

## 3.0SMCJ11 - 220A

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

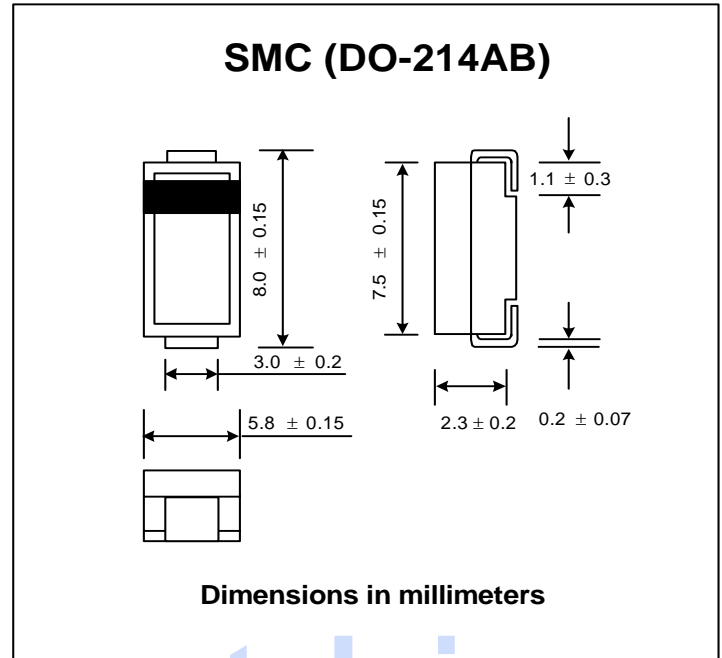
**Stand-off Voltage :** 11 to 220V  
**Peak Pulse Power :** 3000 W

### FEATURES :

- \* 3000W peak pulse power capability with a 10/1000 $\mu$ s waveform
- \* Excellent clamping capability
- \* Low inductance
- \* High temperature soldering : 250 °C/10 seconds at terminals.
- \* Built-in strain relief
- \* Pb / RoHS Free

### MECHANICAL DATA :

- \* Case : SMC Molded plastic
- \* Epoxy : UL94V-O rate flame retardant
- \* Lead : Lead Formed for Surface Mount
- \* Mounting position : Any
- \* Weight : 0.21 gram



### DEVICES FOR BIPOLAR APPLICATIONS

For Bi-directional use C or CA Suffix  
Electrical characteristics apply in both directions

### MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

| Rating  | Symbol                            | Value          | Unit |
|---|-----------------------------------|----------------|------|
| Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform <sup>(1)</sup> <sup>(2)</sup>                            | P <sub>PPM</sub>                  | 3000           | W    |
| Peak Pulse Current on 10/1000 s waveform <sup>(1)</sup>   | I <sub>PPM</sub>                  | See Next Table | A    |
| Peak Forward Surge Current, 8.3 ms single half sine-wave superimposed on rated load <sup>(2)</sup> <sup>(3)</sup> | I <sub>FSM</sub>                  | 200            | A    |
| Operating Junction and Storage Temperature Range  | T <sub>J</sub> , T <sub>STG</sub> | - 55 to + 150  | °C   |

#### Notes :

- (1) Non-repetitive Current pulse, per Fig. 3 and derated above Ta = 25 °C per Fig. 1
- (2) Mounted on 5.0 mm<sup>2</sup> (0.013 thick) land areas.
- (3) Measured on 8.3 ms , single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

