

## Product Summary

| PPK   | V <sub>RWM</sub> | PM(AV) |
|-------|------------------|--------|
| 3000W | 5V to 170V       | 5W     |

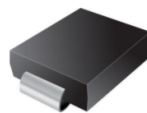
## Features and Benefits

- 3000W Peak Pulse Power Dissipation
- 5V to 170V Standoff Voltages
- Unidirectional and Bidirectional
- Glass Passivated Die Construction
- Excellent Clamping Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: SMC
- Package Material: Molded Plastic.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads.  
Solderable per MIL-STD-202, Method 208 <sup>③</sup>
- Unidirectional Devices Have A Cathode Band. Bidirectional Devices Have No Polarity Indicator
- Weight: 0.21 grams (Approximate)

SMC



Top View



Bottom View

## Ordering Information (Note 4)

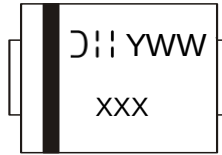
| Part Number        | Qualification | Package | Packing |             |
|--------------------|---------------|---------|---------|-------------|
|                    |               |         | Qty.    | Carrier     |
| 3.0SMCJX.X(C)A-13* | Commercial    | SMC     | 3000pcs | Tape & Reel |
| 3.0SMCJXX(C)A-13*  | Commercial    | SMC     | 3000pcs | Tape & Reel |
| 3.0SMCJXXX(C)A-13* | Commercial    | SMC     | 3000pcs | Tape & Reel |

\*X = Device Voltage, e.g., 3.0SMCJ14CA-13.

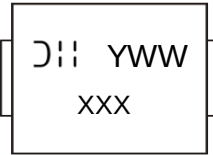
- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information

Cathode Band for Uni-Directional Device



Bi-Directional Device



XXX = Product Type Marking Code  
 (See Electrical Characteristics Table)  
 D|| = Manufacturers' Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 1 for 2021)  
 WW = Week Code (01 to 53)

## Maximum Ratings (@ T<sub>A</sub> = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.  
 For capacitive load, derate current by 20%.

| Characteristic                                                                                          | Symbol           | Value | Unit |
|---------------------------------------------------------------------------------------------------------|------------------|-------|------|
| Peak Pulse Power Dissipation (Note 5)                                                                   | P <sub>PK</sub>  | 3000  | W    |
| Peak Forward Surge Current, 8.3ms<br>Single Half Sine Wave Superimposed on Rated Load (Notes 6 & 7 & 8) | I <sub>FSM</sub> | 300   | A    |

Notes:  
 5. Non-repetitive current pulse per Figure 4 and derated above T<sub>A</sub> = +25°C per Figure 1.  
 6. Mounted on 8.00mm<sup>2</sup> (0.013mm thick) land areas.  
 7. Measured with 8.3ms single half sine-wave. Duty cycle = 4 pulses per minute maximum.  
 8. Unidirectional units only.

