

## SMAG Plastic-Encapsulate Diodes

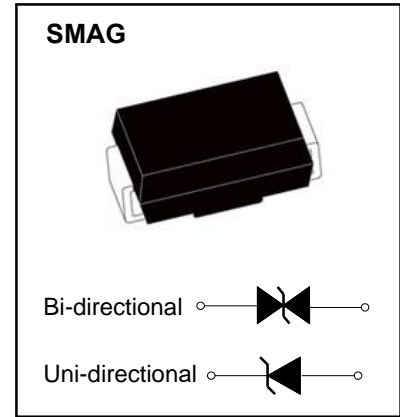
### **CJSMAJ SERIES** Transient Voltage Suppressor Diodes

#### Features

- $P_{PP}$  400W
- $V_{RWM}$  5V- 100V
- Glass passivated chip

#### Applications

- Clamping Voltage



#### Limiting Values (Absolute Maximum Rating)

| Item   | Symbol         | Unit             | Conditions   | Max            |
|--|----------------|------------------|--|----------------|
| Peak pulse power dissipation                     | $P_{PPM}$      | W                | with a 10/1000us waveform  | 400            |
| Peak pulse current(note 1)                       | $I_{PPM}$      | A                | with a 10/1000us waveform  | See Next Table |
| Power dissipation                                | $P_D$          | W                | On infinite heat sink at $T_L=50^\circ\text{C}$  | 3.3            |
| Peak forward surge current                       | $I_{FSM}$      | A                | 8.3 ms single half sine-wave uni-directional only<br>$\left[ \frac{1}{\sqrt{2}} \right]$ | 60             |
| Operating junction and storage temperature range | $T_J, T_{STG}$ | $^\circ\text{C}$ |  | -55 to +150    |

#### Electrical Characteristics ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

| Item                                  | Symbol          | Unit                      | Conditions                                 | Max |
|---------------------------------------|-----------------|---------------------------|--|-----|
| Maximum instantaneous forward Voltage | $V_F$           | V                         | at 25A for uni-directional only            | 3.5 |
| Thermal resistance                    | $R_{\theta JL}$ | $^\circ\text{C}/\text{W}$ | junction to lead $T_L=50^\circ\text{C}$    | 30  |
|                                       | $R_{\theta JA}$ | $^\circ\text{C}/\text{W}$ | junction to ambient $T_A=25^\circ\text{C}$ | 120 |

#### Notes:

- (1) Non-repetitive current pulse, per Fig. 3 and derated above  $T_A=25^\circ\text{C}$  per Fig.2
- (2) 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum

