

## 3000 W Surface Mount Transient Voltage Suppressor

|                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>DO-214AB (SMC)</b></p>  | <p><b>Voltage</b><br/>9.5 V to 95 V (Uni)<br/>9.5 V to 95 V (Bid)</p> <p><b>Current</b><br/>3000 W / ms</p> <p><b>HYPERECTIFIER®</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                                                                | <p><b>FEATURE</b></p> <ul style="list-style-type: none"> <li>• Low profile package</li> <li>• Ideal for automated placement</li> <li>• 3000 peak pulse power capability with a 10/1000 <math>\mu</math>s waveform, repetitive rate (duty cycle): 0.01%</li> <li>• Excellent clamping capability</li> <li>• Very fast response time</li> <li>• Solder dip 260 °C, 10s</li> <li>• Available in uni-directional and bi-directional</li> <li>• AEC-Q101 qualified</li> <li>• Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC</li> <li>• Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C</li> </ul> <p><b>RoHS COMPLIANT</b></p> |
|                                                                                                                | <p><b>MECHANICAL DATA</b></p> <ul style="list-style-type: none"> <li>• <b>Case:</b> DO-214AB (SMC). Epoxy meets UL 94V-0 flammability rating.</li> <li>• <b>Polarity:</b> For unidirectional types color band denotes cathode end. No marking on bidirectional types.</li> <li>• <b>Terminals:</b> Matte tin plated leads, solderable per MIL-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test.</li> <li>• <b>HE3 suffix</b> for high reliability grade, meets JESD 201 class 2 whisker test.</li> </ul>                                                                                           |
|                                                                                                                | <p><b>TYPICAL APPLICATIONS</b></p> <p>Used in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication.</p>                                                                                                                                                                                                                                                                                                                                                                      |

## Maximun Ratings and Electrical Characteristics at 25 °C

|                 |                                                                        |                 |
|-----------------|------------------------------------------------------------------------|-----------------|
| $P_{PPM}$       | Peak Pulse Power Dissipation with 10/1000 $\mu$ s exponential pulse    | 3000 W          |
| $I_{FSM}$       | Peak Forward Surge Current 8.3 ms. (Note 1)<br>(Jedec Method) (Note 2) | 200 A           |
| $V_F$           | Max. Forward Voltage Drop at $I_F = 100$ A (Note 1)                    | 3.5 V           |
| $T_j - T_{stg}$ | Operating Junction and Storage Temperature Range                       | -65 to + 175 °C |

**Notes:**

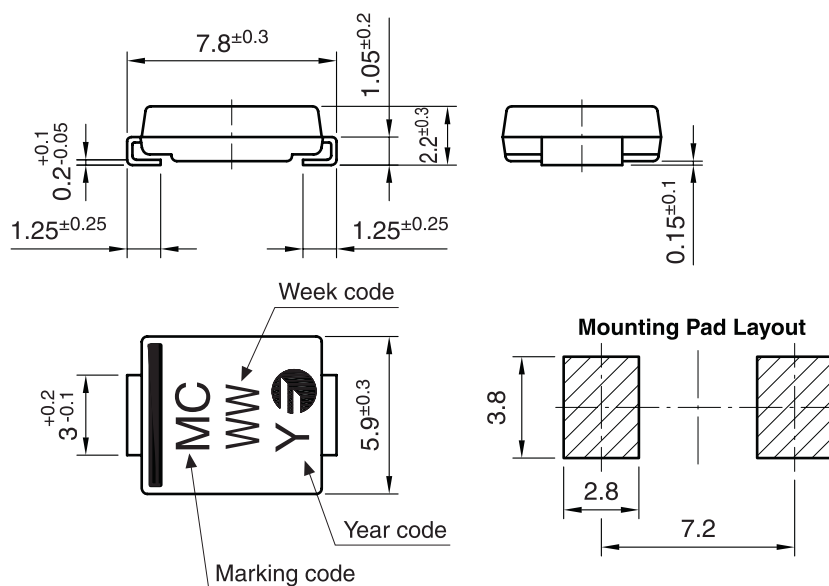
1. Only for unidirectional
2. Mounted on 0.31 x 0.31" (8.0 x 8.0 mm) copper pads to each terminal