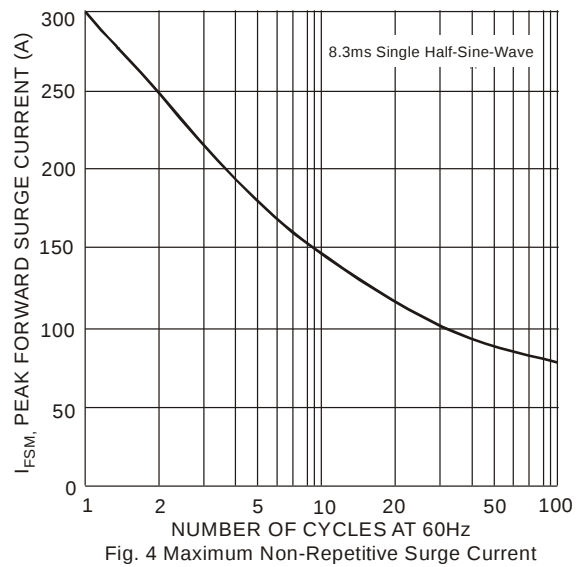
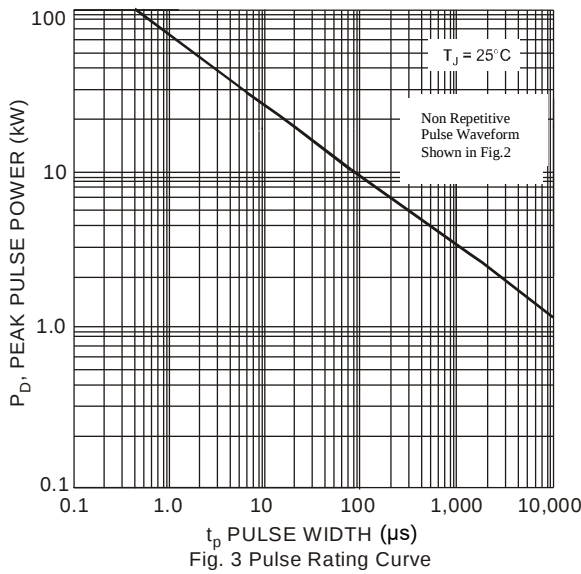
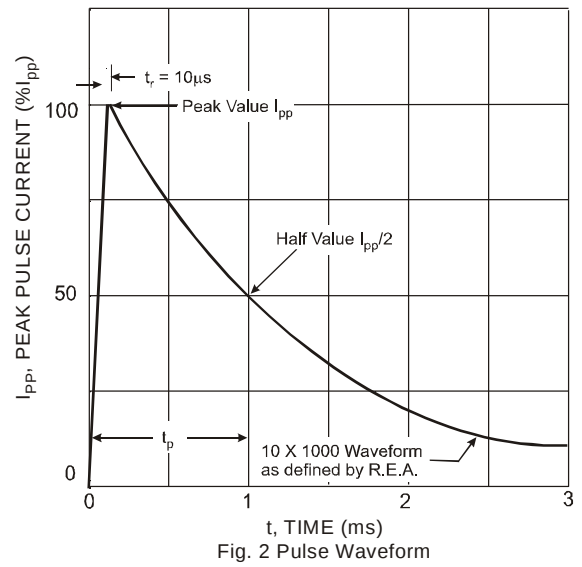
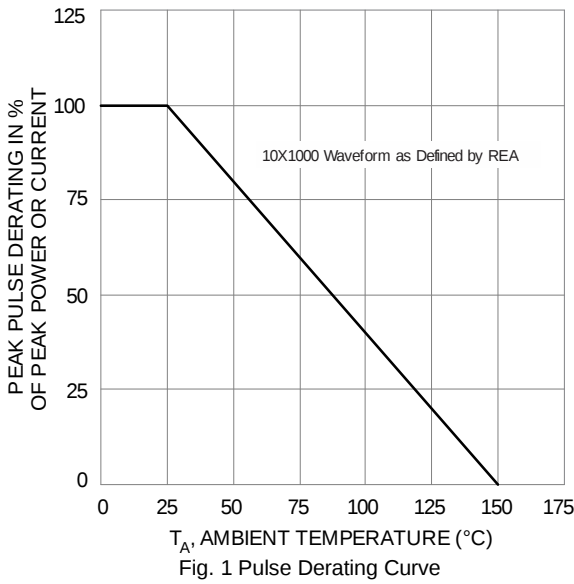
## Thermal Characteristics

| Characteristic              | Symbol           | Value       | Unit |
|-----------------------------|------------------|-------------|------|
| Operating Temperature Range | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage Temperature Range   | T <sub>STG</sub> | -55 to +150 | °C   |

