

FEATURES

- Axial and radial available as “HR” (high reliability) screened per MIL-PRF-19500, JANTX level. Add “HR” suffix to base part number
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding “-PBF” suffix.
- Available in both axial leaded and radial packages (“R” prefix for radial packages)
- Selections for 5.0 to 110 volts standoff voltage
- Suppresses transients up to 5000 watts @ 10/10000µs and 34000 watts @ 8/20µs
- Fast response

MAXIMUM RATINGS

| Rating | Value |
|---|---|
| Peak Pulse Power Dissipation @ 25°C | 5000 watts at 10/1000µs |
| Impulse Repetition Rate (Duty factor) | 0.05% |
| t _{clamping} (0 volts to V _(BR) min): | < 100ps theoretical for unidirectional and < 5 ns for bidirectional |
| Operating and Storage Temperature: | -65 to +150°C |
| Thermal Resistance: | 20°C/W junction to lead or 80°C/W junction to ambient when mounted on FR4 PC board with 4mm ² copper pads and track width 1 mm, length 25 mm |
| Steady-State Power dissipation: | 6 watts at T _L = 30°C or 1.56 watts at T _A = 25°C when mounted on FR4 PC board described for thermal resistance |
| Forward Surge Voltage: | 3.5 V maximum @ 100 Amps 8.3 ms half-sine wave |
| Solder Temperatures: | 260°C for 10 s (maximum) |

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

| Part Number ⁽²⁾ | Reverse Stand-Off Voltage V _{WM} ⁽¹⁾ | Breakdown Voltage V _(BR) | | | Maximum Clamping Voltage V _c @ I _{PP} | Maximum Standby Current ⁽³⁾ I _D @ V _{WM} | Maximum Peak Pulse Current I _{PP} Fig. 2 | Maximum Temperature Coefficient of V _(BR) α _{V(BR)} |
|----------------------------|--|-------------------------------------|-------|-------------------|---|---|---|---|
| | | V _(BR) @ | | I _(BR) | | | | |
| | | Volts | Volts | mA | | | | |
| 5KP5.0 | 5.0 | 6.40 | 7.30 | 50 | 9.6 | 5000 | 521 | 0.057 |
| 5KP5.0A | 5.0 | 6.40 | 7.00 | 50 | 9.2 | 5000 | 543 | 0.057 |
| 5KP6.0 | 6.0 | 6.67 | 8.15 | 50 | 11.4 | 5000 | 439 | 0.061 |
| 5KP6.0A | 6.0 | 6.67 | 7.37 | 50 | 10.3 | 5000 | 485 | 0.061 |
| 5KP6.5 | 6.5 | 7.22 | 8.82 | 50 | 12.3 | 2000 | 407 | 0.065 |
| 5KP6.5A | 6.5 | 7.22 | 7.98 | 50 | 11.2 | 2000 | 446 | 0.065 |
| 5KP7.0 | 7.0 | 7.78 | 9.51 | 50 | 13.3 | 1000 | 376 | 0.068 |
| 5KP7.0A | 7.0 | 7.78 | 8.60 | 50 | 12.0 | 1000 | 417 | 0.068 |
| 5KP7.5 | 7.5 | 8.33 | 10.2 | 5 | 14.3 | 250 | 350 | 0.073 |
| 5KP7.5A | 7.5 | 8.33 | 9.21 | 5 | 12.9 | 250 | 388 | 0.073 |
| 5KP8.0 | 8.0 | 8.89 | 10.9 | 5 | 15.0 | 150 | 333 | 0.075 |
| 5KP8.0A | 8.0 | 8.89 | 9.83 | 5 | 13.6 | 150 | 368 | 0.075 |
| 5KP8.5 | 8.5 | 9.44 | 11.5 | 5 | 15.9 | 50 | 314 | 0.078 |
| 5KP8.5A | 8.5 | 9.44 | 10.4 | 5 | 14.4 | 50 | 347 | 0.078 |
| 5KP9.0 | 9.0 | 10.0 | 12.2 | 5 | 16.9 | 20 | 296 | 0.081 |
| 5KP9.0A | 9.0 | 10.0 | 11.1 | 5 | 15.4 | 20 | 325 | 0.081 |

