

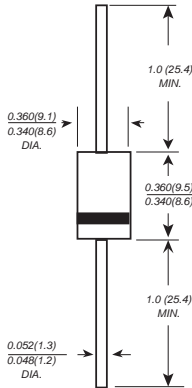


# 5KP5.0 THRU 5KP110A

## GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR

Breakdown Voltage: 5.0-110 Volts Peak Pulse Power: 5000 Watts

### R-6



Dimensions in inches and (millimeters)

Available in unidirectional only

### FEATURE

5000w peak pulse power capability  
 Excellent clamping capability  
 Low incremental surge resistance  
 Fast response time: typically less than 1.0ps from 0v to  $V_{BR}$  for unidirectional and 5.0ns for bidirectional types.  
 High temperature soldering guaranteed:  
 265°C/10S/9.5mm lead length at 5 lbs tension

### MECHANICAL DATA

**Case:** R-6 molded plastic body over passivated junction

**Terminals:** Plated axial leads, solderable per MIL-STD 750 method 2026

**Polarity:** Color band denotes cathode except for bidirectional types

**Mounting Position:** Any

**Weight:** 0.072 ounce, 2.05 grams

## MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| Characteristic   | SYMBOLS        | VALUE        | UNITS |
|--|----------------|--------------|-------|
| Peak power dissipation (Note 1)  | PPPM           | Minimum 5000 | Watts |
| Peak pulse reverse current (Note 1, Fig.3)                                     | IPPM           | See Table 1  | Amps  |
| Steady state power dissipation (Note 2)  | $P_{M(AV)}$    | 8.0          | Watts |
| Peak forward surge current (Note 3)  | IFSM           | 400          | Amps  |
| Maximum instantaneous forward voltage at 100A for unidirectional only (Note 3) | $V_F$          | 3.5          | Volts |
| Operating junction and storage temperature range                               | $T_{STG}, T_J$ | -55 to + 175 | °C    |

### Note:

- 1.10/1000ms waveform non-repetitive current pulse, per Fig.3 and derated above  $T_a=25^\circ\text{C}$  per Fig.2
2.  $T_L=75^\circ\text{C}$ , lead lengths 9.5mm, Mounted on copper pad area of (20x20mm) Fig.5
3. Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.



