

## SMAG Plastic-Encapsulate Diodes

### CJSMAJ SERIES Transient Voltage Suppressor Diodes

#### Features

- $P_{PP}$  400W
- $V_{RWM}$  10V- 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>$\frac{Q}{C} \leq \frac{V}{I}$ | 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

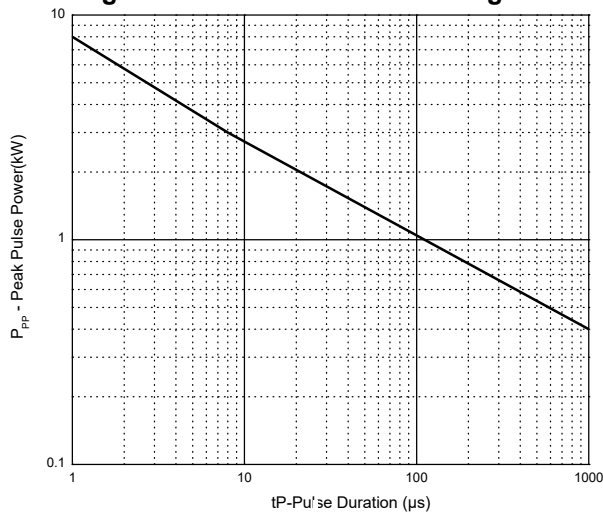
## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| Part Number |             | Device Marking Code       |              | Breakdown Voltage VBR@IT |         | Test Current | Max Reverse Leakage @VRWM IR(μA) |    | Reverse Standoff Voltage | Max Peak Pulse Current <sup>(1)</sup> | Max Clamping Voltage @Ipp |
|-------------|-------------|---------------------------|--------------|--------------------------|---------|--------------|----------------------------------|----|--------------------------|---------------------------------------|---------------------------|
| UNI         | BI          | UNI                       | BI           | Min.(V)                  | Max.(V) | IT(mA)       | UNI                              | BI | V <sub>RWM</sub> (V)     | IPP(A)                                | Vc(V)                     |
| CJSMAJ10A   | CJSMAJ10CA  | A10A<br>XX <sup>(2)</sup> | A10CA<br>XX  | 11.14                    | 12.29   | 1            | 5                                | 5  | 10                       | 23.5                                  | 16.8                      |
| CJSMAJ11A   | CJSMAJ11CA  | A11A<br>XX                | A11CA<br>XX  | 12.25                    | 13.49   | 1            | 5                                | 5  | 11                       | 22                                    | 18                        |
| CJSMAJ12A   | CJSMAJ12CA  | A12A<br>XX                | A12CA<br>XX  | 13.35                    | 14.69   | 1            | 5                                | 5  | 12                       | 20.1                                  | 19.7                      |
| CJSMAJ13A   | CJSMAJ13CA  | A13A<br>XX                | A13CA<br>XX  | 14.46                    | 15.89   | 1            | 5                                | 5  | 13                       | 18.6                                  | 21.3                      |
| CJSMAJ14A   | CJSMAJ14CA  | A14A<br>XX                | A14CA<br>XX  | 15.66                    | 17.19   | 1            | 5                                | 5  | 14                       | 17.2                                  | 23                        |
| CJSMAJ15A   | CJSMAJ15CA  | A15A<br>XX                | A15CA<br>XX  | 16.77                    | 18.49   | 1            | 5                                | 5  | 15                       | 16.4                                  | 24.2                      |
| CJSMAJ16A   | CJSMAJ16CA  | A16A<br>XX                | A16CA<br>XX  | 17.87                    | 19.69   | 1            | 5                                | 5  | 16                       | 15.4                                  | 25.7                      |
| CJSMAJ17A   | CJSMAJ17CA  | A17A<br>XX                | A17CA<br>XX  | 18.98                    | 20.89   | 1            | 5                                | 5  | 17                       | 14.5                                  | 27.3                      |
| CJSMAJ18A   | CJSMAJ18CA  | A18A<br>XX                | A18CA<br>XX  | 20.08                    | 22.08   | 1            | 5                                | 5  | 18                       | 13.7                                  | 28.9                      |
| CJSMAJ20A   | CJSMAJ20CA  | A20A<br>XX                | A20CA<br>XX  | 22.29                    | 24.48   | 1            | 5                                | 5  | 20                       | 12.3                                  | 32.1                      |
| CJSMAJ22A   | CJSMAJ22CA  | A22A<br>XX                | A22CA<br>XX  | 24.5                     | 26.88   | 1            | 5                                | 5  | 22                       | 11.3                                  | 35.1                      |
| CJSMAJ24A   | CJSMAJ24CA  | A24A<br>XX                | A24CA<br>XX  | 26.81                    | 29.48   | 1            | 5                                | 5  | 24                       | 10.3                                  | 38.5                      |
| CJSMAJ26A   | CJSMAJ26CA  | A26A<br>XX                | A26CA<br>XX  | 29.02                    | 31.88   | 1            | 5                                | 5  | 26                       | 9.5                                   | 41.7                      |
| CJSMAJ28A   | CJSMAJ28CA  | A28A<br>XX                | A28CA<br>XX  | 31.22                    | 34.38   | 1            | 5                                | 5  | 28                       | 8.8                                   | 44.9                      |
