

**THINKING ELECTRONIC INDUSTRIAL CO., LTD.**

HEAD OFFICE: 12F, No.93, Dashun 1st Rd., Zuoying Dist., Kaohsiung, Taiwan  
 TEL: 886-7-5577660 FAX: 886-7-5570560

## MANUFACTURING SITE

- KAOHSIUNG FACTORY 1: No. 51, Kaifa Rd., N.E.P.Z, Kaohsiung City 81170, Taiwan  
 TEL: 886-7-9616668 FAX: 886-7-9616698
- KAOHSIUNG FACTORY 2: No. 2-2, Xinjian S. Rd., N.E.P.Z., Kaohsiung City 81170, Taiwan  
 TEL: 886-7-9630001 FAX: 886-7-3635113
- CHANGZHOU FACTORY: No.6 Longmen Rd., Wujin High & New-Tech Industrial  
 Development Zone, Changzhou, Jiangsu, China 213161  
 TEL:86-519-86578999 FAX:86-519-86558643
- DONG GUAN FACTORY: No.45, East Rd., Sha-Tao Dist., Chang-An Town,  
 Dongguan City, Guangdong, China 523863  
 TEL:86-769-85542016 FAX:86-769-85546890
- YICHANG FACTORY: No. 283 Xiaoting Avenue, Xiaoting Dist., Yichang  
 City 443007, Hubei, China  
 TEL:86-717-6510010 FAX:86-717-6511430

**SPECIFICATION FOR APPROVAL**

|                         |                    |
|-------------------------|--------------------|
| CUSTOMER                | 立創電子               |
| CERTIFIED<br>MODEL/TYPE | SMCJ64             |
| PART NO.                | SMCJ64CA (RoHS+HF) |
| APPLICATION             |                    |
| CUSTOMER P/N            |                    |
| ISSUE DATE              | Jan.18,2021        |
| REV. NO.                |                    |
| REV. DATE               |                    |

| FOR CUSTOMER APPROVAL | CHECKED BY            |
|-----------------------|-----------------------|
|                       | <i>Dan Zhang</i>      |
|                       | APPROVED BY           |
|                       | <i>Huaifang Zhang</i> |





**REVISED RECORD SHEET**

| REV. NO | REV. DATE | REVISED CONTENT |
|---------|-----------|-----------------|
|         |           |                 |



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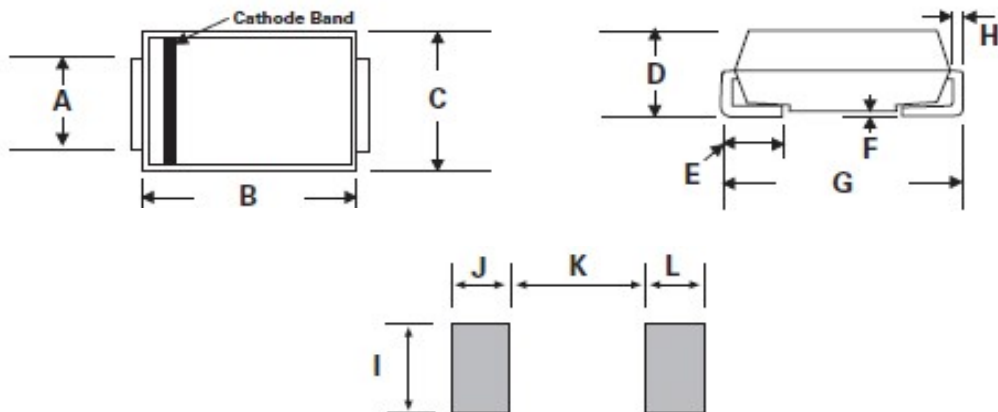
Part Number Code

Example :

**SMCJ**   **64**   **CA**  
(1)        (2)        (3)

| No. | Item                                    | Digit | Specification                              |
|-----|---|-------|--|
| (1) | Product Type                            | SMCJ  | Thinking Power TVS SMD Type                |
| (2) | Reverse Stand off Voltage ( $V_{RWM}$ ) | 64    | 64=64 $V_{RWM}$                            |
| (3) | Type Code                               | CA    | Bi-directional<br>5% VBR Voltage Tolerance |

