

## 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><br>(%/°C) |
|---------|--------------------------------------------------|------|------------------------|---------------------------------|-------------------------------------------------|------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------|
|         | V <sub>BR</sub> (V)                              |      | I <sub>T</sub><br>(mA) |                                 |                                                 |                                          |                                                   |                                                                       |
|         | Min.                                             | Max. |                        |                                 |                                                 |                                          |                                                   |                                                                       |
| 5KP5.0  | 6.40                                             | 7.30 | 50                     | 5.0                             | 5000                                            | 520                                      | 9.60                                              | 0.057                                                                 |
| 5KP5.0A | 6.40                                             | 7.00 | 50                     | 5.0                             | 5000                                            | 543                                      | 9.20                                              | 0.057                                                                 |
| 5KP6.0  | 6.67                                             | 8.15 | 50                     | 6.0                             | 5000                                            | 439                                      | 11.4                                              | 0.061                                                                 |
| 5KP6.0A | 6.67                                             | 7.37 | 50                     | 6.0                             | 5000                                            | 485                                      | 10.3                                              | 0.061                                                                 |
| 5KP6.5  | 7.22                                             | 8.82 | 50                     | 6.5                             | 2000                                            | 407                                      | 12.3                                              | 0.065                                                                 |
| 5KP6.5A | 7.22                                             | 7.98 | 50                     | 6.5                             | 2000                                            | 447                                      | 11.2                                              | 0.065                                                                 |
| 5KP7.0  | 7.78                                             | 9.51 | 50                     | 7.0                             | 1000                                            | 378                                      | 13.3                                              | 0.068                                                                 |
| 5KP7.0A | 7.78                                             | 8.60 | 50                     | 7.0                             | 1000                                            | 417                                      | 12.0                                              | 0.068                                                                 |
| 5KP7.5  | 8.33                                             | 10.2 | 5.0                    | 7.5                             | 250                                             | 350                                      | 14.3                                              | 0.073                                                                 |
| 5KP7.5A | 8.33                                             | 9.21 | 5.0                    | 7.5                             | 250                                             | 388                                      | 12.9                                              | 0.073                                                                 |
| 5KP8.0  | 8.89                                             | 10.9 | 5.0                    | 8.0                             | 150                                             | 333                                      | 15.0                                              | 0.075                                                                 |
| 5KP8.0A | 8.89                                             | 9.83 | 5.0                    | 8.0                             | 150                                             | 367                                      | 13.6                                              | 0.075                                                                 |
| 5KP8.5  | 9.44                                             | 11.5 | 5.0                    | 8.5                             | 50                                              | 314                                      | 15.9                                              | 0.078                                                                 |
| 5KP8.5A | 9.44                                             | 10.4 | 5.0                    | 8.5                             | 50                                              | 347                                      | 14.4                                              | 0.078                                                                 |
| 5KP9.0  | 10.0                                             | 12.2 | 5.0                    | 9.0                             | 20                                              | 295                                      | 16.9                                              | 0.081                                                                 |
| 5KP9.0A | 10.0                                             | 11.1 | 5.0                    | 9.0                             | 20                                              | 325                                      | 15.4                                              | 0.081                                                                 |
| 5KP10   | 11.1                                             | 13.6 | 5.0                    | 10                              | 15                                              | 266                                      | 18.8                                              | 0.084                                                                 |
| 5KP10A  | 11.1                                             | 12.3 | 5.0                    | 10                              | 15                                              | 294                                      | 17.0                                              | 0.084                                                                 |
| 5KP11   | 12.2                                             | 14.9 | 5.0                    | 11                              | 10                                              | 249                                      | 20.1                                              | 0.086                                                                 |
| 5KP11A  | 12.2                                             | 13.5 | 5.0                    | 11                              | 10                                              | 274                                      | 18.2                                              | 0.086                                                                 |
| 5KP12   | 13.3                                             | 16.3 | 5.0                    | 12                              | 10                                              | 227                                      | 22.0                                              | 0.088                                                                 |
| 5KP12A  | 13.3                                             | 14.7 | 5.0                    | 12                              | 10                                              | 251                                      | 19.9                                              | 0.088                                                                 |
| 5KP13   | 14.4                                             | 17.6 | 5.0                    | 13                              | 10                                              | 210                                      | 23.8                                              | 0.090                                                                 |