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

| Part Number |             | Device Marking Code        |              | Breakdown Voltage VBR@IT |         | Test Current | Max Reverse Leakage @VRWM | Reverse Standoff Voltage | Max Peak Pulse Current <sup>(1)</sup> | Max Clamping Voltage @Ipp |
|-------------|-------------|----------------------------|--------------|--------------------------|---------|--------------|---------------------------|--------------------------|---------------------------------------|---------------------------|
| UNI         | BI          | UNI                        | BI           | Min.(V)                  | Max.(V) | IT(mA)       | IR(μA)                    | V <sub>RWM</sub> (V)     | IPP(A)                                | V <sub>c</sub> (V)        |
| CJSMAJ5.0A  | CJSMAJ5.0CA | A5.0A<br>XX <sup>(2)</sup> | A5.0CA<br>XX | 6.40                     | 7.00    | 10           | 800                       | 5                        | 43.5                                  | 9.2                       |
| CJSMAJ6.0A  | CJSMAJ6.0CA | A6.0A<br>XX                | A6.0CA<br>XX | 6.67                     | 7.37    | 10           | 800                       | 6                        | 38.8                                  | 10.3                      |
| CJSMAJ6.5A  | CJSMAJ6.5CA | A6.5A<br>XX                | A6.5CA<br>XX | 7.22                     | 7.98    | 10           | 500                       | 6.5                      | 35.7                                  | 11.2                      |
| CJSMAJ7.0A  | CJSMAJ7.0CA | A7.0A<br>XX                | A7.0CA<br>XX | 7.78                     | 8.60    | 10           | 200                       | 7                        | 33.3                                  | 12.0                      |
| CJSMAJ7.5A  | CJSMAJ7.5CA | A7.5A<br>XX                | A7.5CA<br>XX | 8.33                     | 9.21    | 1            | 100                       | 7.5                      | 31.0                                  | 12.9                      |
| CJSMAJ8.0A  | CJSMAJ8.0CA | A8.0A<br>XX                | A8.0CA<br>XX | 8.89                     | 9.83    | 1            | 50                        | 8                        | 29.4                                  | 13.6                      |
| CJSMAJ8.5A  | CJSMAJ8.5CA | A8.5A<br>XX                | A8.5CA<br>XX | 9.44                     | 10.40   | 1            | 20                        | 8.5                      | 27.8                                  | 14.4                      |
| CJSMAJ9.0A  | CJSMAJ9.0CA | A9.0A<br>XX                | A9.0CA<br>XX | 10.00                    | 11.10   | 1            | 10                        | 9                        | 26.0                                  | 15.4                      |
| CJSMAJ10A   | CJSMAJ10CA  | A10A<br>XX                 | A10CA<br>XX  | 11.10                    | 12.30   | 1            | 5                         | 10                       | 23.5                                  | 17.0                      |
| CJSMAJ11A   | CJSMAJ11CA  | A11A<br>XX                 | A11CA<br>XX  | 12.20                    | 13.50   | 1            | 5                         | 11                       | 22.0                                  | 18.2                      |
| CJSMAJ12A   | CJSMAJ12CA  | A12A<br>XX                 | A12CA<br>XX  | 13.30                    | 14.70   | 1            | 5                         | 12                       | 20.1                                  | 19.9                      |
| CJSMAJ13A   | CJSMAJ13CA  | A13A<br>XX                 | A13CA<br>XX  | 14.40                    | 15.90   | 1            | 5                         | 13                       | 18.6                                  | 21.5                      |
| CJSMAJ14A   | CJSMAJ14CA  | A14A<br>XX                 | A14CA<br>XX  | 15.60                    | 17.20   | 1            | 5                         | 14                       | 17.2                                  | 23.2                      |