Structure and Dimensions



\*The Cathode bend for Uni-directional product only.

| Item | Millimeters |       | Inches |       |
|------|-------------|-------|--------|-------|
|      | Min.        | Max.  | Min.   | Max.  |
| A    | 2.75        | 3.25  | 0.108  | 0.128 |
| B    | 6.6         | 7.11  | 0.26   | 0.28  |
| C    | 5.59        | 6.22  | 0.22   | 0.245 |
| D    | 2           | 2.62  | 0.079  | 0.103 |
| E    | 0.76        | 1.52  | 0.03   | 0.06  |
| F    | -           | 0.203 | -      | 0.008 |
| G    | 7.75        | 8.13  | 0.305  | 0.32  |
| H    | 0.152       | 0.305 | 0.006  | 0.012 |
| I    | 3.3         | -     | 0.129  | -     |
| J/L  | 2.4         | -     | 0.094  | -     |
| K    | -           | 4.2   | -      | 0.165 |

## Electrical Characteristics

Peak power dissipation with a 10/1000 $\mu$ s waveform : 1500W

Operating junction and storage temperature range : -55~+150 °C

| Part No.<br>(Uni) | Part No.<br>(Bi) | Reverse<br>Stand off<br>Voltage | Breakage<br>Voltage<br>VBR @ IT |          | Test<br>Current | Maximum<br>Clamping<br>Voltage<br>VC @ Ipp | Maximum<br>Peak Pulse<br>Current | Maximum<br>Reverse<br>Leakage<br>IR<br>@VRWM | Marking<br>Code |          |
|-------------------|------------------|---------------------------------|---------------------------------|----------|-----------------|--|----------------------------------|--|-----------------|----------|
|                   |                  |                                 | VRWM ( V )                      | Min( V ) |                 |  |                                  |  | Max( V )        | IT( mA ) |
| SMCJ5.0A          | SMCJ5.0CA        | 5                               | 6.4                             | 7        | 10              | 9.2  | 163                              | 800  | GDE.            | BDE.     |
| SMCJ6.0A          | SMCJ6.0CA        | 6                               | 6.67                            | 7.37     | 10              | 10.3                                       | 145.7                            | 800  | GDG.            | BDG.     |
| SMCJ6.5A          | SMCJ6.5CA        | 6.5                             | 7.22                            | 7.98     | 10              | 11.2                                       | 134                              | 500  | GDK.            | BDK.     |
| SMCJ7.0A          | SMCJ7.0CA        | 7                               | 7.78                            | 8.6      | 10              | 12   | 125                              | 200  | GDM.            | BDM.     |
| SMCJ7.5A          | SMCJ7.5CA        | 7.5                             | 8.33                            | 9.21     | 1               | 12.9                                       | 116.3                            | 100  | GDP.            | BDP.     |
| SMCJ8.0A          | SMCJ8.0CA        | 8                               | 8.89                            | 9.83     | 1               | 13.6                                       | 110.3                            | 50   | GDR.            | BDR.     |
| SMCJ8.5A          | SMCJ8.5CA        | 8.5                             | 9.44                            | 10.4     | 1               | 14.4                                       | 104.2                            | 20   | GDT.            | BDT.     |
| SMCJ9.0A          | SMCJ9.0CA        | 9                               | 10                              | 11.1     | 1               | 15.4                                       | 97.4                             | 10   | GDV.            | BDV.     |
| SMCJ10A           | SMCJ10CA         | 10                              | 11.1                            | 12.3     | 1               | 17   | 88.3                             | 5  | GDX.            | BDX.     |
| SMCJ11A           | SMCJ11CA         | 11                              | 12.2                            | 13.5     | 1               | 18.2                                       | 82.5                             | 1  | GDZ.            | BDZ.     |
| SMCJ12A           | SMCJ12CA         | 12                              | 13.3                            | 14.7     | 1               | 19.9                                       | 75.4                             | 1  | GEE.            | BEE.     |
| SMCJ13A           | SMCJ13CA         | 13                              | 14.4                            | 15.9     | 1               | 21.5                                       | 69.8                             | 1  | GEG.            | BEG.     |
| SMCJ14A           | SMCJ14CA         | 14                              | 15.6                            | 17.2     | 1               | 23.2                                       | 64.7                             | 1  | GEK.            | BEK.     |
| SMCJ15A           | SMCJ15CA         | 15                              | 16.7                            | 18.5     | 1               | 24.4                                       | 61.5                             | 1  | GEM.            | BEM.     |
