

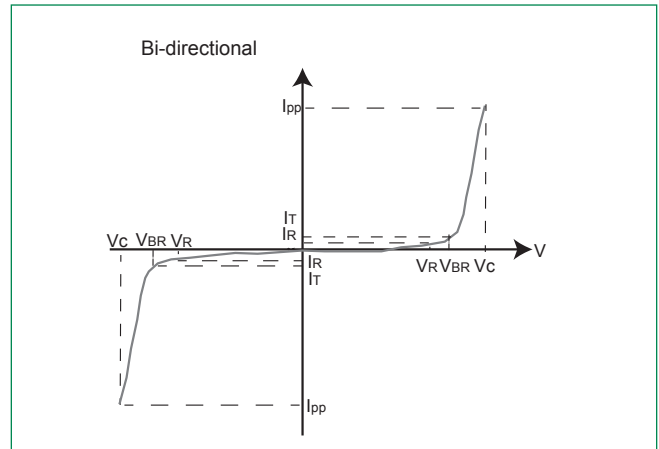
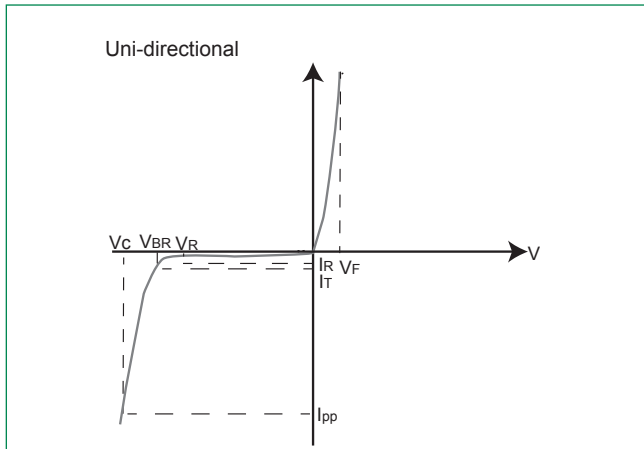
### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| Part Number (Uni) | Part Number (Bi) | Marking |     | Reverse Stand off Voltage V | Breakdown Voltage V |        | Test Current I <sub>T</sub> (mA) | Maximum Clamping Voltage VC @ I <sub>pp</sub> (10/1000µs) (V) | Maximum Peak Pulse Current I <sub>pp</sub> (10/1000µs) (A) | Maximum Clamping Voltage VC @ I <sub>pp</sub> (8/20µs) (V) | Maximum Peak Pulse Current I <sub>pp</sub> (8/20µs) (A) | Maximum Reverse Leakage IR @ VR (µA) | Maximum Temperature coefficient of VBR (%/C) | Agency Approval  |
|-------------------|------------------|---------|-----|-----------------------------|---------------------|--------|----------------------------------|---------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------|--------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------|
|                   |                  | UNI     | BI  |                             | MIN                 | MAX    |                                  |                                                               |                                                            |                                                            |                                                         |                                      |                                              |                                                                                                     |
| SMDJ5.0A          | SMDJ5.0CA        | RDE     | DDE | 5.0                         | 6.40                | 7.00   | 10                               | 9.2                                                           | 326.1                                                      | 11.89                                                      | 1630.5                                                  | 800                                  | 0.041                                        | X                                                                                                   |
| SMDJ6.0A          | SMDJ6.0CA        | RDG     | DDG | 6.0                         | 6.67                | 7.37   | 10                               | 10.3                                                          | 291.3                                                      | 13.31                                                      | 1456.5                                                  | 800                                  | 0.046                                        | X                                                                                                   |
| SMDJ6.5A          | SMDJ6.5CA        | RDK     | DDK | 6.5                         | 7.22                | 7.98   | 10                               | 11.2                                                          | 267.9                                                      | 14.47                                                      | 1339.5                                                  | 500                                  | 0.052                                        | X                                                                                                   |
| SMDJ7.0A          | SMDJ7.0CA        | PDM     | DDM | 7.0                         | 7.78                | 8.60   | 10                               | 12.0                                                          | 250.0                                                      | 15.50                                                      | 1250.0                                                  | 200                                  | 0.058                                        | X                                                                                                   |
| SMDJ7.5A          | SMDJ7.5CA        | PDP     | DDP | 7.5                         | 8.33                | 9.21   | 1                                | 12.9                                                          | 232.6                                                      | 16.67                                                      | 1163.0                                                  | 100                                  | 0.061                                        | X                                                                                                   |
| SMDJ8.0A          | SMDJ8.0CA        | PDR     | DDR | 8.0                         | 8.89                | 9.83   | 1                                | 13.6                                                          | 220.6                                                      | 17.57                                                      | 1103.0                                                  | 50                                   | 0.064                                        | X                                                                                                   |
| SMDJ8.5A          | SMDJ8.5CA        | PDT     | DDT | 8.5                         | 9.44                | 10.40  | 1                                | 14.4                                                          | 208.3                                                      | 18.60                                                      | 1041.5                                                  | 20                                   | 0.066                                        | X                                                                                                   |
| SMDJ9.0A          | SMDJ9.0CA        | PDV     | DDV | 9.0                         | 10.00               | 11.10  | 1                                | 15.4                                                          | 194.8                                                      | 19.90                                                      | 974.0                                                   | 10                                   | 0.069                                        | X                                                                                                   |
| SMDJ10A           | SMDJ10CA         | PDX     | DDX | 10.0                        | 11.10               | 12.30  | 1                                | 17.0                                                          | 176.5                                                      | 21.96                                                      | 882.5                                                   | 5                                    | 0.071                                        | X                                                                                                   |
| SMDJ11A           | SMDJ11CA         | PDZ     | DDZ | 11.0                        | 12.20               | 13.50  | 1                                | 18.2                                                          | 164.8                                                      | 23.51                                                      | 824.0                                                   | 2                                    | 0.074                                        | X                                                                                                   |
| SMDJ12A           | SMDJ12CA         | PEE     | DEE | 12.0                        | 13.30               | 14.70  | 1                                | 19.9                                                          | 150.8                                                      | 25.71                                                      | 754.0                                                   | 2                                    | 0.075                                        | X                                                                                                   |
| SMDJ13A           | SMDJ13CA         | PEG     | DEG | 13.0                        | 14.40               | 15.90  | 1                                | 21.5                                                          | 139.5                                                      | 27.78                                                      | 697.5                                                   | 2                                    | 0.076                                        | X                                                                                                   |