| Type       | Breakdown Voltage @ $I_T^{(1)}$ |      |       | Working Peak Reverse Voltage | Maximum Reverse Leakage @ $V_{WM}$ | Maximum Clamping Voltage @ $I_{PPM}$ | Maximum Peak Pulse Surge Current |           |       |       |           |
|------------|---------------------------------|------|-------|------------------------------|------------------------------------|--------------------------------------|----------------------------------|-----------|-------|-------|-----------|
|            | $V_{BR}$ (V)                    |      | $I_T$ |                              |                                    |                                      |                                  | $V_{RWM}$ | $I_R$ | $V_C$ | $I_{PPM}$ |
|            | Min.                            | Max. | (mA)  |                              |                                    |                                      |                                  |           |       |       |           |
| 3.0SMCJ11  | 12.2                            | 15.4 | 1.0   | 11                           | 1000                               | 20.1                                 | 149.2                            |           |       |       |           |
| 3.0SMCJ11A | 12.2                            | 14.0 | 1.0   | 11                           | 1000                               | 18.2                                 | 184.8                            |           |       |       |           |
| 3.0SMCJ12  | 13.3                            | 16.9 | 1.0   | 12                           | 1000                               | 22.0                                 | 136.4                            |           |       |       |           |
| 3.0SMCJ12A | 13.3                            | 15.3 | 1.0   | 12                           | 1000                               | 19.9                                 | 150.6                            |           |       |       |           |
| 3.0SMCJ13  | 14.4                            | 18.2 | 1.0   | 13                           | 500                                | 23.8                                 | 126.0                            |           |       |       |           |
| 3.0SMCJ13A | 14.4                            | 16.5 | 1.0   | 13                           | 500                                | 21.5                                 | 139.4                            |           |       |       |           |
| 3.0SMCJ14  | 15.6                            | 19.8 | 1.0   | 14                           | 200                                | 25.8                                 | 116.2                            |           |       |       |           |
| 3.0SMCJ14A | 15.6                            | 17.9 | 1.0   | 14                           | 200                                | 23.2                                 | 129.4                            |           |       |       |           |
| 3.0SMCJ15  | 16.7                            | 21.1 | 1.0   | 15                           | 100                                | 26.9                                 | 111.6                            |           |       |       |           |
| 3.0SMCJ15A | 16.7                            | 19.2 | 1.0   | 15                           | 100                                | 24.4                                 | 123.0                            |           |       |       |           |
| 3.0SMCJ16  | 17.8                            | 22.6 | 1.0   | 16                           | 50                                 | 28.8                                 | 104.2                            |           |       |       |           |
| 3.0SMCJ16A | 17.8                            | 20.5 | 1.0   | 16                           | 50                                 | 26.0                                 | 115.4                            |           |       |       |           |
| 3.0SMCJ17  | 18.9                            | 23.9 | 1.0   | 17                           | 20                                 | 30.5                                 | 98.4                             |           |       |       |           |
| 3.0SMCJ17A | 18.9                            | 21.7 | 1.0   | 17                           | 20                                 | 27.6                                 | 106.6                            |           |       |       |           |
| 3.0SMCJ18  | 20.0                            | 25.3 | 1.0   | 18                           | 10                                 | 32.2                                 | 93.2                             |           |       |       |           |
| 3.0SMCJ18A | 20.0                            | 23.3 | 1.0   | 18                           | 10                                 | 29.2                                 | 102.8                            |           |       |       |           |
| 3.0SMCJ20  | 22.2                            | 28.1 | 1.0   | 20                           | 10                                 | 35.8                                 | 83.8                             |           |       |       |           |
| 3.0SMCJ20A | 22.2                            | 25.5 | 1.0   | 20                           | 10                                 | 32.4                                 | 92.6                             |           |       |       |           |
| 3.0SMCJ22  | 24.4                            | 30.9 | 1.0   | 22                           | 5                                  | 39.4                                 | 76.2                             |           |       |       |           |
| 3.0SMCJ22A | 24.4                            | 28.0 | 1.0   | 22                           | 5                                  | 35.5                                 | 84.4                             |           |       |       |           |