5KP5.0-5KP250A

5000W TRANSIENT VOLTAGE SUPPRESSOR

| Part Number ⁽²⁾ | Reverse Stand-Off Voltage $V_{WM}^{(1)}$ | Breakdown Voltage $V_{(BR)}$ | | | Maximum Clamping Voltage $V_C @ I_{PP}$ | Maximum Standby Current $I_D @ V_{WM}$ | Maximum Peak Pulse Current I_{PP} Fig. 2 | Maximum Temperature Coefficient of $V_{(BR)}$ $\alpha_{V(BR)}$ |
|----------------------------|---|---------------------------------|------|------------|--|---|--|---|
| | | $V_{(BR)}$ @ | | $I_{(BR)}$ | | | | |
| | Volts | Volts | mA | Volts | μA | A | mV/°C | |
| 5KP10 | 10 | 11.1 | 13.6 | 5 | 18.8 | 15 | 266 | 0.084 |
| 5KP10A | 10 | 11.1 | 12.3 | 5 | 17.0 | 15 | 294 | 0.084 |
| 5KP11 | 11 | 12.2 | 14.9 | 5 | 20.1 | 10 | 249 | 0.086 |
| 5KP11A | 11 | 12.2 | 13.5 | 5 | 18.2 | 10 | 275 | 0.086 |
| 5KP12 | 12 | 13.3 | 16.3 | 5 | 22.0 | 5 | 227 | 0.088 |
| 5KP12A | 12 | 13.3 | 14.7 | 5 | 19.9 | 5 | 251 | 0.088 |
| 5KP13 | 13 | 14.4 | 17.6 | 5 | 23.8 | 2 | 210 | 0.090 |
| 5KP13A | 13 | 14.4 | 15.9 | 5 | 21.5 | 2 | 233 | 0.090 |
| 5KP14 | 14 | 15.6 | 19.1 | 5 | 25.8 | 2 | 194 | 0.092 |
| 5KP14A | 14 | 15.6 | 17.2 | 5 | 23.2 | 2 | 216 | 0.092 |
| 5KP15 | 15 | 16.7 | 20.4 | 5 | 26.9 | 2 | 186 | 0.094 |
| 5KP15A | 15 | 16.7 | 18.5 | 5 | 24.4 | 2 | 205 | 0.094 |
| 5KP16 | 16 | 17.8 | 21.8 | 5 | 28.8 | 2 | 174 | 0.096 |
| 5KP16A | 16 | 17.8 | 19.7 | 5 | 26.0 | 2 | 192 | 0.096 |
| 5KP17 | 17 | 18.9 | 23.1 | 5 | 30.5 | 2 | 164 | 0.097 |
| 5KP17A | 17 | 18.9 | 20.9 | 5 | 27.6 | 2 | 181 | 0.097 |
| 5KP18 | 18 | 20.0 | 24.4 | 5 | 32.2 | 2 | 155 | 0.098 |
| 5KP18A | 18 | 20.0 | 22.1 | 5 | 29.2 | 2 | 171 | 0.098 |
| 5KP20 | 20 | 22.2 | 27.1 | 5 | 35.8 | 2 | 140 | 0.099 |
| 5KP20A | 20 | 22.2 | 24.5 | 5 | 32.4 | 2 | 154 | 0.099 |
| 5KP22 | 22 | 24.4 | 29.8 | 5 | 39.4 | 2 | 127 | 0.100 |
| 5KP22A | 22 | 24.4 | 26.9 | 5 | 35.5 | 2 | 141 | 0.100 |
| 5KP24 | 24 | 26.7 | 32.6 | 5 | 43.0 | 2 | 116 | 0.101 |
| 5KP24A | 24 | 26.7 | 29.5 | 5 | 38.9 | 2 | 129 | 0.101 |
| 5KP26 | 26 | 28.9 | 35.3 | 5 | 46.6 | 2 | 107 | 0.101 |
| 5KP26A | 26 | 28.9 | 31.9 | 5 | 42.1 | 2 | 119 | 0.101 |
| 5KP28 | 28 | 31.1 | 38.0 | 5 | 50.0 | 2 | 100 | 0.102 |
| 5KP28A | 28 | 31.1 | 34.4 | 5 | 45.4 | 2 | 110 | 0.102 |
| 5KP30 | 30 | 33.3 | 40.7 | 5 | 53.5 | 2 | 93.5 | 0.103 |
| 5KP30A | 30 | 33.3 | 36.8 | 5 | 48.4 | 2 | 103 | 0.103 |
| 5KP33 | 33 | 36.7 | 44.9 | 5 | 59.0 | 2 | 84.7 | 0.104 |
| 5KP33A | 33 | 36.7 | 40.6 | 5 | 53.3 | 2 | 93.8 | 0.104 |
| 5KP36 | 36 | 40.0 | 48.9 | 5 | 64.3 | 2 | 77.8 | 0.104 |
| 5KP36A | 36 | 40.0 | 44.2 | 5 | 58.1 | 2 | 86.1 | 0.104 |