| SMDJ14A           | SMDJ14CA         | PEK     | DEK | 14.0                        | 15.60               | 17.20  | 1                                | 23.2                                                          | 129.3                                                      | 29.97                                                      | 646.5                                                   | 2                                    | 0.08                                         | X                                                                                                   |
| SMDJ15A           | SMDJ15CA         | PEM     | DEM | 15.0                        | 16.70               | 18.50  | 1                                | 24.4                                                          | 123.0                                                      | 31.52                                                      | 615.0                                                   | 2                                    | 0.083                                        | X                                                                                                   |
| SMDJ16A           | SMDJ16CA         | PEP     | DEP | 16.0                        | 17.80               | 19.70  | 1                                | 26.0                                                          | 115.4                                                      | 33.59                                                      | 577.0                                                   | 2                                    | 0.084                                        | X                                                                                                   |
| SMDJ17A           | SMDJ17CA         | PER     | DER | 17.0                        | 18.90               | 20.90  | 1                                | 27.6                                                          | 108.7                                                      | 35.66                                                      | 543.5                                                   | 2                                    | 0.085                                        | X                                                                                                   |
| SMDJ18A           | SMDJ18CA         | PET     | DET | 18.0                        | 20.00               | 22.10  | 1                                | 29.2                                                          | 102.7                                                      | 37.73                                                      | 513.5                                                   | 2                                    | 0.088                                        | X                                                                                                   |
| SMDJ20A           | SMDJ20CA         | PEV     | DEV | 20.0                        | 22.20               | 24.50  | 1                                | 32.4                                                          | 92.6                                                       | 41.86                                                      | 463.0                                                   | 2                                    | 0.091                                        | X                                                                                                   |
| SMDJ22A           | SMDJ22CA         | PEX     | DEX | 22.0                        | 24.40               | 26.90  | 1                                | 35.5                                                          | 84.5                                                       | 45.87                                                      | 422.5                                                   | 2                                    | 0.092                                        | X                                                                                                   |
| SMDJ24A           | SMDJ24CA         | PEZ     | DEZ | 24.0                        | 26.70               | 29.50  | 1                                | 38.9                                                          | 77.1                                                       | 50.26                                                      | 385.5                                                   | 2                                    | 0.092                                        | X                                                                                                   |
| SMDJ26A           | SMDJ26CA         | PFE     | DFE | 26.0                        | 28.90               | 31.90  | 1                                | 42.1                                                          | 71.3                                                       | 54.39                                                      | 356.5                                                   | 2                                    | 0.093                                        | X                                                                                                   |
| SMDJ28A           | SMDJ28CA         | PFG     | DFG | 28.0                        | 31.10               | 34.40  | 1                                | 45.4                                                          | 66.1                                                       | 58.66                                                      | 330.5                                                   | 2                                    | 0.094                                        | X                                                                                                   |
| SMDJ30A           | SMDJ30CA         | PFK     | DFK | 30.0                        | 33.30               | 36.80  | 1                                | 48.4                                                          | 62.0                                                       | 62.53                                                      | 310.0                                                   | 2                                    | 0.096                                        | X                                                                                                   |
| SMDJ33A           | SMDJ33CA         | PFM     | DFM | 33.0                        | 36.70               | 40.60  | 1                                | 53.3                                                          | 56.3                                                       | 68.86                                                      | 281.5                                                   | 2                                    | 0.097                                        | X                                                                                                   |
| SMDJ36A           | SMDJ36CA         | PFP     | DFP | 36.0                        | 40.00               | 44.20  | 1                                | 58.1                                                          | 51.6                                                       | 75.06                                                      | 258.0                                                   | 2                                    | 0.098                                        | X                                                                                                   |
| SMDJ40A           | SMDJ40CA         | PFR     | DFR | 40.0                        | 44.40               | 49.10  | 1                                | 64.5                                                          | 46.5                                                       | 83.33                                                      | 232.5                                                   | 2                                    | 0.099                                        | X                                                                                                   |
| SMDJ43A           | SMDJ43CA         | PFT     | DFT | 43.0                        | 47.80               | 52.80  | 1                                | 69.4                                                          | 43.2                                                       | 89.66                                                      | 216.0                                                   | 2                                    | 0.1                                          | X                                                                                                   |
