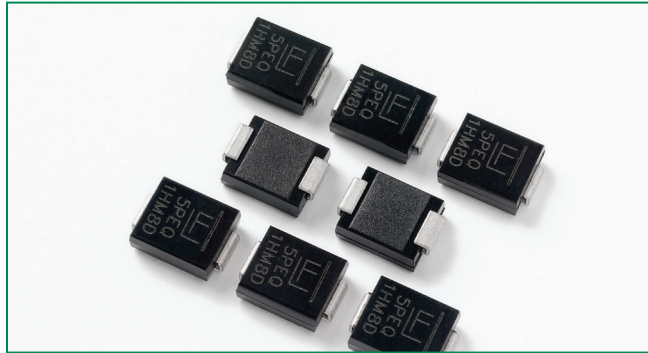



### 5.0SMDJ Series



#### Agency Approvals

| AGENCY  | AGENCY FILE NUMBER |
|---|--------------------|
|  | E230531            |

#### Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| Parameter  | Symbol                            | Value      | Unit |
|--|-----------------------------------|------------|------|
| Peak Pulse Power Dissipation at T <sub>A</sub> =25°C by 10x1000µs waveform (Fig.1)(Note 1), (Note 2) | P <sub>PPM</sub>                  | 5000       | W    |
| Power Dissipation on infinite heat sink at T <sub>A</sub> =50°C                                      | P <sub>M(AV)</sub>                | 6.5        | W    |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)                                     | I <sub>FSM</sub>                  | 300        | A    |
| Maximum Instantaneous Forward Voltage at 100A for Unidirectional only                                | V <sub>F</sub>                    | 5.0        | V    |
| Operating Junction and Storage Temperature Range   | T <sub>J</sub> , T <sub>STG</sub> | -65 to 150 | °C   |
| Typical Thermal Resistance Junction to Lead  | R <sub>θJL</sub>                  | 15         | °C/W |
| Typical Thermal Resistance Junction to Ambient   | R <sub>θJA</sub>                  | 75         | °C/W |

#### Notes:

1. Non-repetitive current pulse, per Fig. 3 and derated above T<sub>A</sub> = 25°C per Fig. 2.
2. Mounted on copper pad area of 0.31x0.31" (8.0 x 8.0mm) to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

#### Description

The 5.0SMDJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.


#### Features

- Halogen-Free
- RoHS compliant
- For surface mounted applications to optimize board space
- Low profile package
- Built-in strain relief
- Typical maximum temperature coefficient  
 $\Delta V_{BR} = 0.1\% \times V_{BR} @ 25^\circ\text{C} \times \Delta T$
- Glass passivated chip junction
- 5000W peak pulse power capability at 10x1000µs waveform, repetition rate (duty cycles):0.01 %
- Fast response time: typically less than 1.0ps from 0V to BV min
- Excellent clamping capability
- Low incremental surge resistance
- Typical I<sub>R</sub> less than 5µA above 22V
- High Temperature soldering guaranteed: 260°C/40 seconds at terminals
- Plastic package has Underwriters Laboratory Flammability 94V-0
- Matte Tin Lead-free Plated

#### Applications

TVS devices are ideal for the protection of I/O Interfaces, V<sub>CC</sub> bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