| CJSMAJ30A   | CJSMAJ30CA  | A30A<br>XX                | A30CA<br>XX  | 33.43                    | 36.77   | 1            | 5                                | 5  | 30                       | 8.3                                   | 47.9                      |
| CJSMAJ33A   | CJSMAJ33CA  | A33A<br>XX                | A33CA<br>XX  | 36.85                    | 40.57   | 1            | 5                                | 5  | 33                       | 7.5                                   | 52.8                      |
| CJSMAJ36A   | CJSMAJ36CA  | A36A<br>XX                | A36CA<br>XX  | 40.16                    | 44.17   | 1            | 5                                | 5  | 36                       | 6.9                                   | 57.5                      |
| CJSMAJ40A   | CJSMAJ40CA  | A40A<br>XX                | A40CA<br>XX  | 44.58                    | 49.07   | 1            | 5                                | 5  | 40                       | 6.2                                   | 63.9                      |
| CJSMAJ43A   | CJSMAJ43CA  | A43A<br>XX                | A43CA<br>XX  | 47.99                    | 52.76   | 1            | 5                                | 5  | 43                       | 5.8                                   | 68.7                      |
| CJSMAJ45A   | CJSMAJ45CA  | A45A<br>XX                | A45CA<br>XX  | 50.2                     | 55.26   | 1            | 5                                | 5  | 45                       | 5.5                                   | 72                        |
| CJSMAJ48A   | CJSMAJ48CA  | A48A<br>XX                | A48CA<br>XX  | 53.51                    | 58.86   | 1            | 5                                | 5  | 48                       | 5.2                                   | 76.6                      |
| CJSMAJ51A   | CJSMAJ51CA  | A51A<br>XX                | A51CA<br>XX  | 56.93                    | 62.66   | 1            | 5                                | 5  | 51                       | 4.9                                   | 81.6                      |
| CJSMAJ54A   | CJSMAJ54CA  | A54A<br>XX                | A54CA<br>XX  | 60.24                    | 66.25   | 1            | 5                                | 5  | 54                       | 4.6                                   | 86.2                      |
| CJSMAJ58A   | CJSMAJ58CA  | A58A<br>XX                | A58CA<br>XX  | 64.66                    | 71.15   | 1            | 5                                | 5  | 58                       | 4.3                                   | 92.7                      |
| CJSMAJ60A   | CJSMAJ60CA  | A60A<br>XX                | A60CA<br>XX  | 66.97                    | 73.65   | 1            | 5                                | 5  | 60                       | 4.1                                   | 95.8                      |
| CJSMAJ64A   | CJSMAJ64CA  | A64A<br>XX                | A64CA<br>XX  | 71.39                    | 78.54   | 1            | 5                                | 5  | 64                       | 3.9                                   | 102                       |
| CJSMAJ70A   | CJSMAJ70CA  | A70A<br>XX                | A70CA<br>XX  | 78.11                    | 85.94   | 1            | 5                                | 5  | 70                       | 3.5                                   | 111.9                     |
| CJSMAJ75A   | CJSMAJ75CA  | A75A<br>XX                | A75CA<br>XX  | 83.63                    | 92.04   | 1            | 5                                | 5  | 75                       | 3.3                                   | 119.8                     |
| CJSMAJ78A   | CJSMAJ78CA  | A78A<br>XX                | A78CA<br>XX  | 87.05                    | 95.73   | 1            | 5                                | 5  | 78                       | 3.2                                   | 124.7                     |
| CJSMAJ85A   | CJSMAJ85CA  | A85A<br>XX                | A85CA<br>XX  | 94.78                    | 103.93  | 1            | 5                                | 5  | 85                       | 2.9                                   | 135.6                     |
| CJSMAJ90A   | CJSMAJ90CA  | A90A<br>XX                | A90CA<br>XX  | 100.4                    | 110.92  | 1            | 5                                | 5  | 90                       | 2.7                                   | 144.5                     |
| CJSMAJ100A  | CJSMAJ100CA | A100A<br>XX               | A100CA<br>XX | 111.45                   | 122.91  | 1            | 5                                | 5  | 100                      | 2.5                                   | 160.4                     |

