SMCJ28A     | SMCJ28CA  | GFG     | BFG | 28.0                                    | 31.10                                  | 34.40 | 1                       | 45.4                                          | 33.04                                   | 5                                              |
| SMCJ30A     | SMCJ30CA  | GFK     | BFK | 30.0                                    | 33.30                                  | 36.80 | 1                       | 48.4                                          | 30.99                                   | 5                                              |
| SMCJ33A     | SMCJ33CA  | GFM     | BFM | 33.0                                    | 36.70                                  | 40.60 | 1                       | 53.3                                          | 28.14                                   | 5                                              |
| SMCJ36A     | SMCJ36CA  | GFP     | BFP | 36.0                                    | 40.00                                  | 44.20 | 1                       | 58.1                                          | 25.82                                   | 5                                              |
| SMCJ40A     | SMCJ40CA  | GFR     | BFR | 40.0                                    | 44.40                                  | 49.10 | 1                       | 64.5                                          | 23.26                                   | 5                                              |
| SMCJ43A     | SMCJ43CA  | GFT     | BFT | 43.0                                    | 47.80                                  | 52.80 | 1                       | 69.4                                          | 21.61                                   | 5                                              |

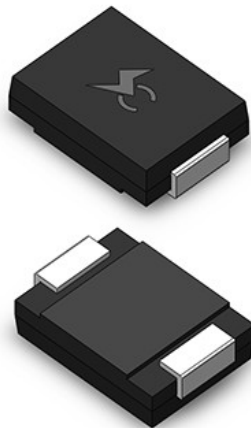
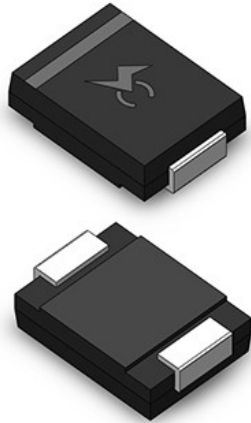
|              |               |     |     |       |        |        |   |       |       |   |
|--------------|---------------|-----|-----|-------|--------|--------|---|-------|-------|---|
| SMCJ45A      | SMCJ45<br>CA  | GFV | BFV | 45.0  | 50.00  | 55.30  | 1 | 72.7  | 20.63 | 5 |
| SMCJ48A      | SMCJ48<br>CA  | GFX | BFX | 48.0  | 53.30  | 58.90  | 1 | 77.4  | 19.38 | 5 |
| SMCJ51A      | SMCJ51<br>CA  | GFZ | BFZ | 51.0  | 56.70  | 62.70  | 1 | 82.4  | 18.20 | 5 |
| SMCJ54A      | SMCJ54<br>CA  | GGE | BGE | 54.0  | 60.00  | 66.30  | 1 | 87.1  | 17.22 | 5 |
| SMCJ58A      | SMCJ58<br>CA  | GGG | BGG | 58.0  | 64.40  | 71.20  | 1 | 93.6  | 16.03 | 5 |
| SMCJ60A      | SMCJ60<br>CA  | GGK | BGK | 60.0  | 66.70  | 73.70  | 1 | 96.8  | 15.50 | 5 |
| SMCJ64A      | SMCJ64<br>CA  | GGM | BGM | 64.0  | 71.10  | 78.60  | 1 | 103.0 | 14.56 | 5 |
| SMCJ70A      | SMCJ70<br>CA  | GGP | BGP | 70.0  | 77.80  | 86.00  | 1 | 113.0 | 13.27 | 5 |
| SMCJ75A      | SMCJ75<br>CA  | GGR | BGR | 75.0  | 83.30  | 92.10  | 1 | 121.0 | 12.40 | 5 |
| SMCJ78A      | SMCJ78<br>CA  | GGT | BGT | 78.0  | 86.70  | 95.80  | 1 | 126.0 | 11.90 | 5 |
| SMCJ80A      | SMCJ80<br>CA  | GGB | BGB | 80.0  | 88.80  | 97.60  | 1 | 129.6 | 11.57 | 5 |
| SMCJ85A      | SMCJ85<br>CA  | GGV | BGV | 85.0  | 94.40  | 104.00 | 1 | 137.0 | 10.95 | 5 |
| SMCJ90A      | SMCJ90<br>CA  | GGX | BGX | 90.0  | 100.00 | 111.00 | 1 | 146.0 | 10.27 | 5 |
| SMCJ100<br>A | SMCJ100<br>CA | GGZ | BGZ | 100.0 | 111.00 | 123.00 | 1 | 162.0 | 9.26  | 5 |
| SMCJ110<br>A | SMCJ110<br>CA | GHE | BHE | 110.0 | 122.00 | 135.00 | 1 | 177.0 | 8.47  | 5 |
| SMCJ120<br>A | SMCJ120<br>CA | GHG | BHG | 120.0 | 133.00 | 147.00 | 1 | 193.0 | 7.77  | 5 |
| SMCJ130<br>A | SMCJ130<br>CA | GHK | BHK | 130.0 | 144.00 | 159.00 | 1 | 209.0 | 7.18  | 5 |
| SMCJ140<br>A | SMCJ140<br>CA | --  | BHB | 140.0 | 155.00 | 171.00 | 1 | 226.8 | 6.61  | 5 |
| SMCJ150<br>A | SMCJ150<br>CA | GHM | BHM | 150.0 | 167.00 | 185.00 | 1 | 243.0 | 6.17  | 5 |
| SMCJ160<br>A | SMCJ160<br>CA | GHP | BHP | 160.0 | 178.00 | 197.00 | 1 | 259.0 | 5.79  | 5 |
| SMCJ170<br>A | SMCJ170<br>CA | GHR | BHR | 170.0 | 189.00 | 209.00 | 1 | 275.0 | 5.45  | 5 |
| SMCJ180<br>A | SMCJ180<br>CA | GHT | BHT | 180.0 | 201.00 | 220.00 | 1 | 291.6 | 5.14  | 5 |
| SMCJ190<br>A | SMCJ190<br>CA | GHV | BHV | 190.0 | 211.00 | 232.00 | 1 | 307.8 | 4.87  | 5 |
| SMCJ200<br>A | SMCJ200<br>CA | GHW | BHW | 200.0 | 224.00 | 247.00 | 1 | 324.0 | 4.60  | 5 |
| SMCJ220<br>A | SMCJ220<br>CA | GHX | BHX | 220.0 | 246.00 | 272.00 | 1 | 356.0 | 4.20  | 5 |
| SMCJ250<br>A | SMCJ250<br>CA | GHZ | BHZ | 250.0 | 279.00 | 309.00 | 1 | 405.0 | 3.70  | 5 |
| SMCJ300<br>A | SMCJ300<br>CA | GJE | BJE | 300.0 | 335.00 | 371.00 | 1 | 486.0 | 3.10  | 5 |
| SMCJ350<br>A | SMCJ350<br>CA | GJG | BJG | 350.0 | 391.00 | 432.00 | 1 | 567.0 | 2.60  | 5 |
| SMCJ400<br>A | SMCJ400<br>CA | GJK | BJK | 400.0 | 447.00 | 494.00 | 1 | 648.0 | 2.30  | 5 |
| SMCJ440<br>A | SMCJ440<br>CA | GJM | BJM | 440.0 | 492.00 | 543.00 | 1 | 713.0 | 2.10  | 5 |

