

# 5KP5.0C SERIES

**V<sub>BR</sub> : 5.0 - 180 Volts**  
**P<sub>PK</sub> : 5000 Watts**

## FEATURES :

- \* 5000W Peak Pulse Power
- \* Excellent clamping capability
- \* Low incremental surge resistance
- \* Fast response time : typically less than 1.0 ps from 0 volt to V<sub>BR(min.)</sub>
- \* Typical I<sub>R</sub> less than 1μA above 10V
- \* **Pb / RoHS Free**

## MECHANICAL DATA

- \* Case : Void-free molded plastic body
- \* Epoxy : UL94V-O rate flame retardant
- \* Lead : Axial lead solderable per MIL-STD-202, Method 208 guaranteed
- \* Polarity : Color band denotes cathode end
- \* Mounting position : Any
- \* Weight : 2.1 grams

## DEVICES FOR UNIPOLAR APPLICATIONS

For uni-directional without "C"  
 Electrical characteristics apply in both directions

## MAXIMUM RATINGS

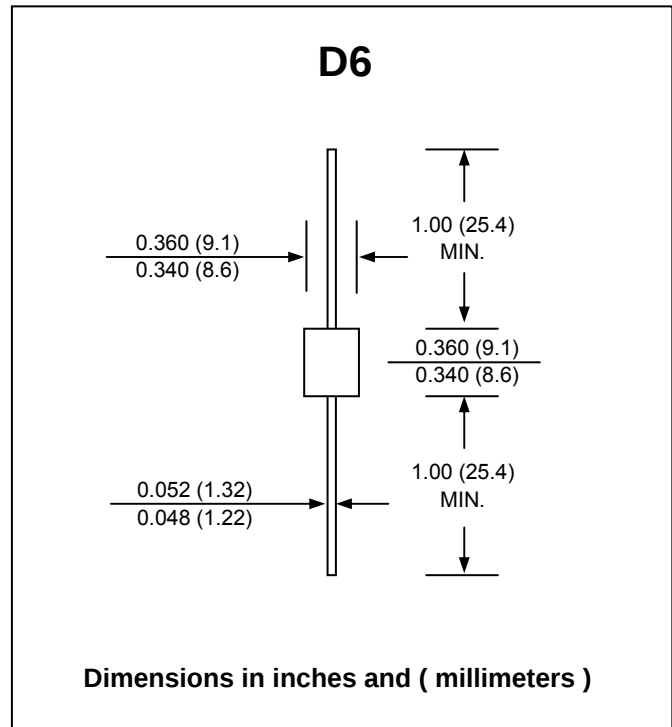
Rating at 25 °C ambient temperature unless otherwise specified.

| Rating                                                                                            | Symbol                            | Value         | Unit |
|---------------------------------------------------------------------------------------------------|-----------------------------------|---------------|------|
| Peak Pulse Power Dissipation at t <sub>p</sub> = 1ms<br>(Note 1, Fig. 4)                          | P <sub>PK</sub>                   | Minimum 5000  | W    |
| Steady State Power Dissipation at T <sub>L</sub> = 75 °C<br>Lead Lengths 0.375", (9.5mm) (Note 2) | P <sub>D</sub>                    | 8.0           | W    |
| Operating and Storage Temperature Range                                                           | T <sub>J</sub> , T <sub>STG</sub> | - 55 to + 150 | °C   |

## Notes :

- (1) Non-repetitive Current pulse, per Fig. 2 and derated above T<sub>a</sub> = 25 °C per Fig. 1
- (2) Mounted on Copper Leaf area of 0.79 in<sup>2</sup> (20mm<sup>2</sup>).