| SMDJ45A           | SMDJ45CA         | PFV     | DFV | 45.0                        | 50.00               | 55.30  | 1                                | 72.7                                                          | 41.3                                                       | 93.93                                                      | 206.5                                                   | 2                                    | 0.101                                        | X                                                                                                   |
| SMDJ48A           | SMDJ48CA         | PFX     | DFX | 48.0                        | 53.30               | 58.90  | 1                                | 77.4                                                          | 38.8                                                       | 100.00                                                     | 194.0                                                   | 2                                    | 0.101                                        | X                                                                                                   |
| SMDJ51A           | SMDJ51CA         | PFZ     | DFZ | 51.0                        | 56.70               | 62.70  | 1                                | 82.4                                                          | 36.4                                                       | 106.46                                                     | 182.0                                                   | 2                                    | 0.101                                        | X                                                                                                   |
| SMDJ54A           | SMDJ54CA         | RGE     | DGE | 54.0                        | 60.00               | 66.30  | 1                                | 87.1                                                          | 34.4                                                       | 112.53                                                     | 172.0                                                   | 2                                    | 0.102                                        | X                                                                                                   |
| SMDJ58A           | SMDJ58CA         | PGG     | DGG | 58.0                        | 64.40               | 71.20  | 1                                | 93.6                                                          | 32.1                                                       | 120.93                                                     | 160.5                                                   | 2                                    | 0.103                                        | X                                                                                                   |
| SMDJ60A           | SMDJ60CA         | PGK     | DGK | 60.0                        | 66.70               | 73.70  | 1                                | 96.8                                                          | 31.0                                                       | 125.06                                                     | 155.0                                                   | 2                                    | 0.103                                        | X                                                                                                   |
| SMDJ64A           | SMDJ64CA         | PGM     | DGM | 64.0                        | 71.10               | 78.60  | 1                                | 103.0                                                         | 29.1                                                       | 133.07                                                     | 145.5                                                   | 2                                    | 0.104                                        | X                                                                                                   |
| SMDJ70A           | SMDJ70CA         | PGP     | DGP | 70.0                        | 77.80               | 86.00  | 1                                | 113.0                                                         | 26.5                                                       | 145.99                                                     | 132.5                                                   | 2                                    | 0.105                                        | X                                                                                                   |
| SMDJ75A           | SMDJ75CA         | PGR     | DGR | 75.0                        | 83.30               | 92.10  | 1                                | 121.0                                                         | 24.8                                                       | 156.33                                                     | 124.0                                                   | 2                                    | 0.106                                        | X                                                                                                   |
| SMDJ78A           | SMDJ78CA         | PGT     | DGT | 78.0                        | 86.70               | 95.80  | 1                                | 126.0                                                         | 23.8                                                       | 162.79                                                     | 119.0                                                   | 2                                    | 0.106                                        | X                                                                                                   |
| SMDJ85A           | SMDJ85CA         | PGV     | DGV | 85.0                        | 94.40               | 104.00 | 1                                | 137.0                                                         | 21.9                                                       | 177.00                                                     | 109.5                                                   | 2                                    | 0.106                                        | X                                                                                                   |
| SMDJ90A           | SMDJ90CA         | PGX     | DGX | 90.0                        | 100.00              | 111.00 | 1                                | 146.0                                                         | 20.5                                                       | 188.63                                                     | 102.5                                                   | 2                                    | 0.107                                        | X                                                                                                   |
| SMDJ100A          | SMDJ100CA        | PGZ     | DGZ | 100.0                       | 111.00              | 123.00 | 1                                | 162.0                                                         | 18.5                                                       | 209.30                                                     | 92.5                                                    | 2                                    | 0.107                                        | X                                                                                                   |
| SMDJ110A          | SMDJ110CA        | PHE     | DHE | 110.0                       | 122.00              | 135.00 | 1                                | 177.0                                                         | 16.9                                                       | 228.68                                                     | 84.5                                                    | 2                                    | 0.107                                        | X                                                                                                   |
| SMDJ120A          | SMDJ120CA        | PHG     | DHG | 120.0                       | 133.00              | 147.00 | 1                                | 193.0                                                         | 15.5                                                       | 249.35                                                     | 77.5                                                    | 2                                    | 0.108                                        | X                                                                                                   |