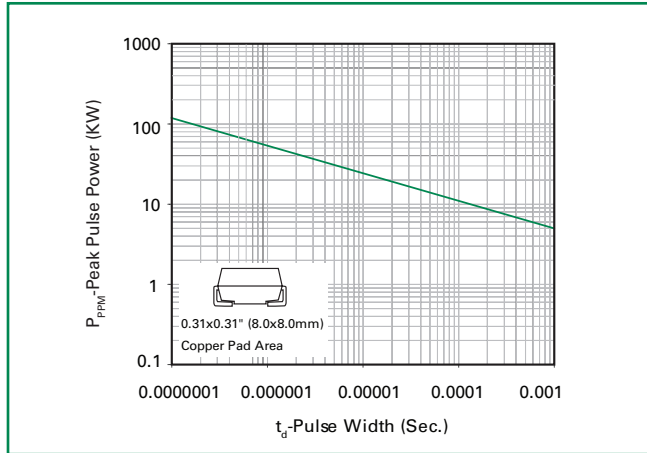
### Electrical Characteristics

| 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 $V_C$ @ $I_{PP}$ (V) | Maximum Peak Pulse Current $I_{PP}$ (A) | Maximum Reverse Leakage $I_R$ @ $V_R$ ( $\mu$ A) | Agency Approval  |
|-------------------|------------------|---------|------|---|--|--------|-------------------------|---|---|--|---|
|                   |                  | UNI     | BI   |   | MIN  | MAX    |                         |   |   |  |   |
| 5.0SMDJ12A        | 5.0SMDJ12CA      | 5PEP    | 5BEP | 12.0                                    | 13.30                                      | 14.70  | 10                      | 19.9  | 252.00                                  | 800  | X   |
| 5.0SMDJ13A        | 5.0SMDJ13CA      | 5PEQ    | 5BEQ | 13.0                                    | 14.40                                      | 15.90  | 10                      | 21.5  | 233.00                                  | 500  | X   |
| 5.0SMDJ14A        | 5.0SMDJ14CA      | 5PER    | 5BER | 14.0                                    | 15.60                                      | 17.20  | 10                      | 23.2  | 216.00                                  | 200  | X   |
| 5.0SMDJ15A        | 5.0SMDJ15CA      | 5PES    | 5BES | 15.0                                    | 16.70                                      | 18.50  | 1                       | 24.4  | 205.00                                  | 100  | X   |
| 5.0SMDJ16A        | 5.0SMDJ16CA      | 5PET    | 5BET | 16.0                                    | 17.80                                      | 19.70  | 1                       | 26.0  | 193.00                                  | 50   | X   |
| 5.0SMDJ17A        | 5.0SMDJ17CA      | 5PEU    | 5BEU | 17.0                                    | 18.90                                      | 20.90  | 1                       | 27.6  | 181.00                                  | 20   | X   |
| 5.0SMDJ18A        | 5.0SMDJ18CA      | 5PEV    | 5BEV | 18.0                                    | 20.00                                      | 22.10  | 1                       | 29.2  | 172.00                                  | 10   | X   |
| 5.0SMDJ20A        | 5.0SMDJ20CA      | 5PEW    | 5BEW | 20.0                                    | 22.20                                      | 24.50  | 1                       | 32.4  | 155.00                                  | 5  | X   |
| 5.0SMDJ22A        | 5.0SMDJ22CA      | 5PEX    | 5BEX | 22.0                                    | 24.40                                      | 26.90  | 1                       | 35.5  | 141.00                                  | 5  | X   |
| 5.0SMDJ24A        | 5.0SMDJ24CA      | 5PEZ    | 5BEZ | 24.0                                    | 26.70                                      | 29.50  | 1                       | 38.9  | 129.00                                  | 5  | X   |
| 5.0SMDJ26A        | 5.0SMDJ26CA      | 5PFE    | 5BFE | 26.0                                    | 28.90                                      | 31.90  | 1                       | 42.1  | 119.00                                  | 5  | X   |
| 5.0SMDJ28A        | 5.0SMDJ28CA      | 5PFG    | 5BFG | 28.0                                    | 31.10                                      | 34.40  | 1                       | 45.4  | 110.00                                  | 5  | X   |
| 5.0SMDJ30A        | 5.0SMDJ30CA      | 5PFK    | 5BFK | 30.0                                    | 33.30                                      | 36.80  | 1                       | 48.4  | 103.00                                  | 5  | X   |
| 5.0SMDJ33A        | 5.0SMDJ33CA      | 5PFM    | 5BFM | 33.0                                    | 36.70                                      | 40.60  | 1                       | 53.3  | 93.90                                   | 5  | X   |
| 5.0SMDJ36A        | 5.0SMDJ36CA      | 5PFP    | 5BFP | 36.0                                    | 40.00                                      | 44.20  | 1                       | 58.1  | 86.10                                   | 5  | X   |
| 5.0SMDJ40A        | 5.0SMDJ40CA      | 5PFR    | 5BFR | 40.0                                    | 44.40                                      | 49.10  | 1                       | 64.5  | 77.60                                   | 5  | X   |
| 5.0SMDJ43A        | 5.0SMDJ43CA      | 5PFT    | 5BFT | 43.0                                    | 47.80                                      | 52.80  | 1                       | 69.4  | 72.10                                   | 5  | X   |