**Electrical Characteristics** (@ T<sub>A</sub> = +25°C, unless otherwise specified.)

| Part Number    | Reverse Standoff Voltage | Breakdown Voltage<br>V <sub>BR</sub> @ I <sub>T</sub> (Note 10) |         | Test Current        | Max. Reverse Leakage @<br>V <sub>RWM</sub> (Note 11) | Max. Clamping Voltage @ I <sub>PP</sub> (Note 9) | Max. Peak Pulse Current | Marking Code |     |
|----------------|--------------------------|-----------------------------------------------------------------|---------|---------------------|------------------------------------------------------|--------------------------------------------------|-------------------------|--------------|-----|
|                | V <sub>RWM</sub> (V)     | Min (V)                                                         | Max (V) | I <sub>T</sub> (mA) | I <sub>R</sub> (μA)                                  | V <sub>C</sub> (V)                               | I <sub>PP</sub> (A)     | Un-          | Bi- |
| 3.0SMCJ5.0(C)A | 5.0                      | 6.40                                                            | 7.07    | 10                  | 1000                                                 | 9.2                                              | 326.1                   | HDE          | DHS |
| 3.0SMCJ6.0(C)A | 6.0                      | 6.67                                                            | 7.37    | 10                  | 1000                                                 | 10.3                                             | 291.3                   | HDG          | DDG |
| 3.0SMCJ6.5(C)A | 6.5                      | 7.22                                                            | 7.98    | 10                  | 500                                                  | 11.2                                             | 267.9                   | HDK          | DHV |
| 3.0SMCJ7.0(C)A | 7.0                      | 7.78                                                            | 8.60    | 10                  | 200                                                  | 12.0                                             | 250.0                   | HDM          | DHW |
| 3.0SMCJ7.5(C)A | 7.5                      | 8.33                                                            | 9.21    | 1.0                 | 100                                                  | 12.9                                             | 232.6                   | HDP          | DDP |
| 3.0SMCJ8.0(C)A | 8.0                      | 8.89                                                            | 9.83    | 1.0                 | 50                                                   | 13.6                                             | 220.6                   | HDR          | DDR |
| 3.0SMCJ8.5(C)A | 8.5                      | 9.44                                                            | 10.43   | 1.0                 | 25                                                   | 14.4                                             | 208.3                   | HDT          | DDT |
| 3.0SMCJ9.0(C)A | 9.0                      | 10.00                                                           | 11.05   | 1.0                 | 10                                                   | 15.4                                             | 194.8                   | HDV          | DDV |
| 3.0SMCJ10(C)A  | 10.0                     | 11.10                                                           | 12.27   | 1.0                 | 5.0                                                  | 17.0                                             | 176.5                   | HDX          | DDX |
| 3.0SMCJ11(C)A  | 11.0                     | 12.20                                                           | 13.5    | 1.0                 | 5.0                                                  | 18.2                                             | 164.8                   | HDZ          | DDZ |
| 3.0SMCJ12(C)A  | 12.0                     | 13.30                                                           | 14.7    | 1.0                 | 5.0                                                  | 19.9                                             | 150.8                   | HEE          | DEE |
| 3.0SMCJ13(C)A  | 13.0                     | 14.40                                                           | 15.9    | 1.0                 | 5.0                                                  | 21.5                                             | 139.5                   | HEG          | DED |
| 3.0SMCJ14(C)A  | 14.0                     | 15.60                                                           | 17.2    | 1.0                 | 5.0                                                  | 23.2                                             | 129.3                   | HDE          | DEK |
| 3.0SMCJ15(C)A  | 15.0                     | 16.70                                                           | 18.5    | 1.0                 | 5.0                                                  | 24.2                                             | 124.0                   | HEM          | DEM |
| 3.0SMCJ16(C)A  | 16.0                     | 17.80                                                           | 19.7    | 1.0                 | 5.0                                                  | 26.0                                             | 115.4                   | HEP          | DEP |
| 3.0SMCJ17(C)A  | 17.0                     | 18.90                                                           | 20.9    | 1.0                 | 5.0                                                  | 27.6                                             | 108.7                   | HER          | DER |
| 3.0SMCJ18(C)A  | 18.0                     | 20.00                                                           | 22.1    | 1.0                 | 5.0                                                  | 29.2                                             | 102.7                   | HET          | DET |
| 3.0SMCJ20(C)A  | 20.0                     | 22.20                                                           | 24.5    | 1.0                 | 5.0                                                  | 32.4                                             | 92.6                    | HEV          | DEV |
| 3.0SMCJ22(C)A  | 22.0                     | 24.40                                                           | 27.0    | 1.0                 | 5.0                                                  | 35.5                                             | 84.5                    | HEX          | DEX |
| 3.0SMCJ24(C)A  | 24.0                     | 26.70                                                           | 29.5    | 1.0                 | 5.0                                                  | 38.9                                             | 77.1                    | HEZ          | DEZ |
| 3.0SMCJ26(C)A  | 26.0                     | 28.90                                                           | 31.9    | 1.0                 | 5.0                                                  | 42.1                                             | 71.3                    | HFE          | DFE |
