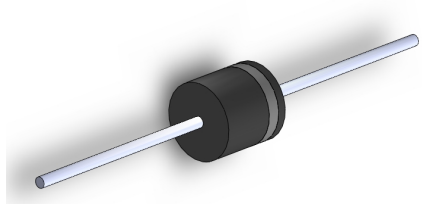
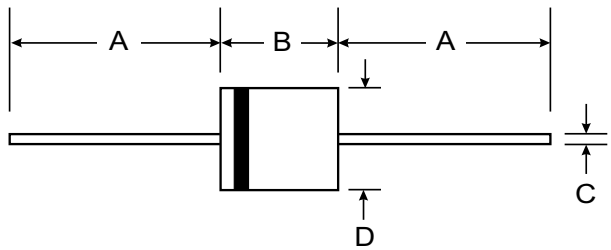
# 5KP5.0A(CA) - 5KP190A(CA)

## AXIAL LEADED TRANSIENT VOLTAGE SUPPRESSORS DIODE

**VOLTAGE RANGE: 5.0 - 190 V**
**POWER: 5000Watts**






## Features

- Uni- and Bi-Directional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Plastic Case Material has UL Flammability Classification Rating 94V-O

## Mechanical Data

- Case:R-6 Molded Plastic
- Terminals: Axial Leads, Solderable per MIL-STD-202, Method 208
- Polarity: Color Band Indicates Cathode
- Approx. Weight: 1.7 grams
- Mounting Position: Any

RoHS COMPLIANT

| R-6 | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 25.4 | — |
| **B** | 8.6 | 9.1 |
| **C** | 1.2 | 1.3 |
| **All Dimensions in mm** | | |

## Maximum Ratings and Electrical Characteristics @$T_A$=25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power Dissipation at $T_A$ = 25°C (Note 1, 2, 5) Figure 3 | $P_{PPM}$ | 5000 Minimum | W |
| Peak Forward Surge Current (Note 3) | $I_{FSM}$ | 400 | A |
| Peak Pulse Current on 10/1000μS Waveform (Note 1) Figure 1 | $I_{PPM}$ | See Table 1 | A |
| Steady State Power Dissipation (Note 2, 4) | $P_{M(AV)}$ | 8.0 | W |
| Operating and Storage Temperature Range | $T_j$, $T_{STG}$ | -55 to +175 | °C |

Note: 1. Non-repetitive current pulse, per Figure 1 and derated above $T_A$ = 25°C per Figure 4.
2. Mounted on 20mm$^2$ copper pad.
3. 8.3ms single half sine-wave duty cycle = 4 pulses per minutes maximum,
4. Lead temperature at 75°C = $T_L$.
5. Peak pulse power waveform is 10/1000μS.