| SMCJ16A           | SMCJ16CA         | 16                              | 17.8                            | 19.7     | 1               | 26   | 57.7                             | 1  | GEP.            | BEP.     |
| SMCJ17A           | SMCJ17CA         | 17                              | 18.9                            | 20.9     | 1               | 27.6                                       | 54.4                             | 1  | GER.            | BER.     |
| SMCJ18A           | SMCJ18CA         | 18                              | 20                              | 22.1     | 1               | 29.2                                       | 51.4                             | 1  | GET.            | BET.     |
| SMCJ20A           | SMCJ20CA         | 20                              | 22.2                            | 24.5     | 1               | 32.4                                       | 46.3                             | 1  | GEV.            | BEV.     |
| SMCJ22A           | SMCJ22CA         | 22                              | 24.4                            | 26.9     | 1               | 35.5                                       | 42.3                             | 1  | GEX.            | BEX.     |
| SMCJ24A           | SMCJ24CA         | 24                              | 26.7                            | 29.5     | 1               | 38.9                                       | 38.6                             | 1  | GEZ.            | BEZ.     |
| SMCJ26A           | SMCJ26CA         | 26                              | 28.9                            | 31.9     | 1               | 42.1                                       | 35.7                             | 1  | GFE.            | BFE.     |
| SMCJ28A           | SMCJ28CA         | 28                              | 31.1                            | 34.4     | 1               | 45.4                                       | 33.1                             | 1  | GFG.            | BFG.     |
| SMCJ30A           | SMCJ30CA         | 30                              | 33.3                            | 36.8     | 1               | 48.4                                       | 31                               | 1  | GFK.            | BFK.     |
| SMCJ33A           | SMCJ33CA         | 33                              | 36.7                            | 40.6     | 1               | 53.3                                       | 28.2                             | 1  | GFM.            | BFM.     |
| SMCJ36A           | SMCJ36CA         | 36                              | 40                              | 44.2     | 1               | 58.1                                       | 25.9                             | 1  | GFP.            | BFP.     |
| SMCJ40A           | SMCJ40CA         | 40                              | 44.4                            | 49.1     | 1               | 64.5                                       | 23.3                             | 1  | GFR.            | BFR.     |
| SMCJ43A           | SMCJ43CA         | 43                              | 47.8                            | 52.8     | 1               | 69.4                                       | 21.7                             | 1  | GFT.            | BFT.     |
| SMCJ45A           | SMCJ45CA         | 45                              | 50                              | 55.3     | 1               | 72.7                                       | 20.6                             | 1  | GFV.            | BFV.     |
| SMCJ48A           | SMCJ48CA         | 48                              | 53.3                            | 58.9     | 1               | 77.4                                       | 19.4                             | 1  | GFX.            | BFX.     |
| SMCJ51A           | SMCJ51CA         | 51                              | 56.7                            | 62.7     | 1               | 82.4                                       | 18.2                             | 1  | GFZ.            | BFZ.     |
| SMCJ54A           | SMCJ54CA         | 54                              | 60                              | 66.3     | 1               | 87.1                                       | 17.3                             | 1  | GGE.            | BGE.     |
| SMCJ58A           | SMCJ58CA         | 58                              | 64.4                            | 71.2     | 1               | 93.6                                       | 16.1                             | 1  | GGG.            | BGG.     |
| SMCJ60A           | SMCJ60CA         | 60                              | 66.7                            | 73.7     | 1               | 96.8                                       | 15.5                             | 1  | G GK.           | B GK.    |

Electrical CharacteristicsPeak power dissipation with a 10/1000 $\mu$ s waveform : 1500W

