

## 5KP-G Series

**Breakdown Voltage: 6.8 to 440 Volts**

**Peak Pulse Power: 5000 Watts**

**RoHS Device**



### Features

- Glass passivated chip.
- 5000W peak pulse power capability with a 10/1000 $\mu$ s waveform, repetitive rate (duty cycle):0.01%
- Low leakage.
- Uni and Bidirectional unit.
- Excellent clamping capability.
- Very fast response time.
- UL recognized file # E349157  Range: 5KP5.0(C)A thru. 5KP190(C)A

### Mechanical Data

- Case: Molded plastic.
- Epoxy: UL 94V-0 rate flame retardant
- Lead: Solderable per MIL-STD-202, method 208 guaranteed.
- Polarity: Color band denotes cathode end except Bipolar.
- Mounting position: Any



### Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.  
Single phase, half wave, 60Hz, resistive or inductive loaded.  
For capacitive load, derated current by 20%.

| Parameter   | Symbol                            | Value          | Unit |
|---|-----------------------------------|----------------|------|
| Peak power dissipation with a 10/1000 $\mu$ s waveform (Note 1)                         | P <sub>PP</sub>                   | 5000           | W    |
| Peak pulse current with a 10/1000 $\mu$ s waveform (Note 1)                             | I <sub>PP</sub>                   | See Next Table | A    |
| Power dissipation on infinite heatsink at T <sub>L</sub> =75°C                          | P <sub>D</sub>                    | 8.0            | W    |
| Peak forward surge current, 8.3ms single half sine-wave unidirectional only (Note 2)    | I <sub>FSM</sub>                  | 500            | A    |
| Maximum instantaneous forward voltage at 100A for uni-directional devices only (Note 3) | V <sub>F</sub>                    | 3.5 / 5.0      | V    |
| Operating junction and storage temperature range  | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150    | °C   |

NTOES:

- (1) Non-repetitive current pulse, per fig.5 and derated above T<sub>A</sub>=25°C per fig.1
- (2) Measured on 8.3 ms single half sine wave of equivalent square wave, duty cycle=4 pulses per minute maximum.
- (3) V<sub>F</sub><3.5V for devices of V<sub>BR</sub><200V and V<sub>F</sub><5.0V for devices of V<sub>BR</sub>>201V

Company reserves the right to improve product design , functions and reliability without notice.

REV:D

## RATING AND CHARACTERISTIC (5KP-G Series)

Fig.1 - Pulse Derating Curve



Fig.2 - Maximum Non-Repetitive Surge Current



Fig.3 - Steady State Power Derating Curve



Fig.4- Peak Pulse Power Rating Curve



Fig.5 - Pulse Waveform



Fig.6 - Typical Junction Capacitance



Company reserves the right to improve product design, functions and reliability without notice.