**Notes:**

1. Suffix 'A' denotes 5% tolerance device.

2. Add suffix 'CA' after part number to specify Bi-directional devices.

For Bi-Directional devices having  $V_R$  of 10 volts and under, the  $I_R$  limit is doubl.

**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
- 1500W Peak power capability at  $10 \times 1000\mu\text{s}$  waveform Repetition rate (duty cycle):0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to  $V_{BR}$  min
- Typical  $I_R$  less than 5 $\mu\text{A}$  above 12V.
- High Temperature soldering: 260°C/40 seconds at terminals
- Typical maximum temperature coefficient  $\Delta V_{BR} = 0.1\% \times V_{BR}@25^\circ\text{C} \times \Delta T$
- 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)

#### Applications:

TVS devices are ideal for the protection of I/O interfaces, VCC bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications .

| Parameter                                                                              | Symbol         | Value          | Unit    |
|----------------------------------------------------------------------------------------|----------------|----------------|---------|
| Peak Pulse Power Dissipation with a 10/1000 $\mu$ s waveform (Fig.1)(Note 1), (Note 2) | $P_{PPM}$      | 1500           | Watts   |
| Peak Pulse Current with a 10/1000 $\mu$ s waveform.(Note1, Fig.3)                      | $I_{PP}$       | See Next Table | Amps    |
| Power Dissipation on Infinite Heat Sink at $T_L=75^\circ\text{C}$                      | $P_{M(AV)}$    | 6.5            | Watt    |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)                       | $I_{FSM}$      | 200            | Amps    |
| Maximum Instantaneous Forward Voltage at 25A for Unidirectional Only (Note 4)          | $V_F$          | 3.5/5.0        | Voltage |
| Operating junction and Storage Temperature Range.                                      | $T_J, T_{STG}$ | -55 to +150    |         |

#### Notes:

1. Non-repetitive current pulse, per Fig. 3 and derated above  $T_A = 25^\circ\text{C}$  per Fig. 2.
2. Mounted on 5.0mm x 5.0mm (0.03mm thick) Copper Pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.
4.  $V_F < 3.5\text{V}$  for  $V_{BR} < 200\text{V}$  and  $V_F < 6.5\text{V}$  for  $V_{BR} > 201\text{V}$ .