# BI-DIRECTIONAL TRANSIENT VOLTAGE SUPPRESSOR



## ELECTRICAL CHARACTERISTICS (Rating at 25 °C ambient temperature unless otherwise specified)

| Type     | Breakdown Voltage @ I <sub>T</sub><br>( Note 1 ) |      | Reverse<br>Stand off<br>Voltage | Maximum<br>Reverse Leakage<br>@ V <sub>RM</sub> | Maximum<br>Peak Pulse<br>Current (Note2) | Maximum<br>Clamping<br>Voltage @ I <sub>PPM</sub> | Maximum<br>Temperature<br>Coefficient<br>of V <sub>BR</sub> |                |                 |                |                  |                |
|----------|--------------------------------------------------|------|---------------------------------|-------------------------------------------------|------------------------------------------|---------------------------------------------------|-------------------------------------------------------------|----------------|-----------------|----------------|------------------|----------------|
|          | V <sub>BR</sub> (V)                              |      |                                 |                                                 |                                          |                                                   |                                                             | I <sub>T</sub> | V <sub>RM</sub> | I <sub>R</sub> | I <sub>PPM</sub> | V <sub>C</sub> |
|          | Min.                                             | Max. |                                 |                                                 |                                          |                                                   |                                                             | (mA)           | (V)             | (μA)           | (A)              | (V)            |
| 5KP5.0C  | 6.40                                             | 7.30 | 50                              | 5.0                                             | 10000                                    | 520                                               | 9.60                                                        | 0.057          |                 |                |                  |                |
| 5KP5.0CA | 6.40                                             | 7.00 | 50                              | 5.0                                             | 10000                                    | 543                                               | 9.20                                                        | 0.057          |                 |                |                  |                |
| 5KP6.0C  | 6.67                                             | 8.15 | 50                              | 6.0                                             | 10000                                    | 439                                               | 11.4                                                        | 0.061          |                 |                |                  |                |
| 5KP6.0CA | 6.67                                             | 7.37 | 50                              | 6.0                                             | 10000                                    | 485                                               | 10.3                                                        | 0.061          |                 |                |                  |                |
| 5KP6.5C  | 7.22                                             | 8.82 | 50                              | 6.5                                             | 4000                                     | 407                                               | 12.3                                                        | 0.065          |                 |                |                  |                |
| 5KP6.5CA | 7.22                                             | 7.98 | 50                              | 6.5                                             | 4000                                     | 447                                               | 11.2                                                        | 0.065          |                 |                |                  |                |
| 5KP7.0C  | 7.78                                             | 9.51 | 50                              | 7.0                                             | 2000                                     | 378                                               | 13.3                                                        | 0.068          |                 |                |                  |                |
| 5KP7.0CA | 7.78                                             | 8.60 | 50                              | 7.0                                             | 2000                                     | 417                                               | 12.0                                                        | 0.068          |                 |                |                  |                |
| 5KP7.5C  | 8.33                                             | 10.2 | 5.0                             | 7.5                                             | 500                                      | 350                                               | 14.3                                                        | 0.073          |                 |                |                  |                |
| 5KP7.5CA | 8.33                                             | 9.21 | 5.0                             | 7.5                                             | 500                                      | 388                                               | 12.9                                                        | 0.073          |                 |                |                  |                |
| 5KP8.0C  | 8.89                                             | 10.9 | 5.0                             | 8.0                                             | 300                                      | 333                                               | 15.0                                                        | 0.075          |                 |                |                  |                |
| 5KP8.0CA | 8.89                                             | 9.83 | 5.0                             | 8.0                                             | 300                                      | 367                                               | 13.6                                                        | 0.075          |                 |                |                  |                |
| 5KP8.5C  | 9.44                                             | 11.5 | 5.0                             | 8.5                                             | 100                                      | 314                                               | 15.9                                                        | 0.078          |                 |                |                  |                |
| 5KP8.5CA | 9.44                                             | 10.4 | 5.0                             | 8.5                                             | 100                                      | 347                                               | 14.4                                                        | 0.078          |                 |                |                  |                |
| 5KP9.0C  | 10.0                                             | 12.2 | 5.0                             | 9.0                                             | 40                                       | 295                                               | 16.9                                                        | 0.081          |                 |                |                  |                |
| 5KP9.0CA | 10.0                                             | 11.1 | 5.0                             | 9.0                                             | 40                                       | 325                                               | 15.4                                                        | 0.081          |                 |                |                  |                |
| 5KP10C   | 11.1                                             | 13.6 | 5.0                             | 10                                              | 30                                       | 266                                               | 18.8                                                        | 0.084          |                 |                |                  |                |
| 5KP10CA  | 11.1                                             | 12.3 | 5.0                             | 10                                              | 30                                       | 294                                               | 17.0                                                        | 0.084          |                 |                |                  |                |
| 5KP11C   | 12.2                                             | 14.9 | 5.0                             | 11                                              | 10                                       | 249                                               | 20.1                                                        | 0.086          |                 |                |                  |                |
| 5KP11CA  | 12.2                                             | 13.5 | 5.0                             | 11                                              | 10                                       | 274                                               | 18.2                                                        | 0.086          |                 |                |                  |                |
| 5KP12C   | 13.3                                             | 16.3 | 5.0                             | 12                                              | 10                                       | 227                                               | 22.0                                                        | 0.088          |                 |                |                  |                |
| 5KP12CA  | 13.3                                             | 14.7 | 5.0                             | 12                                              | 10                                       | 251                                               | 19.9                                                        | 0.088          |                 |                |                  |                |