| CJSMAJ15A   | CJSMAJ15CA  | A15A<br>XX                 | A15CA<br>XX  | 16.70                    | 18.50   | 1            | 5                         | 15                       | 16.4                                  | 24.4                      |
| CJSMAJ16A   | CJSMAJ16CA  | A16A<br>XX                 | A16CA<br>XX  | 17.80                    | 19.70   | 1            | 5                         | 16                       | 15.4                                  | 26.0                      |
| CJSMAJ17A   | CJSMAJ17CA  | A17A<br>XX                 | A17CA<br>XX  | 18.90                    | 20.90   | 1            | 5                         | 17                       | 14.5                                  | 27.6                      |
| CJSMAJ18A   | CJSMAJ18CA  | A18A<br>XX                 | A18CA<br>XX  | 20.00                    | 22.10   | 1            | 5                         | 18                       | 13.7                                  | 29.2                      |
| CJSMAJ20A   | CJSMAJ20CA  | A20A<br>XX                 | A20CA<br>XX  | 22.20                    | 24.50   | 1            | 5                         | 20                       | 12.3                                  | 32.4                      |
| CJSMAJ22A   | CJSMAJ22CA  | A22A<br>XX                 | A22CA<br>XX  | 24.40                    | 26.90   | 1            | 5                         | 22                       | 11.3                                  | 35.5                      |
| CJSMAJ24A   | CJSMAJ24CA  | A24A<br>XX                 | A24CA<br>XX  | 26.70                    | 29.50   | 1            | 5                         | 24                       | 10.3                                  | 38.9                      |
| CJSMAJ26A   | CJSMAJ26CA  | A26A<br>XX                 | A26CA<br>XX  | 28.90                    | 31.90   | 1            | 5                         | 26                       | 9.5                                   | 42.1                      |
| CJSMAJ28A   | CJSMAJ28CA  | A28A<br>XX                 | A28CA<br>XX  | 31.10                    | 34.40   | 1            | 5                         | 28                       | 8.8                                   | 45.4                      |
| CJSMAJ30A   | CJSMAJ30CA  | A30A<br>XX                 | A30CA<br>XX  | 33.30                    | 36.80   | 1            | 5                         | 30                       | 8.3                                   | 48.4                      |
| CJSMAJ33A   | CJSMAJ33CA  | A33A<br>XX                 | A33CA<br>XX  | 36.70                    | 40.60   | 1            | 5                         | 33                       | 7.5                                   | 53.3                      |
| CJSMAJ36A   | CJSMAJ36CA  | A36A<br>XX                 | A36CA<br>XX  | 40.00                    | 44.20   | 1            | 5                         | 36                       | 6.9                                   | 58.1                      |
| CJSMAJ40A   | CJSMAJ40CA  | A40A<br>XX                 | A40CA<br>XX  | 44.40                    | 49.10   | 1            | 5                         | 40                       | 6.2                                   | 64.5                      |
| CJSMAJ43A   | CJSMAJ43CA  | A43A<br>XX                 | A43CA<br>XX  | 47.80                    | 52.80   | 1            | 5                         | 43                       | 5.8                                   | 69.4                      |
| CJSMAJ45A   | CJSMAJ45CA  | A45A<br>XX                 | A45CA<br>XX  | 50.00                    | 55.30   | 1            | 5                         | 45                       | 5.5                                   | 72.7                      |
| CJSMAJ48A   | CJSMAJ48CA  | A48A<br>XX                 | A48CA<br>XX  | 53.30                    | 58.90   | 1            | 5                         | 48                       | 5.2                                   | 77.4                      |
| CJSMAJ51A   | CJSMAJ51CA  | A51A<br>XX                 | A51CA<br>XX  | 56.70                    | 62.70   | 1            | 5                         | 51                       | 4.9                                   | 82.4                      |

