

# 3.0SMCJ7.0 thru 3.0SMCJ170CA

Transient Voltage Suppressors  
Peak Pulse Power 3000W Stand-off Voltage 7V to 170V

## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

For bi-directional devices, use suffix CA (e.g. 3.0SMCJ7.0CA). Electrical characteristics apply in both directions

| Device Type | Marking Code |     | Breakdown Voltage<br>V <sub>(BR)</sub> (Volts) <sup>(1)</sup> |       | Test<br>Current<br>at<br>I <sub>T</sub> (mA) | Stand-off<br>Voltage<br><br>V <sub>WM</sub> (V) | Maximum Reverse<br>Leakage at V <sub>WM</sub><br>I <sub>R</sub> (uA) |     | Maximum<br>Peak Pulse<br>surge<br>current<br>I <sub>PP</sub> <sup>(2)</sup> (A) <sub>M</sub> | Maximum<br>Clamping<br>Voltage at<br>I <sub>PPM</sub><br>V <sub>C</sub> (Volts) |
|-------------|--------------|-----|---------------------------------------------------------------|-------|----------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|             | UNI          | BI  | Min.                                                          | Max.  |                                              |                                                 | UNI                                                                  | BI  |                                                                                              |                                                                                 |
|             |              |     |                                                               |       |                                              |                                                 |                                                                      |     |                                                                                              |                                                                                 |
| 3.0SMCJ7.0  | HDL          | IDL | 7.78                                                          | 9.36  | 10                                           | 7                                               | 200                                                                  | 400 | 225.6                                                                                        | 13.3                                                                            |
| 3.0SMCJ7.0A | HDM          | IDM | 7.78                                                          | 8.45  | 10                                           | 7                                               | 200                                                                  | 400 | 250                                                                                          | 12                                                                              |
| 3.0SMCJ7.5  | HDN          | IDN | 8.33                                                          | 10.17 | 1                                            | 7.5                                             | 100                                                                  | 200 | 209.8                                                                                        | 14.3                                                                            |
| 3.0SMCJ7.5A | HDP          | IDP | 8.33                                                          | 9.08  | 1                                            | 7.5                                             | 100                                                                  | 200 | 232.6                                                                                        | 12.9                                                                            |
| 3.0SMCJ8.0  | HDQ          | IDQ | 8.89                                                          | 10.8  | 1                                            | 8                                               | 50                                                                   | 100 | 220                                                                                          | 13.7                                                                            |
| 3.0SMCJ8.0A | HDR          | IDR | 8.89                                                          | 9.73  | 1                                            | 8                                               | 50                                                                   | 100 | 220.6                                                                                        | 13.6                                                                            |
| 3.0SMCJ8.5  | HDS          | IDS | 9.44                                                          | 11.42 | 1                                            | 8.5                                             | 25                                                                   | 50  | 188.8                                                                                        | 15.9                                                                            |
| 3.0SMCJ8.5A | HDT          | IDT | 9.44                                                          | 10.32 | 1                                            | 8.5                                             | 25                                                                   | 50  | 208.4                                                                                        | 14.4                                                                            |
| 3.0SMCJ9.0  | HDU          | IDU | 10                                                            | 12.1  | 1                                            | 9                                               | 10                                                                   | 20  | 177.4                                                                                        | 16.9                                                                            |
| 3.0SMCJ9.0A | HDV          | IDV | 10                                                            | 11    | 1                                            | 9                                               | 10                                                                   | 20  | 194.8                                                                                        | 15.4                                                                            |
| 3.0SMCJ10   | HDW          | IDW | 11.1                                                          | 13.6  | 1                                            | 10                                              | 5                                                                    | 5   | 159.6                                                                                        | 18.8                                                                            |
| 3.0SMCJ10A  | HDX          | IDX | 11.1                                                          | 12.3  | 1                                            | 10                                              | 5                                                                    | 5   | 176.4                                                                                        | 17                                                                              |
| 3.0SMCJ11   | HDY          | IDY | 12.2                                                          | 14.9  | 1                                            | 11                                              | 5                                                                    | 5   | 149.2                                                                                        | 20.1                                                                            |