Figure 1 - Peak Pulse Power Rating Curve

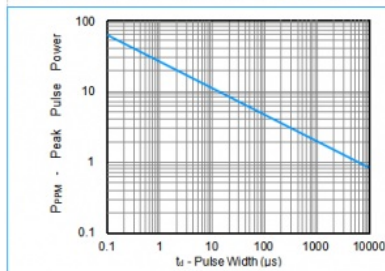


Figure 2 - Pulse Derating Curve

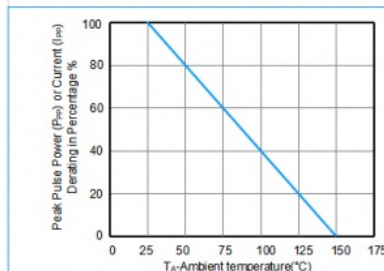


Figure 3 - Pulse Waveform

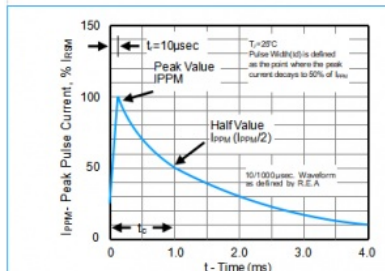


Figure 4 - Typical Junction Capacitance

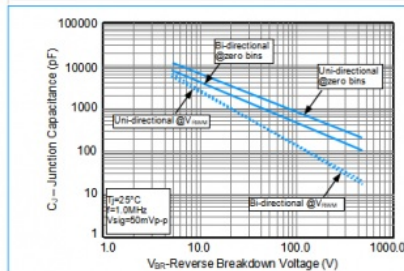


Figure 5 - Steady State Power Derating Curve

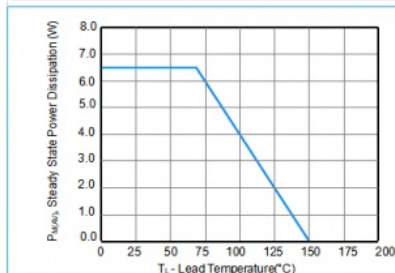
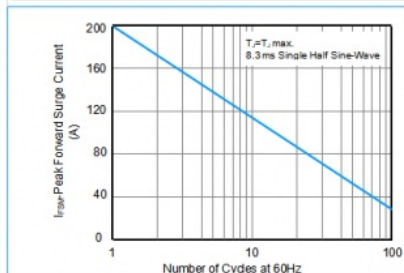
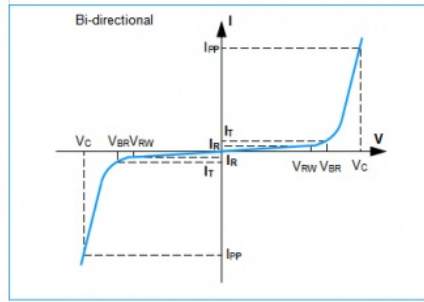
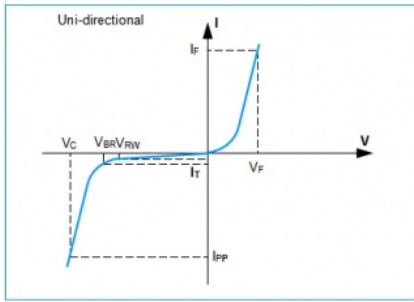


Figure 6 - Maximum Non-Repetitive Surge Current



## I-V Curve Characteristics



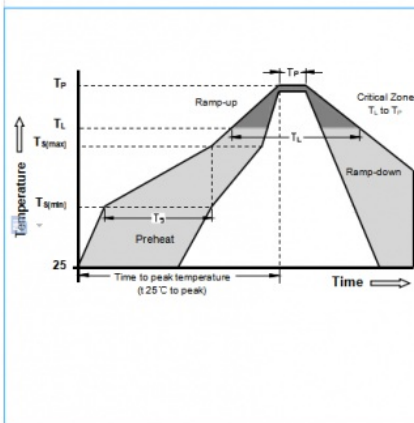
## Physical Specifications

|          |                                                              |
|----------|--------------------------------------------------------------|
| Weight   | 0.007 ounce, 0.21 gram                                       |
| Case     | JEDEC DO-214AB Molded Plastic over glass passivated junction |
| Polarity | Color band denotes cathode except Bipolar                    |
| Terminal | Matte Tin-plated leads, Solderable per JESD22-B102D          |