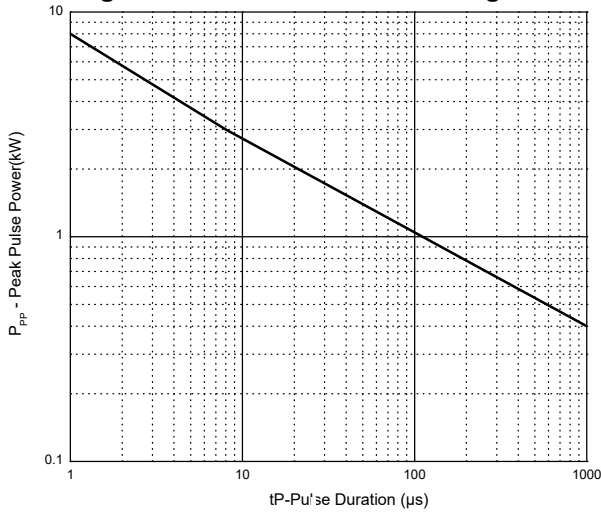
## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

| Part Number |             | Device Marking Code |              | Breakdown Voltage VBR@IT |         | Test Current | Max Reverse Leakage @VRWM | Reverse Standoff Voltage | Max Peak Pulse Current <sup>(1)</sup> | Max Clamping Voltage @Ipp |
|-------------|-------------|---------------------|--------------|--------------------------|---------|--------------|---------------------------|--------------------------|---------------------------------------|---------------------------|
| UNI         | BI          | UNI                 | BI           | Min.(V)                  | Max.(V) | IT(mA)       | IR(uA)                    | V <sub>RWM</sub> (V)     | IPP(A)                                | V <sub>c</sub> (V)        |
| CJSMAJ54A   | CJSMAJ54CA  | A54A<br>XX          | A54CA<br>XX  | 60.00                    | 66.30   | 1            | 5                         | 54                       | 4.6                                   | 87.1                      |
| CJSMAJ58A   | CJSMAJ58CA  | A58A<br>XX          | A58CA<br>XX  | 64.40                    | 71.20   | 1            | 5                         | 58                       | 4.3                                   | 93.6                      |
| CJSMAJ60A   | CJSMAJ60CA  | A60A<br>XX          | A60CA<br>XX  | 66.70                    | 73.70   | 1            | 5                         | 60                       | 4.1                                   | 96.8                      |
| CJSMAJ64A   | CJSMAJ64CA  | A64A<br>XX          | A64CA<br>XX  | 71.10                    | 78.60   | 1            | 5                         | 64                       | 3.9                                   | 103.0                     |
| CJSMAJ70A   | CJSMAJ70CA  | A70A<br>XX          | A70CA<br>XX  | 77.80                    | 86.00   | 1            | 5                         | 70                       | 3.5                                   | 113.0                     |
| CJSMAJ75A   | CJSMAJ75CA  | A75A<br>XX          | A75CA<br>XX  | 83.30                    | 92.10   | 1            | 5                         | 75                       | 3.3                                   | 121.0                     |
| CJSMAJ78A   | CJSMAJ78CA  | A78A<br>XX          | A78CA<br>XX  | 86.70                    | 95.80   | 1            | 5                         | 78                       | 3.2                                   | 126.0                     |
| CJSMAJ85A   | CJSMAJ85CA  | A85A<br>XX          | A85CA<br>XX  | 94.40                    | 104.00  | 1            | 5                         | 85                       | 2.9                                   | 137.0                     |
| CJSMAJ90A   | CJSMAJ90CA  | A90A<br>XX          | A90CA<br>XX  | 100.00                   | 111.00  | 1            | 5                         | 90                       | 2.7                                   | 146.0                     |
| CJSMAJ100A  | CJSMAJ100CA | A100A<br>XX         | A100CA<br>XX | 111.00                   | 123.00  | 1            | 5                         | 100                      | 2.5                                   | 162.0                     |

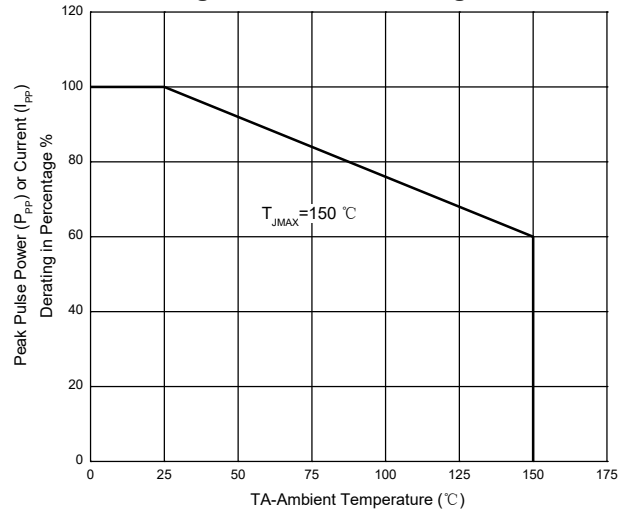
### Notes:

- (1) Waveform of CJSMAJ5.0A -CJSMAJ100CA are defined as per fig.3
- (2) XXX=Code

