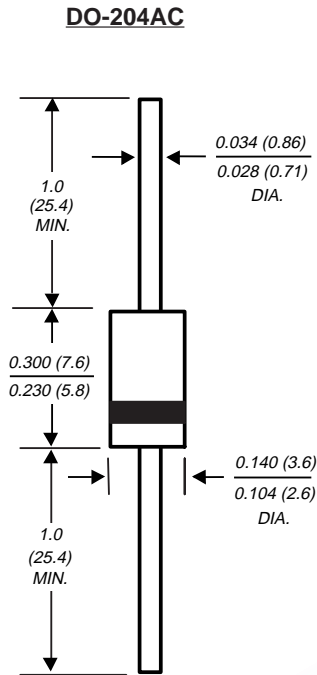


P6KA6.8 THRU P6KA43A

AUTOMOTIVE TRANSIENT VOLTAGE SUPPRESSOR

Breakdown Voltage - 6.8 to 43 Volts Peak Pulse Power - 600 Watts

PATENTED*



Dimensions in inches and (millimeters)

* Patent #'s 4,980,315
5,166,769
5,278,094

FEATURES

- ◆ Designed for under the hood applications
- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ◆ Exclusive patented PAR™ oxide passivated chip construction
- ◆ 600W peak pulse power surge capability with a 10/1000μs waveform repetition rate (duty cycle): 0.01%
- ◆ Excellent clamping capability
- ◆ Low incremental surge resistance
- ◆ Fast response time: typically less than 1.0ps from 0 Volts to V(BR)
- ◆ For devices with V(BR)≥10V, I_D are typically less than 1.0μA
- ◆ High temperature soldering guaranteed: 300°C/10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3 kg) tension

MECHANICAL DATA

Case: JEDEC DO-204AC molded plastic body over passivated junction

Terminals: Solder plated axial leads, solderable per MIL-STD-750, Method 2026

Polarity: Color band denotes positive end (cathode)

Mounting Position: Any

Weight: 0.015 ounce, 0.4 gram

Available in uni-directional only

MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| | SYMBOL | VALUE | UNITS |
|--|-----------------------------------|-------------|-------|
| Peak pulse power dissipation with a 10/1000μs (NOTE 1, FIG. 1) | P _{PPM} | Minimum 600 | Watts |
| Pulse pulse current with a 10/1000μs waveform (NOTE 1, FIG. 3) | I _{PPM} | SEE TABLE 1 | Amps |
| Steady state power dissipation at T _L =75°C lead lengths 0.375" (9.5mm) (NOTE 2) | P _{M(AV)} | 5.0 | Watts |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) (NOTE 3) | I _{FSM} | 70.0 | Amps |
| Maximum instantaneous forward voltage at 50A (NOTE 3) | V _F | 3.5 | Volts |
| Operating junction and storage temperature range | T _J , T _{STG} | -65 to +185 | °C |

NOTES:

- (1) Non-repetitive current pulse, per Fig. 3 and derated above T_A=25°C per Fig. 2
- (2) Mounted on copper pad area of 1.6 x 1.6" (40 x 40mm) per Fig. 5
- (3) Measured on 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum

ELECTRICAL CHARACTERISTICS RATINGS at (TA=25°C unless otherwise noted) TABLE 1

| Device Type | Breakdown Voltage V _(BR) (Volts) (NOTE 1) | | Test Current at I _r (Amps) | Stand-off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (μA) | Maximum Reverse Leakage at V _{WM} T _J =150°C I _D (μA) | Peak Pulse Current I _{PPM} (NOTE 2) (Amps) | Maximum Clamping Voltage at I _{PPM} V _c (Volts) | Maximum Temperature Coefficient of V _(BR) (% / °C) |
|-------------|--|------|---|--|--|---|---|--|--|
| | MIN | MAX | | | | | | | |
| P6KA6.8 | 6.12 | 7.48 | 10 | 5.50 | 500 | 1000 | 55.6 | 10.8 | 0.057 |
| P6KA6.8A | 6.45 | 7.14 | 10 | 5.80 | 500 | 1000 | 57.1 | 10.5 | 0.057 |
| P6KA7.5 | 6.75 | 8.25 | 10 | 6.05 | 250 | 500 | 51.3 | 11.7 | 0.061 |
| P6KA7.5A | 7.13 | 7.88 | 10 | 6.40 | 250 | 500 | 53.1 | 11.3 | 0.061 |
| P6KA8.2 | 7.38 | 9.02 | 10 | 6.63 | 100 | 200 | 48.0 | 12.5 | 0.065 |
| P6KA8.2A | 7.79 | 8.61 | 10 | 7.02 | 100 | 200 | 49.6 | 12.1 | 0.065 |
| P6KA9.1 | 8.19 | 10.0 | 1.0 | 7.37 | 25.0 | 100 | 43.5 | 13.8 | 0.068 |
| P6KA9.1A | 8.65 | 9.55 | 1.0 | 7.78 | 25.0 | 100 | 44.8 | 13.4 | 0.068 |
| P6KA10 | 9.00 | 11.0 | 1.0 | 8.10 | 10.0 | 50 | 40.0 | 15.0 | 0.073 |
| P6KA10A | 9.50 | 10.5 | 1.0 | 8.55 | 10.0 | 50 | 41.4 | 14.5 | 0.073 |
| P6KA11 | 9.90 | 12.1 | 1.0 | 8.92 | 5.0 | 20.0 | 37.0 | 16.2 | 0.075 |
| P6KA11A | 10.5 | 11.6 | 1.0 | 9.40 | 5.0 | 20.0 | 38.5 | 15.6 | 0.076 |
| P6KA12 | 10.8 | 13.2 | 1.0 | 9.72 | 2.0 | 10.0 | 34.7 | 17.3 | 0.076 |
| P6KA12A | 11.4 | 12.6 | 1.0 | 10.2 | 2.0 | 10.0 | 35.9 | 16.7 | 0.078 |
| P6KA13 | 11.7 | 14.3 | 1.0 | 10.5 | 2.0 | 10.0 | 31.6 | 19.0 | 0.081 |
| P6KA13A | 12.4 | 13.7 | 1.0 | 11.1 | 2.0 | 10.0 | 33.0 | 18.2 | 0.081 |
| P6KA15 | 13.5 | 16.3 | 1.0 | 12.1 | 2.0 | 10.0 | 27.3 | 22.0 | 0.084 |
| P6KA15A | 14.3 | 15.8 | 1.0 | 12.8 | 2.0 | 10.0 | 28.3 | 21.2 | 0.084 |
| P6KA16 | 14.4 | 17.6 | 1.0 | 12.9 | 2.0 | 10.0 | 25.5 | 23.5 | 0.086 |
| P6KA16A | 15.2 | 16.8 | 1.0 | 13.6 | 2.0 | 10.0 | 26.7 | 22.5 | 0.086 |
| P6KA18 | 16.2 | 19.8 | 1.0 | 14.5 | 2.0 | 10.0 | 22.6 | 26.5 | 0.088 |
| P6KA18A | 17.1 | 18.9 | 1.0 | 15.3 | 2.0 | 10.0 | 23.8 | 25.2 | 0.088 |

ELECTRICAL CHARACTERISTIC RATINGS (T_A = 25°C unless otherwise noted) TABLE 1 (Cont'd)

