

**POWERMITE®**  
**Low Profile 1500 Watt**  
**Transient Voltage Suppressor**

**DESCRIPTION**

These 1500 watt transient voltage suppressors offer power-handling capabilities only found in larger packages. They are most often used for protecting against transients from inductive switching environments or induced secondary lightning effects as found in lower surge levels of IEC61000-4-5. With very fast response times, they are also effective in protection from ESD or EFT. Powermite® package features include a full metallic bottom that eliminates the possibility of solder-flux entrapment during assembly. They also provide unique locking tab acting as an integral heat sink. With its very short terminations, parasitic inductance is minimized to reduce voltage overshoots during fast-rise-time transients.

**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

**FEATURES**

- Very low profile surface mount package (1.1mm)
- Integral heat sink-locking tabs
- Compatible with automatic insertion equipment
- Full metallic bottom eliminates flux entrapment
- Voltage range 5 volts to 170 volts
- Available in both unidirectional or bi-directional (C suffix for bi-directional)

**APPLICATIONS / BENEFITS**

- Secondary lightning transient protection
- Inductive switching transient protection
- Small footprint
- Very low parasitic inductance for minimal voltage overshoot
- Compliant to IEC61000-4-2 and IEC61000-4-4 for ESD and EFT protection respectively and IEC61000-4-5 for surge levels defined herein

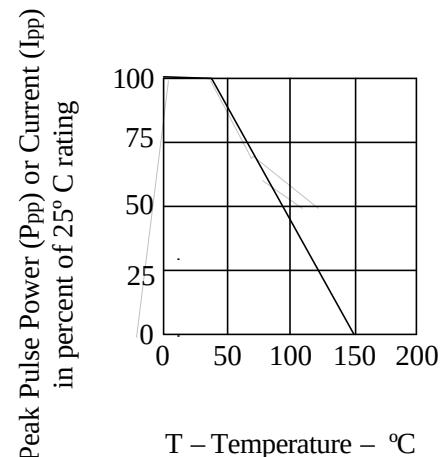
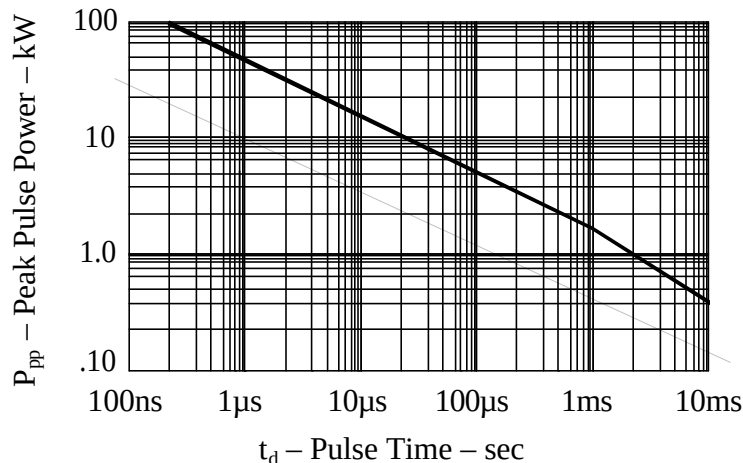
**MAXIMUM RATINGS**

- Operating Temperature: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- 1500 Watt peak pulse power (10 / 1000 µsec.)
- Forward Surge Current: 200 Amps at 8.3 ms (excluding bidirectional)
- Repetition surge rate (duty factor): 0.01%
- Thermal resistance: 2.5°C / watt junction to tab  
130°C / watt junction to ambient with recommended footprint
- Lead and mounting temperature: 260°C for 10 sec

**MECHANICAL AND PACKAGING**

- Terminals tin-lead plated
- Two-leads on side internally connected together
- Cathode designated with band (unidirectional)
- Body marked with P/N without 3PMT prefix (ie. 5.0A, 5.0CA, 12A, 12CA, 170A, 170CA, etc.)
- Molded epoxy package meets UL94V-0
- Weight: 0.072 grams (approximate)
- Tape & Reel packaging per EIA-481-2 (16 mm - 6000 units/reel)

**PEAK PULSE POWER RATINGS**



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**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless otherwise specified**