| 5KP13C   | 14.4                                             | 17.6 | 5.0                             | 13                                              | 10                                       | 210                                               | 23.8                                                        | 0.090          |                 |                |                  |                |
| 5KP13CA  | 14.4                                             | 15.9 | 5.0                             | 13                                              | 10                                       | 232                                               | 21.5                                                        | 0.090          |                 |                |                  |                |
| 5KP14C   | 15.6                                             | 19.1 | 5.0                             | 14                                              | 10                                       | 194                                               | 25.8                                                        | 0.092          |                 |                |                  |                |
| 5KP14CA  | 15.6                                             | 17.2 | 5.0                             | 14                                              | 10                                       | 215                                               | 23.2                                                        | 0.092          |                 |                |                  |                |
| 5KP15C   | 16.7                                             | 20.4 | 5.0                             | 15                                              | 10                                       | 188                                               | 26.9                                                        | 0.094          |                 |                |                  |                |
| 5KP15CA  | 16.7                                             | 18.5 | 5.0                             | 15                                              | 10                                       | 206                                               | 24.4                                                        | 0.094          |                 |                |                  |                |
| 5KP16C   | 17.8                                             | 21.8 | 5.0                             | 16                                              | 10                                       | 176                                               | 28.8                                                        | 0.096          |                 |                |                  |                |
| 5KP16CA  | 17.8                                             | 19.7 | 5.0                             | 16                                              | 10                                       | 192                                               | 26.0                                                        | 0.096          |                 |                |                  |                |
| 5KP17C   | 18.9                                             | 23.1 | 5.0                             | 17                                              | 10                                       | 164                                               | 30.5                                                        | 0.097          |                 |                |                  |                |
| 5KP17CA  | 18.9                                             | 20.9 | 5.0                             | 17                                              | 10                                       | 181                                               | 27.6                                                        | 0.097          |                 |                |                  |                |
| 5KP18C   | 20.0                                             | 24.4 | 5.0                             | 18                                              | 10                                       | 155                                               | 32.2                                                        | 0.098          |                 |                |                  |                |
| 5KP18CA  | 20.0                                             | 22.1 | 5.0                             | 18                                              | 10                                       | 172                                               | 29.2                                                        | 0.098          |                 |                |                  |                |
| 5KP20C   | 22.2                                             | 27.1 | 5.0                             | 20                                              | 10                                       | 139                                               | 35.8                                                        | 0.099          |                 |                |                  |                |
| 5KP20CA  | 22.2                                             | 24.5 | 5.0                             | 20                                              | 10                                       | 154                                               | 32.4                                                        | 0.099          |                 |                |                  |                |
| 5KP22C   | 24.4                                             | 29.8 | 5.0                             | 22                                              | 10                                       | 127                                               | 39.4                                                        | 0.100          |                 |                |                  |                |
| 5KP22CA  | 24.4                                             | 26.9 | 5.0                             | 22                                              | 10                                       | 141                                               | 35.5                                                        | 0.100          |                 |                |                  |                |
| 5KP24C   | 26.7                                             | 32.6 | 5.0                             | 24                                              | 10                                       | 116                                               | 43.0                                                        | 0.101          |                 |                |                  |                |
| 5KP24CA  | 26.7                                             | 29.5 | 5.0                             | 24                                              | 10                                       | 128                                               | 38.9                                                        | 0.101          |                 |                |                  |                |
| 5KP26C   | 28.9                                             | 35.3 | 5.0                             | 26                                              | 10                                       | 107                                               | 46.6                                                        | 0.101          |                 |                |                  |                |
| 5KP26CA  | 28.9                                             | 31.9 | 5.0                             | 26                                              | 10                                       | 119                                               | 42.1                                                        | 0.101          |                 |                |                  |                |
| 5KP27A   | 30.0                                             | 36.6 | 5.0                             | 27                                              | 10                                       | 102                                               | 49.0                                                        | 0.102          |                 |                |                  |                |
| 5KP27CA  | 30.0                                             | 33.3 | 5.0                             | 27                                              | 10                                       | 112                                               | 44.6                                                        | 0.102          |                 |                |                  |                |
| 5KP28C   | 31.1                                             | 38.0 | 5.0                             | 28                                              | 10                                       | 99                                                | 50.1                                                        | 0.102          |                 |                |                  |                |
| 5KP28CA  | 31.1                                             | 34.4 | 5.0                             | 28                                              | 10                                       | 110                                               | 45.4                                                        | 0.102          |                 |                |                  |                |
| 5KP30C   | 33.3                                             | 40.7 | 5.0                             | 30                                              | 10                                       | 93                                                | 53.5                                                        | 0.103          |                 |                |                  |                |
| 5KP30CA  | 33.3                                             | 36.8 | 5.0                             | 30                                              | 10                                       | 103                                               | 48.4                                                        | 0.103          |                 |                |                  |                |