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### Ordering information

| PREFERRED P/N      | PACKAGE CODE | DELIVERY MODE              | BASE QUANTITY | UNIT WEIGHT (g) |
|--------------------|--------------|----------------------------|---------------|-----------------|
| 3KSMC33A TRTB      | TRTB         | 13" diameter tape and reel | 3,500         | 0.211           |
| 3KSMC33A HE3 TRTB  | TRTB         | 13" diameter tape and reel | 3,500         | 0.211           |
| 3KSMC33CA TRTB     | TRTB         | 13" diameter tape and reel | 3,500         | 0.211           |
| 3KSMC33CA HE3 TRTB |              | 13" diameter tape and reel | 3,500         | 0.211           |

### Package Outline Dimensions: (mm) DO-214AB (SMC)



## 3000 W Surface Mount Transient Voltage Suppressor

### Rating and Characteristics (Ta 25 °C unless otherwise noted)

| DEVICE TYPE    | MC  | VBR @ IT (1) |      |     | IR @ VR    |      | IRM @                          | VCL @ IPP               |       | RD                | VCL @ IPP |      | RD             | αT     |
|----------------|-----|--------------|------|-----|------------|------|--------------------------------|-------------------------|-------|-------------------|-----------|------|----------------|--------|
| Unidirectional | (3) | (V)          |      |     | (V)   (μA) |      | T <sub>j</sub> = 150°C<br>(μA) | 10/1000 μs<br>(V)   (A) |       | 10/1000 μs<br>(Ω) | 8/20 μs   |      | 8/20 μs<br>(Ω) | (%/°C) |
|                |     | min          | max  | mA  |            |      |                                |                         |       |                   | (V)       | (A)  |                |        |
| 3KSMC8.5A      | CAT | 9.44         | 10.4 | 1.0 | 8.5        | 10.0 | 50                             | 14.4                    | 208.4 | 0.020             | 19.9      | 1389 | 0.006          | 0.070  |
| 3KSMC10A       | CAA | 11.1         | 12.3 | 1.0 | 10         | 5.0  | 50                             | 17.0                    | 177   | 0.026             | 22.5      | 1217 | 0.008          | 0.075  |
| 3KSMC11A       | CAB | 12.2         | 13.5 | 1.0 | 11         | 5.0  | 50                             | 18.2                    | 165   | 0.028             | 23.7      | 1156 | 0.009          | 0.075  |
| 3KSMC12A       | CAC | 13.3         | 14.7 | 1.0 | 12         | 2.0  | 20                             | 19.9                    | 151   | 0.034             | 25.4      | 1078 | 0.010          | 0.080  |
| 3KSMC13A       | CAD | 14.4         | 15.9 | 1.0 | 13         | 2.0  | 20                             | 21.5                    | 140   | 0.040             | 27.0      | 1014 | 0.011          | 0.080  |
| 3KSMC14A       | CAE | 15.6         | 17.2 | 1.0 | 14         | 1.0  | 10                             | 23.2                    | 129   | 0.046             | 28.7      | 955  | 0.012          | 0.085  |
| 3KSMC15A       | CAF | 16.7         | 18.5 | 1.0 | 15         | 1.0  | 10                             | 24.4                    | 123   | 0.048             | 30.0      | 910  | 0.013          | 0.085  |
| 3KSMC16A       | CAG | 17.8         | 19.7 | 1.0 | 16         | 1.0  | 10                             | 26.0                    | 115   | 0.055             | 31.5      | 870  | 0.013          | 0.085  |
| 3KSMC17A       | CAH | 18.9         | 20.9 | 1.0 | 17         | 1.0  | 10                             | 27.6                    | 109   | 0.061             | 33.1      | 827  | 0.015          | 0.075  |
| 3KSMC18A       | CAI | 20.0         | 22.1 | 1.0 | 18         | 1.0  | 10                             | 29.2                    | 103   | 0.069             | 35.0      | 790  | 0.016          | 0.090  |
| 3KSMC20A       | CAJ | 22.2         | 24.5 | 1.0 | 20         | 1.0  | 10                             | 32.4                    | 92.6  | 0.085             | 37.5      | 730  | 0.018          | 0.090  |