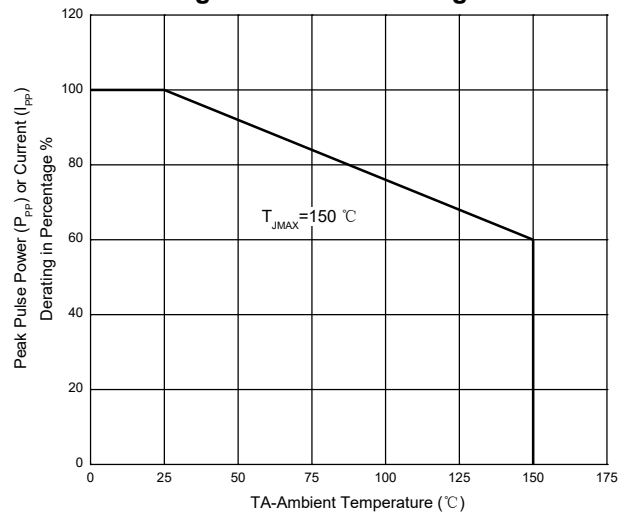
### Notes:

- (1) Waveform of CJSMAJ10A -CJSMAJ100CA are defined as per fig.3
- (2) XX=Code

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



**Figure 2. Pulse Derating Curve**



**Figure 3. Pulse Waveform**



**Figure 4. Typical Junction Capacitance**



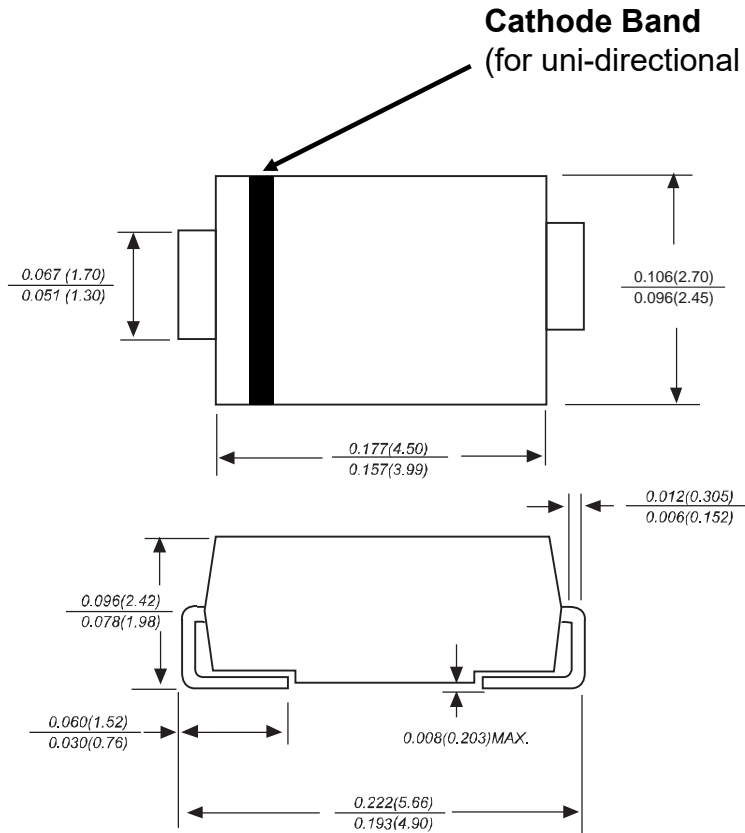
**Figure 5. Steady State Power Dissipation Derating Curve**