5KP5.0-5KP250A

5000W TRANSIENT VOLTAGE SUPPRESSOR

| Part Number ⁽²⁾ | Reverse Stand-Off Voltage $V_{WM}^{(1)}$ | Breakdown Voltage $V_{(BR)}$ | | | Maximum Clamping Voltage $V_C @ I_{PP}$ | Maximum Standby Current $I_D @ V_{WM}$ | Maximum Peak Pulse Current I_{PP} Fig. 2 | Maximum Temperature Coefficient of $V_{(BR)}$ $\alpha_{V(BR)}$ |
|----------------------------|---|---------------------------------|-------|------------|--|---|--|---|
| | | $V_{(BR)} @$ | | $I_{(BR)}$ | | | | |
| | Volts | Volts | mA | Volts | μA | A | mV/°C | |
| 5KP40 | 40 | 44.4 | 54.3 | 5 | 71.4 | 2 | 70 | 0.105 |
| 5KP40A | 40 | 44.4 | 49.1 | 5 | 64.5 | 2 | 77.5 | 0.105 |
| 5KP43 | 43 | 47.8 | 58.4 | 5 | 76.7 | 2 | 65.2 | 0.105 |
| 5KP43A | 43 | 47.8 | 52.8 | 5 | 69.4 | 2 | 72 | 0.105 |
| 5KP45 | 45 | 50.0 | 61.1 | 5 | 80.3 | 2 | 62.3 | 0.106 |
| 5KP45A | 45 | 50.0 | 55.3 | 5 | 72.7 | 2 | 68.8 | 0.106 |
| 5KP48 | 48 | 53.3 | 65.1 | 5 | 85.5 | 2 | 58.5 | 0.106 |
| 5KP48A | 48 | 53.3 | 58.9 | 5 | 77.4 | 2 | 64.6 | 0.106 |
| 5KP51 | 51 | 56.7 | 69.3 | 5 | 91.1 | 2 | 54.9 | 0.107 |
| 5KP51A | 51 | 56.7 | 62.7 | 5 | 82.4 | 2 | 60.7 | 0.107 |
| 5KP54 | 54 | 60.0 | 73.3 | 5 | 96.3 | 2 | 51.9 | 0.107 |
| 5KP54A | 54 | 60.0 | 66.3 | 5 | 87.1 | 2 | 57.4 | 0.107 |
| 5KP58 | 58 | 64.4 | 78.7 | 5 | 103 | 2 | 48.5 | 0.107 |
| 5KP58A | 58 | 64.4 | 71.2 | 5 | 94 | 2 | 53.4 | 0.107 |
| 5KP60 | 60 | 66.7 | 81.5 | 5 | 107 | 2 | 46.7 | 0.108 |
| 5KP60A | 60 | 66.7 | 73.7 | 5 | 97 | 2 | 51.7 | 0.108 |
| 5KP64 | 64 | 71.1 | 86.9 | 5 | 114 | 2 | 43.9 | 0.108 |
| 5KP64A | 64 | 71.1 | 78.6 | 5 | 103 | 2 | 48.5 | 0.108 |
| 5KP70 | 70 | 77.8 | 95.1 | 5 | 125 | 2 | 40.0 | 0.108 |
| 5KP70A | 70 | 77.8 | 86.0 | 5 | 113 | 2 | 44.2 | 0.108 |
| 5KP75 | 75 | 83.3 | 102.0 | 5 | 134 | 2 | 37.3 | 0.108 |
| 5KP75A | 75 | 83.3 | 92.1 | 5 | 121 | 2 | 41.3 | 0.108 |
| 5KP78 | 78 | 86.7 | 106.0 | 5 | 139 | 2 | 36.0 | 0.108 |
| 5KP78A | 78 | 86.7 | 95.8 | 5 | 126 | 2 | 39.7 | 0.108 |
| 5KP85 | 85 | 94.4 | 115.0 | 5 | 151 | 2 | 33.1 | 0.108 |
| 5KP85A | 85 | 94.4 | 104.0 | 5 | 137 | 2 | 36.5 | 0.108 |
| 5KP90 | 90 | 100 | 122 | 5 | 160 | 2 | 31.3 | 0.110 |
| 5KP90A | 90 | 100 | 111 | 5 | 146 | 2 | 34.2 | 0.110 |
| 5KP100 | 100 | 111 | 136 | 5 | 179 | 2 | 27.9 | 0.110 |
| 5KP100A | 100 | 111 | 123 | 5 | 162 | 2 | 30.9 | 0.110 |
| 5KP110 | 110 | 122 | 149 | 5 | 196 | 2 | 25.5 | 0.110 |
| 5KP110A | 110 | 122 | 135 | 5 | 177 | 2 | 28.2 | 0.110 |
| 5KP120 | 120 | 133 | 162 | 5 | 213 | 2 | 23.5 | 0.110 |
| 5KP120A | 120 | 133 | 147 | 5 | 193 | 2 | 26.4 | 0.110 |
| 5KP130 | 130 | 144 | 175 | 5 | 231 | 2 | 21.6 | 0.110 |