| 3.0SMCJ28(C)A  | 28.0                     | 31.10                                                           | 34.4    | 1.0                 | 5.0                                                  | 45.4                                             | 66.1                    | HFG          | DFD |
| 3.0SMCJ30(C)A  | 30.0                     | 33.30                                                           | 36.8    | 1.0                 | 5.0                                                  | 48.4                                             | 62.0                    | HFK          | DFK |
| 3.0SMCJ33(C)A  | 33.0                     | 36.70                                                           | 40.6    | 1.0                 | 5.0                                                  | 53.3                                             | 56.3                    | HFM          | DFM |
| 3.0SMCJ36(C)A  | 36.0                     | 40.00                                                           | 44.2    | 1.0                 | 5.0                                                  | 58.1                                             | 51.6                    | HFP          | DFP |
| 3.0SMCJ40(C)A  | 40.0                     | 44.40                                                           | 49.1    | 1.0                 | 5.0                                                  | 64.5                                             | 46.5                    | HFR          | DFR |
| 3.0SMCJ43(C)A  | 43.0                     | 47.80                                                           | 52.8    | 1.0                 | 5.0                                                  | 69.4                                             | 43.2                    | HFT          | DFT |
| 3.0SMCJ45(C)A  | 45.0                     | 50.00                                                           | 55.3    | 1.0                 | 5.0                                                  | 72.7                                             | 41.3                    | HFV          | DFV |
| 3.0SMCJ48(C)A  | 48.0                     | 53.30                                                           | 58.9    | 1.0                 | 5.0                                                  | 77.4                                             | 38.8                    | HFX          | DFX |
| 3.0SMCJ51(C)A  | 51.0                     | 56.70                                                           | 62.7    | 1.0                 | 5.0                                                  | 82.4                                             | 36.4                    | HFZ          | DFZ |
| 3.0SMCJ54(C)A  | 54.0                     | 60.00                                                           | 66.3    | 1.0                 | 5.0                                                  | 87.1                                             | 34.4                    | HGE          | DDE |
| 3.0SMCJ58(C)A  | 58.0                     | 64.40                                                           | 71.2    | 1.0                 | 5.0                                                  | 93.6                                             | 32.1                    | HGG          | DDD |
| 3.0SMCJ60(C)A  | 60.0                     | 66.70                                                           | 73.7    | 1.0                 | 5.0                                                  | 96.8                                             | 31.0                    | HGK          | DDK |
| 3.0SMCJ64(C)A  | 64.0                     | 71.10                                                           | 78.6    | 1.0                 | 5.0                                                  | 103.0                                            | 29.1                    | HGM          | DDM |
| 3.0SMCJ70(C)A  | 70.0                     | 77.80                                                           | 86.0    | 1.0                 | 5.0                                                  | 113.0                                            | 26.5                    | HGP          | DGP |
| 3.0SMCJ75(C)A  | 75.0                     | 83.30                                                           | 92.1    | 1.0                 | 5.0                                                  | 121.0                                            | 24.8                    | HGR          | DGR |
| 3.0SMCJ78(C)A  | 78.0                     | 86.70                                                           | 95.8    | 1.0                 | 5.0                                                  | 126.0                                            | 23.8                    | HGT          | DGT |
| 3.0SMCJ85(C)A  | 85.0                     | 94.40                                                           | 104.3   | 1.0                 | 5.0                                                  | 137.0                                            | 21.9                    | HGV          | DGV |
| 3.0SMCJ90(C)A  | 90.0                     | 100.00                                                          | 110.5   | 1.0                 | 5.0                                                  | 146.0                                            | 20.5                    | HGX          | DGX |
| 3.0SMCJ100(C)A | 100.0                    | 111.00                                                          | 122.7   | 1.0                 | 5.0                                                  | 162.0                                            | 18.5                    | HGZ          | DGZ |
| 3.0SMCJ110(C)A | 110.0                    | 122.00                                                          | 134.8   | 1.0                 | 5.0                                                  | 177.0                                            | 16.9                    | HHE          | DHE |
| 3.0SMCJ120(C)A | 120.0                    | 133.00                                                          | 147.0   | 1.0                 | 5.0                                                  | 193.0                                            | 15.5                    | HHG          | DHG |
| 3.0SMCJ130(C)A | 130.0                    | 144.00                                                          | 159.2   | 1.0                 | 5.0                                                  | 209.0                                            | 14.4                    | HHK          | DHK |
| 3.0SMCJ150(C)A | 150.0                    | 167.00                                                          | 184.6   | 1.0                 | 5.0                                                  | 243.0                                            | 12.3                    | HHM          | DGM |
| 3.0SMCJ160(C)A | 160.0                    | 178.00                                                          | 196.7   | 1.0                 | 5.0                                                  | 259.0                                            | 11.6                    | HHP          | DHP |
| 3.0SMCJ170(C)A | 170.0                    | 189.00                                                          | 208.9   | 1.0                 | 5.0                                                  | 275.0                                            | 10.9                    | HHR          | DHR |