| 5.0SMDJ45A        | 5.0SMDJ45CA      | 5PFV    | 5BFV | 45.0                                    | 50.00                                      | 55.30  | 1                       | 72.7  | 68.80                                   | 5  | X   |
| 5.0SMDJ48A        | 5.0SMDJ48CA      | 5PFX    | 5BFX | 48.0                                    | 53.30                                      | 58.90  | 1                       | 77.4  | 64.70                                   | 5  | X   |
| 5.0SMDJ51A        | 5.0SMDJ51CA      | 5PFZ    | 5BFZ | 51.0                                    | 56.70                                      | 62.70  | 1                       | 82.4  | 60.70                                   | 5  | X   |
| 5.0SMDJ54A        | 5.0SMDJ54CA      | 5PGE    | 5BGE | 54.0                                    | 60.00                                      | 66.30  | 1                       | 87.1  | 57.50                                   | 5  | X   |
| 5.0SMDJ58A        | 5.0SMDJ58CA      | 5PGG    | 5BGG | 58.0                                    | 64.40                                      | 71.20  | 1                       | 93.6  | 53.50                                   | 5  | X   |
| 5.0SMDJ60A        | 5.0SMDJ60CA      | 5PGK    | 5BGK | 60.0                                    | 66.70                                      | 73.70  | 1                       | 96.8  | 51.70                                   | 5  | X   |
| 5.0SMDJ64A        | 5.0SMDJ64CA      | 5PGM    | 5BGM | 64.0                                    | 71.10                                      | 78.60  | 1                       | 103.0   | 48.60                                   | 5  | X   |
| 5.0SMDJ70A        | 5.0SMDJ70CA      | 5PGP    | 5BGP | 70.0                                    | 77.80                                      | 86.00  | 1                       | 113.0   | 44.30                                   | 5  | X   |
| 5.0SMDJ75A        | 5.0SMDJ75CA      | 5PGR    | 5BGR | 75.0                                    | 83.30                                      | 92.10  | 1                       | 121.0   | 41.40                                   | 5  | X   |
| 5.0SMDJ78A        | 5.0SMDJ78CA      | 5PGT    | 5BGT | 78.0                                    | 86.70                                      | 95.80  | 1                       | 126.0   | 39.70                                   | 5  | X   |
| 5.0SMDJ85A        | 5.0SMDJ85CA      | 5PGV    | 5BGV | 85.0                                    | 94.40                                      | 104.00 | 1                       | 137.0   | 36.50                                   | 5  | X   |
| 5.0SMDJ90A        | 5.0SMDJ90CA      | 5PGX    | 5BGX | 90.0                                    | 100.00                                     | 111.00 | 1                       | 146.0   | 34.30                                   | 5  | X   |
| 5.0SMDJ100A       | 5.0SMDJ100CA     | 5PGZ    | 5BGZ | 100.0                                   | 111.00                                     | 123.00 | 1                       | 162.0   | 30.90                                   | 5  | X   |
| 5.0SMDJ110A       | 5.0SMDJ110CA     | 5PHE    | 5BHE | 110.0                                   | 122.00                                     | 135.00 | 1                       | 177.0   | 28.30                                   | 5  | X   |
| 5.0SMDJ120A       | 5.0SMDJ120CA     | 5PHG    | 5BHG | 120.0                                   | 133.00                                     | 147.00 | 1                       | 193.0   | 26.00                                   | 5  | X   |
| 5.0SMDJ130A       | 5.0SMDJ130CA     | 5PHK    | 5BHK | 130.0                                   | 144.00                                     | 159.00 | 1                       | 209.0   | 24.00                                   | 5  | X   |
| 5.0SMDJ150A       | 5.0SMDJ150CA     | 5PHM    | 5BHM | 150.0                                   | 167.00                                     | 185.00 | 1                       | 243.0   | 20.60                                   | 5  | X   |
| 5.0SMDJ160A       | 5.0SMDJ160CA     | 5PHP    | 5BHB | 160.0                                   | 178.00                                     | 197.00 | 1                       | 259.0   | 19.30                                   | 5  | X   |
| 5.0SMDJ170A       | 5.0SMDJ170CA     | 5PHR    | 5BHR | 170.0                                   | 189.00                                     | 209.00 | 1                       | 275.0   | 18.20                                   | 5  | X   |