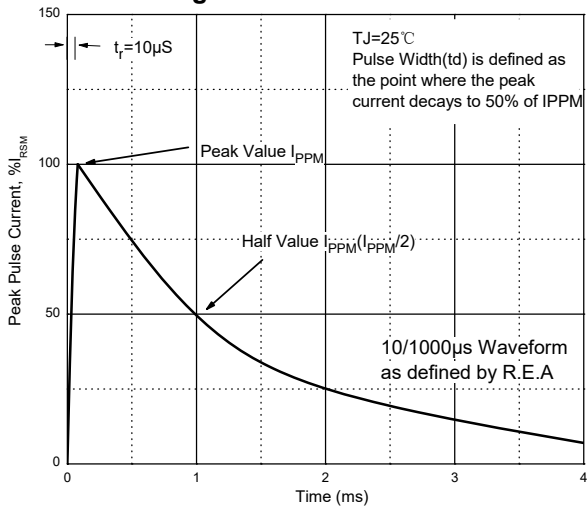
**Figure 1. Peak Pulse Power Rating Curve**



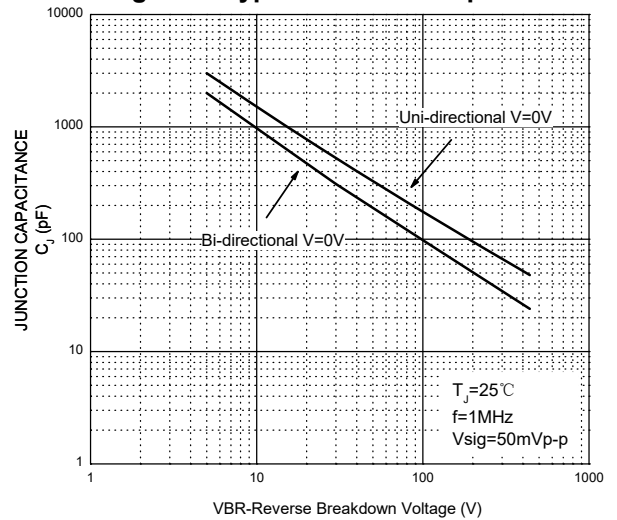
**Figure 2. Pulse Derating Curve**



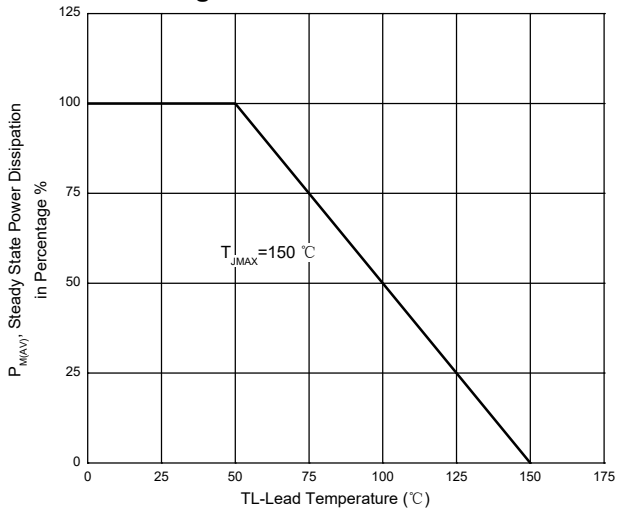
**Figure 3. Pulse Waveform**



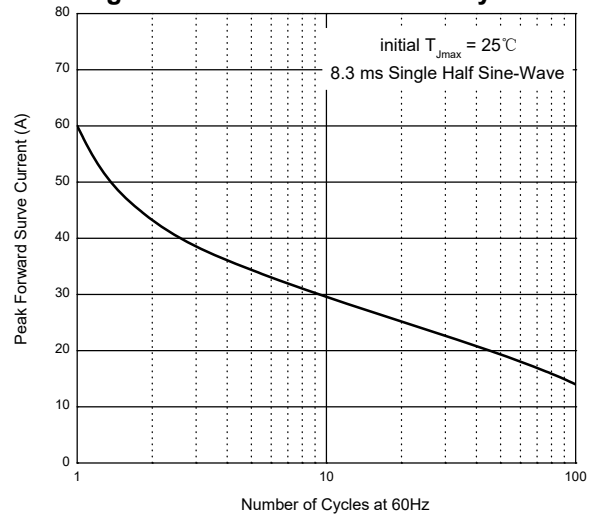
**Figure 4. Typical Junction Capacitance**