Operating junction and storage temperature range : -55~+150 °C

| Part No.<br>(Uni) | Part No.<br>(Bi) | Reverse<br>Stand off<br>Voltage | Breakage<br>Voltage<br>VBR @ IT |          | Test<br>Current<br>IT( mA ) | Maximum<br>Clamping<br>Voltage<br>VC @ Ipp | Maximum<br>Peak Pulse<br>Current<br>Ipp(A) | Maximum<br>Reverse<br>Leakage<br>IR<br>@VRWM | Marking<br>Code |      |
|-------------------|------------------|---------------------------------|---------------------------------|----------|-----------------------------|--|--|--|-----------------|------|
|                   |                  |                                 | VRWM ( V )                      | Min( V ) |                             |  |  |  | Max( V )        | Uni  |
| SMCJ64A           | SMCJ64CA         | 64                              | 71.1                            | 78.6     | 1                           | 103  | 14.6                                       | 1  | GGM.            | BGM. |
| SMCJ70A           | SMCJ70CA         | 70                              | 77.8                            | 86       | 1                           | 113  | 13.3                                       | 1  | GGP.            | BGP. |
| SMCJ75A           | SMCJ75CA         | 75                              | 83.3                            | 92.1     | 1                           | 121  | 12.4                                       | 1  | GGR.            | BGR. |
| SMCJ78A           | SMCJ78CA         | 78                              | 86.7                            | 95.8     | 1                           | 126  | 11.9                                       | 1  | GGT.            | BGT. |
| SMCJ85A           | SMCJ85CA         | 85                              | 94.4                            | 104      | 1                           | 137  | 11   | 1  | GGV.            | BGV. |
| SMCJ90A           | SMCJ90CA         | 90                              | 100                             | 111      | 1                           | 146  | 10.3                                       | 1  | GGX.            | BGX. |
| SMCJ100A          | SMCJ100CA        | 100                             | 111                             | 123      | 1                           | 162  | 9.3  | 1  | GGZ.            | BGZ. |
| SMCJ110A          | SMCJ110CA        | 110                             | 122                             | 135      | 1                           | 177  | 8.5  | 1  | GHE.            | BHE. |
| SMCJ120A          | SMCJ120CA        | 120                             | 133                             | 147      | 1                           | 193  | 7.8  | 1  | GHG.            | BHG. |
| SMCJ130A          | SMCJ130CA        | 130                             | 144                             | 159      | 1                           | 209  | 7.2  | 1  | GHK.            | BHK. |
| SMCJ150A          | SMCJ150CA        | 150                             | 167                             | 185      | 1                           | 243  | 6.2  | 1  | GHM.            | BHM. |
| SMCJ160A          | SMCJ160CA        | 160                             | 178                             | 197      | 1                           | 259  | 5.8  | 1  | GHP.            | BHP. |
| SMCJ170A          | SMCJ170CA        | 170                             | 189                             | 209      | 1                           | 275  | 5.5  | 1  | GHR.            | BHR. |
| SMCJ180A          | SMCJ180CA        | 180                             | 201                             | 222      | 1                           | 292  | 5.1  | 1  | GHT.            | BHT. |
| SMCJ190A          | SMCJ190CA        | 190                             | 209                             | 243      | 1                           | 308  | 4.8  | 1  | GHV.            | BHV. |
| SMCJ200A          | SMCJ200CA        | 200                             | 224                             | 247      | 1                           | 324  | 4.6  | 1  | GHW.            | BHW. |
| SMCJ220A          | SMCJ220CA        | 220                             | 246                             | 272      | 1                           | 356  | 4.2  | 1  | GHX.            | BHX. |
| SMCJ250A          | SMCJ250CA        | 250                             | 279                             | 309      | 1                           | 405  | 3.7  | 1  | GHZ.            | BHZ. |
| SMCJ300A          | SMCJ300CA        | 300                             | 335                             | 371      | 1                           | 486  | 3.1  | 1  | GJE.            | BJE. |
| SMCJ350A          | SMCJ350CA        | 350                             | 391                             | 432      | 1                           | 567  | 2.6  | 1  | GJG.            | BJG. |
| SMCJ400A          | SMCJ400CA        | 400                             | 447                             | 494      | 1                           | 648  | 2.3  | 1  | GJK.            | BJK. |
| SMCJ440A          | SMCJ440CA        | 440                             | 492                             | 543      | 1                           | 713  | 2.1  | 1  | GJM.            | BJM. |