5KP5.0-5KP250A

5000W TRANSIENT VOLTAGE SUPPRESSOR

| Part Number ⁽²⁾ | Reverse Stand-Off Voltage $V_{WM}^{(1)}$ | Breakdown Voltage $V_{(BR)}$ | | | Maximum Clamping Voltage $V_C @ I_{PP}$ | Maximum Standby Current $I_D @ V_{WM}$ | Maximum Peak Pulse Current I_{PP} Fig. 2 | Maximum Temperature Coefficient of $V_{(BR)}$ $\alpha_{V(BR)}$ |
|----------------------------|---|---------------------------------|-----|------------|--|---|--|---|
| | | $V_{(BR)}$ @ | | $I_{(BR)}$ | | | | |
| | Volts | Volts | mA | Volts | μA | A | mV/°C | |
| 5KP130A | 130 | 144 | 159 | 5 | 209 | 2 | 24.4 | 0.110 |
| 5KP150 | 150 | 167 | 204 | 5 | 268 | 2 | 18.7 | 0.110 |
| 5KP150A | 150 | 167 | 185 | 5 | 243 | 2 | 21.0 | 0.110 |
| 5KP160 | 160 | 178 | 217 | 5 | 287 | 2 | 17.4 | 0.110 |
| 5KP160A | 160 | 178 | 197 | 5 | 259 | 2 | 19.7 | 0.110 |
| 5KP170 | 170 | 189 | 231 | 5 | 304 | 2 | 16.4 | 0.110 |
| 5KP170A | 170 | 189 | 209 | 5 | 275 | 2 | 18.5 | 0.110 |
| 5KP180 | 180 | 200 | 244 | 5 | 323 | 2 | 15.5 | 0.110 |
| 5KP180A | 180 | 200 | 221 | 5 | 292 | 2 | 17.5 | 0.110 |
| 5KP190 | 190 | 211 | 258 | 5 | 343 | 2 | 14.6 | 0.110 |
| 5KP190A | 190 | 211 | 233 | 5 | 310 | 2 | 16.5 | 0.110 |
| 5KP200 | 200 | 222 | 271 | 5 | 364 | 2 | 13.7 | 0.110 |
| 5KP200A | 200 | 222 | 246 | 5 | 329 | 2 | 15.5 | 0.110 |
| 5KP210 | 210 | 233 | 284 | 5 | 386 | 2 | 12.9 | 0.110 |
| 5KP210A | 210 | 233 | 258 | 5 | 349 | 2 | 14.6 | 0.110 |
| 5KP220 | 220 | 244 | 298 | 5 | 410 | 2 | 12.2 | 0.110 |
| 5KP220A | 220 | 244 | 270 | 5 | 371 | 2 | 13.7 | 0.110 |
| 5KP250 | 250 | 277 | 338 | 5 | 470 | 2 | 10.6 | 0.110 |
| 5KP250A | 250 | 277 | 306 | 5 | 425 | 2 | 12.0 | 0.110 |