| MICROSEMI<br>PART NUMBER | STANDOFF<br>VOLTAGE<br>$V_{WM}$<br>VOLTS | BREAKDOWN<br>VOLTAGE<br>$V_{BR}$<br>@1 mA<br>VOLTS<br>MIN | CLAMPING<br>VOLTAGE<br>$V_C$<br>@ $I_{PP}$<br>(FIGURE 2)<br>VOLTS<br>MAX | PEAK PULSE<br>CURRENT<br>$I_{PP}$<br>(FIGURE 2)<br>AMPS | STANDBY<br>CURRENT<br>$I_b$<br>@ $V_{WM}$<br>$\mu A$<br>MAX | TEMPERATURE<br>COEFFICIENT<br>OF $V_{BR}$<br>$a_{V(BR)}$<br>%/°C<br>MAX |
|--------------------------|------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------|
| <b>3PMT5.0A</b>          | 5                                        | 6.40                                                      | 9.2                                                                      | 163.0                                                   | 1000                                                        | .057                                                                    |
| 3PMT6.0A                 | 6                                        | 6.67                                                      | 10.3                                                                     | 145.6                                                   | 1000                                                        | .059                                                                    |
| 3PMT6.5A                 | 6.5                                      | 7.22                                                      | 11.2                                                                     | 133.9                                                   | 500                                                         | .061                                                                    |
| 3PMT7.0A                 | 7                                        | 7.78                                                      | 12.0                                                                     | 125.0                                                   | 200                                                         | .065                                                                    |
| 3PMT7.5A                 | 7.5                                      | 8.33                                                      | 12.9                                                                     | 116.3                                                   | 100                                                         | .067                                                                    |
| <b>3PMT8.0A</b>          | 8                                        | 8.89                                                      | 13.6                                                                     | 110.3                                                   | 50                                                          | .070                                                                    |
| <b>3PMT8.5A</b>          | 8.5                                      | 9.94                                                      | 14.4                                                                     | 104.2                                                   | 25                                                          | .073                                                                    |
| 3PMT9.0A                 | 9.0                                      | 10.0                                                      | 15.4                                                                     | 97.4                                                    | 10                                                          | .076                                                                    |
| <b>3PMT10A</b>           | 10                                       | 11.1                                                      | 17.0                                                                     | 88.2                                                    | 5                                                           | .078                                                                    |
| <b>3PMT11A</b>           | 11                                       | 12.2                                                      | 18.2                                                                     | 82.4                                                    | 5                                                           | .081                                                                    |
| <b>3PMT12A</b>           | 12                                       | 13.3                                                      | 19.9                                                                     | 75.3                                                    | 5                                                           | .082                                                                    |
| <b>3PMT13A</b>           | 13                                       | 14.4                                                      | 21.5                                                                     | 69.7                                                    | 5                                                           | .084                                                                    |
| 3PMT14A                  | 14                                       | 15.8                                                      | 23.2                                                                     | 64.7                                                    | 5                                                           | .086                                                                    |
| <b>3PMT15A</b>           | 15                                       | 16.7                                                      | 24.4                                                                     | 61.5                                                    | 5                                                           | .087                                                                    |
| <b>3PMT16A</b>           | 16                                       | 17.8                                                      | 26.0                                                                     | 57.7                                                    | 5                                                           | .088                                                                    |
| <b>3PMT17A</b>           | 17                                       | 18.9                                                      | 27.6                                                                     | 53.3                                                    | 5                                                           | .090                                                                    |
| <b>3PMT18A</b>           | 18                                       | 20.0                                                      | 29.2                                                                     | 51.4                                                    | 5                                                           | .092                                                                    |
| <b>3PMT20A</b>           | 20                                       | 22.2                                                      | 32.4                                                                     | 46.3                                                    | 5                                                           | .093                                                                    |
| <b>3PMT22A</b>           | 22                                       | 24.4                                                      | 35.5                                                                     | 42.2                                                    | 5                                                           | .094                                                                    |
| 3PMT24A                  | 24                                       | 26.7                                                      | 38.9                                                                     | 38.6                                                    | 5                                                           | .096                                                                    |
| 3PMT26A                  | 26                                       | 28.9                                                      | 42.1                                                                     | 35.6                                                    | 5                                                           | .097                                                                    |
| <b>3PMT28A</b>           | 28                                       | 31.1                                                      | 45.4                                                                     | 33.0                                                    | 5                                                           | .098                                                                    |
| <b>3PMT30A</b>           | 30                                       | 33.3                                                      | 48.4                                                                     | 31.0                                                    | 5                                                           | .099                                                                    |
| <b>3PMT33A</b>           | 33                                       | 36.7                                                      | 53.3                                                                     | 28.1                                                    | 5                                                           | .100                                                                    |
| <b>3PMT36A</b>           | 36                                       | 40.0                                                      | 58.1                                                                     | 25.8                                                    | 5                                                           | .101                                                                    |
| <b>3PMT40A</b>           | 40                                       | 44.4                                                      | 64.5                                                                     | 23.2                                                    | 5                                                           | .101                                                                    |
| 3PMT43A                  | 43                                       | 47.8                                                      | 69.4                                                                     | 21.6                                                    | 5                                                           | .102                                                                    |
| 3PMT45A                  | 45                                       | 50.0                                                      | 72.7                                                                     | 20.6                                                    | 5                                                           | .102                                                                    |
| 3PMT48A                  | 48                                       | 53.3                                                      | 77.4                                                                     | 19.4                                                    | 5                                                           | .103                                                                    |
| 3PMT51A                  | 51                                       | 56.7                                                      | 82.4                                                                     | 18.2                                                    | 5                                                           | .103                                                                    |
| 3PMT54A                  | 54                                       | 60.0                                                      | 87.1                                                                     | 17.2                                                    | 5                                                           | .104                                                                    |
| 3PMT58A                  | 58                                       | 64.4                                                      | 93.6                                                                     | 16.0                                                    | 5                                                           | .104                                                                    |
| 3PMT60A                  | 60                                       | 66.7                                                      | 96.8                                                                     | 15.5                                                    | 5                                                           | .104                                                                    |
| 3PMT64A                  | 64                                       | 71.1                                                      | 103.0                                                                    | 14.6                                                    | 5                                                           | .105                                                                    |
| 3PMT70A                  | 70                                       | 77.8                                                      | 113                                                                      | 13.3                                                    | 5                                                           | .105                                                                    |
| 3PMT75A                  | 75                                       | 83.3                                                      | 121                                                                      | 12.4                                                    | 5                                                           | .105                                                                    |
| 3PMT78A                  | 78                                       | 86.7                                                      | 126                                                                      | 11.4                                                    | 5                                                           | .106                                                                    |
| 3PMT85A                  | 85                                       | 94.4                                                      | 137                                                                      | 10.4                                                    | 5                                                           | .106                                                                    |
| <b>3PMT90A</b>           | 90                                       | 100                                                       | 146                                                                      | 10.3                                                    | 5                                                           | .107                                                                    |
| <b>3PMT100A</b>          | 100                                      | 111                                                       | 162                                                                      | 9.3                                                     | 5                                                           | .107                                                                    |
| 3PMT110A                 | 110                                      | 122                                                       | 177                                                                      | 8.4                                                     | 5                                                           | .107                                                                    |
| 3PMT120A                 | 120                                      | 133                                                       | 193                                                                      | 7.8                                                     | 5                                                           | .107                                                                    |
| <b>3PMT130A</b>          | 130                                      | 144                                                       | 209                                                                      | 7.2                                                     | 5                                                           | .108                                                                    |
| <b>3PMT150A</b>          | 150                                      | 167                                                       | 243                                                                      | 6.2                                                     | 5                                                           | .108                                                                    |
| 3PMT160A                 | 160                                      | 178                                                       | 259                                                                      | 5.8                                                     | 5                                                           | .108                                                                    |
| <b>3PMT170A</b>          | 170                                      | 189                                                       | 275                                                                      | 5.5                                                     | 5                                                           | .108                                                                    |