## Environmental Specifications

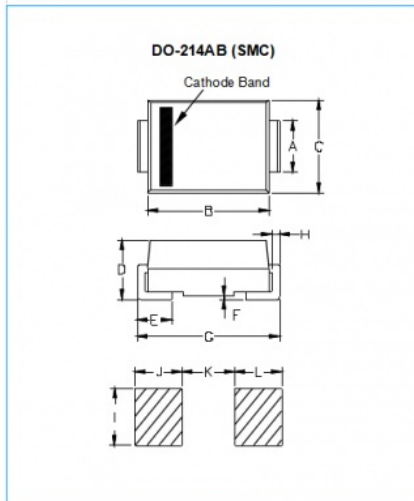
|                    |             |
|--------------------|-------------|
| Temperature Cycle  | JESD22-A104 |
| Pressure Cooker    | JESD22-A102 |
| High Temp. Storage | JESD22-A103 |
| HTRB               | JESD22-A108 |
| Thermal Shock      | JESD22-A106 |

## Soldering Parameters



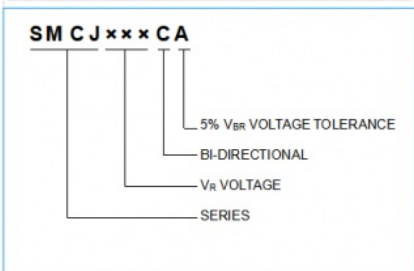
| Reflow Condition                                     |                                    | Lead-free assembly |
|------------------------------------------------------|------------------------------------|--------------------|
| Pre Heat                                             | -Temperature Min ( $T_{s(min)}$ )  | 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                                        |                                    | 260°C              |

## Dimensions

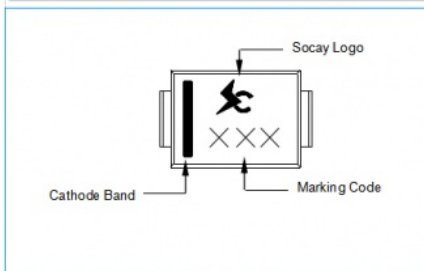


| Dimensions | Inches |       | Millimeters |       |
|------------|--------|-------|-------------|-------|
|            | Min    | Max   | Min         | Max   |
| A          | 0.108  | 0.126 | 2.750       | 3.200 |
| B          | 0.260  | 0.280 | 6.520       | 7.110 |
| C          | 0.217  | 0.244 | 5.520       | 6.220 |
| D          | 0.080  | 0.112 | 2.050       | 2.850 |
| E          | 0.030  | 0.060 | 0.750       | 1.520 |
| F          | -      | 0.008 | -           | 0.203 |
| G          | 0.305  | 0.320 | 7.640       | 8.130 |
| H          | 0.006  | 0.012 | 0.150       | 0.310 |
| I          | 0.121  | -     | 3.070       | -     |
| J          | 0.068  | -     | 1.715       | -     |
| K          | -      | 0.185 | -           | 4.690 |
| L          | 0.068  | -     | 1.715       | -     |

## Part Numbering



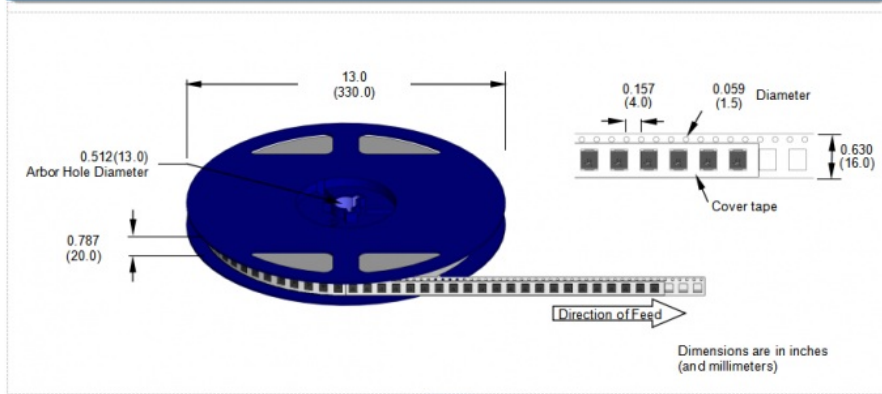
## Part Marking



### Packaging

| Part Number | Component Package | Reel (pcs) | Per Carton (pcs) | Packaging Option           | Reel Diameters (mm) |
|-------------|-------------------|------------|------------------|----------------------------|---------------------|
| SMCJXXXX    | DO-214AB (SMC)    | 3000       | 48000            | Tape & Reel - 20mm/13"tape | 330.0               |

### Tape and Reel Specifications



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