| 3.0SMCJ11A  | HDZ          | IDZ | 12.2                                                          | 13.5  | 1                                            | 11                                              | 5                                                                    | 5   | 184.88                                                                                       | 16.3                                                                            |
| 3.0SMCJ12   | HED          | IED | 13.3                                                          | 16.4  | 1                                            | 12                                              | 5                                                                    | 5   | 136.4                                                                                        | 22                                                                              |
| 3.0SMCJ12A  | HEE          | IEE | 13.3                                                          | 14.8  | 1                                            | 12                                              | 5                                                                    | 5   | 150.6                                                                                        | 20                                                                              |
| 3.0SMCJ13   | HEF          | IEF | 14.4                                                          | 17.7  | 1                                            | 13                                              | 5                                                                    | 5   | 126                                                                                          | 24                                                                              |
| 3.0SMCJ13A  | HEG          | IEG | 14.4                                                          | 16    | 1                                            | 13                                              | 5                                                                    | 5   | 139.4                                                                                        | 21.6                                                                            |
| 3.0SMCJ14   | HEH          | IEH | 15.6                                                          | 19.3  | 1                                            | 14                                              | 5                                                                    | 5   | 116.2                                                                                        | 25.9                                                                            |
| 3.0SMCJ14A  | HEK          | IEK | 15.6                                                          | 17.4  | 1                                            | 14                                              | 5                                                                    | 5   | 129.4                                                                                        | 23.2                                                                            |
| 3.0SMCJ15   | HEL          | IEL | 16.7                                                          | 20.6  | 1                                            | 15                                              | 5                                                                    | 5   | 111.6                                                                                        | 26.9                                                                            |
| 3.0SMCJ15A  | HEM          | IEM | 16.7                                                          | 18.7  | 1                                            | 15                                              | 5                                                                    | 5   | 123                                                                                          | 24.4                                                                            |
| 3.0SMCJ16   | HEN          | IEN | 17.8                                                          | 22.1  | 1                                            | 16                                              | 5                                                                    | 5   | 104.2                                                                                        | 28.8                                                                            |
| 3.0SMCJ16A  | HEP          | IEP | 17.8                                                          | 20    | 1                                            | 16                                              | 5                                                                    | 5   | 115.4                                                                                        | 26                                                                              |
| 3.0SMCJ17   | HEQ          | IEQ | 18.9                                                          | 23.4  | 1                                            | 17                                              | 5                                                                    | 5   | 98.4                                                                                         | 30.5                                                                            |
| 3.0SMCJ17A  | HER          | IER | 18.9                                                          | 21.2  | 1                                            | 17                                              | 5                                                                    | 5   | 106.6                                                                                        | 28.2                                                                            |
| 3.0SMCJ18   | HES          | IES | 20                                                            | 24.8  | 1                                            | 18                                              | 5                                                                    | 5   | 93.2                                                                                         | 32.2                                                                            |
| 3.0SMCJ18A  | HET          | IET | 20                                                            | 22.8  | 1                                            | 18                                              | 5                                                                    | 5   | 102.8                                                                                        | 29.2                                                                            |
| 3.0SMCJ20   | HEU          | IEU | 22.2                                                          | 27.6  | 1                                            | 20                                              | 5                                                                    | 5   | 83.8                                                                                         | 35.8                                                                            |
| 3.0SMCJ20A  | HEV          | IEV | 22.2                                                          | 25    | 1                                            | 20                                              | 5                                                                    | 5   | 92.6                                                                                         | 32.4                                                                            |

