

AXIAL LEAD PACKAGE

DESCRIPTION

The 30KPA Series, are discrete 30,000 Watt, silicon transient voltage suppressors (TVS) designed for use in applications where large voltage transients can permanently damage voltage sensitive components and equipment.

The 30KPA series is available in voltages ranging from 30V to 360V with 5 percent and 10 percent tolerances. Both tolerances are referenced to the power supply output or operating voltage level. This series is compatible with IEC 61000-4-5 (Surge) requirements.

FEATURES

- RTCA DO-160G COMPLIANT PRODUCT
- Compatible with IEC 61000-4-2 (ESD): Air ± 30 kV, Contact ± 30 kV
- UL File Recognition #E208219
- Compatible with IEC 61000-4-5 (Surge): 48A, 8/20 μ s - L3(Line-Ground), L4(Line-Line) & L1 (Power)
- 30,000 Watts Peak Pulse Power per Line ($t_p = 10/1000\mu$ s)
- Unidirectional and Bidirectional Configurations
- Easy Mounting to Printed Circuit Board
- tClamping (0V to V_{BR} Min.) $< 1 \times 10^{-12}$ seconds theoretical
- Available in Multiple Voltage
- RoHS Complaint (Exemption #7)

APPLICATIONS

- Relay Drives
- Motor (Start/Stop) Back EMF Protection
- Module Lightning Protection
- Secondary Lightning Protection for AC/DC

MECHANICAL CHARACTERISTICS

- Molded Case
- Approximate Weight: 5 grams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:
Pure-Tin - Sn, 100: 260-270°C
- Flammability Rating UL 94V-0

CIRCUIT DIAGRAMS



UNIDIRECTIONAL



BIDIRECTIONAL

30kW POWER TVS COMPONENT

RTCA DO-160G COMPLIANT PRODUCT

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

| PARAMETER | SYMBOL | VALUE | UNITS |
|---|-----------------|------------|-------|
| Peak Pulse Power (tp = 10/1000µs) - See Figure 1 | P_{PP} | 30,000 | Watts |
| Forward Surge Rating - 1/120 seconds - See Note 2 | I_F | 200 | Amps |
| Steady State Power Dissipation | P_P | 8.0 | Watts |
| Storage Temperature | T_{STG} | -55 to 175 | °C |
| Operating Temperature | T_L | -55 to 175 | °C |
| Typical Thermal Resistance, Junction to Lead | $R_{\theta JL}$ | 8.0 | °C/W |
| Typical Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 40 | °C/W |