| 5KP13A  | 14.4                                             | 15.9 | 5.0                    | 13                              | 10                                              | 232                                      | 21.5                                              | 0.090                                                                 |
| 5KP14   | 15.6                                             | 19.1 | 5.0                    | 14                              | 10                                              | 194                                      | 25.8                                              | 0.092                                                                 |
| 5KP14A  | 15.6                                             | 17.2 | 5.0                    | 14                              | 10                                              | 215                                      | 23.2                                              | 0.092                                                                 |
| 5KP15   | 16.7                                             | 20.4 | 5.0                    | 15                              | 10                                              | 188                                      | 26.9                                              | 0.094                                                                 |
| 5KP15A  | 16.7                                             | 18.5 | 5.0                    | 15                              | 10                                              | 206                                      | 24.4                                              | 0.094                                                                 |
| 5KP16   | 17.8                                             | 21.8 | 5.0                    | 16                              | 10                                              | 176                                      | 28.8                                              | 0.096                                                                 |
| 5KP16A  | 17.8                                             | 19.7 | 5.0                    | 16                              | 10                                              | 192                                      | 26.0                                              | 0.096                                                                 |
| 5KP17   | 18.9                                             | 23.1 | 5.0                    | 17                              | 10                                              | 164                                      | 30.5                                              | 0.097                                                                 |
| 5KP17A  | 18.9                                             | 20.9 | 5.0                    | 17                              | 10                                              | 181                                      | 27.6                                              | 0.097                                                                 |
| 5KP18   | 20.0                                             | 24.4 | 5.0                    | 18                              | 10                                              | 155                                      | 32.2                                              | 0.098                                                                 |
| 5KP18A  | 20.0                                             | 22.1 | 5.0                    | 18                              | 10                                              | 172                                      | 29.2                                              | 0.098                                                                 |
| 5KP20   | 22.2                                             | 27.1 | 5.0                    | 20                              | 10                                              | 139                                      | 35.8                                              | 0.099                                                                 |
| 5KP20A  | 22.2                                             | 24.5 | 5.0                    | 20                              | 10                                              | 154                                      | 32.4                                              | 0.099                                                                 |
| 5KP22   | 24.4                                             | 29.8 | 5.0                    | 22                              | 10                                              | 127                                      | 39.4                                              | 0.100                                                                 |
| 5KP22A  | 24.4                                             | 26.9 | 5.0                    | 22                              | 10                                              | 141                                      | 35.5                                              | 0.100                                                                 |
| 5KP24   | 26.7                                             | 32.6 | 5.0                    | 24                              | 10                                              | 116                                      | 43.0                                              | 0.101                                                                 |
| 5KP24A  | 26.7                                             | 29.5 | 5.0                    | 24                              | 10                                              | 128                                      | 38.9                                              | 0.101                                                                 |
| 5KP26   | 28.9                                             | 35.3 | 5.0                    | 26                              | 10                                              | 107                                      | 46.6                                              | 0.101                                                                 |
| 5KP26A  | 28.9                                             | 31.9 | 5.0                    | 26                              | 10                                              | 119                                      | 42.1                                              | 0.101                                                                 |
| 5KP28   | 31.1                                             | 38.0 | 5.0                    | 28                              | 10                                              | 99                                       | 50.1                                              | 0.102                                                                 |
| 5KP28A  | 31.1                                             | 34.4 | 5.0                    | 28                              | 10                                              | 110                                      | 45.4                                              | 0.102                                                                 |
| 5KP30   | 33.3                                             | 40.7 | 5.0                    | 30                              | 10                                              | 93                                       | 53.5                                              | 0.103                                                                 |
| 5KP30A  | 33.3                                             | 36.8 | 5.0                    | 30                              | 10                                              | 103                                      | 48.4                                              | 0.103                                                                 |
| 5KP33   | 36.7                                             | 44.9 | 5.0                    | 33                              | 10                                              | 85                                       | 59.0                                              | 0.104                                                                 |
| 5KP33A  | 36.7                                             | 40.6 | 5.0                    | 33                              | 10                                              | 94                                       | 53.3                                              | 0.104                                                                 |