## ELECTRICAL CHARACTERISTICS (Rating at 25 °C ambient temperature unless otherwise specified)

| Type     | Breakdown Voltage @ I <sub>T</sub><br>( Note 1 ) |      | Reverse<br>Stand off<br>Voltage<br>V <sub>RM</sub> | Maximum<br>Reverse Leakage<br>@ V <sub>RM</sub><br>I <sub>R</sub> | Maximum<br>Peak Pulse<br>Current (Note2)<br>I <sub>PPM</sub> | Maximum<br>Clamping<br>Voltage @ I <sub>PPM</sub><br>V <sub>C</sub> | Maximum<br>Temperature<br>Coefficient<br>of V <sub>BR</sub><br>(%/°C) |                |
|----------|--------------------------------------------------|------|----------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|----------------|
|          | V <sub>BR</sub> (V)                              |      |                                                    |                                                                   |                                                              |                                                                     |                                                                       | I <sub>T</sub> |
|          | Min.                                             | Max. |                                                    |                                                                   |                                                              |                                                                     |                                                                       | (mA)           |
| 5KP33C   | 36.7                                             | 44.9 | 5.0                                                | 33                                                                | 10                                                           | 85                                                                  | 59.0                                                                  | 0.104          |
| 5KP33CA  | 36.7                                             | 40.6 | 5.0                                                | 33                                                                | 10                                                           | 94                                                                  | 53.3                                                                  | 0.104          |
| 5KP36C   | 40.0                                             | 48.9 | 5.0                                                | 36                                                                | 10                                                           | 78                                                                  | 64.3                                                                  | 0.104          |
| 5KP36CA  | 40.0                                             | 44.2 | 5.0                                                | 36                                                                | 10                                                           | 86                                                                  | 58.1                                                                  | 0.104          |
| 5KP40C   | 44.4                                             | 54.3 | 5.0                                                | 40                                                                | 10                                                           | 70                                                                  | 71.4                                                                  | 0.105          |
| 5KP40CA  | 44.4                                             | 49.1 | 5.0                                                | 40                                                                | 10                                                           | 78                                                                  | 64.5                                                                  | 0.105          |
| 5KP43C   | 47.8                                             | 58.4 | 5.0                                                | 43                                                                | 10                                                           | 65                                                                  | 76.7                                                                  | 0.105          |
| 5KP43CA  | 47.8                                             | 52.8 | 5.0                                                | 43                                                                | 10                                                           | 72                                                                  | 69.4                                                                  | 0.105          |
| 5KP45C   | 50.0                                             | 61.1 | 5.0                                                | 45                                                                | 10                                                           | 62                                                                  | 80.3                                                                  | 0.106          |
| 5KP45CA  | 50.0                                             | 55.3 | 5.0                                                | 45                                                                | 10                                                           | 69                                                                  | 72.7                                                                  | 0.106          |
| 5KP48C   | 53.3                                             | 65.2 | 5.0                                                | 48                                                                | 10                                                           | 58                                                                  | 85.5                                                                  | 0.106          |
| 5KP48CA  | 53.3                                             | 58.9 | 5.0                                                | 48                                                                | 10                                                           | 65                                                                  | 77.4                                                                  | 0.106          |
| 5KP51C   | 56.7                                             | 69.3 | 5.0                                                | 51                                                                | 10                                                           | 55                                                                  | 91.1                                                                  | 0.107          |
| 5KP51CA  | 56.7                                             | 62.7 | 5.0                                                | 51                                                                | 10                                                           | 61                                                                  | 82.4                                                                  | 0.107          |
| 5KP54C   | 60.0                                             | 73.3 | 5.0                                                | 54                                                                | 10                                                           | 52                                                                  | 96.3                                                                  | 0.107          |
| 5KP54CA  | 60.0                                             | 66.3 | 5.0                                                | 54                                                                | 10                                                           | 57                                                                  | 87.1                                                                  | 0.107          |
| 5KP58C   | 64.4                                             | 78.7 | 5.0                                                | 58                                                                | 10                                                           | 49                                                                  | 103                                                                   | 0.107          |
| 5KP58CA  | 64.4                                             | 71.2 | 5.0                                                | 58                                                                | 10                                                           | 53                                                                  | 94                                                                    | 0.107          |
| 5KP60C   | 66.7                                             | 81.5 | 5.0                                                | 60                                                                | 10                                                           | 47                                                                  | 107                                                                   | 0.108          |
| 5KP60CA  | 66.7                                             | 73.7 | 5.0                                                | 60                                                                | 10                                                           | 52                                                                  | 97                                                                    | 0.108          |
| 5KP64C   | 71.1                                             | 96.9 | 5.0                                                | 64                                                                | 10                                                           | 44                                                                  | 114                                                                   | 0.108          |