Reliability

| Item   | Standard                                    | Test conditions / Methods   | Specifications                                  |
|--|---|---|---|
| HTRB<br>(High Temp.<br>Reverse Bias<br>Test) | MIL-STD-750D<br>METHOD 1038.3<br>Method 103 | Test Temp. : 150°C<br>Duration 168 hrs with rated VRWM  | Electrical<br>properties meet<br>Specifications |
| PCT<br>(Pressure<br>Cooker Test)             | MIL-STD-19500<br>EAPPENDIX C                | Test Temp. : 121 °C<br>Pressure:1.2Kg<br>Duration: 96 hrs   | Electrical<br>properties meet<br>Specifications |
| TCT  | MIL-STD-750D<br>METHOD 1051.5               | Test Temp. : -55°C ~+150°C<br>20 cycles   | Electrical<br>properties meet<br>Specifications |
| Forward<br>Surge                             | MIL-STD-750D<br>METHOD 4066.3               | Sine half wave 8.3mS 1 shot<br>IFSM:20A forSMF<br>40A for SMA/ P4SMA & SMAF<br>100A for SMB/P6SMB<br>200A for SMC/1.5SMC<br>For Uni-directional product only. | Electrical<br>properties meet<br>Specifications |
| Soldering<br>Heat                            | MIL-STD-750D<br>METHOD 2031.2               | Test Temp. : 260°C<br>Duration:10 sec<br>1cycle   | Electrical<br>properties meet<br>Specifications |