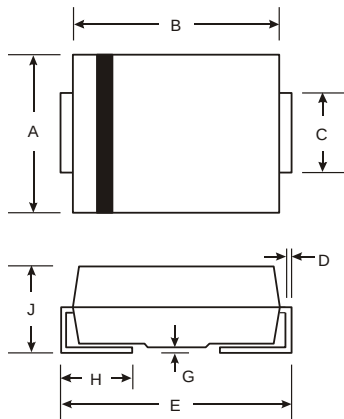
Notes: 9. Per 10 × 1000μs waveform. See Figure 2.  
10. V<sub>BR</sub> measured with I<sub>T</sub> current pulse = 10ms to 15ms.  
11. The I<sub>R</sub> limit is double for Bi-Directional device for V<sub>B</sub> ≤ 10V.



## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SMC

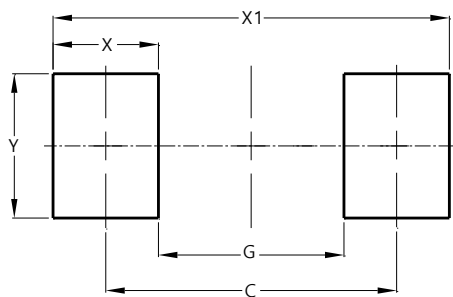


| SMC                  |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 5.59 | 6.22 |
| B                    | 6.60 | 7.11 |
| C                    | 2.75 | 3.18 |
| D                    | 0.15 | 0.31 |
| E                    | 7.75 | 8.13 |
| G                    | 0.10 | 0.20 |
| H                    | 0.76 | 1.52 |
| J                    | 2.00 | 2.50 |
| All Dimensions in mm |      |      |

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SMC



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 6.90          |
| G          | 4.40          |
| X          | 2.50          |
| X1         | 9.40          |
| Y          | 3.30          |

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