# 3.0SMCJ7.0 thru 3.0SMCJ170CA

Transient Voltage Suppressors

Peak Pulse Power 3000W Stand-off Voltage 7V to 170V

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

| Device Type | Marking Code |     | Breakdown Voltage<br>V <sub>(BR)</sub> (Volts) <sup>(1)</sup> |      | Test<br>Current<br>at<br>I <sub>T</sub> (mA) | Stand-off<br>Voltage<br>V <sub>WM</sub> (V) | Maximum Reverse<br>Leakage at V <sub>WM</sub><br>I <sub>R</sub> (uA) |    | Maximum<br>Peak Pulse<br>surge<br>current<br>I <sub>PP</sub> <sup>(2)</sup> (A) M | Maximum<br>Clamping<br>Voltage at<br>I <sub>PPM</sub><br>V <sub>C</sub> (Volts) |
|-------------|--------------|-----|---------------------------------------------------------------|------|----------------------------------------------|---------------------------------------------|----------------------------------------------------------------------|----|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|             | UNI          | BI  | Min.                                                          | Max. |                                              |                                             | UNI                                                                  | BI |                                                                                   |                                                                                 |
|             |              |     |                                                               |      |                                              |                                             |                                                                      |    |                                                                                   |                                                                                 |
| 3.0SMCJ22   | HEW          | IEW | 24.4                                                          | 30.4 | 1                                            | 22                                          | 5                                                                    | 5  | 76.2                                                                              | 39.4                                                                            |
| 3.0SMCJ22A  | HEX          | IEX | 24.4                                                          | 27.5 | 1                                            | 22                                          | 5                                                                    | 5  | 84.4                                                                              | 35.7                                                                            |
| 3.0SMCJ24   | HEY          | IEY | 26.7                                                          | 33.3 | 1                                            | 24                                          | 5                                                                    | 5  | 69.8                                                                              | 43                                                                              |
| 3.0SMCJ24A  | HEZ          | IEZ | 26.7                                                          | 30.2 | 1                                            | 24                                          | 5                                                                    | 5  | 77.2                                                                              | 38.9                                                                            |
| 3.0SMCJ26   | HFD          | IFD | 28.9                                                          | 36.1 | 1                                            | 26                                          | 5                                                                    | 5  | 64.4                                                                              | 46.6                                                                            |
| 3.0SMCJ26A  | HFE          | IFE | 28.9                                                          | 32.7 | 1                                            | 26                                          | 5                                                                    | 5  | 71.2                                                                              | 42.3                                                                            |
| 3.0SMCJ28   | HFF          | IFF | 31.1                                                          | 38.9 | 1                                            | 28                                          | 5                                                                    | 5  | 60                                                                                | 50                                                                              |
| 3.0SMCJ28A  | HFG          | IFG | 31.1                                                          | 35.3 | 1                                            | 28                                          | 5                                                                    | 5  | 66                                                                                | 45.6                                                                            |
| 3.0SMCJ30   | HFH          | IFH | 33.3                                                          | 41.7 | 1                                            | 30                                          | 5                                                                    | 5  | 56                                                                                | 53.6                                                                            |
| 3.0SMCJ30A  | HFK          | IFK | 33.3                                                          | 37.8 | 1                                            | 30                                          | 5                                                                    | 5  | 62                                                                                | 48.4                                                                            |
| 3.0SMCJ33   | HFL          | IFL | 36.7                                                          | 46   | 1                                            | 33                                          | 5                                                                    | 5  | 50.4                                                                              | 59.8                                                                            |
| 3.0SMCJ33A  | HFM          | IFM | 36.7                                                          | 41.7 | 1                                            | 33                                          | 5                                                                    | 5  | 56.2                                                                              | 53.7                                                                            |
| 3.0SMCJ36   | HFN          | IFN | 40                                                            | 50.2 | 1                                            | 36                                          | 5                                                                    | 5  | 46.6                                                                              | 64.6                                                                            |