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

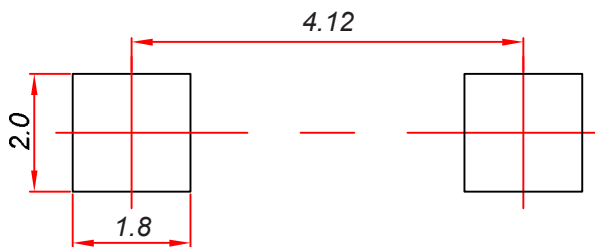


## SMAG Package Outline Dimensions



Dimensions in inches and (millimeters)

## SMAG Suggested Pad Layout



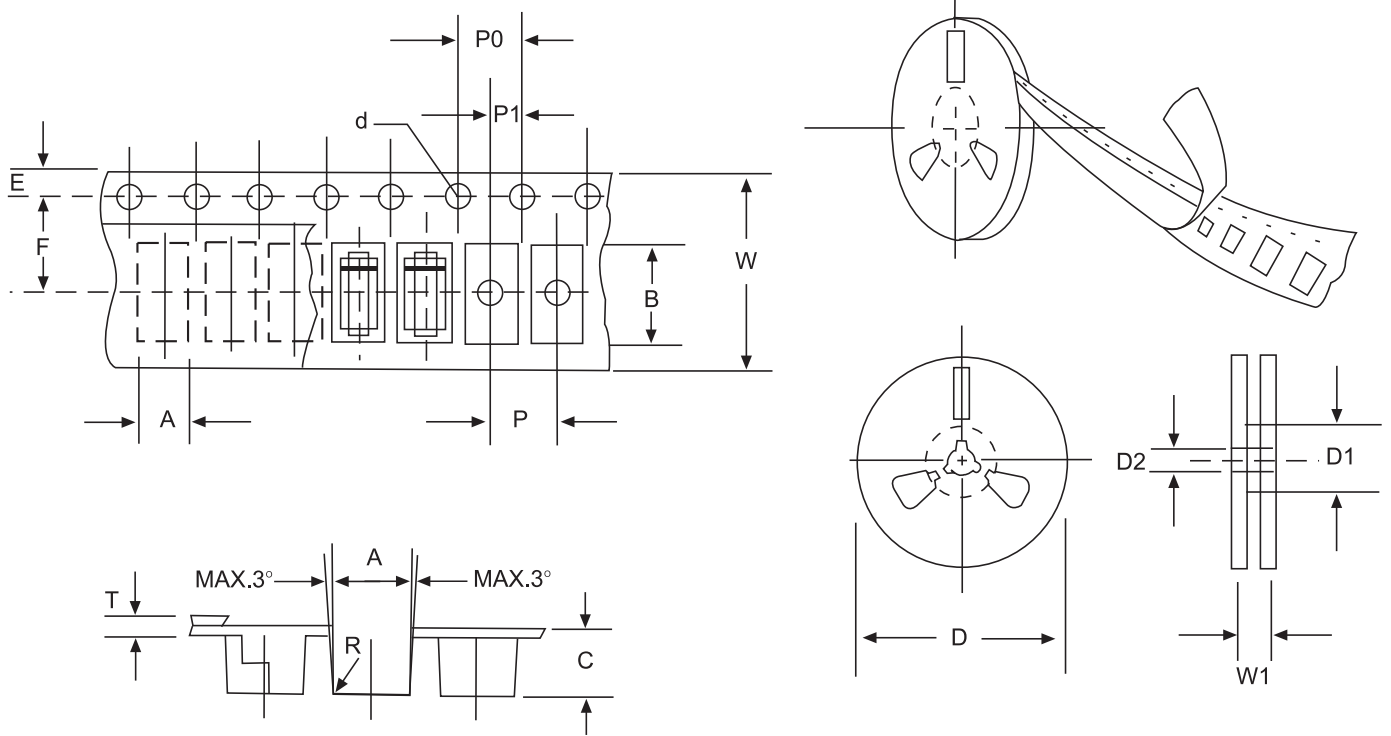
**Note:**

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

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# 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.

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