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

| PART NUMBER (Notes 1 - 2) | RATED STAND-OFF VOLTAGE V_{WM} VOLTS | BREAKDOWN VOLTAGE | | MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D µA | MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ 10/1000µs V_C @ I_{PP} | TEMPERATURE COEFFICIENT OF $V_{(BR)}$ qV _(BR) mV/°C |
|------------------------------|--|-------------------------|---------------|--|---|--|
| | | MIN $V_{(BR)}$ VOLTS | @ I_T mA | | | |
| 30KPA28A | 28.0 | 31.28 | 50 | 5000 | 50.0V @ 606.0A | 32 |
| 30KPA30A | 30.0 | 33.3 | 50 | 5000 | 55.2V @ 543.0A | 34 |
| 30KPA33A | 33.0 | 36.7 | 50 | 5000 | 58.6V @ 512.0A | 39 |
| 30KPA36A | 36.0 | 40.0 | 50 | 2000 | 61.8V @ 485.0A | 41 |
| 30KPA43A | 43.0 | 47.8 | 50 | 1000 | 73.0V @ 410.0A | 50 |
| 30KPA45A | 45.0 | 50.3 | 5 | 250 | 77.4V @ 391.5A | 51 |
| 30KPA48A | 48.0 | 53.3 | 5 | 250 | 77.4V @ 388.0A | 56 |
| 30KPA51A | 51.0 | 57.00 | 5 | 50 | 86.4V @ 350.7A | 60 |
| 30KPA54A | 54.0 | 60.0 | 5 | 20 | 91.4V @ 331.5A | 64 |
| 30KPA58A | 58.0 | 64.4 | 5 | 20 | 92.4V @ 325.0A | 68 |
| 30KPA64A | 64.0 | 71.1 | 5 | 10 | 104.0V @ 294.0A | 76 |
| 30KPA70A | 70.0 | 77.8 | 5 | 2 | 109.0V @ 274.0A | 83 |
| 30KPA72A | 72.0 | 80.4 | 5 | 2 | 114.0V @ 265.0A | 85 |
| 30KPA75A | 75.0 | 83.3 | 5 | 2 | 119.4V @ 251.0A | 89 |
| 30KPA78A | 78.0 | 87.10 | 5 | 2 | 129.0V @ 234.9A | 92 |
| 30KPA85A | 85.0 | 94.4 | 5 | 2 | 139.0V @ 216.0A | 105 |
| 30KPA90A | 90.0 | 100.0 | 5 | 2 | 147.0V @ 206.0A | 109 |
| 30KPA100 | 100.0 | 111.0 | 5 | 2 | 179.0V @ 168.0A | 134 |
| 30KPA100A | 100.0 | 111.0 | 5 | 2 | 162.0V @ 186.0A | 121 |
| 30KPA102A | 102.0 | 114.0 | 5 | 2 | 166.0V @ 183.0A | 124 |
| 30KPA110A | 110.0 | 122.0 | 5 | 2 | 178.0V @ 168.0A | 126 |
| 30KPA130A | 130.0 | 144.0 | 5 | 2 | 209.0V @ 142.0A | 157 |
| 30KPA150A | 150.0 | 167.6 | 5 | 2 | 233.4V @ 129.8A | 195 |

TYPICAL DEVICE CHARACTERISTICS

RTCA DO-160G COMPLIANT PRODUCT

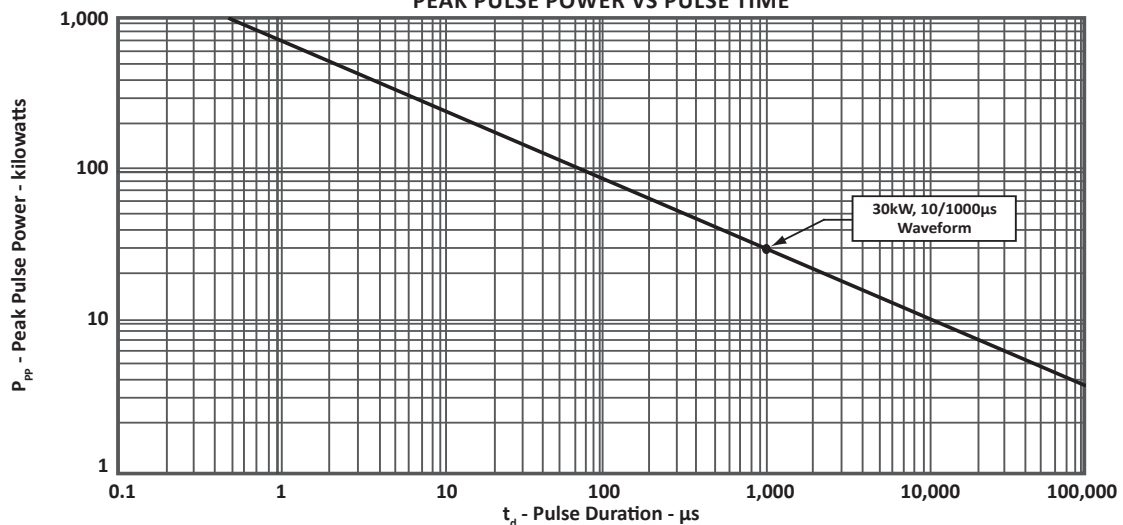
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