For bi-directional indicate a C suffix after the part number (i.e.: 3PMT170CA). Capacitance will be ½ that shown in figure 1.  
 Part numbers in **italics** are preferred devices.

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**DEFINITIONS**

| Symbol    | DEFINITION                                                                                                       |
|-----------|------------------------------------------------------------------------------------------------------------------|
| $V_{RWM}$ | Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range. |
| $V_{BR}$  | Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current.                   |
| $V_C$     | Minimum Clamping Voltage: The maximum voltage the device will exhibit at the peak pulse current.                 |
| $I_D$     | Maximum Leakage Current: The maximum leakage current that will flow at the specified voltage and temperature.    |

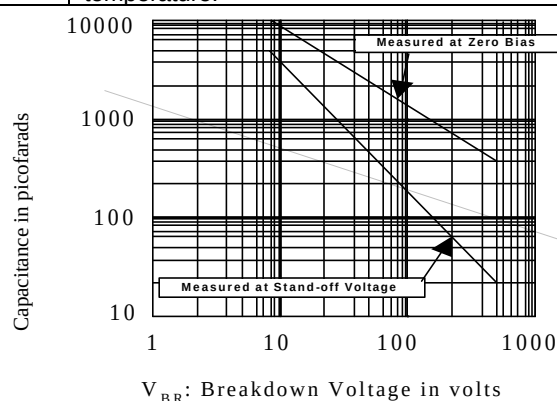


figure 1

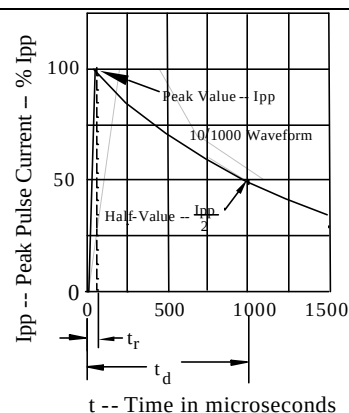


figure 2

**OUTLINE AND PAD LAYOUT**

| DIM | INCHES<br>NOMINAL | MILLIMETERS<br>NOMINAL |
|-----|-------------------|------------------------|
| A   | 0.070             | 1.778                  |
| B   | 0.173             | 4.392                  |
| C   | 0.200             | 5.080                  |
| D   | 0.035             | 0.889                  |
| E   | 0.160             | 4.064                  |
| F   | 0.072             | 1.829                  |
| G   | 0.056             | 1.422                  |
| H   | 0.044             | 1.118                  |
| J   | 0.190             | 4.826                  |
| K   | 0.210             | 5.344                  |
| L   | 0.038             | 0.965                  |
| M   | 0.034             | 0.864                  |
| N   | 0.030             | 0.762                  |
| P   | 0.030             | 0.762                  |

