

### Applications

- ◆ Computer system
- ◆ Domestic appliance
- ◆ Video input

### Description

- ◆ Transient voltage suppression diodes, also known as TVS diodes, are protective electronic parts that protect electrical equipment from voltage spikes introduced by wires.

### Mechanical Data

- ◆ Package : SMC/DO-214AB
- ◆ Case Material : Molded Plastic. UL Flammability Classification Rating 94V-0. RoHS compliant
- ◆ Moisture Sensitivity : Meet MSL 1
- ◆ Terminal : Solder plated, solderable per MIL-STD-750, Method 2026
- ◆ Polarity : Color band denotes cathode except bi-directional models
- ◆ Weight : 0.28g(approximate)

### Features

- ◆ For surface mounted applications
- ◆ Excellent clamping capability
- ◆ 6600 W peak pulse power capability with a 10/1000 $\mu$ s Waveform.
- ◆ VRWM 12 ~100V
- ◆ Low profile package and low inductance
- ◆ Typical IR less than 1uA above 12V
- ◆ Fast response time: typically less than 1.0ps from 0V to VBR min.
- ◆ AEC-Q101 Qualified

### Product and Packing Information

| Part Number      | QTY/Reel | Reel Size |
|------------------|----------|-----------|
| 6.6SMDJxx(C)A-AT | 3,000    | 13 inch   |

### DO-214AB(SMC)



DO-214AB



Bi-directional



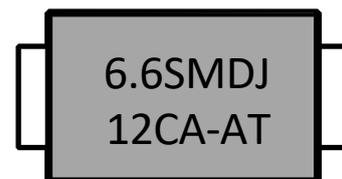
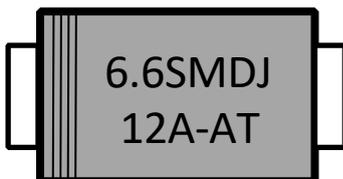
Un-directional

### Marking Information

EX :