## ELECTRICAL CHARACTERISTICS (at TA=25°C unless otherwise noted)

| Device Type | Breakdown Voltage<br>V <sub>(BR)</sub><br>(Volts)(NOTES 1) |       | Test<br>Current<br>I <sub>T</sub> (mA) | Stand-off<br>Voltage<br>V <sub>WM</sub><br>(Volts) | Maximum<br>Reverse<br>Leakage<br>at V <sub>WM</sub><br>I <sub>D</sub> (NOTE3)(mA) | Maximum<br>Peak Puls<br>Reverse Current<br>I <sub>PPM</sub> (NOTE2)<br>(Amps) | Maximum<br>Clamping<br>Voltage at<br>I <sub>PPM</sub><br>V <sub>C</sub> (Volts) | Maximum<br>Temperature<br>Coefficient<br>of V <sub>(BR)</sub><br>(%/°C) |
|-------------|--|-------|--|--|---|---|---|---|
|             | MIN  | MAX   |  |  |   |   |   |   |
| 5KP5.0      | 6.40   | 7.30  | 50                                     | 5.0  | 5000  | 522   | 9.6   | 0.057   |
| 5KP5.0A     | 6.40   | 7.00  | 50                                     | 5.0  | 5000  | 544   | 9.2   | 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  | 486   | 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  | 377   | 13.3  | 0.068   |
| 5KP7.0A     | 7.78   | 8.60  | 50                                     | 7.0  | 1000  | 417   | 12.0  | 0.068   |
| 5KP7.5      | 8.33   | 10.20 | 5                                      | 7.5  | 250   | 350   | 14.3  | 0.073   |
| 5KP7.5A     | 8.33   | 9.21  | 5                                      | 7.5  | 250   | 388   | 12.9  | 0.073   |
| 5KP8.0      | 8.89   | 10.90 | 5                                      | 8.0  | 150   | 334   | 15.0  | 0.075   |
| 5KP8.0A     | 8.89   | 9.83  | 5                                      | 8.0  | 150   | 368   | 13.6  | 0.075   |
| 5KP8.5      | 9.44   | 11.50 | 5                                      | 8.5  | 50  | 315   | 15.9  | 0.078   |
| 5KP8.5A     | 9.44   | 10.40 | 5                                      | 8.5  | 50  | 348   | 14.4  | 0.078   |
| 5KP9.0      | 10.00  | 12.20 | 5                                      | 9.0  | 20  | 296   | 16.9  | 0.081   |
| 5KP9.0A     | 10.00  | 11.10 | 5                                      | 9.0  | 20  | 325   | 15.4  | 0.081   |
| 5KP10       | 11.10  | 13.60 | 5                                      | 10.00  | 15  | 266   | 18.8  | 0.084   |
| 5KP10A      | 11.10  | 12.30 | 5                                      | 10.00  | 15  | 295   | 17.0  | 0.084   |
| 5KP11       | 12.20  | 14.90 | 5                                      | 11.00  | 10  | 249   | 20.1  | 0.086   |
| 5KP11A      | 12.20  | 13.50 | 5                                      | 11.00  | 10  | 275   | 18.2  | 0.086   |
| 5KP12       | 13.30  | 16.30 | 5                                      | 12.00  | 10  | 228   | 22.0  | 0.088   |
| 5KP12A      | 13.30  | 14.70 | 5                                      | 12.00  | 10  | 252   | 19.9  | 0.088   |
| 5KP13       | 14.40  | 17.60 | 5                                      | 13.00  | 10  | 210   | 23.8  | 0.090   |
| 5KP13A      | 14.40  | 15.90 | 5                                      | 13.00  | 10  | 233   | 21.5  | 0.090   |
| 5KP14       | 15.60  | 19.10 | 5                                      | 14.00  | 10  | 194   | 25.8  | 0.092   |
| 5KP14A      | 15.60  | 17.20 | 5                                      | 14.00  | 10  | 216   | 23.2  | 0.092   |
| 5KP15       | 16.70  | 20.40 | 5                                      | 15.00  | 10  | 186   | 26.9  | 0.094   |
| 5KP15A      | 16.70  | 18.50 | 5                                      | 15.00  | 10  | 205   | 24.4  | 0.094   |
| 5KP16       | 17.80  | 21.80 | 5                                      | 16.00  | 10  | 174   | 28.8  | 0.096   |
| 5KP16A      | 17.80  | 19.70 | 5                                      | 16.00  | 10  | 193   | 26.0  | 0.096   |
| 5KP17       | 18.90  | 23.10 | 5                                      | 17.00  | 10  | 164   | 30.5  | 0.097   |
| 5KP17A      | 18.90  | 20.90 | 5                                      | 17.00  | 10  | 181   | 27.6  | 0.097   |
| 5KP18       | 20.00  | 24.40 | 5                                      | 18.00  | 10  | 155   | 32.2  | 0.098   |
| 5KP18A      | 20.00  | 22.10 | 5                                      | 18.00  | 10  | 172   | 29.2  | 0.098   |
| 5KP20       | 22.20  | 27.10 | 5                                      | 20.00  | 10  | 140   | 35.8  | 0.099   |
| 5KP20A      | 22.20  | 24.50 | 5                                      | 20.00  | 10  | 154   | 32.4  | 0.099   |
| 5KP22       | 24.40  | 29.80 | 5                                      | 22.00  | 10  | 127   | 39.4  | 0.100   |
| 5KP22A      | 24.40  | 26.90 | 5                                      | 22.00  | 10  | 141   | 35.5  | 0.100   |
| 5KP24       | 26.70  | 32.60 | 5                                      | 24.00  | 10  | 116   | 43.0  | 0.101   |
| 5KP24A      | 26.70  | 29.50 | 5                                      | 24.00  | 10  | 129   | 38.9  | 0.101   |
| 5KP26       | 28.90  | 35.30 | 5                                      | 26.00  | 10  | 107   | 46.6  | 0.101   |
| 5KP26A      | 28.90  | 31.90 | 5                                      | 26.00  | 10  | 119   | 42.1  | 0.101   |
| 5KP28       | 31.10  | 38.00 | 5                                      | 28.00  | 10  | 100   | 50.1  | 0.102   |
| 5KP28A      | 31.10  | 34.40 | 5                                      | 28.00  | 10  | 110   | 45.4  | 0.102   |
| 5KP30       | 33.30  | 40.70 | 5                                      | 30.00  | 10  | 93.6  | 53.5  | 0.103   |
| 5KP30A      | 33.30  | 36.80 | 5                                      | 30.00  | 10  | 103   | 48.4  | 0.103   |
| 5KP33       | 36.70  | 44.90 | 5                                      | 33.00  | 10  | 84.8  | 59.0  | 0.104   |
| 5KP33A      | 36.70  | 40.60 | 5                                      | 33.00  | 10  | 93.9  | 53.3  | 0.104   |