| 3KSMC22A       | CAK | 24.4         | 26.9 | 1.0 | 22         | 1.0  | 10                             | 35.5                    | 84.5  | 0.102             | 40.5      | 680  | 0.020          | 0.095  |
| 3KSMC24A       | CAL | 26.7         | 29.5 | 1.0 | 24         | 1.0  | 10                             | 38.9                    | 77.1  | 0.122             | 43.9      | 630  | 0.023          | 0.095  |
| 3KSMC26A       | CAM | 28.9         | 31.9 | 1.0 | 26         | 1.0  | 10                             | 42.1                    | 71.3  | 0.143             | 42.0      | 600  | 0.025          | 0.095  |
| 3KSMC28A       | CAN | 31.1         | 34.4 | 1.0 | 28         | 1.0  | 10                             | 45.4                    | 66.1  | 0.166             | 50.0      | 560  | 0.028          | 0.095  |
| 3KSMC30A       | CAO | 33.3         | 36.8 | 1.0 | 30         | 1.0  | 15                             | 48.4                    | 62.0  | 0.187             | 53.0      | 530  | 0.030          | 0.095  |
| 3KSMC33A       | CAP | 36.7         | 40.6 | 1.0 | 33         | 1.0  | 15                             | 53.3                    | 56.3  | 0.226             | 58.0      | 490  | 0.035          | 0.100  |
| 3KSMC36A       | CAQ | 40.0         | 44.2 | 1.0 | 36         | 1.0  | 20                             | 58.1                    | 51.6  | 0.269             | 62.7      | 437  | 0.042          | 0.100  |
| 3KSMC40A       | CAR | 44.4         | 49.1 | 1.0 | 40         | 1.0  | 20                             | 64.5                    | 46.5  | 0.331             | 69.0      | 396  | 0.050          | 0.105  |
| 3KSMC43A       | CAS | 47.8         | 52.8 | 1.0 | 43         | 1.0  | 20                             | 69.4                    | 43.2  | 0.384             | 73.9      | 371  | 0.057          | 0.105  |
| 3KSMC45A       | CAU | 50.0         | 55.3 | 1.0 | 45         | 2.0  | 20                             | 72.7                    | 41.3  | 0.421             | 77.4      | 354  | 0.062          | 0.105  |
| 3KSMC48A       | CAV | 53.3         | 58.9 | 1.0 | 48         | 2.0  | 20                             | 77.4                    | 38.8  | 0.477             | 82.0      | 334  | 0.069          | 0.105  |
| 3KSMC51A       | CAW | 56.7         | 62.7 | 1.0 | 51         | 2.0  | 20                             | 82.4                    | 36.4  | 0.541             | 87.0      | 314  | 0.077          | 0.105  |
| 3KSMC54A       | CAX | 60.0         | 66.3 | 1.0 | 54         | 2.0  | 20                             | 87.1                    | 34.4  | 0.605             | 91.7      | 298  | 0.085          | 0.105  |
| 3KSMC58A       | CAY | 64.4         | 71.2 | 1.0 | 58         | 2.0  | 20                             | 93.6                    | 32.1  | 0.698             | 98.3      | 278  | 0.097          | 0.110  |
| 3KSMC60A       | CAZ | 66.7         | 73.7 | 1.0 | 60         | 2.0  | 20                             | 96.8                    | 31.0  | 0.745             | 102       | 268  | 0.106          | 0.110  |
| 3KSMC64A       | CCA | 71.1         | 78.6 | 1.0 | 64         | 2.0  | 20                             | 103                     | 29.1  | 0.838             | 108       | 253  | 0.116          | 0.110  |
| 3KSMC70A       | CCB | 77.8         | 86.0 | 1.0 | 70         | 2.0  | 20                             | 113                     | 26.5  | 1.019             | 118       | 232  | 0.138          | 0.110  |
| 3KSMC75A       | CCC | 83.3         | 92.1 | 1.0 | 75         | 2.0  | 20                             | 121                     | 24.8  | 1.165             | 126       | 217  | 0.156          | 0.110  |
| 3KSMC78A       | CCD | 86.7         | 95.8 | 1.0 | 78         | 2.0  | 20                             | 126                     | 23.8  | 1.269             | 132       | 207  | 0.175          | 0.110  |

**Notes:** (1) Pulse Test: tp≤50 ms  
(2) Surge current waveform per fig. 3 and derate per fig. 2  
• All terms and symbols are consistent with ANSI / IEEE C62.35  
(3) Marking code