| Device Type | Breakdown Voltage V _(BR) Volts (NOTE 1) | | Test Current at I _T (mA) | Stand-off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (μA) | T _c =150°C Maximum Reverse Leakage at V _{WM} I _D (μA) | Peak Pulse Current I _{PPM} (NOTE 2) (Amps) | Maximum Clamping Voltage at I _{PPM} V _c (Volts) | Maximum Temperature Coefficient of V _(BR) (% / °C) |
|-------------|--|------|--|--|--|---|---|--|--|
| | MIN | MAX | | | | | | | |
| P6KA20 | 18.0 | 22.0 | 1.0 | 16.2 | 2.0 | 10.0 | 20.6 | 29.1 | 0.090 |
| P6KA20A | 19.0 | 21.0 | 1.0 | 17.1 | 2.0 | 10.0 | 21.7 | 27.7 | 0.090 |
| P6KA22 | 19.8 | 24.2 | 1.0 | 17.8 | 2.0 | 10.0 | 18.8 | 31.9 | 0.092 |
| P6KA22A | 20.9 | 23.1 | 1.0 | 18.8 | 2.0 | 10.0 | 19.6 | 30.6 | 0.092 |
| P6KA24 | 21.6 | 26.4 | 1.0 | 19.4 | 2.0 | 10.0 | 17.3 | 34.7 | 0.094 |
| P6KA24A | 22.8 | 25.2 | 1.0 | 20.5 | 2.0 | 10.0 | 18.1 | 33.6 | 0.094 |
| P6KA27 | 24.3 | 29.7 | 1.0 | 21.8 | 2.0 | 10.0 | 15.3 | 39.1 | 0.096 |
| P6KA27A | 25.7 | 28.4 | 1.0 | 23.1 | 2.0 | 10.0 | 16.0 | 37.5 | 0.096 |
| P6KA30 | 27.0 | 33.0 | 1.0 | 24.3 | 2.0 | 10.0 | 13.8 | 43.5 | 0.097 |
| P6KA30A | 28.5 | 31.5 | 1.0 | 25.6 | 2.0 | 10.0 | 14.5 | 41.4 | 0.097 |
| P6KA33 | 29.7 | 36.3 | 1.0 | 26.8 | 2.0 | 10.0 | 12.6 | 47.7 | 0.098 |
| P6KA33A | 31.4 | 34.7 | 1.0 | 28.2 | 2.0 | 10.0 | 13.1 | 45.7 | 0.098 |
| P6KA36 | 32.4 | 39.6 | 1.0 | 29.1 | 2.0 | 10.0 | 11.5 | 52.0 | 0.099 |
| P6KA36A | 34.2 | 37.8 | 1.0 | 30.8 | 2.0 | 10.0 | 12.0 | 49.9 | 0.099 |
| P6KA39 | 35.1 | 42.9 | 1.0 | 31.6 | 2.0 | 10.0 | 10.6 | 56.4 | 0.100 |
| P6KA39A | 37.1 | 41.0 | 1.0 | 33.3 | 2.0 | 10.0 | 11.1 | 53.9 | 0.100 |
| P6KA43 | 38.7 | 47.3 | 1.0 | 34.8 | 2.0 | 10.0 | 9.7 | 61.9 | 0.101 |
| P6KA43A | 40.9 | 45.2 | 1.0 | 36.8 | 2.0 | 10.0 | 10.1 | 59.3 | 0.101 |

NOTES:

- (1) V_(BR) measured after I_T applied for 300μs. I_T=square wave pulse or equivalent
- (2) Surge current waveform per Fig. 3 and derate per Fig. 2
- (3) All terms and symbols are consistent with ANSI/IEEE C62.35