## Soldering Recommendation

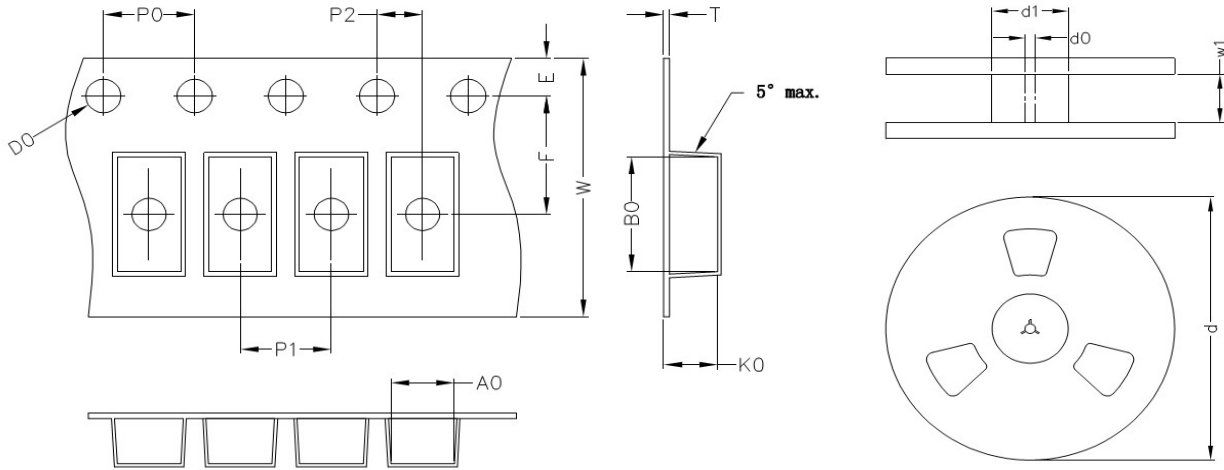
### ■ IR-reflow soldering profile



| Reflow Condition  | Lead-free assembly                 |
|---|------------------------------------|
| <b>Preheat</b><br>-Temperature Min(Ts min)<br>-Temperature Min(Ts max)<br>-Time (min to max) (ts) | 150°C<br>200°C<br>60 – 180 seconds |
| <b>Average ramp up rate</b><br>-Temperature Liquidus (TL) to peak                                 | 3°C/second max                     |
| <b>Ts(max) to TL</b><br>-Ramp-up Rate   | 3°C/second max.                    |
| <b>Reflow</b><br>-Temperature Liquidus (TL)<br>-Time (tL)   | 217°C<br>60 – 150 seconds          |
| <b>Peak Temperature (TP)</b>  | 260°C                              |
| <b>Time within 5°C of actual peak Temperature(tp)</b>   | 20 – 40 seconds                    |
| <b>Ramp-down Rate</b>   | 6°C/second max.                    |
| <b>Time 25°C to peak Temperature(TP)</b>  | 8 minutes max.                     |
| <b>Do not exceed</b>  | 260°C                              |

## Packaging

### ■ Taping Specification



(Unit : mm)

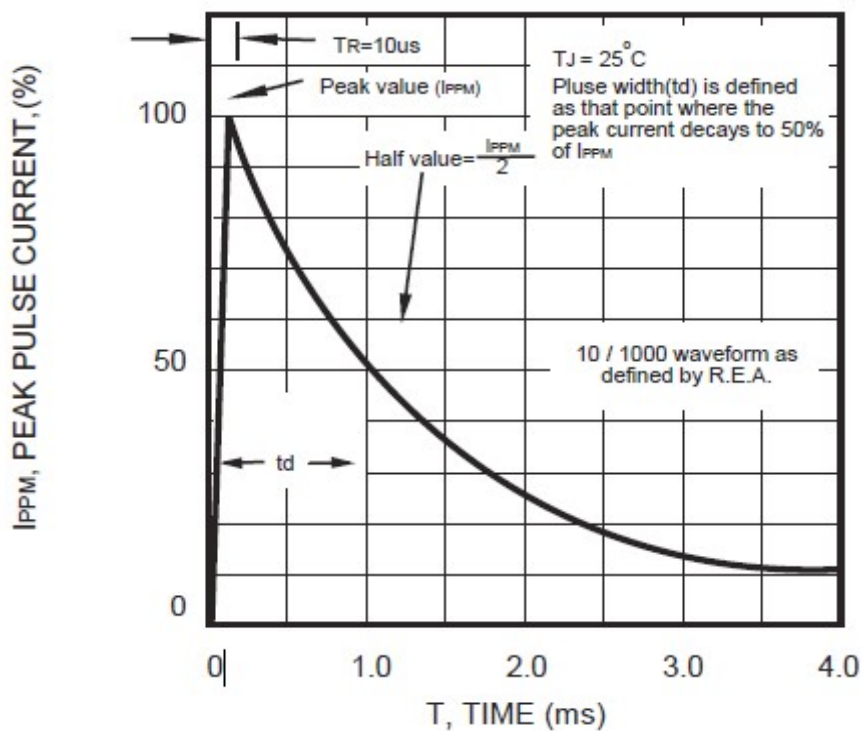
| Index | A0   | B0   | K0   | D0   | E    | F   | P0 | P1 | P2 | T    | W  | d(13") | d1 | d0   | w1 |
|-------|------|------|------|------|------|-----|----|----|----|------|----|--------|----|------|----|
| SMCJ  | 6.05 | 8.31 | 2.54 | 1.55 | 1.75 | 7.5 | 4  | 8  | 2  | 0.25 | 16 | 330    | 75 | 13.5 | 17 |

Notes: The tolerance of carrier tape and top cover is  $\pm 0.1$  mm, the tolerance of reel is  $\pm 2$  mm