## 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><br>(μA) | Maximum<br>Peak Pulse<br>Current (Note2)<br>I <sub>PPM</sub><br>(A) | Maximum<br>Clamping<br>Voltage @ I <sub>PPM</sub><br>V <sub>C</sub><br>(V) | Maximum<br>Temperature<br>Coefficient<br>of V <sub>BR</sub><br>(%/°C) |
|---------|--------------------------------------------------|------|------------------------|----------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------|
|         | V <sub>BR</sub> (V)                              |      | I <sub>T</sub><br>(mA) |                                                    |                                                                           |                                                                     |                                                                            |                                                                       |
|         | Min.                                             | Max. |                        |                                                    |                                                                           |                                                                     |                                                                            |                                                                       |
| 5KP36   | 40.0                                             | 48.9 | 5.0                    | 36                                                 | 10                                                                        | 78                                                                  | 64.3                                                                       | 0.104                                                                 |
| 5KP36A  | 40.0                                             | 44.2 | 5.0                    | 36                                                 | 10                                                                        | 86                                                                  | 58.1                                                                       | 0.104                                                                 |
| 5KP40   | 44.4                                             | 54.3 | 5.0                    | 40                                                 | 10                                                                        | 70                                                                  | 71.4                                                                       | 0.105                                                                 |
| 5KP40A  | 44.4                                             | 49.1 | 5.0                    | 40                                                 | 10                                                                        | 78                                                                  | 64.5                                                                       | 0.105                                                                 |
| 5KP43   | 47.8                                             | 58.4 | 5.0                    | 43                                                 | 10                                                                        | 65                                                                  | 76.7                                                                       | 0.105                                                                 |
| 5KP43A  | 47.8                                             | 52.8 | 5.0                    | 43                                                 | 10                                                                        | 72                                                                  | 69.4                                                                       | 0.105                                                                 |
| 5KP45   | 50.0                                             | 61.1 | 5.0                    | 45                                                 | 10                                                                        | 62                                                                  | 80.3                                                                       | 0.106                                                                 |
| 5KP45A  | 50.0                                             | 55.3 | 5.0                    | 45                                                 | 10                                                                        | 69                                                                  | 72.7                                                                       | 0.106                                                                 |
| 5KP48   | 53.3                                             | 65.2 | 5.0                    | 48                                                 | 10                                                                        | 58                                                                  | 85.5                                                                       | 0.106                                                                 |
| 5KP48A  | 53.3                                             | 58.9 | 5.0                    | 48                                                 | 10                                                                        | 65                                                                  | 77.4                                                                       | 0.106                                                                 |
| 5KP51   | 56.7                                             | 69.3 | 5.0                    | 51                                                 | 10                                                                        | 55                                                                  | 91.1                                                                       | 0.107                                                                 |
| 5KP51A  | 56.7                                             | 62.7 | 5.0                    | 51                                                 | 10                                                                        | 61                                                                  | 82.4                                                                       | 0.107                                                                 |
| 5KP54   | 60.0                                             | 73.3 | 5.0                    | 54                                                 | 10                                                                        | 52                                                                  | 96.3                                                                       | 0.107                                                                 |
| 5KP54A  | 60.0                                             | 66.3 | 5.0                    | 54                                                 | 10                                                                        | 57                                                                  | 87.1                                                                       | 0.107                                                                 |
| 5KP56   | 62.2                                             | 76.1 | 5.0                    | 56                                                 | 10                                                                        | 50                                                                  | 100                                                                        | 0.107                                                                 |
| 5KP56A  | 62.2                                             | 68.8 | 5.0                    | 56                                                 | 10                                                                        | 55                                                                  | 91                                                                         | 0.107                                                                 |
| 5KP58   | 64.4                                             | 78.7 | 5.0                    | 58                                                 | 10                                                                        | 49                                                                  | 103                                                                        | 0.107                                                                 |
| 5KP58A  | 64.4                                             | 71.2 | 5.0                    | 58                                                 | 10                                                                        | 53                                                                  | 94                                                                         | 0.107                                                                 |
| 5KP60   | 66.7                                             | 81.5 | 5.0                    | 60                                                 | 10                                                                        | 47                                                                  | 107                                                                        | 0.108                                                                 |
| 5KP60A  | 66.7                                             | 73.7 | 5.0                    | 60                                                 | 10                                                                        | 52                                                                  | 97                                                                         | 0.108                                                                 |
| 5KP64   | 71.1                                             | 96.9 | 5.0                    | 64                                                 | 10                                                                        | 44                                                                  | 114                                                                        | 0.108                                                                 |