| PART NUMBER (Notes 1 - 2) | RATED STAND-OFF VOLTAGE V_{WM} VOLTS | BREAKDOWN VOLTAGE | | MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA | MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ 10/1000 μS V_C @ I_{PP} | TEMPERATURE COEFFICIENT OF $V_{(BR)}$ $qV_{(BR)}$ mV/°C |
|------------------------------|--|-------------------------|---------------|---|---|---|
| | | MIN $V_{(BR)}$ VOLTS | @ I_T mA | | | |
| 30KPA160A | 160.0 | 178.0 | 5 | 2 | 252.6V @ 119.0A | 195 |
| 30KPA170A | 170.0 | 189.0 | 5 | 2 | 274.0V @ 110.0A | 207 |
| 30KPA180A | 180.0 | 200.0 | 5 | 2 | 291.0V @ 104.0A | 230 |
| 30KPA200A | 200.0 | 222.0 | 5 | 2 | 320.0V @ 94.0A | 250 |
| 30KPA220A | 220.0 | 245.0 | 5 | 2 | 356.0V @ 84.0A | 269 |
| 30KPA250A | 250.0 | 277.0 | 5 | 2 | 404.0V @ 74.0A | 314 |
| 30KPA260A | 260.0 | 289.0 | 5 | 2 | 416.0V @ 72.0A | 317 |
| 30KPA280A | 280.0 | 311.0 | 5 | 2 | 464.0V @ 65.0A | 342 |
| 30KPA300A | 300.0 | 334.0 | 5 | 2 | 484.0V @ 62.0A | 368 |
| 30KPA320A | 320.0 | 356.0 | 5 | 2 | 530.0V @ 57.0A | 370 |
| 30KPA345A | 345.0 | 380.0 | 5 | 2 | 560.0V @ 53.6A | 375 |
| 30KPA360A | 360.0 | 400.0 | 5 | 2 | 640.0V @ 55.0A | 380 |
| 30KPA400A | 400.0 | 440.0 | 5 | 2 | 704.0V @ 42.6A | 430 |

NOTES

- Part numbers shown are unidirectional devices. Add a "CA" suffix to specify bidirectional devices, such as 30KPA30CA.
- $V_f = 15$ Volts @ 200A, 8.3ms(1/2 Sine Wave) - Unidirectional devices only.