| 3.0SMCJ36A  | HFP          | IFP | 40                                                            | 45.5 | 1                                            | 36                                          | 5                                                                    | 5  | 51.6                                                                              | 58.2                                                                            |
| 3.0SMCJ40   | HFQ          | IFQ | 44.4                                                          | 55.8 | 1                                            | 40                                          | 5                                                                    | 5  | 42                                                                                | 71.5                                                                            |
| 3.0SMCJ40A  | HFR          | IFR | 44.4                                                          | 50.6 | 1                                            | 40                                          | 5                                                                    | 5  | 46.4                                                                              | 64.7                                                                            |
| 3.0SMCJ43   | HFS          | IFS | 47.8                                                          | 60   | 1                                            | 43                                          | 5                                                                    | 5  | 39.2                                                                              | 76.7                                                                            |
| 3.0SMCJ43A  | HFT          | IFT | 47.8                                                          | 54.4 | 1                                            | 43                                          | 5                                                                    | 5  | 43.2                                                                              | 69.5                                                                            |
| 3.0SMCJ45   | HFU          | IFU | 50                                                            | 62.8 | 1                                            | 45                                          | 5                                                                    | 5  | 37.4                                                                              | 80.3                                                                            |
| 3.0SMCJ45A  | HFV          | IFV | 50                                                            | 57   | 1                                            | 45                                          | 5                                                                    | 5  | 41.2                                                                              | 72.9                                                                            |
| 3.0SMCJ48   | HFW          | IFW | 53.3                                                          | 67   | 1                                            | 48                                          | 5                                                                    | 5  | 35                                                                                | 85.8                                                                            |
| 3.0SMCJ48A  | HFX          | IFX | 53.3                                                          | 60.8 | 1                                            | 48                                          | 5                                                                    | 5  | 38.8                                                                              | 77.4                                                                            |
| 3.0SMCJ51   | HFY          | IFY | 56.7                                                          | 71.3 | 1                                            | 51                                          | 5                                                                    | 5  | 37                                                                                | 81.5                                                                            |
| 3.0SMCJ51A  | HFZ          | IFZ | 56.7                                                          | 64.7 | 1                                            | 51                                          | 5                                                                    | 5  | 36.4                                                                              | 82.5                                                                            |
| 3.0SMCJ54   | HGD          | IGD | 60                                                            | 75.5 | 1                                            | 54                                          | 5                                                                    | 5  | 31.2                                                                              | 96.3                                                                            |
| 3.0SMCJ54A  | HGE          | IGE | 60                                                            | 68.5 | 1                                            | 54                                          | 5                                                                    | 5  | 34.4                                                                              | 87.5                                                                            |
| 3.0SMCJ58   | HGF          | IGF | 64.4                                                          | 81.1 | 1                                            | 58                                          | 5                                                                    | 5  | 29.2                                                                              | 103                                                                             |
| 3.0SMCJ58A  | HGG          | IGG | 64.4                                                          | 73.6 | 1                                            | 58                                          | 5                                                                    | 5  | 32                                                                                | 94                                                                              |
| 3.0SMCJ60   | HGH          | IGH | 66.7                                                          | 84   | 1                                            | 60                                          | 5                                                                    | 5  | 28                                                                                | 107.5                                                                           |
| 3.0SMCJ60A  | HGK          | IGK | 66.7                                                          | 76.2 | 1                                            | 60                                          | 5                                                                    | 5  | 31                                                                                | 97                                                                              |