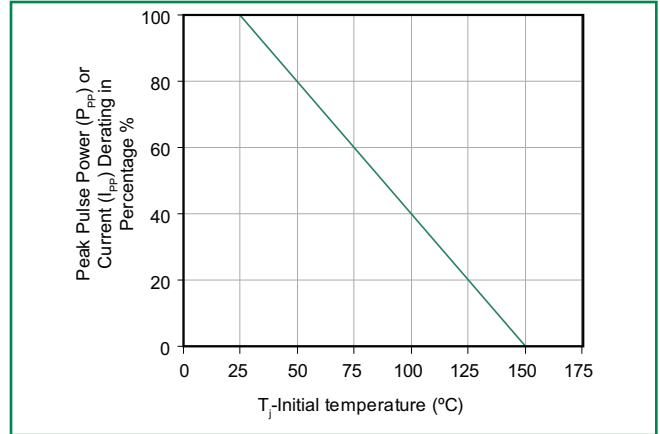
For Bidirectional type having  $V_R$  of 20 volts and less, the  $I_R$  limit is double.

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

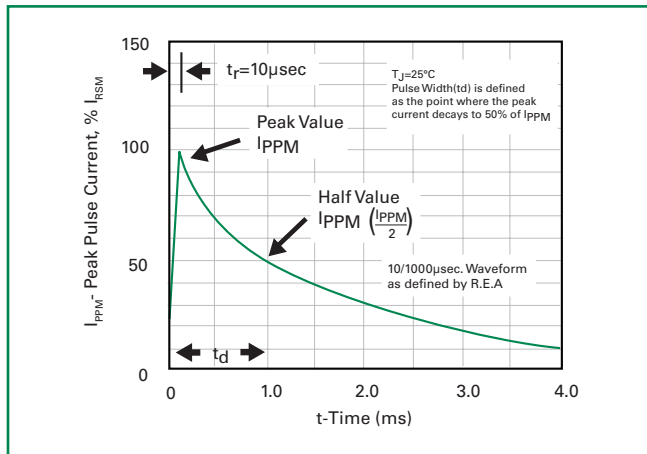
**Figure 1 - Peak Pulse Power Rating Curve**



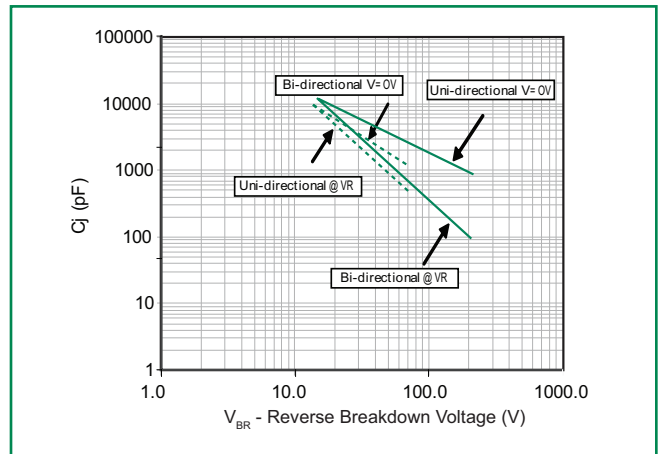
**Figure 2 - Peak Pulse Power or Current Derating Curve vs Initial Junction Temperature**