| SMDJ130A          | SMDJ130CA        | PHK     | DHK | 130.0                       | 144.00              | 159.00 | 1                                | 209.0                                                         | 14.4                                                       | 270.03                                                     | 72.0                                                    | 2                                    | 0.108                                        | X                                                                                                   |
| SMDJ150A          | -                | PHM     | -   | 150.0                       | 167.00              | 185.00 | 1                                | 243.0                                                         | 12.3                                                       | 313.95                                                     | 61.5                                                    | 2                                    | 0.108                                        | X                                                                                                   |
| -                 | SMDJ150CA*       | -       | DHM | 150.0                       | 167.00              | 185.00 | 1                                | 243.0                                                         | 16.5                                                       | 313.95                                                     | 61.5                                                    | 2                                    | 0.108                                        | X                                                                                                   |
| SMDJ160A          | -                | PHP     | -   | 160.0                       | 178.00              | 197.00 | 1                                | 259.0                                                         | 11.6                                                       | 334.63                                                     | 58.0                                                    | 2                                    | 0.108                                        | X                                                                                                   |
| -                 | SMDJ160CA*       | -       | DHP | 160.0                       | 178.00              | 197.00 | 1                                | 259.0                                                         | 15.5                                                       | 334.63                                                     | 58.0                                                    | 2                                    | 0.108                                        | X                                                                                                   |
| SMDJ170A          | -                | PHR     | -   | 170.0                       | 189.00              | 209.00 | 1                                | 275.0                                                         | 10.9                                                       | 355.30                                                     | 54.5                                                    | 2                                    | 0.108                                        | X                                                                                                   |
| -                 | SMDJ170CA*       | -       | DHR | 170.0                       | 189.00              | 209.00 | 1                                | 275.0                                                         | 14.6                                                       | 355.30                                                     | 54.5                                                    | 2                                    | 0.108                                        | X                                                                                                   |
| SMDJ180A*         | SMDJ180CA*       | PHT     | DHT | 180.0                       | 200.00              | 221.00 | 1                                | 292.0                                                         | 13.7                                                       | 377.26                                                     | 51.5                                                    | 2                                    | 0.108                                        | X                                                                                                   |
| SMDJ200A*         | SMDJ200CA*       | PHV     | DHV | 200.0                       | 224.00              | 247.00 | 1                                | 324.0                                                         | 12.4                                                       | 418.60                                                     | 46.5                                                    | 2                                    | 0.11                                         | X                                                                                                   |
| SMDJ220A*         | SMDJ220CA*       | PKE     | DKE | 220.0                       | 244.00              | 270.00 | 1                                | 356.0                                                         | 11.3                                                       | 459.95                                                     | 42.0                                                    | 2                                    | 0.11                                         | X                                                                                                   |
| SMDJ250A*         | SMDJ250CA*       | PKG     | DKG | 250.0                       | 279.00              | 309.00 | 1                                | 405.0                                                         | 9.9                                                        | 523.26                                                     | 37.5                                                    | 2                                    | 0.11                                         | X                                                                                                   |
| SMDJ300A*         | SMDJ300CA*       | PKI     | DKI | 300.0                       | 335.00              | 371.00 | 1                                | 486.0                                                         | 8.3                                                        | 627.91                                                     | 31.0                                                    | 2                                    | 0.112                                        | X                                                                                                   |
| SMDJ350A*         | SMDJ350CA*       | PKJ     | DKJ | 350.0                       | 391.00              | 432.00 | 1                                | 567.0                                                         | 7.1                                                        | 732.56                                                     | 26.5                                                    | 2                                    | 0.112                                        | X                                                                                                   |
| SMDJ400A*         | SMDJ400CA*       | PKL     | DKL | 400.0                       | 447.00              | 494.00 | 1                                | 648.0                                                         | 6.2                                                        | 837.21                                                     | 23.5                                                    | 2                                    | 0.112                                        | X                                                                                                   |
| SMDJ440A*         | SMDJ440CA*       | PKN     | DKN | 440.0                       | 492.00              | 543.00 | 1                                | 713.0                                                         | 5.7                                                        | 921.19                                                     | 21.5                                                    | 2                                    | 0.112                                        | X                                                                                                   |