6.6SMDJ12A-AT Marking code : 6.6SMDJ12A-AT

6.6SMDJ12CA-AT Marking code : 6.6SMDJ12CA-AT



**Electrical Characteristics (T=25°C)**

| Part Number   |                | Marking       |                | V <sub>R</sub> | I <sub>R</sub> @V <sub>R</sub> | V <sub>BR</sub> @I <sub>T</sub> |        | I <sub>T</sub> | V <sub>C</sub> @I <sub>PP</sub> | I <sub>PP</sub> ① |
|---------------|----------------|---------------|----------------|----------------|--------------------------------|---------------------------------|--------|----------------|---------------------------------|-------------------|
| Uni-Polar     | Bi-Polar       | Uni           | Bi             | V              | μA                             | min(V)                          | max(V) | mA             | max(V)                          | A                 |
| 6.6SMDJ12A-AT | 6.6SMDJ12CA-AT | 6.6SMDJ12A-AT | 6.6SMDJ12CA-AT | 12.0           | 1                              | 13.30                           | 14.70  | 1              | 19.9                            | 331.7             |
| 6.6SMDJ13A-AT | 6.6SMDJ13CA-AT | 6.6SMDJ13A-AT | 6.6SMDJ13CA-AT | 13.0           | 1                              | 14.40                           | 15.90  | 1              | 21.5                            | 307.0             |
| 6.6SMDJ14A-AT | 6.6SMDJ14CA-AT | 6.6SMDJ14A-AT | 6.6SMDJ14CA-AT | 14.0           | 1                              | 15.60                           | 17.20  | 1              | 23.2                            | 284.5             |
| 6.6SMDJ15A-AT | 6.6SMDJ15CA-AT | 6.6SMDJ15A-AT | 6.6SMDJ15CA-AT | 15.0           | 1                              | 16.70                           | 18.50  | 1              | 24.4                            | 270.5             |
| 6.6SMDJ16A-AT | 6.6SMDJ16CA-AT | 6.6SMDJ16A-AT | 6.6SMDJ16CA-AT | 16.0           | 1                              | 17.80                           | 19.70  | 1              | 26.0                            | 253.9             |
| 6.6SMDJ17A-AT | 6.6SMDJ17CA-AT | 6.6SMDJ17A-AT | 6.6SMDJ17CA-AT | 17.0           | 1                              | 18.90                           | 20.90  | 1              | 27.6                            | 239.2             |
| 6.6SMDJ18A-AT | 6.6SMDJ18CA-AT | 6.6SMDJ18A-AT | 6.6SMDJ18CA-AT | 18.0           | 1                              | 20.00                           | 22.10  | 1              | 29.2                            | 226.1             |
| 6.6SMDJ20A-AT | 6.6SMDJ20CA-AT | 6.6SMDJ20A-AT | 6.6SMDJ20CA-AT | 20.0           | 1                              | 22.20                           | 24.50  | 1              | 32.4                            | 203.8             |
| 6.6SMDJ22A-AT | 6.6SMDJ22CA-AT | 6.6SMDJ22A-AT | 6.6SMDJ22CA-AT | 22.0           | 1                              | 24.40                           | 26.90  | 1              | 35.5                            | 186.0             |
| 6.6SMDJ24A-AT | 6.6SMDJ24CA-AT | 6.6SMDJ24A-AT | 6.6SMDJ24CA-AT | 24.0           | 1                              | 26.70                           | 29.50  | 1              | 38.9                            | 169.7             |
| 6.6SMDJ26A-AT | 6.6SMDJ26CA-AT | 6.6SMDJ26A-AT | 6.6SMDJ26CA-AT | 26.0           | 1                              | 28.90                           | 31.90  | 1              | 42.1                            | 156.8             |
| 6.6SMDJ28A-AT | 6.6SMDJ28CA-AT | 6.6SMDJ28A-AT | 6.6SMDJ28CA-AT | 28.0           | 1                              | 31.10                           | 34.40  | 1              | 45.4                            | 145.4             |
| 6.6SMDJ30A-AT | 6.6SMDJ30CA-AT | 6.6SMDJ30A-AT | 6.6SMDJ30CA-AT | 30.0           | 1                              | 33.30                           | 36.80  | 1              | 48.4                            | 136.4             |
| 6.6SMDJ33A-AT | 6.6SMDJ33CA-AT | 6.6SMDJ33A-AT | 6.6SMDJ33CA-AT | 33.0           | 1                              | 36.70                           | 40.60  | 1              | 53.3                            | 123.9             |
| 6.6SMDJ36A-AT | 6.6SMDJ36CA-AT | 6.6SMDJ36A-AT | 6.6SMDJ36CA-AT | 36.0           | 1                              | 40.00                           | 44.20  | 1              | 58.1                            | 113.6             |
| 6.6SMDJ40A-AT | 6.6SMDJ40CA-AT | 6.6SMDJ40A-AT | 6.6SMDJ40CA-AT | 40.0           | 1                              | 44.40                           | 49.10  | 1              | 64.5                            | 102.4             |
| 6.6SMDJ43A-AT | 6.6SMDJ43CA-AT | 6.6SMDJ43A-AT | 6.6SMDJ43CA-AT | 43.0           | 1                              | 47.80                           | 52.80  | 1              | 69.4                            | 95.11             |
| 6.6SMDJ45A-AT | 6.6SMDJ45CA-AT | 6.6SMDJ45A-AT | 6.6SMDJ45CA-AT | 45.0           | 1                              | 50.00                           | 55.30  | 1              | 72.7                            | 90.79             |
| 6.6SMDJ48A-AT | 6.6SMDJ48CA-AT | 6.6SMDJ48A-AT | 6.6SMDJ48CA-AT | 48.0           | 1                              | 53.30                           | 58.90  | 1              | 77.4                            | 85.28             |
| 6.6SMDJ51A-AT | 6.6SMDJ51CA-AT | 6.6SMDJ51A-AT | 6.6SMDJ51CA-AT | 51.0           | 1                              | 56.70                           | 62.70  | 1              | 82.4                            | 80.10             |
| 6.6SMDJ54A-AT | 6.6SMDJ54CA-AT | 6.6SMDJ54A-AT | 6.6SMDJ54CA-AT | 54.0           | 1                              | 60.00                           | 66.30  | 1              | 87.1                            | 75.78             |
| 6.6SMDJ58A-AT | 6.6SMDJ58CA-AT | 6.6SMDJ58A-AT | 6.6SMDJ58CA-AT | 58.0           | 1                              | 64.40                           | 71.20  | 1              | 93.6                            | 70.52             |
| 6.6SMDJ60A-AT | 6.6SMDJ60CA-AT | 6.6SMDJ60A-AT | 6.6SMDJ60CA-AT | 60.0           | 1                              | 66.70                           | 73.70  | 1              | 96.8                            | 68.19             |