| 5KP64CA  | 71.1                                             | 78.6 | 5.0                                                | 64                                                                | 10                                                           | 49                                                                  | 103                                                                   | 0.108          |
| 5KP70C   | 77.6                                             | 95.1 | 5.0                                                | 70                                                                | 10                                                           | 40                                                                  | 125                                                                   | 0.108          |
| 5KP70CA  | 77.6                                             | 86.0 | 5.0                                                | 70                                                                | 10                                                           | 44                                                                  | 113                                                                   | 0.108          |
| 5KP75C   | 83.3                                             | 102  | 5.0                                                | 75                                                                | 10                                                           | 37                                                                  | 134                                                                   | 0.108          |
| 5KP75CA  | 83.3                                             | 92.1 | 5.0                                                | 75                                                                | 10                                                           | 41                                                                  | 121                                                                   | 0.108          |
| 5KP78C   | 86.7                                             | 106  | 5.0                                                | 78                                                                | 10                                                           | 36                                                                  | 139                                                                   | 0.108          |
| 5KP78CA  | 86.7                                             | 95.8 | 5.0                                                | 78                                                                | 10                                                           | 40                                                                  | 126                                                                   | 0.108          |
| 5KP85C   | 94.4                                             | 115  | 5.0                                                | 85                                                                | 10                                                           | 33                                                                  | 151                                                                   | 0.108          |
| 5KP85CA  | 94.4                                             | 104  | 5.0                                                | 85                                                                | 10                                                           | 36                                                                  | 137                                                                   | 0.110          |
| 5KP90C   | 100                                              | 122  | 5.0                                                | 90                                                                | 10                                                           | 31                                                                  | 160                                                                   | 0.110          |
| 5KP90CA  | 100                                              | 111  | 5.0                                                | 90                                                                | 10                                                           | 34                                                                  | 146                                                                   | 0.110          |
| 5KP100C  | 111                                              | 136  | 5.0                                                | 100                                                               | 10                                                           | 28                                                                  | 179                                                                   | 0.110          |
| 5KP100CA | 111                                              | 123  | 5.0                                                | 100                                                               | 10                                                           | 31                                                                  | 162                                                                   | 0.110          |
| 5KP110C  | 122                                              | 149  | 5.0                                                | 110                                                               | 10                                                           | 26                                                                  | 196                                                                   | 0.112          |
| 5KP110CA | 122                                              | 135  | 5.0                                                | 110                                                               | 10                                                           | 28                                                                  | 177                                                                   | 0.112          |
| 5KP120C  | 133                                              | 163  | 5.0                                                | 120                                                               | 10                                                           | 24                                                                  | 211                                                                   | 0.112          |
| 5KP120CA | 133                                              | 147  | 5.0                                                | 120                                                               | 10                                                           | 26                                                                  | 194                                                                   | 0.112          |
| 5KP150C  | 167                                              | 204  | 5.0                                                | 150                                                               | 10                                                           | 19                                                                  | 263                                                                   | 0.112          |
| 5KP150CA | 167                                              | 184  | 5.0                                                | 150                                                               | 10                                                           | 21                                                                  | 242                                                                   | 0.112          |
| 5KP160C  | 178                                              | 217  | 5.0                                                | 160                                                               | 10                                                           | 18                                                                  | 281                                                                   | 0.114          |
| 5KP160CA | 178                                              | 196  | 5.0                                                | 160                                                               | 10                                                           | 19                                                                  | 258                                                                   | 0.114          |
| 5KP170C  | 189                                              | 231  | 5.0                                                | 170                                                               | 10                                                           | 17                                                                  | 298                                                                   | 0.114          |
| 5KP170CA | 189                                              | 209  | 5.0                                                | 170                                                               | 10                                                           | 18                                                                  | 274                                                                   | 0.114          |
| 5KP180C  | 200                                              | 244  | 5.0                                                | 180                                                               | 10                                                           | 16                                                                  | 316                                                                   | 0.114          |
| 5KP180CA | 200                                              | 221  | 5.0                                                | 180                                                               | 10                                                           | 17                                                                  | 290                                                                   | 0.114          |