## 3000 W Surface Mount Transient Voltage Suppressor

### Rating and Characteristics (Ta 25 °C unless otherwise noted)

| DEVICE TYPE    | MC  | VBR @ IT (1) |      |     | IR @ VR |      | IRM @<br>T <sub>j</sub> = 150°C | VCL @ IPP  |       | RD         | VCL @ IPP |      | RD      | αT     |
|----------------|-----|--------------|------|-----|---------|------|---------------------------------|------------|-------|------------|-----------|------|---------|--------|
| Unidirectional | (3) | (V)          |      |     | (V)     | (μA) | (μA)                            | 10/1000 μs |       | 10/1000 μs | 8/20 μs   |      | 8/20 μs | (%/°C) |
|                |     | min          | max  | mA  |         |      |                                 | (V)        | (A)   | (Ω)        | (V)       | (A)  | (Ω)     |        |
| 3KSMC8.5CA     | CBT | 9.44         | 10.4 | 1.0 | 8.5     | 10.0 | 50                              | 14.4       | 208.4 | 0.020      | 19.9      | 1389 | 0.006   | 0.070  |
| 3KSMC10CA      | CBU | 11.1         | 12.3 | 1.0 | 10      | 5.0  | 50                              | 17.0       | 177   | 0.026      | 22.5      | 1217 | 0.008   | 0.075  |
| 3KSMC11CA      | CBV | 12.2         | 13.5 | 1.0 | 11      | 5.0  | 50                              | 18.2       | 165   | 0.028      | 23.7      | 1156 | 0.009   | 0.075  |
| 3KSMC12CA      | CBW | 13.3         | 14.7 | 1.0 | 12      | 2.0  | 20                              | 19.9       | 151   | 0.034      | 25.4      | 1078 | 0.010   | 0.080  |
| 3KSMC13CA      | CBX | 14.4         | 15.9 | 1.0 | 13      | 2.0  | 20                              | 21.5       | 140   | 0.040      | 27.0      | 1014 | 0.011   | 0.080  |
| 3KSMC14CA      | CBY | 15.6         | 17.2 | 1.0 | 14      | 1.0  | 10                              | 23.2       | 129   | 0.046      | 28.7      | 955  | 0.012   | 0.085  |
| 3KSMC15CA      | CBZ | 16.7         | 18.5 | 1.0 | 15      | 1.0  | 10                              | 24.4       | 123   | 0.048      | 30.0      | 910  | 0.013   | 0.085  |
| 3KSMC16CA      | CCE | 17.8         | 19.7 | 1.0 | 16      | 1.0  | 10                              | 26.0       | 115   | 0.055      | 31.5      | 870  | 0.013   | 0.085  |
| 3KSMC17CA      | CCF | 18.9         | 20.9 | 1.0 | 17      | 1.0  | 10                              | 27.6       | 109   | 0.061      | 33.1      | 827  | 0.015   | 0.075  |
| 3KSMC18CA      | CCG | 20.0         | 22.1 | 1.0 | 18      | 1.0  | 10                              | 29.2       | 103   | 0.069      | 35.0      | 790  | 0.016   | 0.090  |
| 3KSMC20CA      | CCH | 22.2         | 24.5 | 1.0 | 20      | 1.0  | 10                              | 32.4       | 92.6  | 0.085      | 37.5      | 730  | 0.018   | 0.090  |
| 3KSMC22CA      | CBA | 24.4         | 26.9 | 1.0 | 22      | 1.0  | 10                              | 35.5       | 84.5  | 0.102      | 40.5      | 680  | 0.020   | 0.095  |
| 3KSMC24CA      | CBB | 26.7         | 29.5 | 1.0 | 24      | 1.0  | 10                              | 38.9       | 77.1  | 0.122      | 43.9      | 630  | 0.023   | 0.095  |