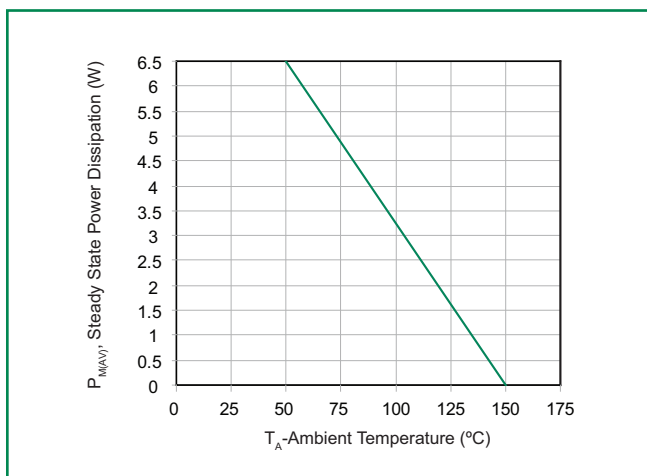
**Figure 3 - Pulse Waveform**



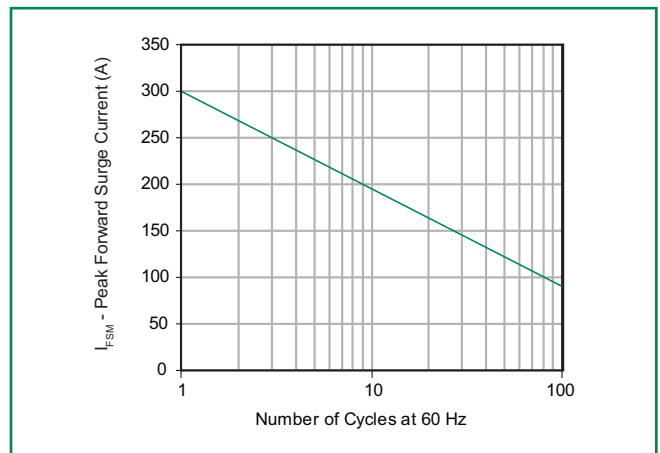
**Figure 4 - Typical Junction Capacitance**



**Figure 5 - Steady State Power Derating Curve**

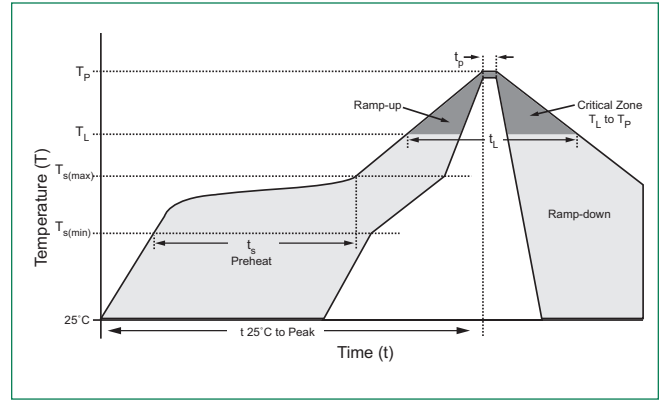


**Figure 6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only**



**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 secs           |
| 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) ( $t_s$ )      | 60 – 150 seconds        |
| Peak Temperature ( $T_p$ )                             |                                    | 260 <sup>+0/-5</sup> °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                   |



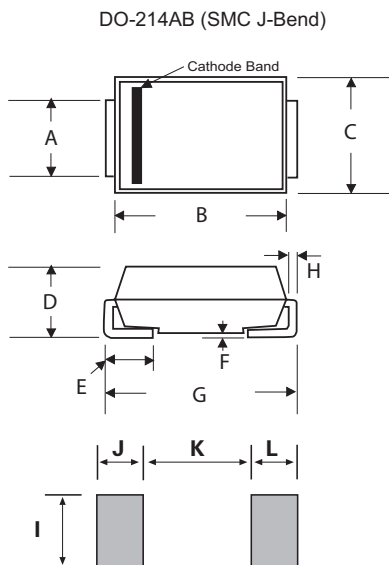
**Physical Specifications**

|                 |   |
|-----------------|---|
| <b>Weight</b>   | 0.007 ounce, 0.21 grams   |
| <b>Case</b>     | JEDEC DO214AB. Molded plastic body over glass passivated junction |
| <b>Polarity</b> | Color band denotes positive end (cathode) except Bidirectional.   |
| <b>Terminal</b> | Matte Tin-plated leads, Solderable per JESD22-B102D               |