**Electrical Characteristics (T=25°C)**

| Part Number    |                 | Marking        |                 | V <sub>R</sub> | I <sub>R</sub> @V <sub>R</sub> | V <sub>BR</sub> @I <sub>T</sub> |        | I <sub>T</sub> | V <sub>C</sub> @I <sub>PP</sub> | I <sub>PP</sub> ① |
|----------------|-----------------|----------------|-----------------|----------------|--------------------------------|---------------------------------|--------|----------------|---------------------------------|-------------------|
| Uni-Polar      | Bi-Polar        | Uni            | Bi              | V              | μA                             | min(V)                          | max(V) | mA             | max(V)                          | A                 |
| 6.6SMDJ64A-AT  | 6.6SMDJ64CA-AT  | 6.6SMDJ64A-AT  | 6.6SMDJ64CA-AT  | 64.0           | 1                              | 71.10                           | 78.60  | 1              | 103.0                           | 64.08             |
| 6.6SMDJ70A-AT  | 6.6SMDJ70CA-AT  | 6.6SMDJ70A-AT  | 6.6SMDJ70CA-AT  | 70.0           | 1                              | 77.80                           | 86.00  | 1              | 113.0                           | 58.41             |
| 6.6SMDJ75A-AT  | 6.6SMDJ75CA-AT  | 6.6SMDJ75A-AT  | 6.6SMDJ75CA-AT  | 75.0           | 1                              | 83.30                           | 92.10  | 1              | 121.0                           | 54.55             |
| 6.6SMDJ78A-AT  | 6.6SMDJ78CA-AT  | 6.6SMDJ78A-AT  | 6.6SMDJ78CA-AT  | 78.0           | 1                              | 86.70                           | 95.80  | 1              | 126.0                           | 52.39             |
| 6.6SMDJ85A-AT  | 6.6SMDJ85CA-AT  | 6.6SMDJ85A-AT  | 6.6SMDJ85CA-AT  | 85.0           | 1                              | 94.40                           | 104.0  | 1              | 137.0                           | 48.18             |
| 6.6SMDJ90A-AT  | 6.6SMDJ90CA-AT  | 6.6SMDJ90A-AT  | 6.6SMDJ90CA-AT  | 90.0           | 1                              | 100.0                           | 111.0  | 1              | 146.0                           | 45.21             |
| 6.6SMDJ100A-AT | 6.6SMDJ100CA-AT | 6.6SMDJ100A-AT | 6.6SMDJ100CA-AT | 100.0          | 1                              | 111.0                           | 123.0  | 1              | 162.0                           | 40.75             |

**Note:** ①. Surge waveform: 10/1000μs

V<sub>R</sub>: Stand-off voltage -- Maximum voltage that can be applied

V<sub>BR</sub>: Breakdown voltage

V<sub>C</sub>: Clamping voltage -- Peak voltage measured across the suppressor at a specified I<sub>PP</sub>