| 3KSMC26CA      | CBC | 28.9         | 31.9 | 1.0 | 26      | 1.0  | 10                              | 42.1       | 71.3  | 0.143      | 42.0      | 600  | 0.025   | 0.095  |
| 3KSMC28CA      | CBD | 31.1         | 34.4 | 1.0 | 28      | 1.0  | 10                              | 45.4       | 66.1  | 0.166      | 50.0      | 560  | 0.028   | 0.095  |
| 3KSMC30CA      | CBE | 33.3         | 36.8 | 1.0 | 30      | 1.0  | 15                              | 48.4       | 62.0  | 0.187      | 53.0      | 530  | 0.030   | 0.095  |
| 3KSMC33CA      | CBF | 36.7         | 40.6 | 1.0 | 33      | 1.0  | 15                              | 53.3       | 56.3  | 0.226      | 58.0      | 490  | 0.035   | 0.100  |
| 3KSMC36CA      | CBG | 40.0         | 44.2 | 1.0 | 36      | 1.0  | 20                              | 58.1       | 51.6  | 0.269      | 62.7      | 437  | 0.042   | 0.100  |
| 3KSMC40CA      | CBH | 44.4         | 49.1 | 1.0 | 40      | 1.0  | 20                              | 64.5       | 46.5  | 0.331      | 69.0      | 396  | 0.050   | 0.105  |
| 3KSMC43CA      | CBI | 47.8         | 52.8 | 1.0 | 43      | 1.0  | 20                              | 69.4       | 43.2  | 0.384      | 73.9      | 371  | 0.057   | 0.105  |
| 3KSMC45CA      | CBJ | 50.0         | 55.3 | 1.0 | 45      | 2.0  | 20                              | 72.7       | 41.3  | 0.421      | 77.4      | 354  | 0.062   | 0.105  |
| 3KSMC48CA      | CBK | 53.3         | 58.9 | 1.0 | 48      | 2.0  | 20                              | 77.4       | 38.8  | 0.477      | 82.0      | 334  | 0.069   | 0.105  |
| 3KSMC51CA      | CBL | 56.7         | 62.7 | 1.0 | 51      | 2.0  | 20                              | 82.4       | 36.4  | 0.541      | 87.0      | 314  | 0.077   | 0.105  |
| 3KSMC54CA      | CBM | 60.0         | 66.3 | 1.0 | 54      | 2.0  | 20                              | 87.1       | 34.4  | 0.605      | 91.7      | 298  | 0.085   | 0.105  |
| 3KSMC58CA      | CBN | 64.4         | 71.2 | 1.0 | 58      | 2.0  | 20                              | 93.6       | 32.1  | 0.698      | 98.3      | 278  | 0.097   | 0.110  |
| 3KSMC60CA      | CBO | 66.7         | 73.7 | 1.0 | 60      | 2.0  | 20                              | 96.8       | 31.0  | 0.745      | 102       | 268  | 0.106   | 0.110  |
| 3KSMC64CA      | CBP | 71.1         | 78.6 | 1.0 | 64      | 2.0  | 20                              | 103        | 29.1  | 0.838      | 108       | 253  | 0.116   | 0.110  |
| 3KSMC70CA      | CBQ | 77.8         | 86.0 | 1.0 | 70      | 2.0  | 20                              | 113        | 26.5  | 1.019      | 118       | 232  | 0.138   | 0.110  |
| 3KSMC75CA      | CBR | 83.3         | 92.1 | 1.0 | 75      | 2.0  | 20                              | 121        | 24.8  | 1.165      | 126       | 217  | 0.156   | 0.110  |
| 3KSMC78CA      | CBS | 86.7         | 95.8 | 1.0 | 78      | 2.0  | 20                              | 126        | 23.8  | 1.269      | 132       | 207  | 0.175   | 0.110  |