Note 1: Transient voltage suppressors are normally selected with reverse "Stand-Off Voltage" V_{WM} which should be equal or greater than the dc or continuous peak operating voltage level.

Note 2: For bidirectional construction, indicate C or CA suffix after the part number.

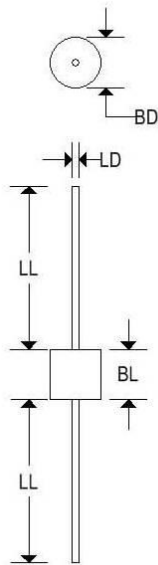
Note 3: For the 5KP5.0C and 5KP5.0CA double the Maximum Standby Current to 4000 μA

5KP5.0-5KP250A

5000W TRANSIENT VOLTAGE SUPPRESSOR

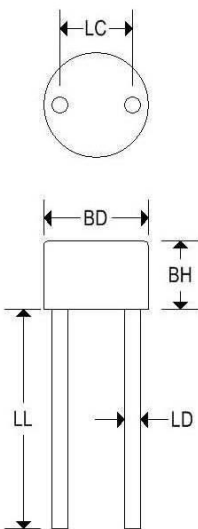
MECHANICAL CHARACTERISTICS

| | |
|-----------------|--|
| Case | Digi I |
| Marking | Body-painted, alpha numeric |
| Polarity | Cathode band. Bidirectional not marked for polarity. |



| | Digi I | | | |
|----|--------|-------|-------------|-------|
| | Inches | | Millimeters | |
| | Min | Max | Min | Max |
| BD | 0.340 | 0.360 | 8.600 | 9.100 |
| BL | 0.340 | 0.360 | 8.600 | 9.100 |
| LD | 0.047 | 0.053 | 1.194 | 1.346 |
| LL | 1.000 | - | 25.400 | - |

| | |
|-----------------|--|
| Case | 5R |
| Marking | Body-painted, alpha numeric |
| Polarity | Cathode band. Bidirectional not marked for polarity. |



| | Case 5R | | | |
|----|---------|-------|-------------|-------|
| | Inches | | Millimeters | |
| | Min | Max | Min | Max |
| BH | 0.205 | 0.235 | 5.207 | 5.969 |
| BD | 0.340 | 0.360 | 8.636 | 9.144 |
| LD | 0.047 | 0.053 | 1.194 | 1.346 |
| LL | 0.750 | - | 19.050 | - |
| LC | 0.235 | 0.265 | 5.969 | 6.731 |