| 3.0SMCJ24  | 26.7                            | 33.8 | 1.0   | 24                           | 5                                  | 43.0                                 | 69.8                             |           |       |       |           |
| 3.0SMCJ24A | 26.7                            | 30.7 | 1.0   | 24                           | 5                                  | 38.9                                 | 77.2                             |           |       |       |           |
| 3.0SMCJ26  | 28.9                            | 36.6 | 1.0   | 26                           | 5                                  | 46.6                                 | 64.4                             |           |       |       |           |
| 3.0SMCJ26A | 28.9                            | 33.2 | 1.0   | 26                           | 5                                  | 42.1                                 | 71.2                             |           |       |       |           |
| 3.0SMCJ28  | 31.1                            | 39.4 | 1.0   | 28                           | 5                                  | 50.0                                 | 60.0                             |           |       |       |           |
| 3.0SMCJ28A | 31.1                            | 35.8 | 1.0   | 28                           | 5                                  | 45.4                                 | 66.0                             |           |       |       |           |
| 3.0SMCJ30  | 33.3                            | 42.2 | 1.0   | 30                           | 5                                  | 53.5                                 | 56.0                             |           |       |       |           |
| 3.0SMCJ30A | 33.3                            | 38.3 | 1.0   | 30                           | 5                                  | 48.4                                 | 62.0                             |           |       |       |           |
| 3.0SMCJ33  | 36.7                            | 46.5 | 1.0   | 33                           | 5                                  | 59.0                                 | 50.4                             |           |       |       |           |
| 3.0SMCJ33A | 36.7                            | 42.2 | 1.0   | 33                           | 5                                  | 53.3                                 | 56.2                             |           |       |       |           |
| 3.0SMCJ36  | 40.0                            | 50.7 | 1.0   | 36                           | 5                                  | 64.3                                 | 46.6                             |           |       |       |           |
| 3.0SMCJ36A | 40.0                            | 46.0 | 1.0   | 36                           | 5                                  | 58.1                                 | 51.6                             |           |       |       |           |
| 3.0SMCJ40  | 44.4                            | 56.3 | 1.0   | 40                           | 5                                  | 71.4                                 | 42.0                             |           |       |       |           |
| 3.0SMCJ40A | 44.4                            | 51.1 | 1.0   | 40                           | 5                                  | 64.5                                 | 46.4                             |           |       |       |           |
| 3.0SMCJ43  | 47.8                            | 60.5 | 1.0   | 43                           | 5                                  | 76.7                                 | 39.2                             |           |       |       |           |
| 3.0SMCJ43A | 47.8                            | 54.9 | 1.0   | 43                           | 5                                  | 69.4                                 | 43.2                             |           |       |       |           |
| 3.0SMCJ45  | 50.0                            | 63.3 | 1.0   | 45                           | 5                                  | 80.3                                 | 37.4                             |           |       |       |           |
| 3.0SMCJ45A | 50.0                            | 57.5 | 1.0   | 45                           | 5                                  | 72.7                                 | 41.2                             |           |       |       |           |
| 3.0SMCJ48  | 53.3                            | 67.5 | 1.0   | 48                           | 5                                  | 85.5                                 | 35.0                             |           |       |       |           |
| 3.0SMCJ48A | 53.3                            | 61.3 | 1.0   | 48                           | 5                                  | 77.4                                 | 38.8                             |           |       |       |           |
| 3.0SMCJ51  | 56.7                            | 71.8 | 1.0   | 51                           | 5                                  | 91.1                                 | 37.0                             |           |       |       |           |
| 3.0SMCJ51A | 56.7                            | 65.2 | 1.0   | 51                           | 5                                  | 82.4                                 | 36.4                             |           |       |       |           |
| 3.0SMCJ54  | 60.0                            | 76.0 | 1.0   | 54                           | 5                                  | 96.3                                 | 31.2                             |           |       |       |           |
| 3.0SMCJ54A | 60.0                            | 69.0 | 1.0   | 54                           | 5                                  | 87.1                                 | 34.4                             |           |       |       |           |