For bidirectional type having V<sub>R</sub> of 10 volts and less, the I<sub>R</sub> limit is double.

For stack-die parts, use \* to label the part number.

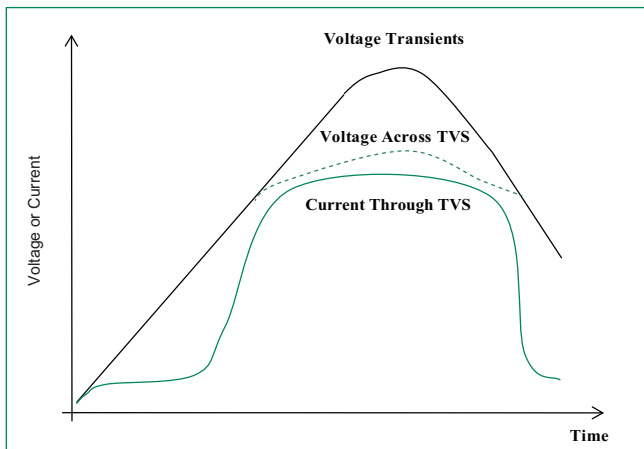
## I-V Curve Characteristics



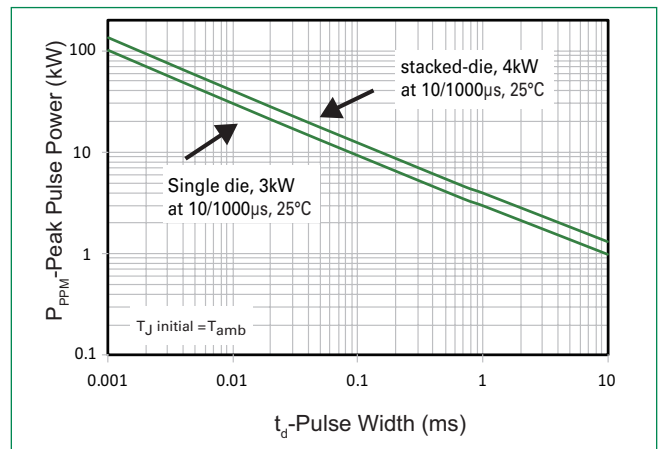
- $P_{PPM}$  Peak Pulse Power Dissipation** – Max power dissipation
- $V_R$  Stand-off Voltage** – Maximum voltage that can be applied to the TVS without operation
- $V_{BR}$  Breakdown Voltage** – Maximum voltage that flows through the TVS at a specified test current ( $I_T$ )
- $V_C$  Clamping Voltage** – Peak voltage measured across the TVS at a specified  $I_{ppm}$  (peak impulse current)
- $I_R$  Reverse Leakage Current** – Current measured at  $V_R$
- $V_F$  Forward Voltage Drop for Uni-directional**