# 3.0SMCJ7.0 thru 3.0SMCJ170CA

Transient Voltage Suppressors  
Peak Pulse Power 3000W Stand-off Voltage 7V to 170V

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

| Device Type | Marking Code |     | Breakdown Voltage<br>V <sub>(BR)</sub> (Volts) <sup>(1)</sup> |       | Test<br>Current<br>at<br>I <sub>T</sub> (mA) | Stand-off<br>Voltage<br>V <sub>WM</sub> (V) | Maximum Reverse<br>Leakage at V <sub>WM</sub><br>I <sub>R</sub> (uA) |    | Maximum<br>Peak Pulse<br>surge<br>current<br>I <sub>PP</sub> <sup>(2)</sup> (A) <sub>M</sub> | Maximum<br>Clamping<br>Voltage at<br>I <sub>PPM</sub><br>V <sub>C</sub> (Volts) |
|-------------|--------------|-----|---------------------------------------------------------------|-------|----------------------------------------------|---------------------------------------------|----------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|             | UNI          | BI  | Min.                                                          | Max.  |                                              |                                             | UNI                                                                  | BI |                                                                                              |                                                                                 |
|             |              |     |                                                               |       |                                              |                                             |                                                                      |    |                                                                                              |                                                                                 |
| 3.0SMCJ64   | HGL          | IGL | 71.1                                                          | 89.6  | 1                                            | 64                                          | 5                                                                    | 5  | 26.4                                                                                         | 114                                                                             |
| 3.0SMCJ64A  | HGM          | IGM | 71.1                                                          | 81.3  | 1                                            | 64                                          | 5                                                                    | 5  | 29.2                                                                                         | 103                                                                             |
| 3.0SMCJ70   | HGN          | IGN | 77.8                                                          | 98.1  | 1                                            | 70                                          | 5                                                                    | 5  | 24                                                                                           | 125                                                                             |
| 3.0SMCJ70A  | HGP          | IGP | 77.8                                                          | 89    | 1                                            | 70                                          | 5                                                                    | 5  | 26.8                                                                                         | 112.1                                                                           |
| 3.0SMCJ75   | HGQ          | IGQ | 83.3                                                          | 105.2 | 1                                            | 75                                          | 5                                                                    | 5  | 22.4                                                                                         | 134                                                                             |
| 3.0SMCJ75A  | HGR          | IGR | 83.3                                                          | 95.3  | 1                                            | 75                                          | 5                                                                    | 5  | 24.8                                                                                         | 121                                                                             |
| 3.0SMCJ78   | HGS          | IGS | 86.7                                                          | 109.3 | 1                                            | 78                                          | 5                                                                    | 5  | 21.6                                                                                         | 139                                                                             |
| 3.0SMCJ78A  | HGT          | IGT | 86.7                                                          | 99.2  | 1                                            | 78                                          | 5                                                                    | 5  | 22.8                                                                                         | 132                                                                             |
| 3.0SMCJ85   | HGU          | IGU | 94.4                                                          | 118.7 | 1                                            | 85                                          | 5                                                                    | 5  | 19.8                                                                                         | 152                                                                             |
| 3.0SMCJ85A  | HGV          | IGV | 94.4                                                          | 107.7 | 1                                            | 85                                          | 5                                                                    | 5  | 20.8                                                                                         | 145                                                                             |
| 3.0SMCJ90   | HGW          | IGW | 100                                                           | 126   | 1                                            | 90                                          | 5                                                                    | 5  | 18.8                                                                                         | 160                                                                             |
| 3.0SMCJ90A  | HGX          | IGX | 100                                                           | 115   | 1                                            | 90                                          | 5                                                                    | 5  | 20.6                                                                                         | 146                                                                             |
| 3.0SMCJ100  | HGY          | IGY | 111                                                           | 140.5 | 1                                            | 100                                         | 5                                                                    | 5  | 16.6                                                                                         | 181                                                                             |
| 3.0SMCJ100A | HGZ          | IGZ | 111                                                           | 127.5 | 1                                            | 100                                         | 5                                                                    | 5  | 18.6                                                                                         | 162                                                                             |
| 3.0SMCJ110  | HHD          | IHD | 122                                                           | 154   | 1                                            | 110                                         | 5                                                                    | 5  | 15.4                                                                                         | 196                                                                             |
| 3.0SMCJ110A | HHE          | IHE | 122                                                           | 140   | 1                                            | 110                                         | 5                                                                    | 5  | 16.8                                                                                         | 179                                                                             |
| 3.0SMCJ120  | HHF          | IHF | 133                                                           | 168.5 | 1                                            | 120                                         | 5                                                                    | 5  | 14                                                                                           | 215                                                                             |
| 3.0SMCJ120A | HHG          | IHG | 133                                                           | 152.5 | 1                                            | 120                                         | 5                                                                    | 5  | 15.6                                                                                         | 193                                                                             |
| 3.0SMCJ130  | HHH          | IHH | 144                                                           | 182   | 1                                            | 130                                         | 5                                                                    | 5  | 13                                                                                           | 231                                                                             |
| 3.0SMCJ130A | HHK          | IHK | 144                                                           | 165   | 1                                            | 130                                         | 5                                                                    | 5  | 14.4                                                                                         | 209                                                                             |
| 3.0SMCJ150  | HHL          | IHL | 167                                                           | 211   | 1                                            | 150                                         | 5                                                                    | 5  | 11.2                                                                                         | 268                                                                             |
| 3.0SMCJ150A | HHM          | IHM | 167                                                           | 192   | 1                                            | 150                                         | 5                                                                    | 5  | 12.4                                                                                         | 243                                                                             |
| 3.0SMCJ160  | HHN          | IHN | 178                                                           | 225.5 | 1                                            | 160                                         | 5                                                                    | 5  | 10.4                                                                                         | 289                                                                             |
| 3.0SMCJ160A | HHP          | IHP | 178                                                           | 204.5 | 1                                            | 160                                         | 5                                                                    | 5  | 11.6                                                                                         | 259                                                                             |
| 3.0SMCJ170  | HHQ          | IHQ | 189                                                           | 239   | 1                                            | 170                                         | 5                                                                    | 5  | 9.8                                                                                          | 307                                                                             |
| 3.0SMCJ170A | HHR          | IHR | 189                                                           | 217   | 1                                            | 170                                         | 5                                                                    | 5  | 11                                                                                           | 273                                                                             |