**Environmental Specifications**

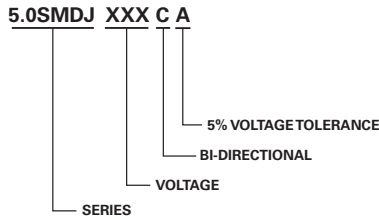
|                           |              |
|---------------------------|--------------|
| <b>Temperature Cycle</b>  | JESD22-A104  |
| <b>Pressure Cooker</b>    | JESD 22-A102 |
| <b>High Temp. Storage</b> | JESD22-A103  |
| <b>HTRB</b>               | JESD22-A108  |
| <b>Thermal Shock</b>      | JESD22-A106  |

**Dimensions**

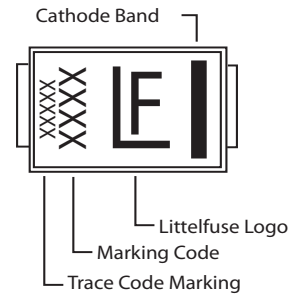


| Dimensions | Inches |       | Millimeters |       |
|------------|--------|-------|-------------|-------|
|            | Min    | Max   | Min         | Max   |
| A          | 0.114  | 0.126 | 2.900       | 3.200 |
| B          | 0.260  | 0.280 | 6.600       | 7.110 |
| C          | 0.220  | 0.245 | 5.590       | 6.220 |
| D          | 0.079  | 0.103 | 2.060       | 2.620 |
| E          | 0.030  | 0.060 | 0.760       | 1.520 |
| F          | -      | 0.008 | -           | 0.203 |
| G          | 0.305  | 0.320 | 7.750       | 8.130 |
| H          | 0.006  | 0.012 | 0.152       | 0.305 |
| I          | 0.129  | -     | 3.300       | -     |
| J          | 0.094  | -     | 2.400       | -     |
| K          | -      | 0.165 | -           | 4.200 |
| L          | 0.094  | -     | 2.400       | -     |

### Part Numbering System



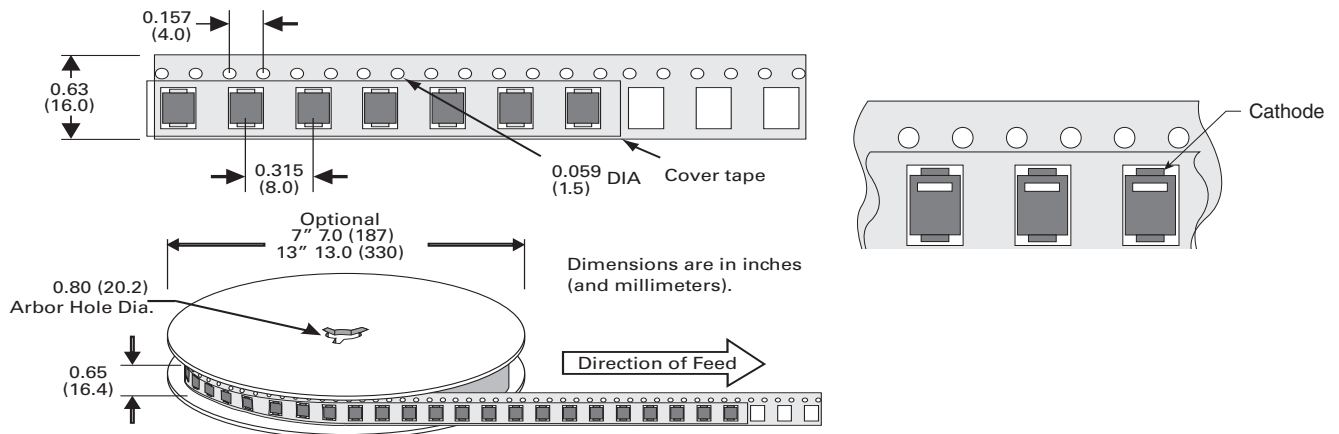
### Part Marking System



### Packaging Options

| Part number     | Component Package | Quantity | Packaging Option            | Packaging Specification |
|-----------------|-------------------|----------|-----------------------------|-------------------------|
| 5.0SMDJxxxXX    | DO-214AB          | 3000     | Tape & Reel – 16mm/13" tape | EIA STD RS-481          |
| 5.0SMDJxxxXX-T7 | DO-214AB          | 500      | Tape & Reel – 16mm/7" tape  | EIA STD RS-481          |

### Tape and Reel Specification



Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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