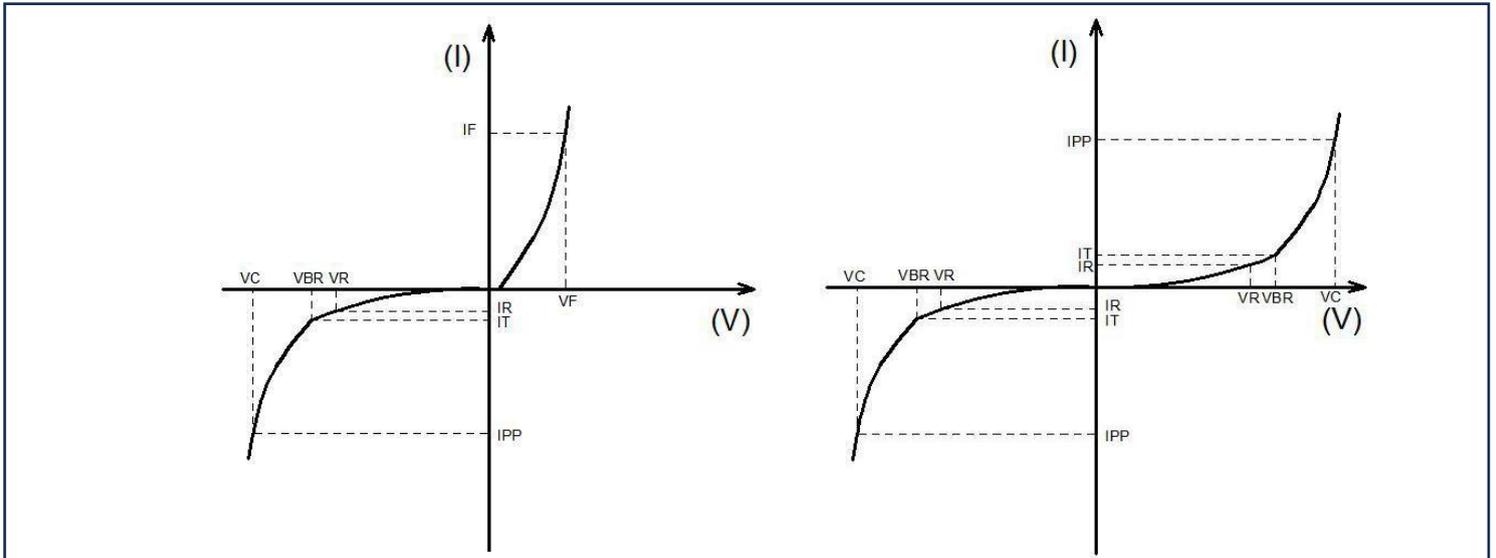
I<sub>R</sub>: Reverse leakage current

I<sub>T</sub>: Test current

Maximum Ratings (T=25°C, RH=45% ~ 75%, unless otherwise noted)

| Parameter  | Symbol             | Value       | Unit |
|--|--------------------|-------------|------|
| Peak pulse power dissipation on 10/1000µs waveform     | P <sub>PP</sub>    | 6600        | W    |
| Steady state power dissipation at T <sub>L</sub> =75°C | P <sub>M(AV)</sub> | 6.5         | W    |
| Operating junction temperature range                   | T <sub>j</sub>     | -55 to +175 | °C   |
| Storage temperature range                              | T <sub>stg</sub>   | -55 to +175 | °C   |

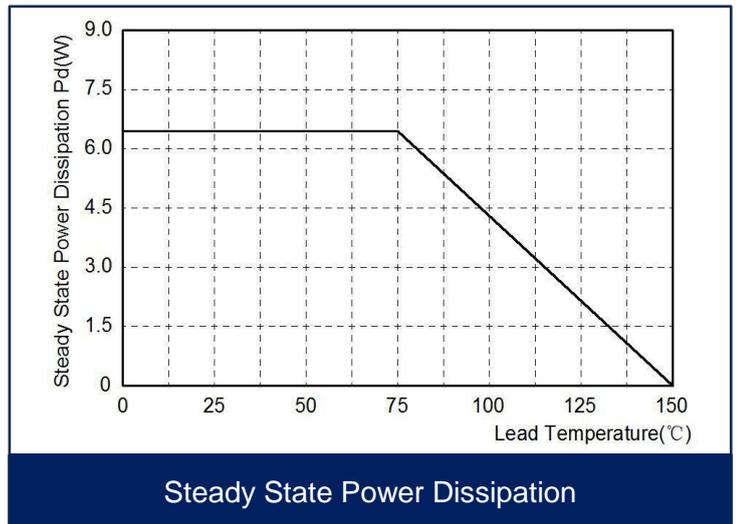
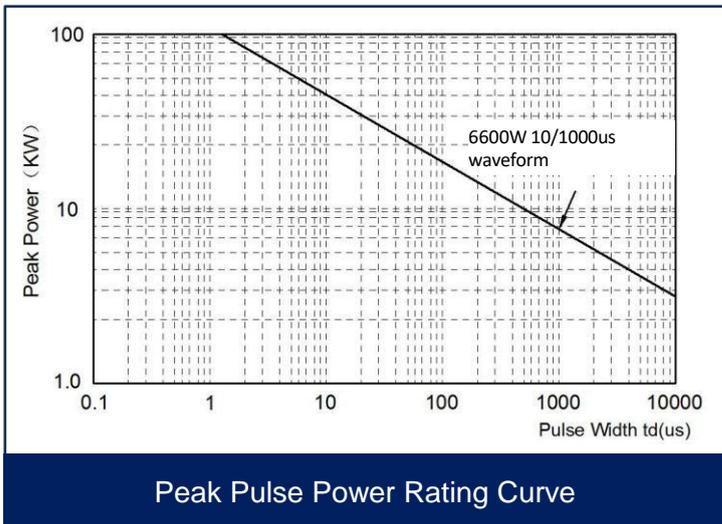
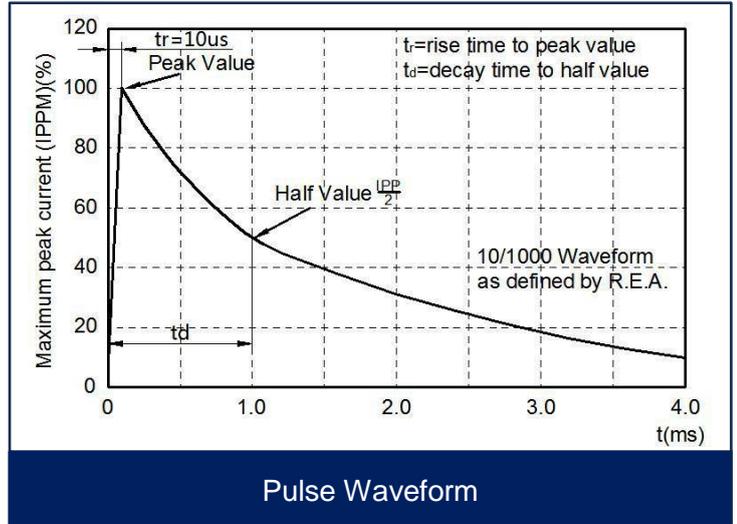
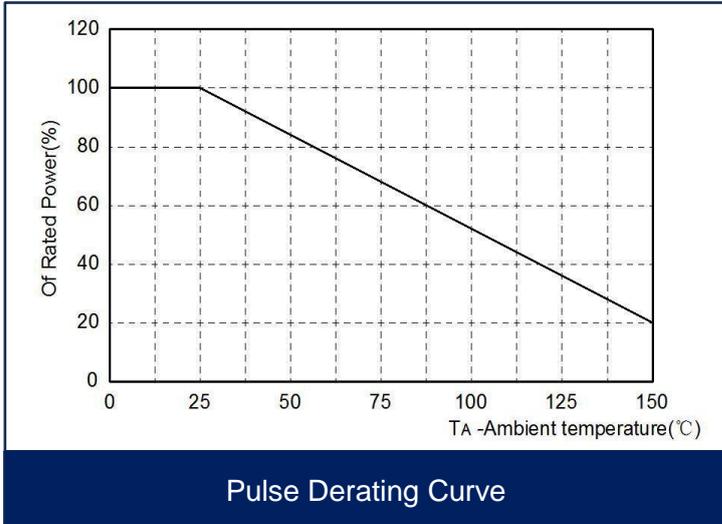
Ratings And V-I Characteristics Curves (T=25°C, unless otherwise noted)