# 5000W Transient Voltage Suppressor

## Electrical Characteristics (5KP-G Series)

| Part No.     | Breakdown voltage<br>VBR @ IT |             |            | Maximum<br>Reverse<br>Leakage<br>@VRWM<br>IR (uA) | Working<br>Peak<br>Reverse<br>Voltage<br>VRWM (V) | Maximum<br>Reverse<br>Surge<br>Current<br>IPP (A) | Maximum<br>Clamping<br>Voltage<br>@IPP<br>Vc (V) | Marking Code |          |
|--------------|-------------------------------|-------------|------------|---|---|---|--|--------------|----------|
|              | Min.<br>(V)                   | Max.<br>(V) | IT<br>(mA) |   |   |   |  | UNI          | BI       |
| 5KP5.0(C)A-G | 6.40                          | 7.00        | 50         | 5000  | 5.0   | 543.48  | 9.2  | 5KP5.0A      | 5KP5.0CA |
| 5KP6.0(C)A-G | 6.67                          | 7.37        | 50         | 5000  | 6.0   | 485.44  | 10.3   | 5KP6.0A      | 5KP6.0CA |
| 5KP6.5(C)A-G | 7.22                          | 7.98        | 50         | 2000  | 7.0   | 446.43  | 11.2   | 5KP6.5A      | 5KP6.5CA |
| 5KP7.0(C)A-G | 7.78                          | 8.60        | 50         | 1000  | 7.0   | 416.67  | 12.0   | 5KP7.0A      | 5KP7.0CA |
| 5KP7.5(C)A-G | 8.33                          | 9.21        | 5          | 250   | 8.0   | 387.60  | 12.9   | 5KP7.5A      | 5KP7.5CA |
| 5KP8.0(C)A-G | 8.89                          | 9.83        | 5          | 150   | 8.0   | 367.65  | 13.6   | 5KP8.0A      | 5KP8.0CA |
| 5KP8.5(C)A-G | 9.44                          | 10.40       | 5          | 50  | 9.0   | 347.22  | 14.4   | 5KP8.5A      | 5KP8.5CA |
| 5KP9.0(C)A-G | 10.00                         | 11.10       | 5          | 20  | 9.0   | 324.68  | 15.4   | 5KP9.0A      | 5KP9.0CA |
| 5KP10(C)A-G  | 11.10                         | 12.30       | 5          | 15  | 10.0  | 294.12  | 17.0   | 5KP10A       | 5KP10CA  |
| 5KP11(C)A-G  | 12.20                         | 13.50       | 5          | 2   | 11.0  | 274.73  | 18.2   | 5KP11A       | 5KP11CA  |
| 5KP12(C)A-G  | 13.30                         | 14.70       | 5          | 2   | 12.0  | 251.26  | 19.9   | 5KP12A       | 5KP12CA  |
| 5KP13(C)A-G  | 14.40                         | 15.90       | 5          | 2   | 13.0  | 232.56  | 21.5   | 5KP13A       | 5KP13CA  |
| 5KP14(C)A-G  | 15.60                         | 17.20       | 5          | 2   | 14.0  | 215.52  | 23.2   | 5KP14A       | 5KP14CA  |
| 5KP15(C)A-G  | 16.70                         | 18.50       | 5          | 2   | 15.0  | 204.92  | 24.4   | 5KP15A       | 5KP15CA  |
| 5KP16(C)A-G  | 17.80                         | 19.70       | 5          | 2   | 16.0  | 192.31  | 26.0   | 5KP16A       | 5KP16CA  |
| 5KP17(C)A-G  | 18.90                         | 20.90       | 5          | 2   | 17.0  | 181.16  | 27.6   | 5KP17A       | 5KP17CA  |
| 5KP18(C)A-G  | 20.00                         | 22.10       | 5          | 2   | 18.0  | 171.23  | 29.2   | 5KP18A       | 5KP18CA  |
| 5KP19(C)A-G  | 21.10                         | 23.30       | 5          | 2   | 19.0  | 162.44  | 30.8   | 5KP19A       | 5KP19CA  |
| 5KP20(C)A-G  | 22.20                         | 24.50       | 5          | 2   | 20.0  | 154.32  | 32.4   | 5KP20A       | 5KP20CA  |
| 5KP22(C)A-G  | 24.40                         | 26.90       | 5          | 2   | 22.0  | 140.85  | 35.5   | 5KP22A       | 5KP22CA  |
| 5KP24(C)A-G  | 26.70                         | 29.50       | 5          | 2   | 24.0  | 128.53  | 38.9   | 5KP24A       | 5KP24CA  |
| 5KP26(C)A-G  | 28.90                         | 31.90       | 5          | 2   | 26.0  | 118.76  | 42.1   | 5KP26A       | 5KP26CA  |
| 5KP28(C)A-G  | 31.10                         | 34.40       | 5          | 2   | 28.0  | 110.13  | 45.4   | 5KP28A       | 5KP28CA  |
| 5KP30(C)A-G  | 33.30                         | 36.80       | 5          | 2   | 30.0  | 103.31  | 48.4   | 5KP30A       | 5KP30CA  |
| 5KP33(C)A-G  | 36.70                         | 40.60       | 5          | 2   | 33.0  | 93.81   | 53.3   | 5KP33A       | 5KP33CA  |
| 5KP36(C)A-G  | 40.00                         | 44.20       | 5          | 2   | 36.0  | 86.06   | 58.1   | 5KP36A       | 5KP36CA  |
| 5KP40(C)A-G  | 44.40                         | 49.10       | 5          | 2   | 40.0  | 77.52   | 64.5   | 5KP40A       | 5KP40CA  |
| 5KP43(C)A-G  | 47.80                         | 52.80       | 5          | 2   | 43.0  | 72.05   | 69.4   | 5KP43A       | 5KP43CA  |
| 5KP45(C)A-G  | 50.00                         | 55.30       | 5          | 2   | 45.0  | 68.78   | 72.7   | 5KP45A       | 5KP45CA  |
| 5KP48(C)A-G  | 53.30                         | 58.90       | 5          | 2   | 48.0  | 64.60   | 77.4   | 5KP48A       | 5KP48CA  |
| 5KP51(C)A-G  | 56.70                         | 62.70       | 5          | 2   | 51.0  | 60.68   | 82.4   | 5KP51A       | 5KP51CA  |
| 5KP54(C)A-G  | 60.00                         | 66.30       | 5          | 2   | 54.0  | 57.41   | 87.1   | 5KP54A       | 5KP54CA  |
| 5KP58(C)A-G  | 64.40                         | 71.20       | 5          | 2   | 58.0  | 53.42   | 93.6   | 5KP58A       | 5KP58CA  |
| 5KP60(C)A-G  | 66.70                         | 73.70       | 5          | 2   | 60.0  | 51.65   | 96.8   | 5KP60A       | 5KP60CA  |
| 5KP64(C)A-G  | 71.10                         | 78.60       | 5          | 2   | 64.0  | 48.54   | 103.0  | 5KP64A       | 5KP64CA  |
| 5KP70(C)A-G  | 77.80                         | 86.00       | 5          | 2   | 70.0  | 44.25   | 113.0  | 5KP70A       | 5KP70CA  |
| 5KP75(C)A-G  | 83.30                         | 92.10       | 5          | 2   | 75.0  | 41.32   | 121.0  | 5KP75A       | 5KP75CA  |
| 5KP78(C)A-G  | 86.70                         | 95.80       | 5          | 2   | 78.0  | 39.68   | 126.0  | 5KP78A       | 5KP78CA  |
| 5KP80(C)A-G  | 88.80                         | 97.60       | 5          | 2   | 80.0  | 38.58   | 129.6  | 5KP80A       | 5KP80CA  |
| 5KP85(C)A-G  | 94.40                         | 104.00      | 5          | 2   | 85.0  | 36.50   | 137.0  | 5KP85A       | 5KP85CA  |

- Note: 1) Suffix A denotes 5% tolerance devices.  
 2) Add suffix "C" or "CA" after part number to specify Bi-directional devices.  
 3) For Bi-Directional devices having VR of 10 volts and under, the IR limit is double.