| TYPE | | Reverse Stand-Off Voltage | Breakdown Voltage Min. @$I_T$ | Breakdown Voltage Max. @ $I_T$ | Test Current | Maximum Clamping Voltage @$I_{PP}$ | Peak Pulse Current | Reverse Leakage @$V_{RWM}$ |
|---|---|---|---|---|---|---|---|---|
| (UNI) | (BI) | $V_{RWM}$(V) | $V_{BR\ MIN}$(V) | $V_{BR\ MAX}$(V) | $I_T$ (mA) | $V_C$(V) | $I_{PP}$(A) | $I_R$(uA) |
| 5KP5.0 | 5KP5.0C | 5.0 | 6.40 | 7.55 | 10 | 9.6 | 520.8 | 1000.0 |
| 5KP5.0A | 5KP5.0CA | 5.0 | 6.40 | 7.25 | 10 | 9.2 | 543.5 | 1000.0 |
| 5KP6.0 | 5KP6.0C | 6.0 | 6.67 | 8.45 | 10 | 11.4 | 438.6 | 1000.0 |
| 5KP6.0A | 5KP6.0CA | 6.0 | 6.67 | 7.67 | 10 | 10.3 | 485.4 | 1000.0 |
| 5KP6.5 | 5KP6.5C | 6.5 | 7.22 | 9.14 | 10 | 12.3 | 406.5 | 500.0 |
| 5KP6.5A | 5KP6.5CA | 6.5 | 7.22 | 8.30 | 10 | 11.2 | 446.4 | 500.0 |
| 5KP7.0 | 5KP7.0C | 7.0 | 7.78 | 9.86 | 10 | 13.3 | 375.9 | 200.0 |
| 5KP7.0A | 5KP7.0CA | 7.0 | 7.78 | 8.95 | 10 | 12.0 | 416.7 | 200.0 |
| 5KP7.5 | 5KP7.5C | 7.5 | 8.33 | 10.67 | 1.0 | 14.3 | 349.7 | 50.0 |
| 5KP7.5A | 5KP7.5CA | 7.5 | 8.33 | 9.58 | 1.0 | 12.9 | 387.6 | 50.0 |
| 5KP8.0 | 5KP8.0C | 8.0 | 8.89 | 11.3 | 1.0 | 15.0 | 333.3 | 10.0 |
| 5KP8.0A | 5KP8.0CA | 8.0 | 8.89 | 10.23 | 1.0 | 13.6 | 367.6 | 10.0 |
| 5KP8.5 | 5KP8.5C | 8.5 | 9.44 | 11.92 | 1.0 | 15.9 | 314.5 | 5.0 |
| 5KP8.5A | 5KP8.5CA | 8.5 | 9.44 | 10.82 | 1.0 | 14.4 | 347.2 | 5.0 |
| 5KP9.0 | 5KP9.0C | 9.0 | 10.0 | 12.6 | 1.0 | 16.9 | 295.9 | 5.0 |
| 5KP9.0A | 5KP9.0CA | 9.0 | 10.0 | 11.5 | 1.0 | 15.4 | 324.7 | 5.0 |
| 5KP10 | 5KP10C | 10 | 11.1 | 14.1 | 1.0 | 18.8 | 266.0 | 5.0 |
| 5KP10A | 5KP10CA | 10 | 11.1 | 12.8 | 1.0 | 17.0 | 294.1 | 5.0 |
| 5KP11 | 5KP11C | 11 | 12.2 | 15.4 | 1.0 | 20.1 | 248.8 | 5.0 |
| 5KP11A | 5KP11CA | 11 | 12.2 | 14.0 | 1.0 | 18.2 | 274.7 | 5.0 |
| 5KP12 | 5KP12C | 12 | 13.3 | 16.9 | 1.0 | 22.0 | 227.3 | 5.0 |
| 5KP12A | 5KP12CA | 12 | 13.3 | 15.3 | 1.0 | 19.9 | 251.3 | 5.0 |
| 5KP13 | 5KP13C | 13 | 14.4 | 18.2 | 1.0 | 23.8 | 210.1 | 5.0 |
| 5KP13A | 5KP13CA | 13 | 14.4 | 16.5 | 1.0 | 21.5 | 232.6 | 5.0 |
| 5KP14 | 5KP14C | 14 | 15.6 | 19.8 | 1.0 | 25.8 | 193.8 | 5.0 |
| 5KP14A | 5KP14CA | 14 | 15.6 | 17.9 | 1.0 | 23.2 | 215.5 | 5.0 |
| 5KP15 | 5KP15C | 15 | 16.7 | 21.1 | 1.0 | 26.9 | 185.9 | 5.0 |
| 5KP15A | 5KP15CA | 15 | 16.7 | 19.2 | 1.0 | 24.4 | 204.9 | 5.0 |
| 5KP16 | 5KP16C | 16 | 17.8 | 22.6 | 1.0 | 28.8 | 173.6 | 5.0 |
| 5KP16A | 5KP16CA | 16 | 17.8 | 20.5 | 1.0 | 26.0 | 192.3 | 5.0 |
| 5KP17 | 5KP17C | 17 | 18.9 | 23.9 | 1.0 | 30.5 | 163.9 | 5.0 |
| 5KP17A | 5KP17CA | 17 | 18.9 | 21.7 | 1.0 | 27.6 | 181.2 | 5.0 |
| 5KP18 | 5KP18C | 18 | 20.0 | 25.3 | 1.0 | 32.2 | 155.3 | 5.0 |
| 5KP18A | 5KP18CA | 18 | 20.0 | 23.3 | 1.0 | 29.2 | 171.2 | 5.0 |
| 5KP20 | 5KP20C | 20 | 22.2 | 28.1 | 1.0 | 35.8 | 139.7 | 5.0 |
| 5KP20A | 5KP20CA | 20 | 22.2 | 25.5 | 1.0 | 32.4 | 154.3 | 5.0 |