### Notes:

- .(1) Pulse test: tp ≤ 50 ms  
.(2) Surge current waveform per Fig. 3 and derated per Fig. 2  
.(3) All terms and symbols are consistent with ANSI/IEEE C62.35

## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

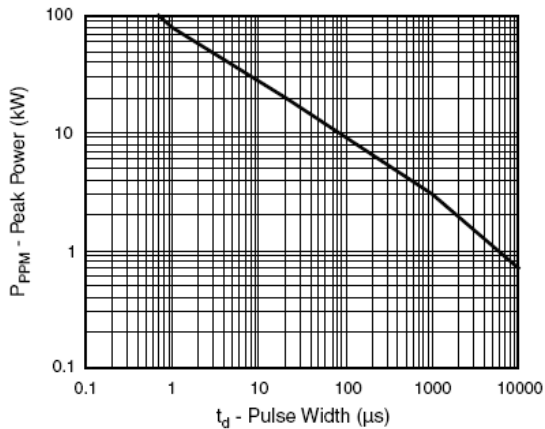


FIGURE 1-PEAK PULSE POWER VS PULSE TIME

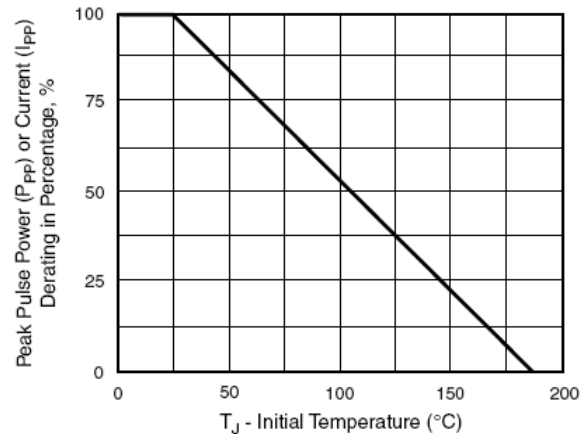


FIGURE 2 Pulse Power or Current vs. Initial Junction Temperature

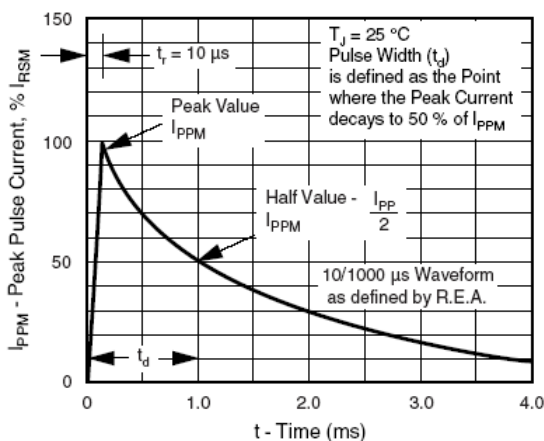


FIGURE 3-PULSE WAVEFORM

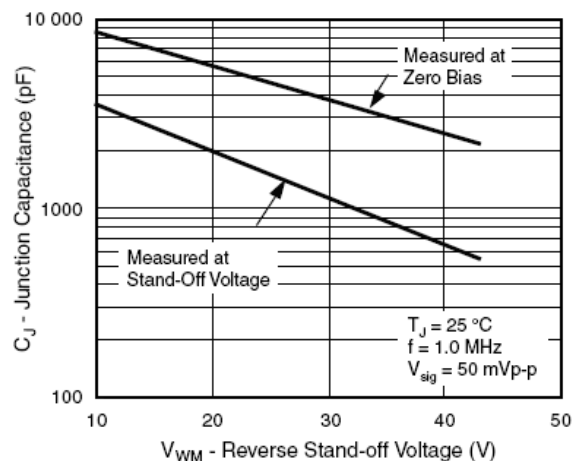