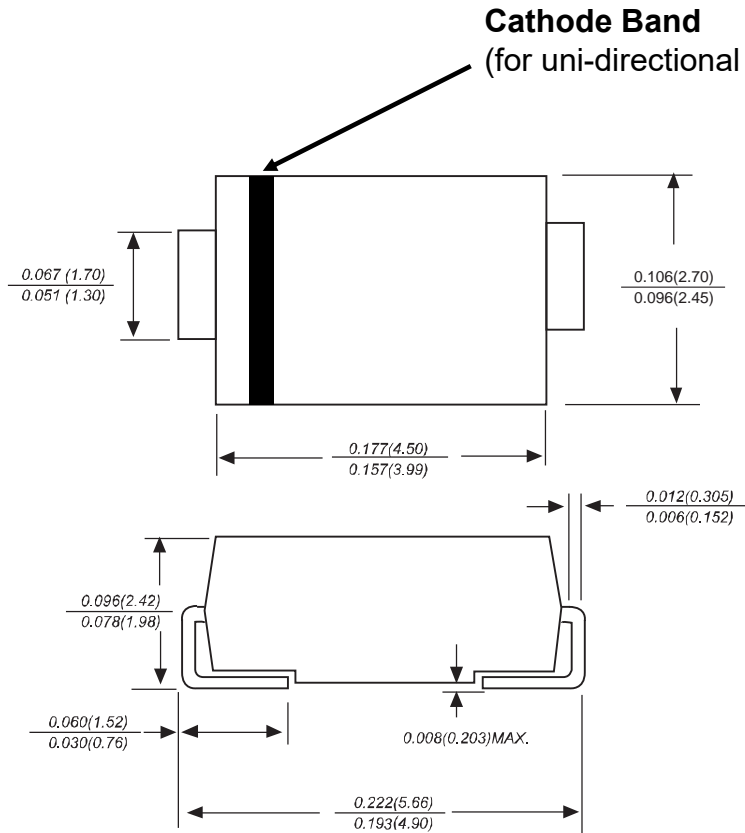
**Figure 5. Steady State Power Dissipation Derating Curve**



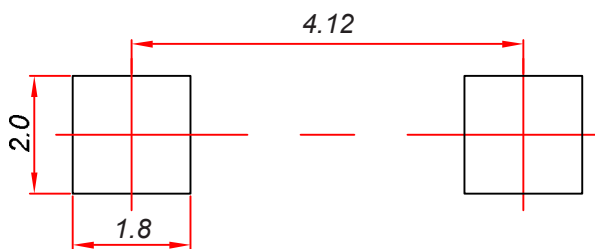
**Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only**