Company reserves the right to improve product design , functions and reliability without notice.

# 5000W Transient Voltage Suppressor

## Electrical Characteristics (5KP-G Series)

| Part No.     | Breakdown voltage<br>VBR @ IT |             |            | Maximum<br>Reverse<br>Leakage<br>@VRWM<br>IR (uA) | Working<br>Peak<br>Reverse<br>Voltage<br>VRWM (V) | Maximum<br>Reverse<br>Surge<br>Current<br>IPP (A) | Maximum<br>Clamping<br>Voltage<br>@IPP<br>Vc (V) | Marking Code |          |
|--------------|-------------------------------|-------------|------------|---|---|---|--|--------------|----------|
|              | Min.<br>(V)                   | Max.<br>(V) | IT<br>(mA) |   |   |   |  | UNI          | BI       |
| 5KP90(C)A-G  | 100.00                        | 111.00      | 5          | 2   | 90.0  | 34.25   | 146.0  | 5KP90A       | 5KP90CA  |
| 5KP100(C)A-G | 111.00                        | 123.00      | 5          | 2   | 100.0   | 30.86   | 162.0  | 5KP100A      | 5KP100CA |
| 5KP110(C)A-G | 122.00                        | 135.00      | 5          | 2   | 110.0   | 28.25   | 177.0  | 5KP110A      | 5KP110CA |
| 5KP120(C)A-G | 133.00                        | 147.00      | 5          | 2   | 120.0   | 25.91   | 193.0  | 5KP120A      | 5KP120CA |
| 5KP130(C)A-G | 144.00                        | 159.00      | 5          | 2   | 130.0   | 23.92   | 209.0  | 5KP130A      | 5KP130CA |
| 5KP140(C)A-G | 155.00                        | 171.00      | 5          | 2   | 140.0   | 22.05   | 226.8  | 5KP140A      | 5KP140CA |
| 5KP150(C)A-G | 167.00                        | 185.00      | 5          | 2   | 150.0   | 20.58   | 243.0  | 5KP150A      | 5KP150CA |
| 5KP160(C)A-G | 178.00                        | 197.00      | 5          | 2   | 160.0   | 19.31   | 259.0  | 5KP160A      | 5KP160CA |
| 5KP170(C)A-G | 189.00                        | 209.00      | 5          | 2   | 170.0   | 18.18   | 275.0  | 5KP170A      | 5KP170CA |
| 5KP180(C)A-G | 200.00                        | 220.00      | 5          | 2   | 180.0   | 17.15   | 291.6  | 5KP180A      | 5KP180CA |
| 5KP190(C)A-G | 211.00                        | 232.00      | 5          | 2   | 190.0   | 16.24   | 307.8  | 5KP190A      | 5KP190CA |
| 5KP200(C)A-G | 224.00                        | 247.00      | 5          | 2   | 200.0   | 15.43   | 324.0  | 5KP200A      | 5KP200CA |
| 5KP210(C)A-G | 233.00                        | 258.00      | 5          | 2   | 210.0   | 14.31   | 349.5  | 5KP210A      | 5KP210CA |
| 5KP220(C)A-G | 246.00                        | 272.00      | 5          | 2   | 220.0   | 14.04   | 356.0  | 5KP220A      | 5KP220CA |
| 5KP250(C)A-G | 279.00                        | 309.00      | 5          | 2   | 250.0   | 12.35   | 405.0  | 5KP250A      | 5KP250CA |
| 5KP300(C)A-G | 335.00                        | 371.00      | 5          | 2   | 300.0   | 10.29   | 486.0  | 5KP300A      | 5KP300CA |
| 5KP350(C)A-G | 391.00                        | 432.00      | 5          | 2   | 350.0   | 8.82  | 567.0  | 5KP350A      | 5KP350CA |
| 5KP400(C)A-G | 447.00                        | 494.00      | 5          | 2   | 400.0   | 7.72  | 648.0  | 5KP400A      | 5KP400CA |
| 5KP440(C)A-G | 492.00                        | 543.00      | 5          | 2   | 440.0   | 7.01  | 713.0  | 5KP440A      | 5KP440CA |

Note: 1) Suffix A denotes 5% tolerance devices.  
 2) Add suffix "C" or "CA" after part number to specify Bi-directional devices.  
 3) For Bi-Directional devices having Vr of 10 volts and under, the IR limit is double.