Note:

(1)  $V_{BR}$  measured after  $I_T$  applied for 300  $\mu s$ .,  $I_T$  = square wave pulse or equivalent.

## RATING AND CHARACTERISTIC CURVES ( 5KP5.0C SERIES )

FIG.1 - PULSE DERATING CURVE

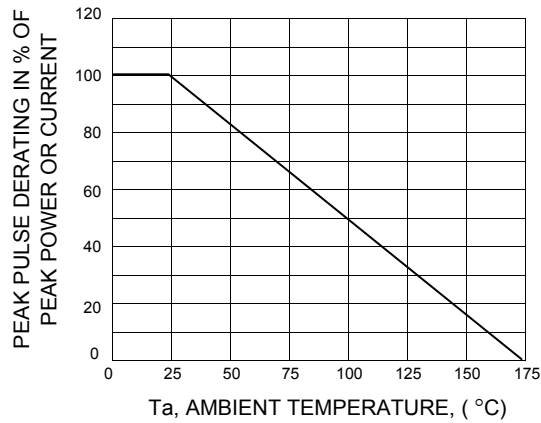


FIG.2 - PULSE WAVEFORM

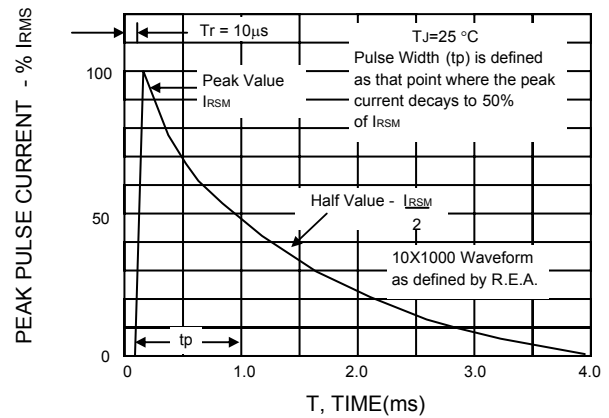


FIG.3 - STEADY STATE POWER DERATING

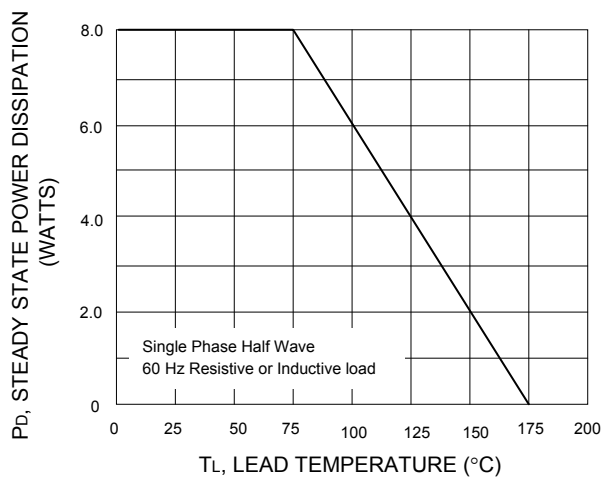


FIG.4 - PULSE RATING CURVE