V-I cure characteristics

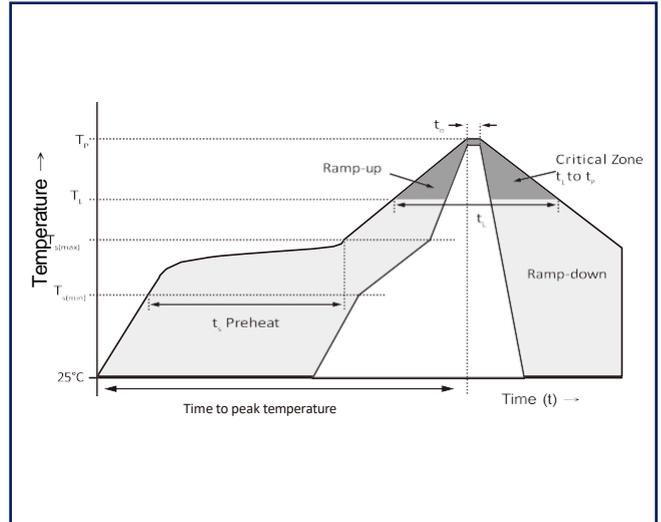
| Symbol          | Parameter                                |
|-----------------|--|
| I <sub>F</sub>  | Mean Forward Current                     |
| V <sub>F</sub>  | Maximum Forward Voltage @ I <sub>F</sub> |
| V <sub>R</sub>  | Peak Reverse Working Voltage             |
| I <sub>R</sub>  | Reverse Leakage Current @ V <sub>R</sub> |
| V <sub>BR</sub> | Breakdown Voltage @ I <sub>T</sub>       |
| I <sub>T</sub>  | Test Current                             |
| I <sub>PP</sub> | Maximum Reverse Peak Pulse Current       |
| V <sub>C</sub>  | Clamping Voltage @ I <sub>PP</sub>       |