| TYPE | | Reverse Stand-Off Voltage | Breakdown Voltage Min. @$I_T$ | Breakdown Voltage Max. @ $I_T$ | Test Current | Maximum Clamping Voltage @$I_{PP}$ | Peak Pulse Current | Reverse Leakage @$V_{RWM}$ |
|---|---|---|---|---|---|---|---|---|
| (UNI) | (BI) | $V_{RWM}$(V) | $V_{BR\ MIN}$(V) | $V_{BR\ MAX}$(V) | $I_T$ (mA) | $V_C$(V) | $I_{PP}$(A) | $I_R$(uA) |
| 5KP22 | 5KP22C | 22 | 24.4 | 30.9 | 1.0 | 39.4 | 126.9 | 5.0 |
| 5KP22A | 5KP22CA | 22 | 24.4 | 28.0 | 1.0 | 35.5 | 140.8 | 5.0 |
| 5KP24 | 5KP24C | 24 | 26.7 | 33.8 | 1.0 | 43.0 | 116.3 | 5.0 |
| 5KP24A | 5KP24CA | 24 | 26.7 | 30.7 | 1.0 | 38.9 | 128.5 | 5.0 |
| 5KP26 | 5KP26C | 26 | 28.9 | 36.6 | 1.0 | 46.6 | 107.3 | 5.0 |
| 5KP26A | 5KP26CA | 26 | 28.9 | 33.2 | 1.0 | 42.1 | 118.8 | 5.0 |
| 5KP28 | 5KP28C | 28 | 31.1 | 39.4 | 1.0 | 50.0 | 100.0 | 5.0 |
| 5KP28A | 5KP28CA | 28 | 31.1 | 35.8 | 1.0 | 45.4 | 110.1 | 5.0 |
| 5KP30 | 5KP30C | 30 | 33.3 | 42.2 | 1.0 | 53.5 | 93.5 | 5.0 |
| 5KP30A | 5KP30CA | 30 | 33.3 | 38.3 | 1.0 | 48.4 | 103.3 | 5.0 |
| 5KP33 | 5KP33C | 33 | 36.7 | 46.5 | 1.0 | 59.0 | 84.7 | 5.0 |
| 5KP33A | 5KP33CA | 33 | 36.7 | 42.2 | 1.0 | 53.3 | 93.8 | 5.0 |
| 5KP36 | 5KP36C | 36 | 40.0 | 50.7 | 1.0 | 64.3 | 77.8 | 5.0 |
| 5KP36A | 5KP36CA | 36 | 40.0 | 46.0 | 1.0 | 58.1 | 86.1 | 5.0 |
| 5KP40 | 5KP40C | 40 | 44.4 | 56.3 | 1.0 | 71.4 | 70.0 | 5.0 |
| 5KP40A | 5KP40CA | 40 | 44.4 | 51.1 | 1.0 | 64.5 | 77.5 | 5.0 |
| 5KP43 | 5KP43C | 43 | 47.8 | 60.5 | 1.0 | 76.7 | 65.2 | 5.0 |
| 5KP43A | 5KP43CA | 43 | 47.8 | 54.9 | 1.0 | 69.4 | 72.0 | 5.0 |
| 5KP45 | 5KP45C | 45 | 50.0 | 63.3 | 1.0 | 80.3 | 62.3 | 5.0 |
| 5KP45A | 5KP45CA | 45 | 50.0 | 57.5 | 1.0 | 72.7 | 68.8 | 5.0 |
| 5KP48 | 5KP48C | 48 | 53.3 | 67.5 | 1.0 | 85.5 | 58.5 | 5.0 |
| 5KP48A | 5KP48CA | 48 | 53.3 | 61.3 | 1.0 | 77.4 | 64.6 | 5.0 |
| 5KP51 | 5KP51C | 51 | 56.7 | 71.8 | 1.0 | 91.1 | 54.9 | 5.0 |
| 5KP51A | 5KP51CA | 51 | 56.7 | 65.2 | 1.0 | 82.4 | 60.7 | 5.0 |
| 5KP54 | 5KP54C | 54 | 60.0 | 76.0 | 1.0 | 96.3 | 51.9 | 5.0 |
| 5KP54A | 5KP54CA | 54 | 60.0 | 69.0 | 1.0 | 87.1 | 57.4 | 5.0 |
| 5KP58 | 5KP58C | 58 | 64.4 | 81.6 | 1.0 | 103 | 48.5 | 5.0 |
| 5KP58A | 5KP58CA | 58 | 64.4 | 74.1 | 1.0 | 93.6 | 53.4 | 5.0 |
| 5KP60 | 5KP60C | 60 | 66.7 | 84.5 | 1.0 | 107 | 46.7 | 5.0 |
| 5KP60A | 5KP60CA | 60 | 66.7 | 76.7 | 1.0 | 96.8 | 51.7 | 5.0 |
| 5KP64 | 5KP64C | 64 | 71.1 | 90.1 | 1.0 | 114 | 43.9 | 5.0 |
| 5KP64A | 5KP64CA | 64 | 71.1 | 81.8 | 1.0 | 103 | 48.5 | 5.0 |
| 5KP70 | 5KP70C | 70 | 77.8 | 98.6 | 1.0 | 125 | 40.0 | 5.0 |
| 5KP70A | 5KP70CA | 70 | 77.8 | 89.5 | 1.0 | 113 | 44.2 | 5.0 |
| 5KP75 | 5KP75C | 75 | 83.0 | 105.7 | 1.0 | 134 | 37.3 | 5.0 |
| 5KP75A | 5KP75CA | 75 | 83.0 | 95.8 | 1.0 | 121 | 41.3 | 5.0 |