| 5KP64A  | 71.1                                             | 78.6 | 5.0                    | 64                                                 | 10                                                                        | 49                                                                  | 103                                                                        | 0.108                                                                 |
| 5KP70   | 77.6                                             | 95.1 | 5.0                    | 70                                                 | 10                                                                        | 40                                                                  | 125                                                                        | 0.108                                                                 |
| 5KP70A  | 77.6                                             | 86.0 | 5.0                    | 70                                                 | 10                                                                        | 44                                                                  | 113                                                                        | 0.108                                                                 |
| 5KP75   | 83.3                                             | 102  | 5.0                    | 75                                                 | 10                                                                        | 37                                                                  | 134                                                                        | 0.108                                                                 |
| 5KP75A  | 83.3                                             | 92.1 | 5.0                    | 75                                                 | 10                                                                        | 41                                                                  | 121                                                                        | 0.108                                                                 |
| 5KP78   | 86.7                                             | 106  | 5.0                    | 78                                                 | 10                                                                        | 36                                                                  | 139                                                                        | 0.108                                                                 |
| 5KP78A  | 86.7                                             | 95.8 | 5.0                    | 78                                                 | 10                                                                        | 40                                                                  | 126                                                                        | 0.108                                                                 |
| 5KP85   | 94.4                                             | 115  | 5.0                    | 85                                                 | 10                                                                        | 33                                                                  | 151                                                                        | 0.108                                                                 |
| 5KP85A  | 94.4                                             | 104  | 5.0                    | 85                                                 | 10                                                                        | 36                                                                  | 137                                                                        | 0.110                                                                 |
| 5KP90   | 100                                              | 122  | 5.0                    | 90                                                 | 10                                                                        | 31                                                                  | 160                                                                        | 0.110                                                                 |
| 5KP90A  | 100                                              | 111  | 5.0                    | 90                                                 | 10                                                                        | 34                                                                  | 146                                                                        | 0.110                                                                 |
| 5KP100  | 111                                              | 136  | 5.0                    | 100                                                | 10                                                                        | 28                                                                  | 179                                                                        | 0.110                                                                 |
| 5KP100A | 111                                              | 123  | 5.0                    | 100                                                | 10                                                                        | 31                                                                  | 162                                                                        | 0.110                                                                 |
| 5KP110  | 122                                              | 149  | 5.0                    | 110                                                | 10                                                                        | 26                                                                  | 196                                                                        | 0.112                                                                 |
| 5KP110A | 122                                              | 135  | 5.0                    | 110                                                | 10                                                                        | 28                                                                  | 177                                                                        | 0.112                                                                 |
| 5KP120  | 133                                              | 163  | 5.0                    | 120                                                | 10                                                                        | 24                                                                  | 211                                                                        | 0.112                                                                 |
| 5KP120A | 133                                              | 147  | 5.0                    | 120                                                | 10                                                                        | 26                                                                  | 194                                                                        | 0.112                                                                 |
| 5KP150  | 167                                              | 204  | 5.0                    | 150                                                | 10                                                                        | 19                                                                  | 263                                                                        | 0.112                                                                 |
| 5KP150A | 167                                              | 184  | 5.0                    | 150                                                | 10                                                                        | 21                                                                  | 242                                                                        | 0.112                                                                 |
| 5KP160  | 178                                              | 217  | 5.0                    | 160                                                | 10                                                                        | 18                                                                  | 281                                                                        | 0.114                                                                 |
| 5KP160A | 178                                              | 196  | 5.0                    | 160                                                | 10                                                                        | 19                                                                  | 258                                                                        | 0.114                                                                 |
| 5KP170  | 189                                              | 231  | 5.0                    | 170                                                | 10                                                                        | 17                                                                  | 298                                                                        | 0.114                                                                 |
| 5KP170A | 189                                              | 209  | 5.0                    | 170                                                | 10                                                                        | 18                                                                  | 274                                                                        | 0.114                                                                 |
| 5KP180  | 200                                              | 244  | 5.0                    | 180                                                | 10                                                                        | 16                                                                  | 316                                                                        | 0.114                                                                 |
| 5KP180A | 200                                              | 221  | 5.0                    | 180                                                | 10                                                                        | 17                                                                  | 290                                                                        | 0.114                                                                 |