RATINGS AND CHARACTERISTIC CURVES P6KA6.8 THRU P6KA43A

FIG. 1 - PEAK PULSE POWER RATING CURVE

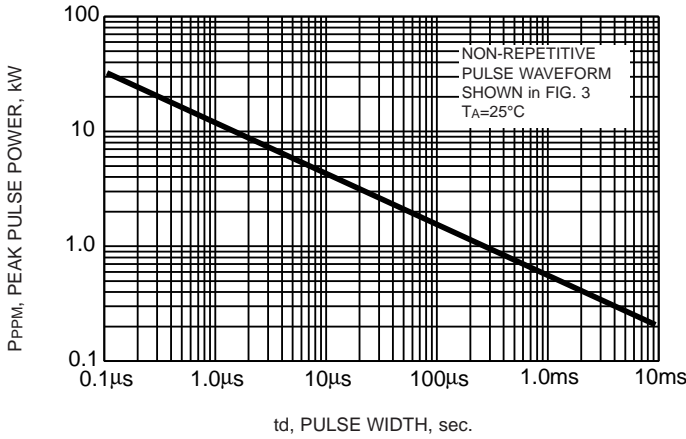


FIG. 2 - PULSE DERATING CURVE

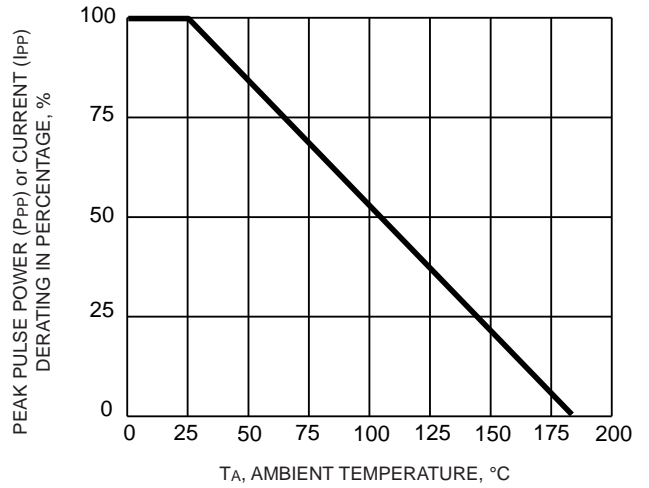


FIG. 3 - PULSE WAVEFORM

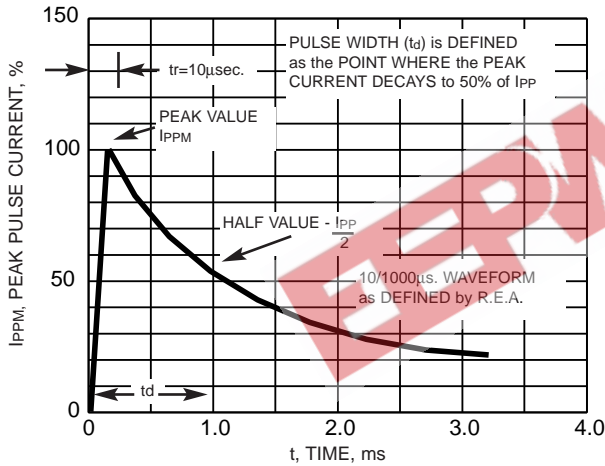


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

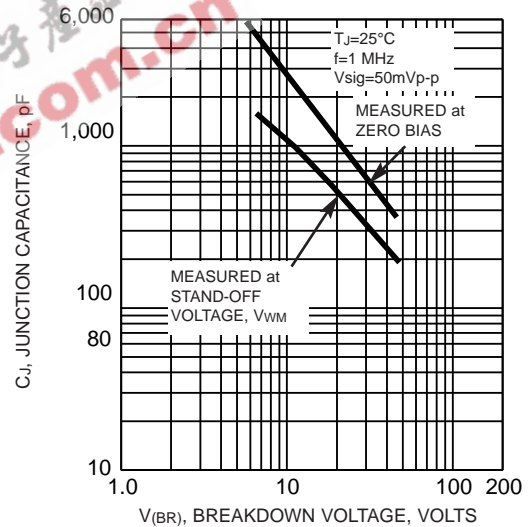


FIG. 5 - STEADY STATE POWER DERATING CURVE

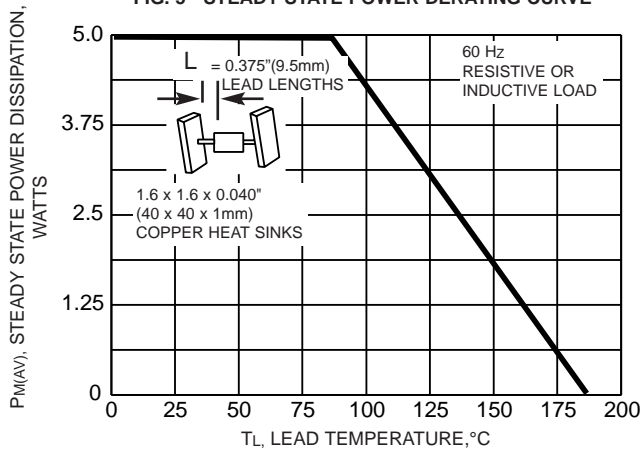


FIG. 6 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