## ELECTRICAL CHARACTERISTICS (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Device Type | Breakdown Voltage $V_{(BR)}$<br>(Volts)(NOTES 1) |        | Test Current $I_T$ (mA) | Stand-off Voltage $V_{WM}$<br>(Volts) | Maximum Reverse Leakage at $V_{WM}$<br>$I_D$ (NOTE3)(mA) | Maximum Peak Puls Reverse Current $I_{PPM}$ (NOTE2)<br>(Amps) | Maximum Clamping Voltage at $I_{PPM}$<br>$V_c$ (Volts) | Maximum Temperature Coefficient of $V_{(BR)}$<br>(%/ $^{\circ}\text{C}$ ) |
|-------------|--|--------|-------------------------|---------------------------------------|--|---|--|---|
|             | MIN  | MAX    |                         |                                       |  |   |  |   |
| 5KP36       | 40.00  | 48.90  | 5.0                     | 36.00                                 | 10   | 64.3  | 77.8   | 0.104   |
| 5KP36A      | 40.00  | 44.20  | 5.0                     | 36.00                                 | 10   | 58.1  | 86.1   | 0.104   |
| 5KP40       | 44.40  | 54.30  | 5.0                     | 40.00                                 | 10   | 71.4  | 70.1   | 0.105   |
| 5KP40A      | 44.40  | 49.10  | 5.0                     | 40.00                                 | 10   | 64.5  | 77.6   | 0.105   |
| 5KP43       | 47.80  | 58.40  | 5.0                     | 43.00                                 | 10   | 76.7  | 65.2   | 0.105   |
| 5KP43A      | 47.80  | 52.80  | 5.0                     | 43.00                                 | 10   | 69.4  | 72.1   | 0.105   |
| 5KP45       | 50.00  | 61.10  | 5.0                     | 45.00                                 | 10   | 80.3  | 62.3   | 0.106   |
| 5KP45A      | 50.00  | 55.30  | 5.0                     | 45.00                                 | 10   | 72.7  | 68.8   | 0.106   |
| 5KP48       | 53.30  | 65.20  | 5.0                     | 48.00                                 | 10   | 85.8  | 58.5   | 0.106   |
| 5KP48A      | 53.30  | 58.90  | 5.0                     | 48.00                                 | 10   | 77.4  | 64.7   | 0.106   |
| 5KP51       | 56.70  | 69.30  | 5.0                     | 51.00                                 | 10   | 91.1  | 54.9   | 0.107   |
| 5KP51A      | 56.70  | 62.70  | 5.0                     | 51.00                                 | 10   | 82.4  | 60.7   | 0.107   |
| 5KP54       | 60.00  | 73.30  | 5.0                     | 54.00                                 | 10   | 96.3  | 52.0   | 0.107   |
| 5KP54A      | 60.00  | 66.30  | 5.0                     | 54.00                                 | 10   | 87.1  | 57.5   | 0.107   |
| 5KP58       | 64.40  | 78.70  | 5.0                     | 58.00                                 | 10   | 103.0   | 48.6   | 0.107   |
| 5KP58A      | 64.40  | 71.20  | 5.0                     | 58.00                                 | 10   | 93.6  | 53.5   | 0.107   |
| 5KP60       | 66.70  | 81.50  | 5.0                     | 60.00                                 | 10   | 107.0   | 46.8   | 0.108   |
| 5KP60A      | 66.70  | 73.70  | 5.0                     | 60.00                                 | 10   | 96.8  | 51.7   | 0.108   |
| 5KP64       | 71.10  | 86.90  | 5.0                     | 64.00                                 | 10   | 114.0   | 43.9   | 0.108   |
| 5KP64A      | 71.10  | 78.60  | 5.0                     | 64.00                                 | 10   | 103.0   | 48.6   | 0.108   |
| 5KP70       | 77.80  | 95.10  | 5.0                     | 70.00                                 | 10   | 125.0   | 40.0   | 0.108   |
| 5KP70A      | 77.80  | 86.00  | 5.0                     | 70.00                                 | 10   | 113.0   | 44.3   | 0.108   |
| 5KP75       | 83.30  | 102.00 | 5.0                     | 75.00                                 | 10   | 134.0   | 37.4   | 0.108   |
| 5KP75A      | 83.30  | 92.10  | 5.0                     | 75.00                                 | 10   | 121.0   | 41.4   | 0.108   |
| 5KP78       | 86.70  | 106.00 | 5.0                     | 78.00                                 | 10   | 139.0   | 36.0   | 0.108   |
| 5KP78A      | 86.70  | 95.80  | 5.0                     | 78.00                                 | 10   | 126.0   | 39.7   | 0.108   |
| 5KP85       | 94.40  | 115.00 | 5.0                     | 85.00                                 | 10   | 151.0   | 33.2   | 0.108   |
| 5KP85A      | 94.40  | 104.00 | 5.0                     | 85.00                                 | 10   | 137.0   | 36.5   | 0.108   |
| 5KP90       | 100.00   | 122.00 | 5.0                     | 90.00                                 | 10   | 160.0   | 31.3   | 0.110   |
| 5KP90A      | 100.00   | 111.00 | 5.0                     | 90.00                                 | 10   | 146.0   | 34.3   | 0.110   |
| 5KP100      | 111.00   | 136.00 | 5.0                     | 100.00                                | 10   | 179.0   | 28.0   | 0.110   |
| 5KP100A     | 111.00   | 123.00 | 5.0                     | 100.00                                | 10   | 162.0   | 30.9   | 0.110   |
| 5KP110      | 122.00   | 149.00 | 5.0                     | 110.00                                | 10   | 196.0   | 25.6   | 0.112   |
| 5KP110A     | 122.00   | 135.00 | 5.0                     | 110.00                                | 10   | 177.0   | 28.3   | 0.112   |

**NOTES:**

1.  $V_{(BR)}$  measured after  $I_T$  applied for 300ms  $I_T$ =square wave pulse or equivalent
2. Surge current waveform per Fig.3 and derate per Fig.2
3. All items and symbols are consistent with ANSI/IEEE C62.35



# RATINGS AND CHARACTERISTIC CURVES 5KP5.0 THUR 5KP110A