5KP5.0-5KP250A

5000W TRANSIENT VOLTAGE SUPPRESSOR

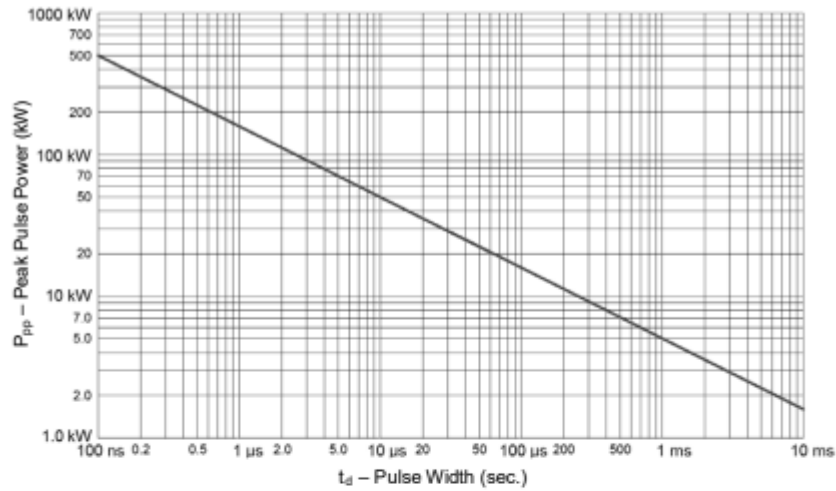


FIGURE 1
Peak Pulse Power Rating Curve

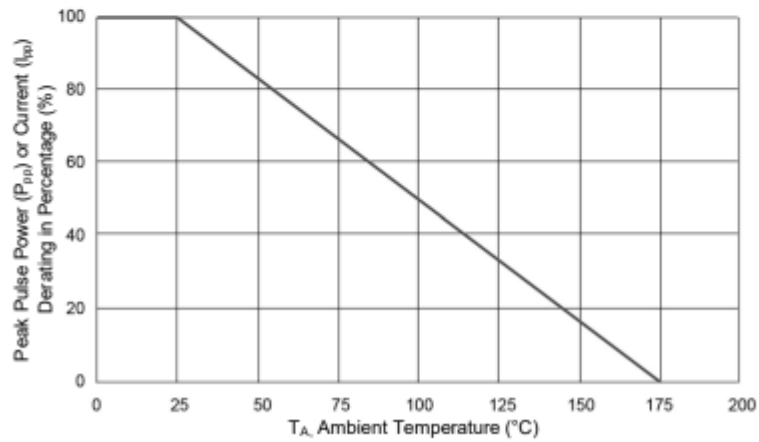


FIGURE 2
Pulse Derating Curve

5KP5.0-5KP250A

5000W TRANSIENT VOLTAGE SUPPRESSOR

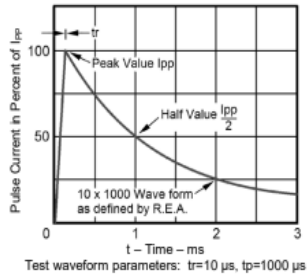


FIGURE 3
Pulse Waveform for 10/1000 μs Exponential Surge

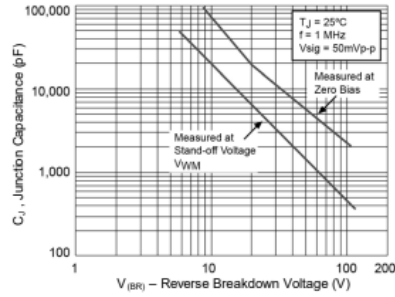


FIGURE 4
Typical Junction Capacitance

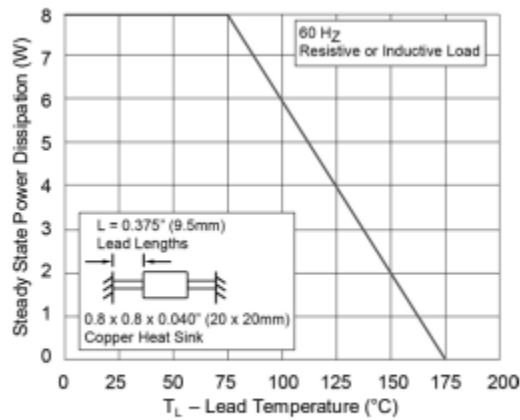


FIGURE 5
Steady State Power Derating Curve

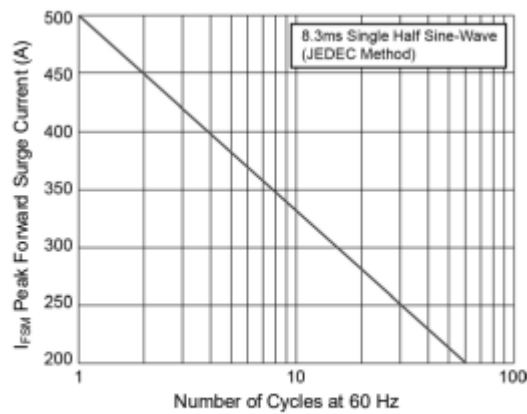


FIGURE 6
Maximum Non-repetitive Forward Surge Current