| TYPE | | Reverse Stand-Off Voltage | Breakdown Voltage Min. @$I_T$ | Breakdown Voltage Max. @ $I_T$ | Test Current | Maximum Clamping Voltage @$I_{PP}$ | Peak Pulse Current | Reverse Leakage @$V_{RWM}$ |
|---|---|---|---|---|---|---|---|---|
| (UNI) | (BI) | $V_{RWM}$(V) | $V_{BR\ MIN}$(V) | $V_{BR\ MAX}$(V) | $I_T$ (mA) | $V_C$(V) | $I_{PP}$(A) | $I_R$(uA) |
| 5KP78 | 5KP78C | 78 | 86.0 | 109.8 | 1.0 | 139 | 36.0 | 5.0 |
| 5KP78A | 5KP78CA | 78 | 86.0 | 99.7 | 1.0 | 126 | 39.7 | 5.0 |
| 5KP85 | 5KP85C | 85 | 94.0 | 119.2 | 1.0 | 151 | 33.1 | 5.0 |
| 5KP85A | 5KP85CA | 85 | 94.0 | 108.2 | 1.0 | 137 | 36.5 | 5.0 |
| 5KP90 | 5KP90C | 90 | 100 | 126.5 | 1.0 | 160 | 31.3 | 5.0 |
| 5KP90A | 5KP90CA | 90 | 100 | 115.5 | 1.0 | 146 | 34.2 | 5.0 |
| 5KP100 | 5KP100C | 100 | 111 | 141.0 | 1.0 | 179 | 27.9 | 5.0 |
| 5KP100A | 5KP100CA | 100 | 111 | 128.0 | 1.0 | 162 | 30.9 | 5.0 |
| 5KP110 | 5KP110C | 110 | 122 | 154.5 | 1.0 | 196 | 25.5 | 5.0 |
| 5KP110A | 5KP110CA | 110 | 122 | 140.5 | 1.0 | 177 | 28.2 | 5.0 |
| 5KP120 | 5KP120C | 120 | 133 | 169.0 | 1.0 | 214 | 23.4 | 5.0 |
| 5KP120A | 5KP120CA | 120 | 133 | 153.0 | 1.0 | 193 | 25.9 | 5.0 |
| 5KP130 | 5KP130C | 130 | 144 | 182.5 | 1.0 | 231 | 21.6 | 5.0 |
| 5KP130A | 5KP130CA | 130 | 144 | 165.5 | 1.0 | 209 | 23.9 | 5.0 |
| 5KP150 | 5KP150C | 150 | 167 | 211.5 | 1.0 | 268 | 18.7 | 5.0 |
| 5KP150A | 5KP150CA | 150 | 167 | 192.5 | 1.0 | 243 | 20.6 | 5.0 |
| 5KP160 | 5KP160C | 160 | 178 | 226.0 | 1.0 | 287 | 17.4 | 5.0 |
| 5KP160A | 5KP160CA | 160 | 178 | 205.0 | 1.0 | 259 | 19.3 | 5.0 |
| 5KP170 | 5KP170C | 170 | 189 | 239.5 | 1.0 | 304 | 16.4 | 5.0 |
| 5KP170A | 5KP170CA | 170 | 189 | 217.5 | 1.0 | 275 | 18.2 | 5.0 |
| 5KP180 | 5KP180C | 180 | 200 | 253.8 | 1.0 | 321 | 15.6 | 5.0 |
| 5KP180A | 5KP180CA | 180 | 200 | 230.4 | 1.0 | 290 | 17.2 | 5.0 |
| 5KP190 | 5KP190C | 190 | 211 | 267.9 | 1.0 | 339 | 14.7 | 5.0 |
| 5KP190A | 5KP190CA | 190 | 211 | 243.2 | 1.0 | 306 | 16.3 | 5.0 |