## SMAG Package Outline Dimensions



## SMAG Suggested Pad Layout



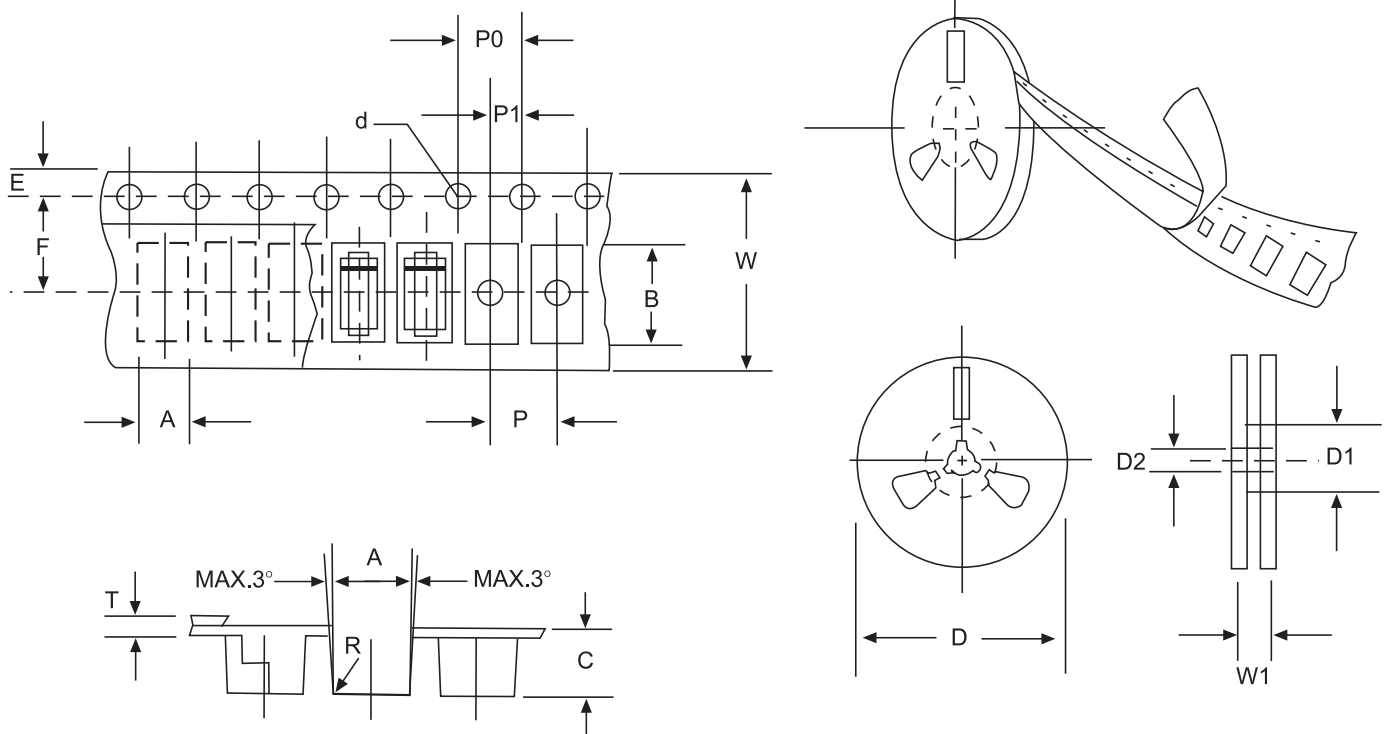
**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$ mm.
3. The pad layout is for reference purposes only.

**NOTICE**

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

## Reel Taping Specifications For Surface Mount Devices- SMAG



**FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING**

| ITEM                   | SYMBOL | SMAG mm(inch)            |
|------------------------|--------|--------------------------|
| Carrier width          | A      | 2.79±0.1(0.110±0.004)    |
| Carrier length         | B      | 5.33±0.1(0.210±0.004)    |
| Carrier depth          | C      | 2.36±0.1(0.093±0.004)    |
| Sprocket hole          | d      | 1.55±0.05(0.061±0.002)   |
| Reel outside diameter  | D      | 279±2.0 (11± 0.079)      |
| Reel inner diameter    | D1     | 75 ±1.0 ( 2.95 ±0.039)   |
| Feed hole diameter     | D2     | 13±0.5(0.512±0.020)      |
| Sprocket hole position | E      | 1.75±0.1(0.069±0.004)    |
| Punch hole position    | F      | 5.5±0.05(0.217±0.002)    |
| Punch hole pitch       | P      | 4.0±0.1(0.157±0.004)     |
| Sprocket hole pitch    | P0     | 4.0±0.1(0.157±0.004)     |
| Embossment center      | P1     | 2.0±0.1(0.079±0.004)     |
| Totall tape thickness  | T      | 0.28±0.02(0.011 ±0.0008) |
| Tape width             | W      | 12.0±0.2(0.472±0.008)    |
| Reel width             | W1     | 16.8±2.0(0.661±0.079)    |

NOTE: Devices are packed in accordance with EIA standard RS-481-A and specification given above.