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

| Type        | Breakdown Voltage @ $I_T^{(1)}$ |       | Working Peak Reverse Voltage | Maximum Reverse Leakage @ $V_{WM}$ | Maximum Clamping Voltage @ $I_{PPM}$ | Maximum Peak Pulse Surge Current |           |
|-------------|---------------------------------|-------|------------------------------|------------------------------------|--------------------------------------|----------------------------------|-----------|
|             | $V_{BR}$ (V)                    |       |                              |                                    |                                      |                                  | $V_{RWM}$ |
|             | Min.                            | Max.  | (mA)                         | (V)                                | ( $\mu$ A)                           | (V)                              | (A)       |
| 3.0SMCJ58   | 64.4                            | 81.6  | 1.0                          | 58                                 | 5                                    | 103                              | 39.2      |
| 3.0SMCJ58A  | 64.4                            | 74.1  | 1.0                          | 58                                 | 5                                    | 93.6                             | 32.0      |
| 3.0SMCJ60   | 66.7                            | 84.5  | 1.0                          | 60                                 | 5                                    | 107                              | 28.0      |
| 3.0SMCJ60A  | 66.7                            | 76.7  | 1.0                          | 60                                 | 5                                    | 96                               | 31.0      |
| 3.0SMCJ64   | 71.1                            | 90.1  | 1.0                          | 64                                 | 5                                    | 114                              | 26.4      |
| 3.0SMCJ64A  | 71.1                            | 81.8  | 1.0                          | 64                                 | 5                                    | 103                              | 29.2      |
| 3.0SMCJ70   | 77.8                            | 98.6  | 1.0                          | 70                                 | 5                                    | 125                              | 24.0      |
| 3.0SMCJ70A  | 77.8                            | 89.5  | 1.0                          | 70                                 | 5                                    | 113                              | 26.6      |
| 3.0SMCJ75   | 83.3                            | 105.7 | 1.0                          | 75                                 | 5                                    | 134                              | 22.4      |
| 3.0SMCJ75A  | 83.3                            | 95.8  | 1.0                          | 75                                 | 5                                    | 121                              | 24.8      |
| 3.0SMCJ78   | 86.7                            | 109.8 | 1.0                          | 78                                 | 5                                    | 139                              | 21.6      |
| 3.0SMCJ78A  | 86.7                            | 99.7  | 1.0                          | 78                                 | 5                                    | 126                              | 22.8      |
| 3.0SMCJ85   | 94.4                            | 119.2 | 1.0                          | 85                                 | 5                                    | 151                              | 19.8      |
| 3.0SMCJ85A  | 94.4                            | 108.2 | 1.0                          | 85                                 | 5                                    | 137                              | 20.8      |
| 3.0SMCJ90   | 100                             | 126.5 | 1.0                          | 90                                 | 5                                    | 160                              | 18.8      |
| 3.0SMCJ90A  | 100                             | 115.5 | 1.0                          | 90                                 | 5                                    | 146                              | 20.6      |
| 3.0SMCJ100  | 111                             | 141.0 | 1.0                          | 100                                | 5                                    | 179                              | 16.6      |
| 3.0SMCJ100A | 111                             | 128.0 | 1.0                          | 100                                | 5                                    | 162                              | 18.6      |
| 3.0SMCJ110  | 122                             | 154.5 | 1.0                          | 110                                | 5                                    | 196                              | 15.4      |
| 3.0SMCJ110A | 122                             | 140.5 | 1.0                          | 110                                | 5                                    | 177                              | 16.8      |
| 3.0SMCJ120  | 133                             | 169.0 | 1.0                          | 120                                | 5                                    | 214                              | 14.0      |
| 3.0SMCJ120A | 133                             | 153.0 | 1.0                          | 120                                | 5                                    | 193                              | 15.6      |
| 3.0SMCJ130  | 144                             | 182.5 | 1.0                          | 130                                | 5                                    | 231                              | 13.0      |
| 3.0SMCJ130A | 144                             | 165.5 | 1.0                          | 130                                | 5                                    | 209                              | 14.4      |
| 3.0SMCJ150  | 167                             | 211.5 | 1.0                          | 150                                | 5                                    | 268                              | 11.2      |
| 3.0SMCJ150A | 167                             | 192.5 | 1.0                          | 150                                | 5                                    | 243                              | 12.4      |
| 3.0SMCJ160  | 178                             | 226.0 | 1.0                          | 160                                | 5                                    | 287                              | 10.4      |
| 3.0SMCJ160A | 178                             | 205.0 | 1.0                          | 160                                | 5                                    | 259                              | 11.6      |
| 3.0SMCJ170  | 189                             | 239.5 | 1.0                          | 170                                | 5                                    | 304                              | 9.8       |
| 3.0SMCJ170A | 189                             | 217.5 | 1.0                          | 170                                | 5                                    | 275                              | 11.0      |
| 3.0SMCJ180  | 198                             | 253.8 | 1.0                          | 180                                | 5                                    | 322                              | 9.3       |
| 3.0SMCJ180A | 198                             | 230.4 | 1.0                          | 180                                | 5                                    | 292                              | 10.3      |
| 3.0SMCJ190  | 209                             | 267.9 | 1.0                          | 190                                | 5                                    | 340                              | 8.8       |
| 3.0SMCJ190A | 209                             | 243.2 | 1.0                          | 190                                | 5                                    | 308                              | 9.7       |
| 3.0SMCJ200  | 220                             | 282.0 | 1.0                          | 200                                | 5                                    | 358                              | 8.4       |
| 3.0SMCJ200A | 220                             | 256.0 | 1.0                          | 200                                | 5                                    | 324                              | 9.3       |
| 3.0SMCJ210  | 231                             | 296.1 | 1.0                          | 210                                | 5                                    | 376                              | 7.8       |
| 3.0SMCJ210A | 231                             | 268.8 | 1.0                          | 210                                | 5                                    | 340                              | 8.8       |
| 3.0SMCJ220  | 242                             | 310.2 | 1.0                          | 220                                | 5                                    | 394                              | 7.6       |
| 3.0SMCJ220A | 242                             | 281.6 | 1.0                          | 220                                | 5                                    | 356                              | 8.4       |