- Notes:**
- (1) Pulse Test: tp ≤ 50 ms
  - (2) Surge current waveform per fig. 3 and derate per fig. 2
  - All terms and symbols are consistent with ANSI / IEEE C62.35
  - (3) Marking code

## 3000 W Surface Mount Transient Voltage Suppressor

### Rating and Characteristics ( $T_a$ 25 °C unless otherwise noted)

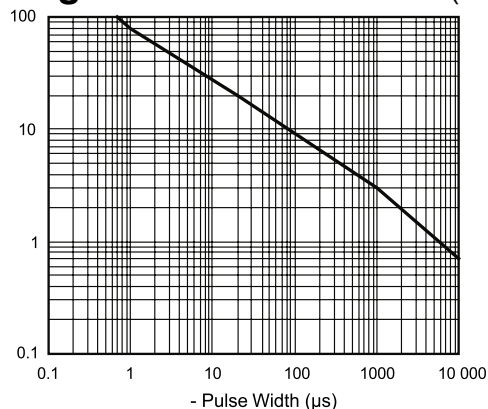


Fig. 1 - Peak Pulse Power Rating Curve

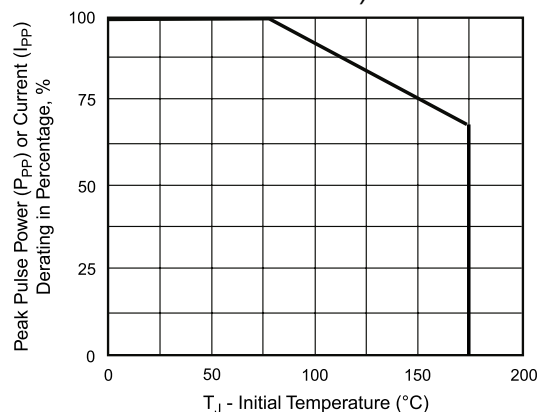


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

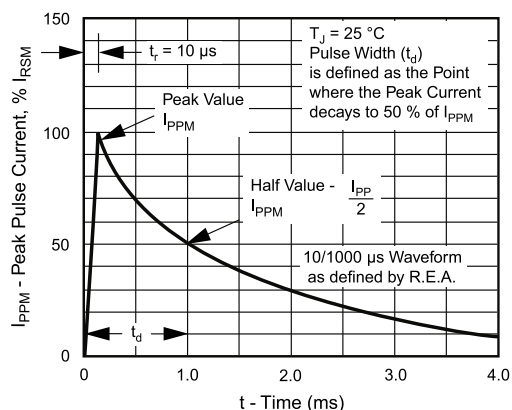


Fig. 3 - Pulse Waveform

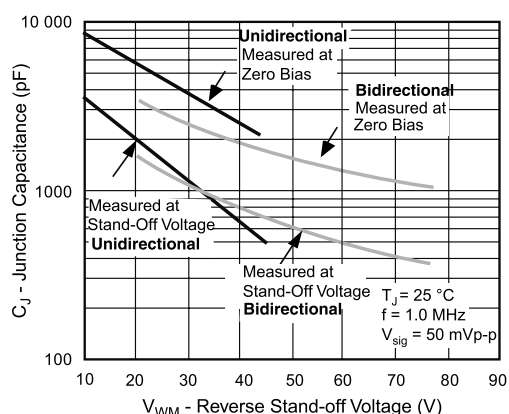


Fig. 4 - Typical Junction Capacitance

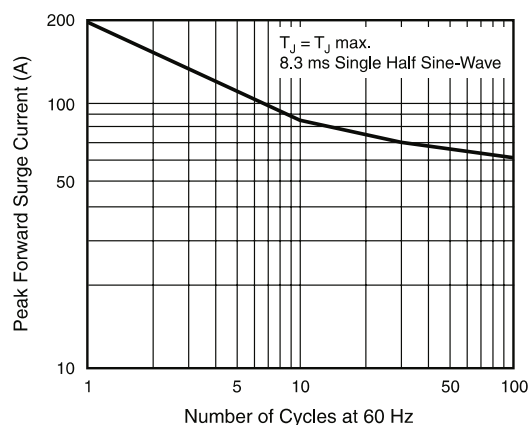


Fig. 5 - Maximum Non-Repetitive/Peak Forward Surge Current

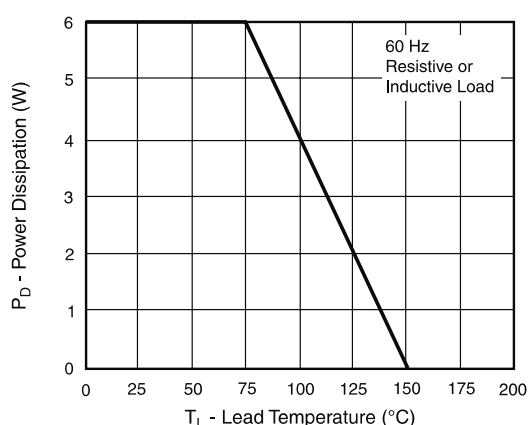


Fig. 6 - Power Derating Curve

**3000 W Surface Mount Transient Voltage Suppressor****Revision History**

| DATE        | REVISION | DESCRIPTION OF CHANGES        |
|-------------|----------|-------------------------------|
| 21-Feb-2018 | 0        | Original Data Sheet           |
| 09-Jan-2022 | 1        | Qualification at 175 °C of Tj |

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