### Notes:

- (1)  $V_{BR}$  measured after  $I_T$  applied for 300 $\mu$ s,  $I_T$  = square wave pulse or equivalent.
- (2) Surge Current waveform per Fig. 3 and Derate per Fig. 2
- (3)  $V_F$  = 3.5 Volts max. for devices of  $V_R$  < 100 V, and  $V_F$  = 5 Volts max. for devices of  $V_R$  > 100 V.
- (4) For Bi-directional devices having  $V_R$  of 10 Volts and under the  $I_R$  limit is doubled.

## RATING AND CHARACTERISTIC CURVES ( 5KP SERIES )

FIG.1 - PULSE DERATING CURVE

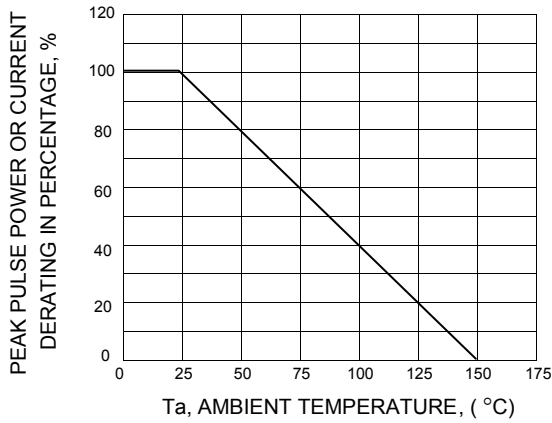


FIG.2 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

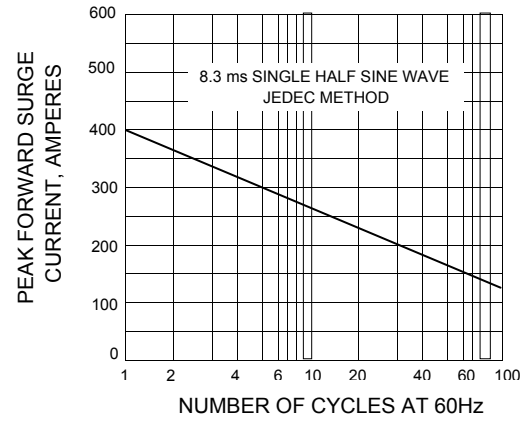


FIG.3 - STEADY STATE POWER DERATING

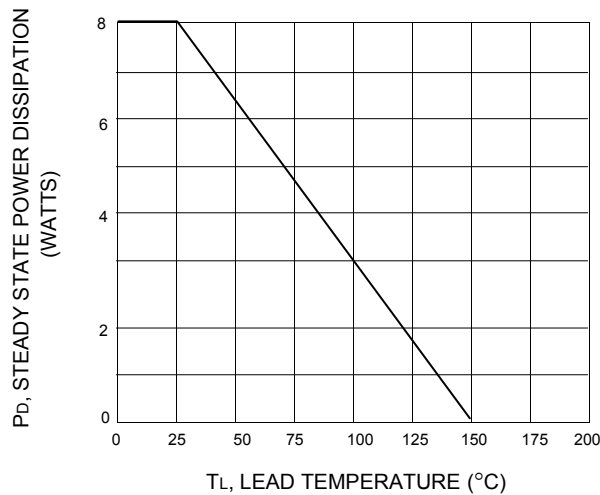


FIG.4 - PEAK PULSE POWER RATING CURVE

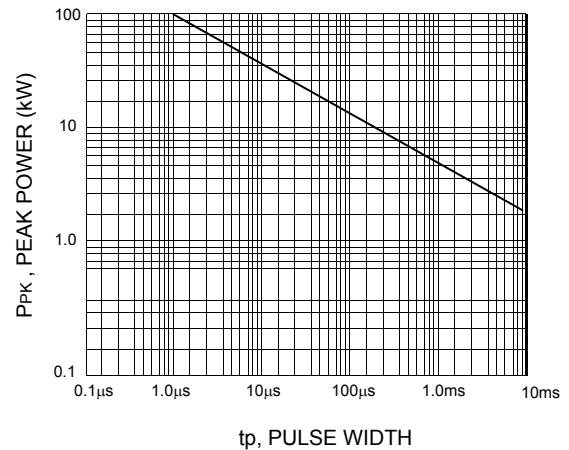


FIG.5 - PULSE WAVEFORM

