

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 μ 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 μ s waveform (Note 1) | P _{PP} | 5000 | W |
| Peak pulse current with a 10/1000 μ s waveform (Note 1) | I _{PP} | See Next Table | A |
| Power dissipation on infinite heatsink at T _L =75°C | P _D | 8.0 | W |
| Peak forward surge current, 8.3ms single half sine-wave unidirectional only (Note 2) | I _{FSM} | 500 | A |
| Maximum instantaneous forward voltage at 100A for uni-directional devices only (Note 3) | V _F | 3.5 / 5.0 | V |
| Operating junction and storage temperature range | T _J , T _{STG} | -55 to +150 | °C |

NTOES:

- (1) Non-repetitive current pulse, per fig.5 and derated above T_A=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_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>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



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5000W Transient Voltage Suppressor

Electrical Characteristics (5KP-G Series)

| Part No. | Breakdown voltage VBR @ IT | | | Maximum Reverse Leakage @VRWM IR (uA) | Working Peak Reverse Voltage VRWM (V) | Maximum Reverse Surge Current IPP (A) | Maximum Clamping Voltage @IPP Vc (V) | Marking Code | |
|--------------|-------------------------------|-------------|------------|---|---|---|--|--------------|----------|
| | Min. (V) | Max. (V) | IT (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.

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Electrical Characteristics (5KP-G Series)

| Part No. | Breakdown voltage VBR @ IT | | | Maximum Reverse Leakage @VRWM IR (uA) | Working Peak Reverse Voltage VRWM (V) | Maximum Reverse Surge Current IPP (A) | Maximum Clamping Voltage @IPP Vc (V) | Marking Code | |
|--------------|-------------------------------|-------------|------------|---|---|---|--|--------------|----------|
| | Min. (V) | Max. (V) | IT (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 |

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