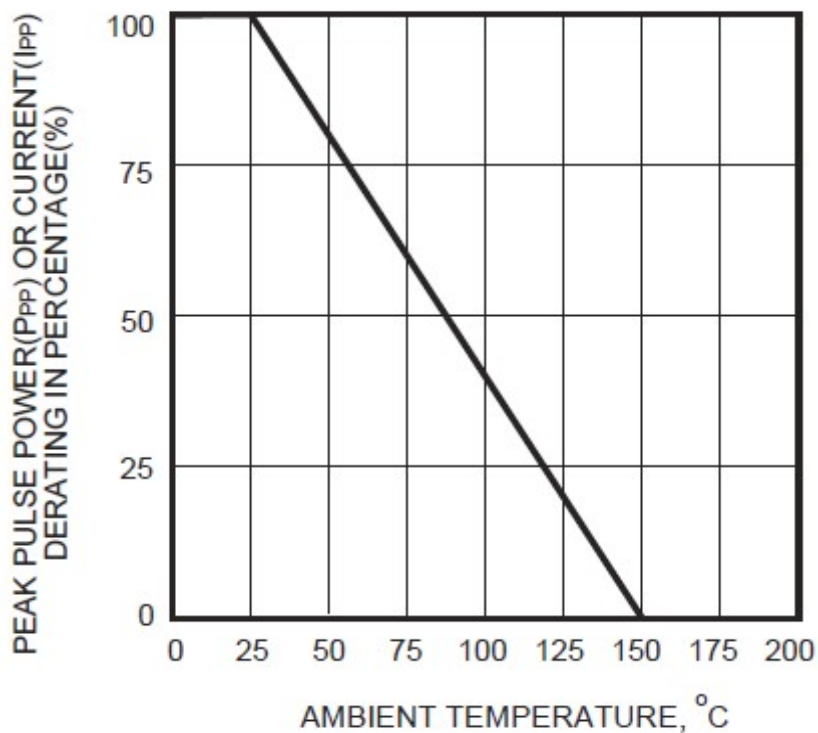
### ■ Quantity

| Series Type | Reel size | Quantity (pcs/reel) |
|-------------|-----------|---------------------|
| SMCJ        | 13"       | 3,000               |