Typical Characteristics

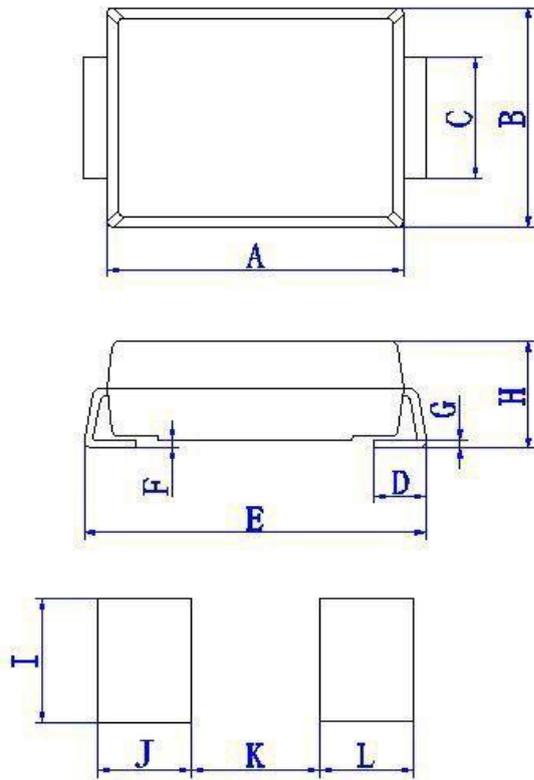


Soldering Parameters

| Reflow Condition                                       |                                  | Lead-free assembly |
|--|----------------------------------|--------------------|
| Pre Heat   | Temperature Max ( $T_{s(min)}$ ) | 150°C              |
|  | Temperature Max ( $T_{s(max)}$ ) | 200°C              |
|  | Time (min to max) ( $t_p$ )      | 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) ( $t_r$ )      | 60 – 150 seconds   |
| Peak Temperature ( $T_p$ )                             |                                  | 260°C (+0/-5)      |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                  | 30 seconds Max     |
| Ramp-down Rate   |                                  | 6°C/second Max     |
| Time 25°C to peak Temperature ( $T_p$ )                |                                  | 8 minutes Max.     |
| Do not exceed  |                                  | 260°C              |

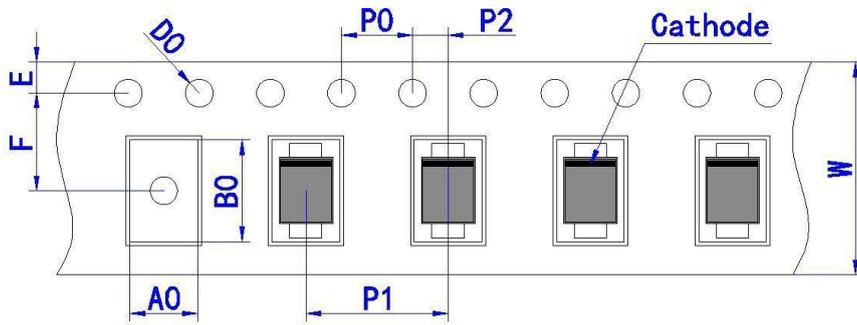


Package mechanical data & Suggested Land Pattern



| Ref. (mm) | Millimeters |       |
|-----------|-------------|-------|
|           | Min.        | Max.  |
| A         | 6.60        | 7.11  |
| B         | 5.59        | 6.20  |
| C         | 2.75        | 3.20  |
| D         | 0.76        | 1.52  |
| E         | 7.71        | 8.13  |
| F         | 0.051       | 0.203 |
| G         | 0.15        | 0.25  |
| H         | 2.06        | 2.75  |
| I         | 3.30        | --    |
| J         | 1.30        | --    |
| K         | --          | 5.30  |
| L         | 1.30        | --    |

Package mechanical data & Suggested Land Pattern



| Ref. | Millimeters |
|------|-------------|
| A0   | 6.20±0.20   |
| B0   | 8.31±0.20   |
| C    | 330.00      |
| D0   | 1.55±0.10   |
| E    | 1.75±0.20   |
| E1   | 13.50±1.00  |
| F    | 7.50±0.10   |
| P0   | 8.00±0.20   |
| P1   | 4.00±0.20   |
| P2   | 2.00±0.20   |
| W    | 16.00±0.30  |
| W1   | 20.00±4.00  |
| D    | 333.00±2.00 |
| D2   | 13.50±0.30  |