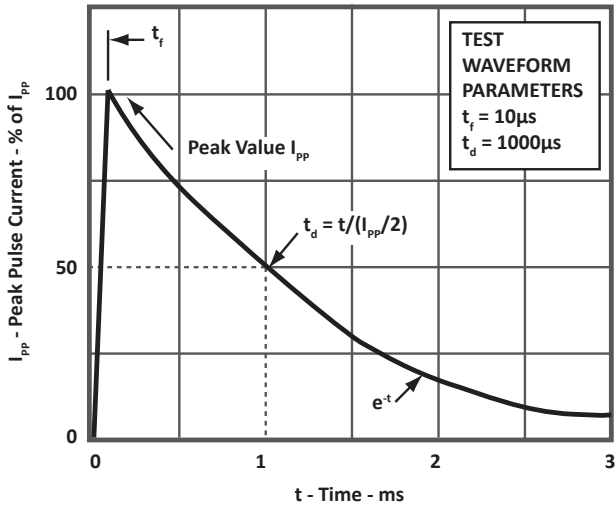
FIGURE 1
PEAK PULSE POWER VS PULSE TIME



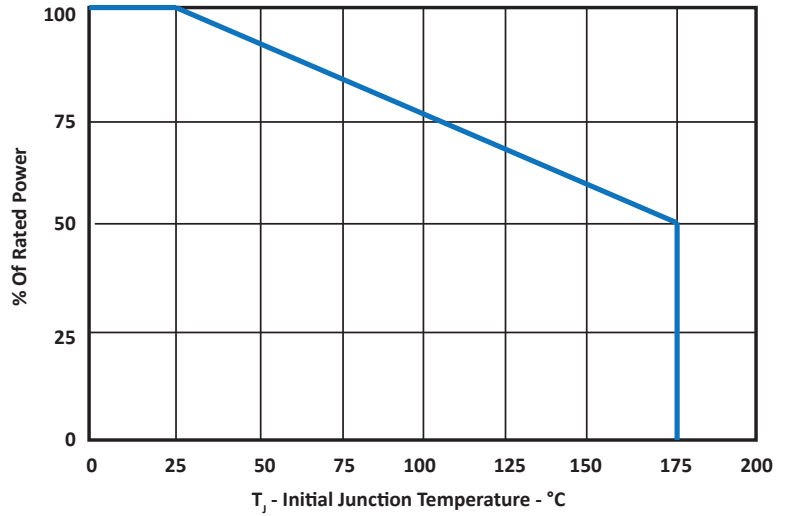
TYPICAL DEVICE CHARACTERISTICS

RTCA DO-160G COMPLIANT PRODUCT

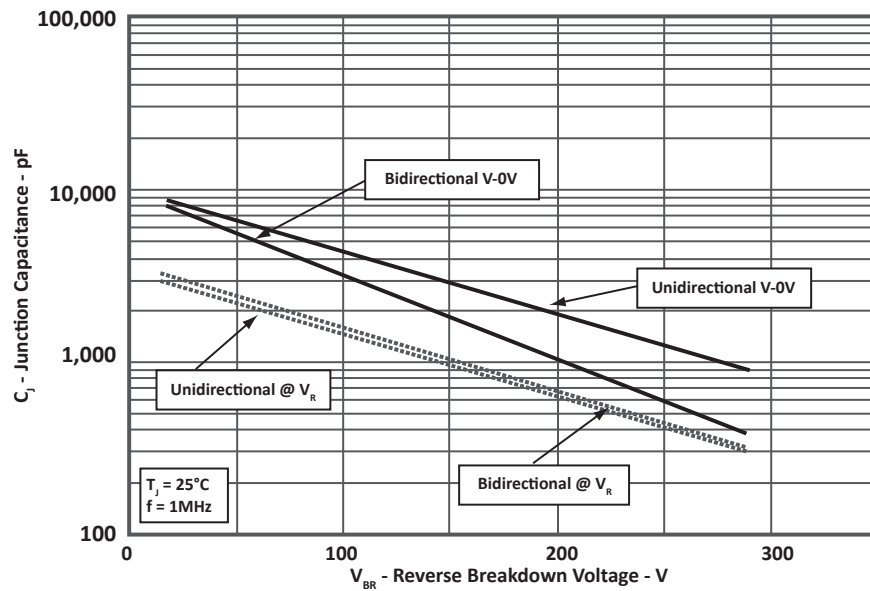
**FIGURE 2
PULSE WAVEFORM**



**FIGURE 3
POWER DERATING CURVE**

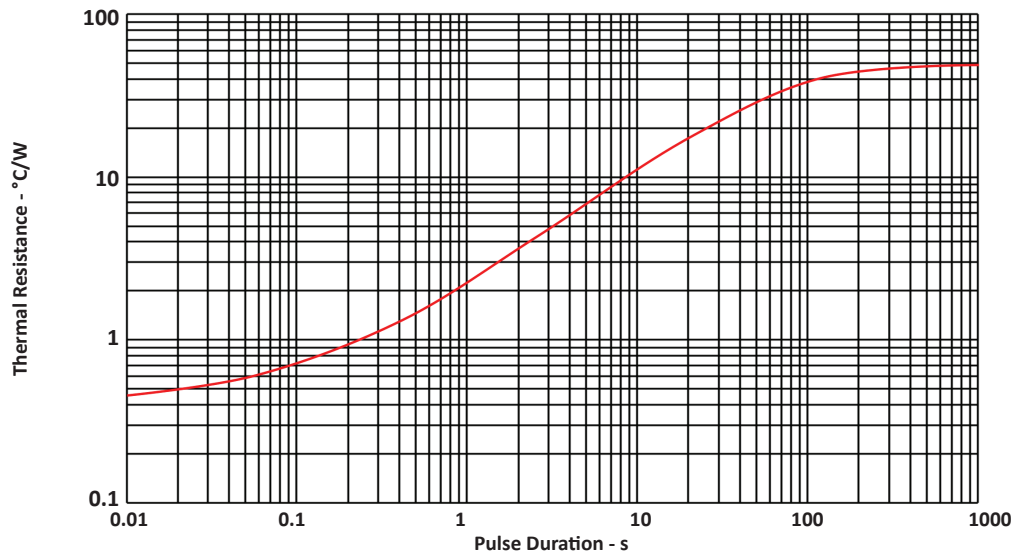


**FIGURE 4
TYPICAL JUNCTION CAPACITANCE**



TYPICAL DEVICE CHARACTERISTICS

FIGURE 5
TRANSIENT THERMAL RESISTANCE



AXIAL LEAD PACKAGE INFORMATION

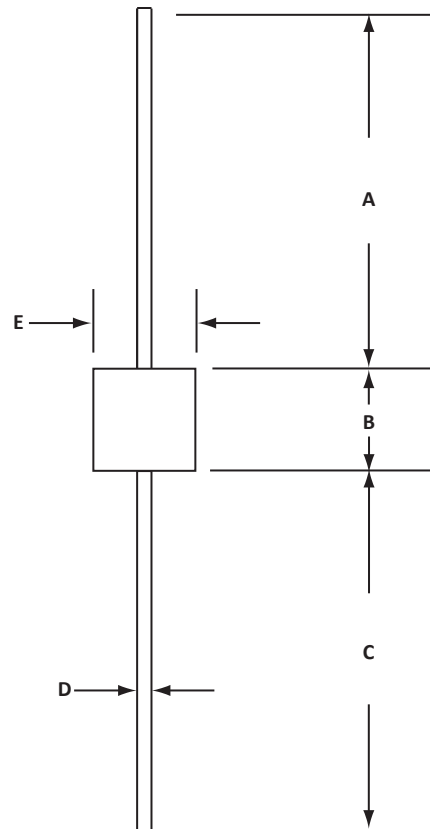
RTCA DO-160G COMPLIANT PRODUCT

OUTLINE DIMENSIONS

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-----------|------------|------------|
| | MIN | MAX | MIN | MAX |
| A | 24.5 | - | 1.00 | - |
| B | 8.60 | 9.10 | 0.34 | 0.36 |
| C | 24.5 | - | 1.00 | - |
| D | 1.20 DIA. | 1.30 DIA. | 0.048 DIA. | 0.052 DIA. |
| E | 8.60 | 9.10 | 0.34 | 0.36 |

NOTES

1. Dimensions are exclusive of mold flash and metal burrs.



ORDERING INFORMATION

| BASE PART NUMBER (xx = Voltage) | LEADFREE SUFFIX | TAPE SUFFIX | QTY/REEL | REEL SIZE | TUBE QTY |
|------------------------------------|-----------------|-------------|----------|-----------|----------|
| 30KPAxx | -LF | n/a | n/a | n/a | n/a |
| 30KPAxxA | -LF | n/a | n/a | n/a | n/a |
| 30KPAxxCA | -LF | n/a | n/a | n/a | n/a |

NOTES

1. Marking on Part - logo, part number, date code and positive terminal marked with band (unidirectional only).

MARKING DIAGRAM



COMPANY INFORMATION**RTCA DO-160G COMPLIANT PRODUCT****COMPANY PROFILE**

In business more than 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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