Pulse Waveform

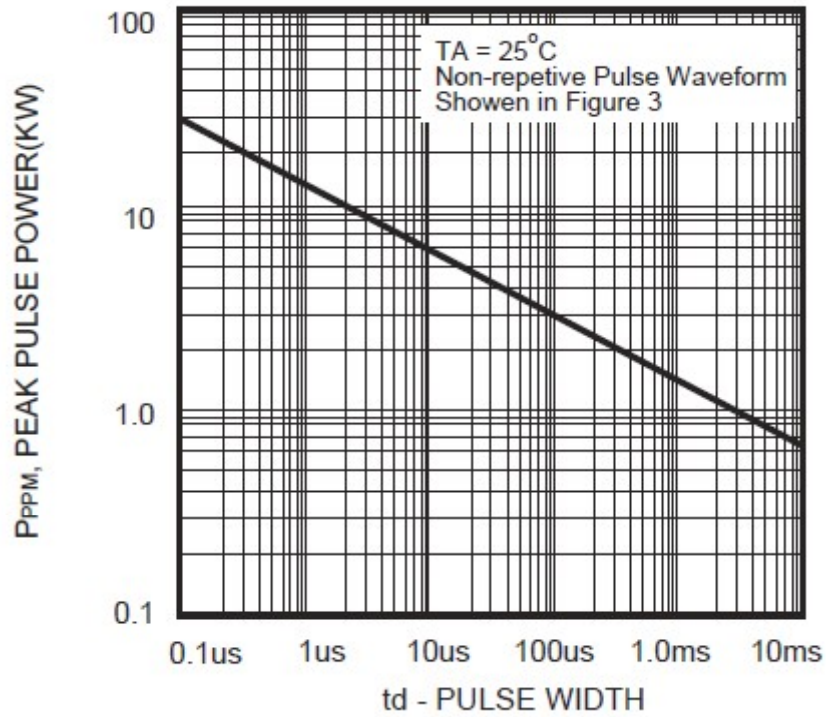


Pulse Derating Curve



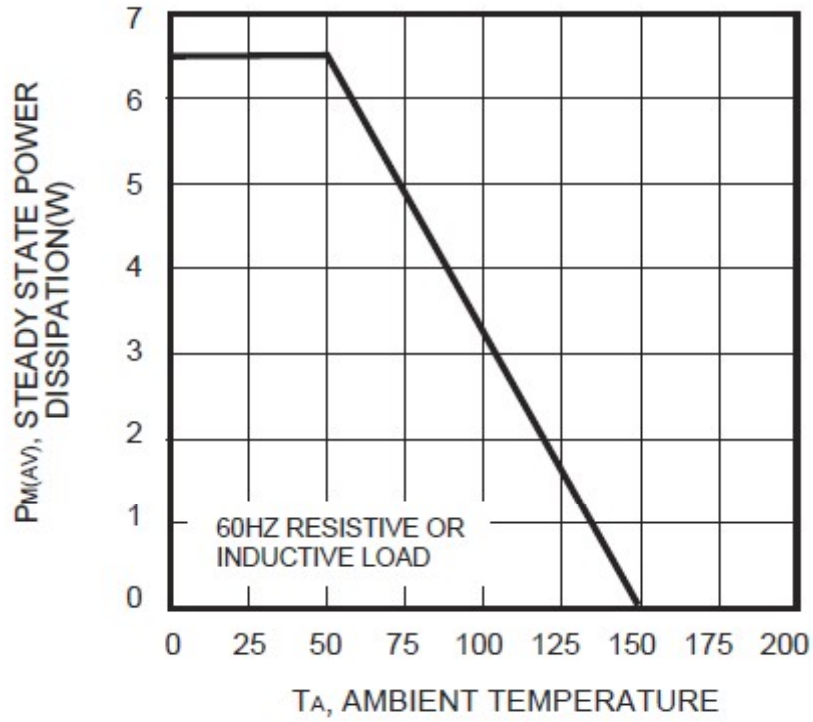
Peak Pulse Power Rating Curve

SMCJ series



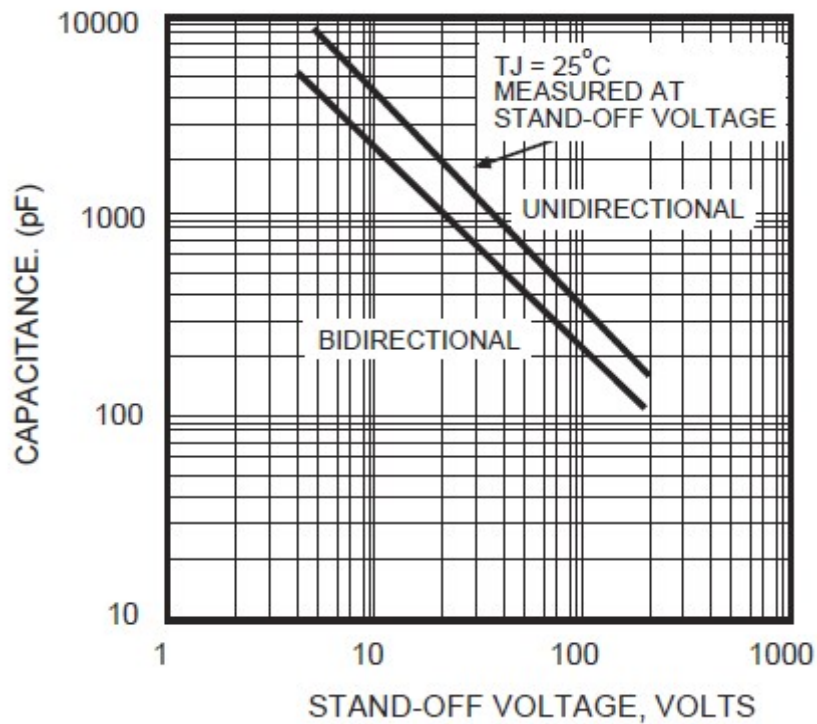
Steady State Power Derating Curve

SMCJ series



Typical Junction Capacitance

SMCJ series



### RoHS Compliant Declaration

We hereby declare that the components delivered to your company are compliant with RoHS directive 2015/863/EU.

### Warehouse Storage Conditions of Products

(I) Storage Conditions :

- 1.Storage Temperature :  $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
- 2.Relative Humidity :  $\leq 75\%RH$
- 3.Keep away from corrosive atmosphere and sunlight.

(II) Period of Storage : 1 year

## Safety Approvals



\* UL 497B recognized (File # E229991)

## Certificates

- (1) IATF 16949 certificate
- (2) ISO 9001 certificate

## Test Report

- (1) RoHS test report
- (2) Halogen-free test report