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

**Figure 1 - TVS Transients Clamping Waveform**



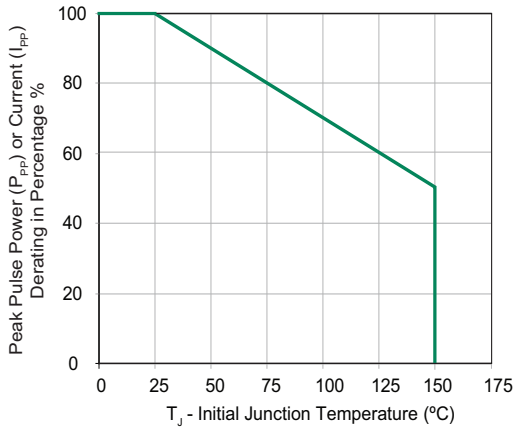
**Figure 2 - Peak Pulse Power Rating**



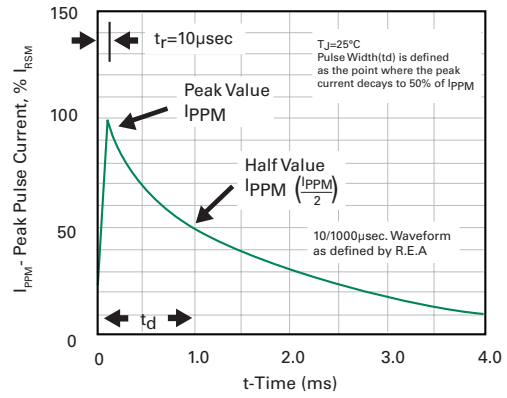
continues on next page.

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

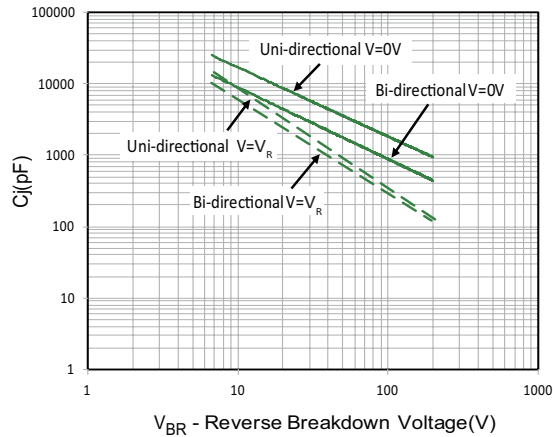
**Figure 3 - Peak Pulse Power Derating Curve**



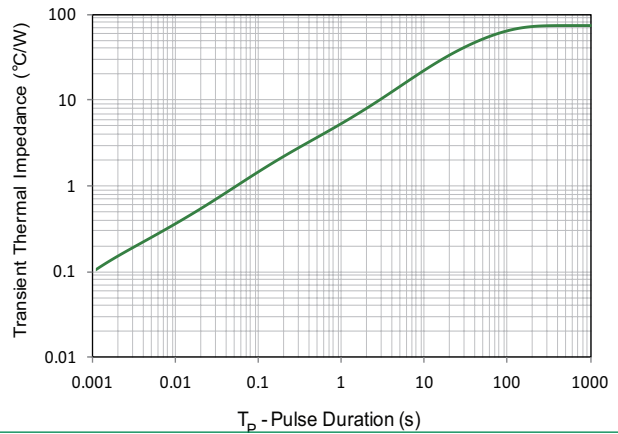
**Figure 4 - Pulse Waveform**



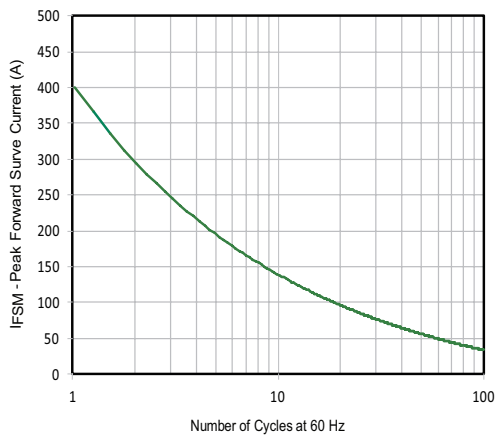
**Figure 5 - Typical Junction Capacitance**



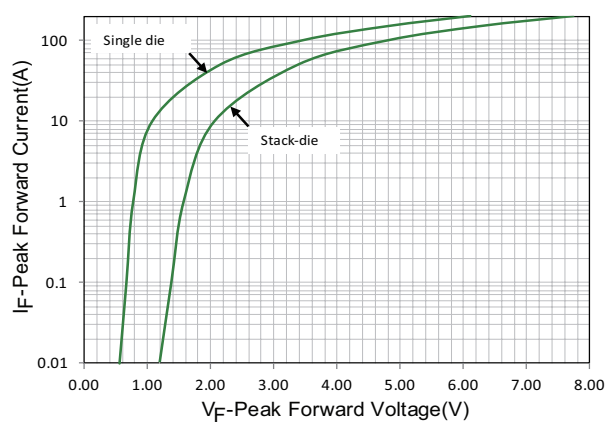
**Figure 6 - Typical Transient Thermal Impedance**