### Notes :

- (1) Pulse test :  $t_p \leq 50\text{ms}$ .
- (2) "SMCJ" will be omitted on marking of the diode.

## RATING AND CHARACTERISTIC CURVES ( 3.0SMCJ11 - 220A )

FIG.1 - PULSE DERATING CURVE

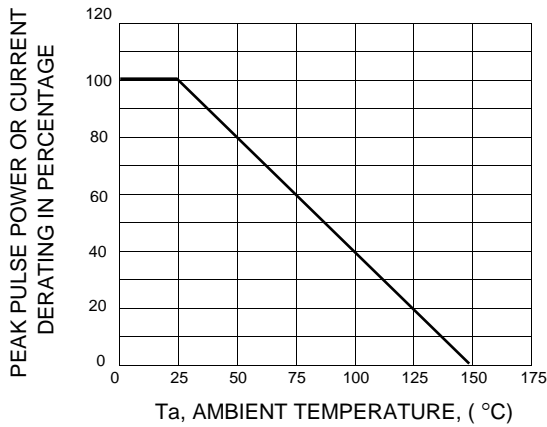


FIG.2 - TYPICAL JUNCTION CAPACITANCE

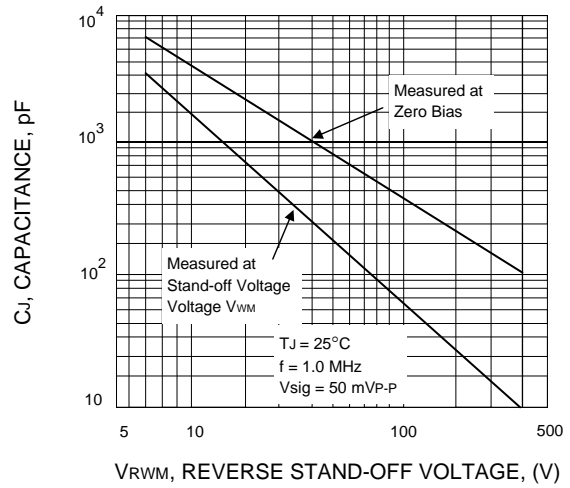


FIG.3 - PULSE WAVEFORM

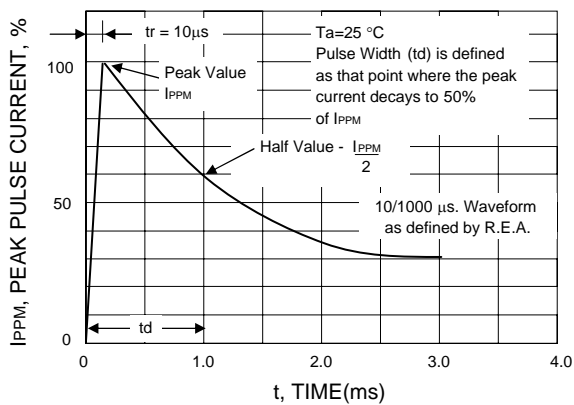


FIG.4 - PEAK PULSE POWER RATING CURVE