## Typical Characteristics

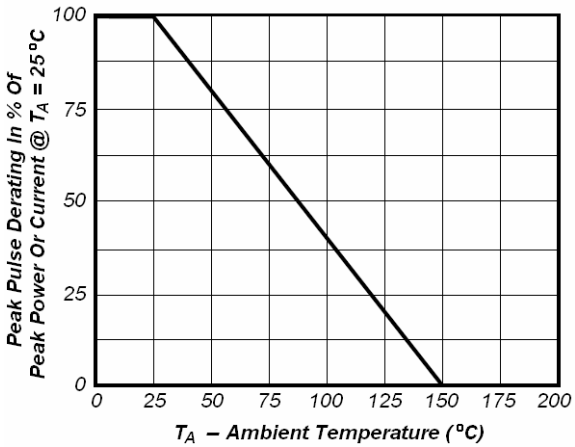



Fig1. Pulse Dearting Curve

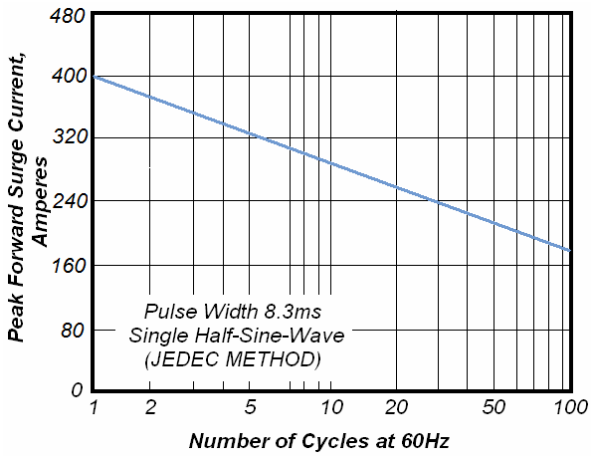



Fig2. Maximum Non-Repetitive Peak Forward Surge Current

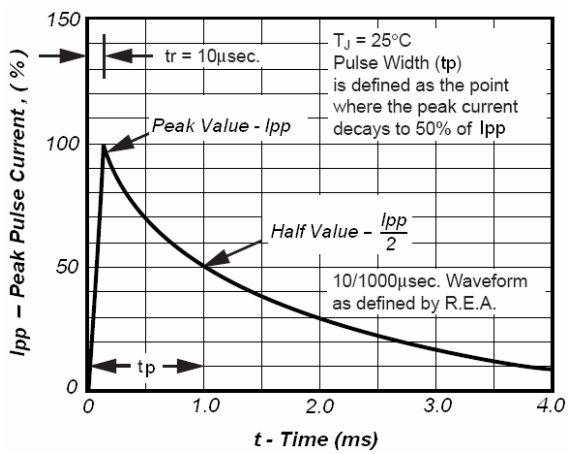



Fig3. Pulse Waveform

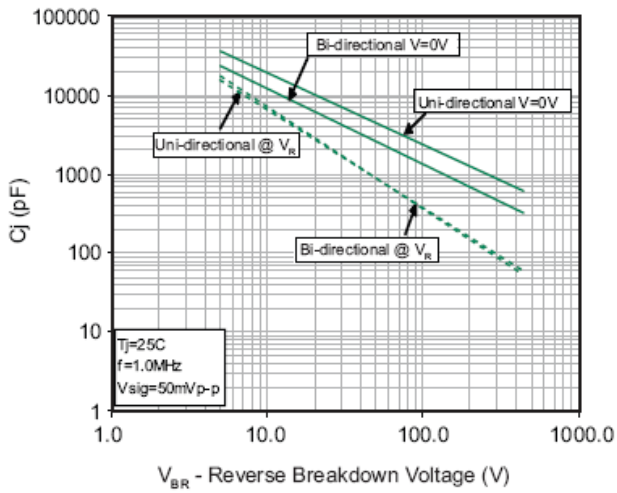



Fig4. Typical Junction Capacitance