**Figure 7 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only**

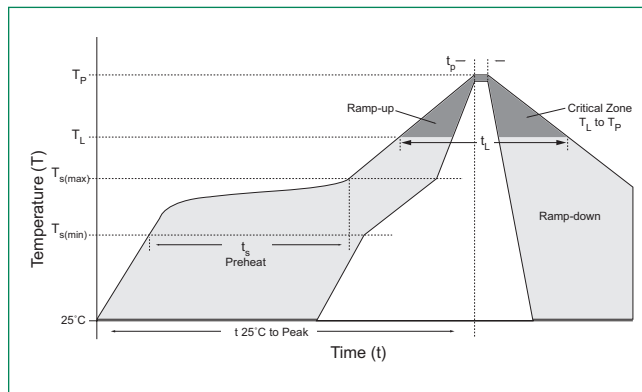


**Figure 8 - Peak Forward Voltage Drop vs Peak Forward Current (Typical Values)**



### Soldering Parameters

|                                                                       |                                    |                         |
|-----------------------------------------------------------------------|------------------------------------|-------------------------|
| <b>Reflow Condition</b>                                               |                                    | Lead-free assembly      |
| <b>Pre Heat</b>                                                       | - Temperature Min ( $T_{s(min)}$ ) | 150°C                   |
|                                                                       | - Temperature Max ( $T_{s(max)}$ ) | 200°C                   |
|                                                                       | - Time (min to max) ( $t_s$ )      | 60 – 120 secs           |
| <b>Average ramp up rate (Liquidus Temp (<math>T_L</math>) to peak</b> |                                    | 3°C/second max          |
| <b><math>T_{s(max)}</math> to <math>T_L</math> - Ramp-up Rate</b>     |                                    | 3°C/second max          |
| <b>Reflow</b>                                                         | - Temperature ( $T_L$ ) (Liquidus) | 217°C                   |
|                                                                       | - Time (min to max) ( $t_L$ )      | 60 – 150 seconds        |
| <b>Peak Temperature (<math>T_p</math>)</b>                            |                                    | 260 <sup>+0/-5</sup> °C |
| <b>Time within 5°C of actual peak Temperature (<math>t_p</math>)</b>  |                                    | 30 seconds max          |
| <b>Ramp-down Rate</b>                                                 |                                    | 6°C/second max          |
| <b>Time 25°C to peak Temperature (<math>T_p</math>)</b>               |                                    | 8 minutes Max.          |
| <b>Do not exceed</b>                                                  |                                    | 260°C                   |



### Physical Specifications

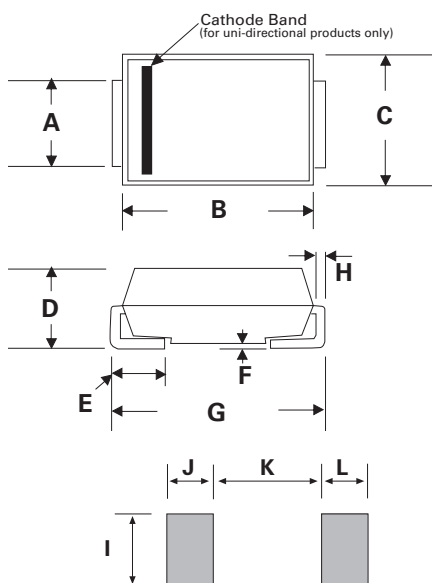
|                 |                                                                              |
|-----------------|------------------------------------------------------------------------------|
| <b>Weight</b>   | 0.007 ounce, 0.21 grams                                                      |
| <b>Case</b>     | JEDEC DQ214AB. Molded plastic body over glass passivated junction            |
| <b>Polarity</b> | Color band denotes positive end (cathode) except for bidirectional versions. |
| <b>Terminal</b> | Matte Tin-plated leads, Solderable per JESD22-B102                           |

### Environmental Specifications

|                            |                          |
|----------------------------|--------------------------|
| <b>High Temp. Storage</b>  | JESD22-A103              |
| <b>HTRB</b>                | JESD22-A108              |
| <b>Temperature Cycling</b> | JESD22-A104              |
| <b>MSL</b>                 | JEDEC-J-STD-020, Level 1 |
| <b>H3TRB</b>               | JESD22-A101              |
| <b>RSH</b>                 | JESD22-A111              |