FIGURE 4 TYPICAL CAPACITANCE VS STAND-OFF VOLTAGE

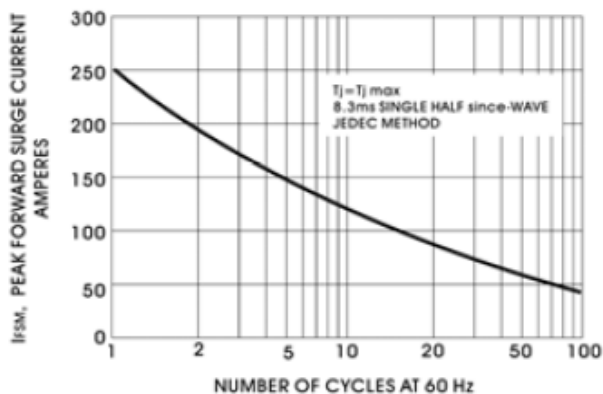


FIGURE 5 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL

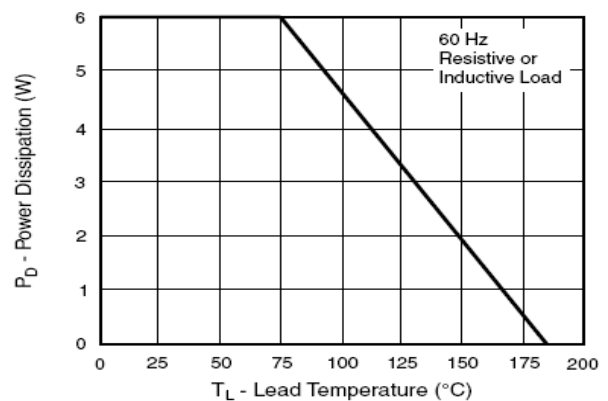


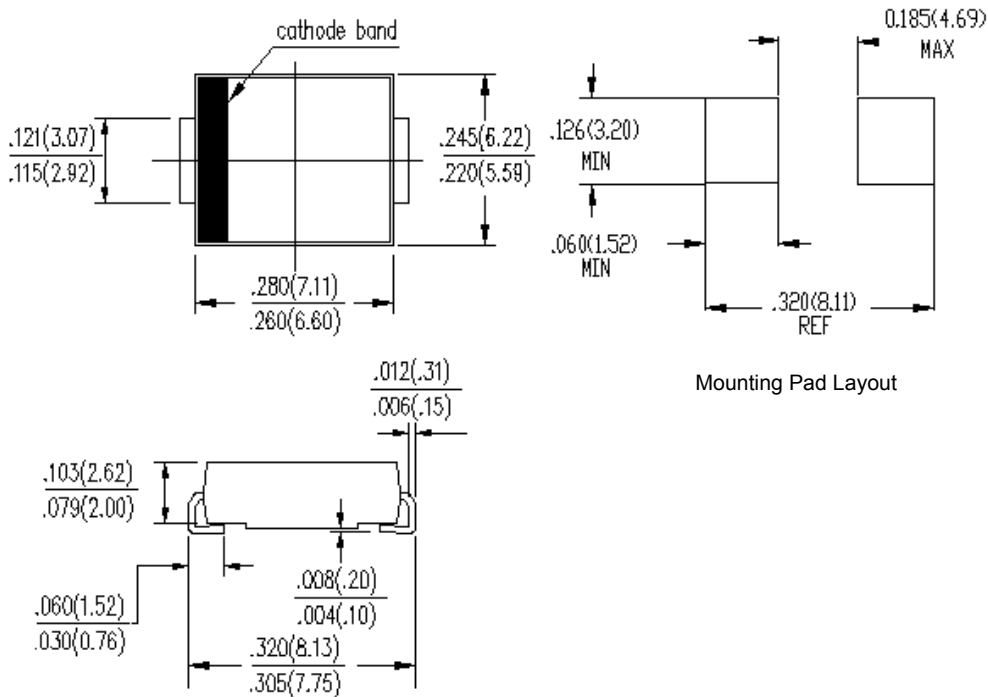
FIGURE 6 STEADY STATE POWER DERATING CURVE

# 3.0SMCJ7.0 thru 3.0SMCJ170CA

Transient Voltage Suppressors  
 Peak Pulse Power 3000W Stand-off Voltage 7V to 170V

## Package Outline Dimensions

DO-214AB(SMC) dimensions in inches (millimeters)



Mounting Pad Layout