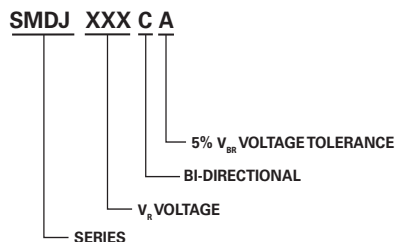
### Dimensions

**DO-214AB (SMC J-Bend)**

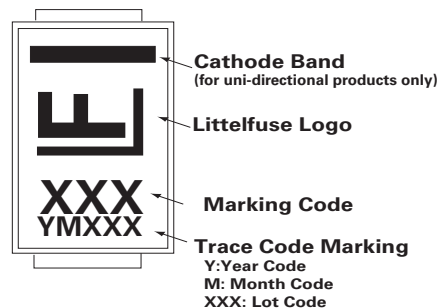


| Dimensions | Inches |       | Millimeters |       |
|------------|--------|-------|-------------|-------|
|            | Min    | Max   | Min         | Max   |
| A          | 0.114  | 0.126 | 2.900       | 3.200 |
| B          | 0.260  | 0.280 | 6.600       | 7.110 |
| C          | 0.220  | 0.245 | 5.590       | 6.220 |
| D          | 0.079  | 0.103 | 2.060       | 2.620 |
| E          | 0.030  | 0.060 | 0.760       | 1.520 |
| F          | -      | 0.008 | -           | 0.203 |
| G          | 0.305  | 0.320 | 7.750       | 8.130 |
| H          | 0.006  | 0.012 | 0.152       | 0.305 |
| I          | 0.129  | -     | 3.300       | -     |
| J          | 0.094  | -     | 2.400       | -     |
| K          | -      | 0.165 | -           | 4.200 |
| L          | 0.094  | -     | 2.400       | -     |

### Part Numbering System



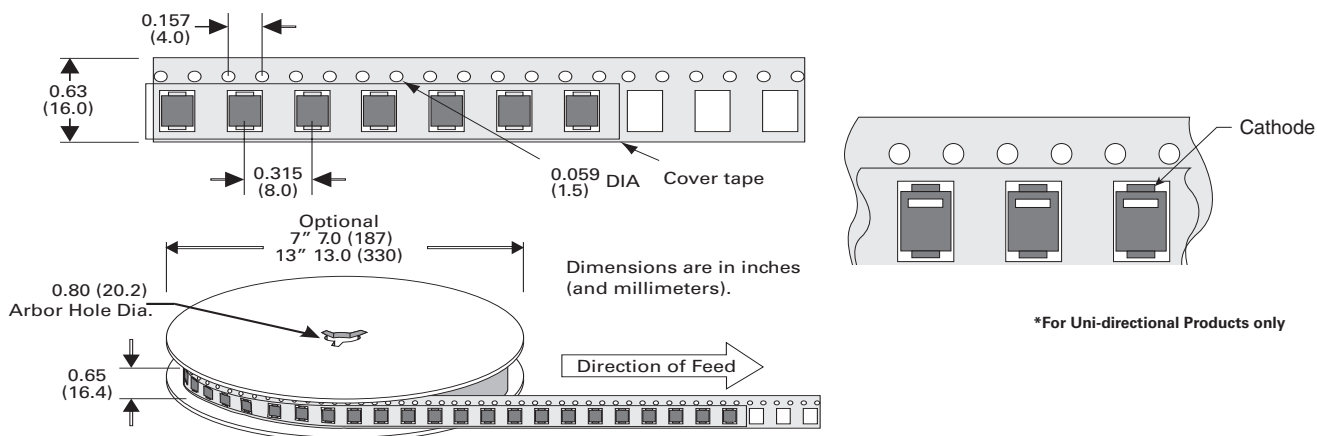
### Part Marking System



### Packaging Options

| Part number  | Component Package | Quantity | Packaging Option                 | Packaging Specification |
|--------------|-------------------|----------|----------------------------------|-------------------------|
| SMDJxxxXX    | DO-214AB          | 3000     | Tape & Reel - 16mm tape/13" reel | EIA STD RS-481          |
| SMDJxxxXX-T7 | DO-214AB          | 500      | Tape & Reel - 16mm tape/7" reel  | EIA STD RS-481          |

### Tape and Reel Specification



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