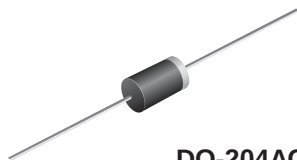
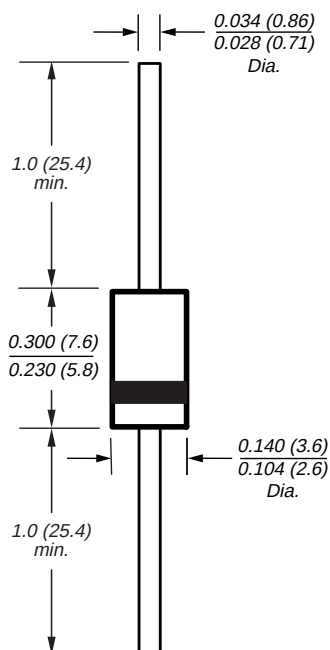


## Automotive Transient Voltage Suppressors

**Breakdown Voltage** 6.8 to 43V  
**Peak Pulse Power** 600W



**DO-204AC (DO-15)**



Available in uni-directional only

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<sup>®</sup> oxide passivated chip construction
- 600W peak pulse power surge capability with a 10/1000ms waveform repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time
- For devices with  $V_{(BR)} \geq 10V$ ,  $I_D$  are typically less than 1.0mA
- High temperature soldering guaranteed: 300°C/10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3kg) 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:** For unidirectional types the color band denotes the cathode, which is positive with respect to the anode under normal TVS operation

**Mounting Position:** Any

**Weight:** 0.015 oz., 0.4 g

**Packaging codes/options:**

1/4K per Bulk Box, 40K/box

4/4K per 13" Reel, 16K/box

23/2K per Ammo mag., 18K/box

## Maximum Ratings and Thermal Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter                                                                                             | Symbol                            | Value          | Unit |
|-------------------------------------------------------------------------------------------------------|-----------------------------------|----------------|------|
| Peak pulse power dissipation with a 10/1000 $\mu\text{s}$ <sup>(1)</sup> (Fig. 1)                     | PPPM                              | Minimum 600    | W    |
| Pulse pulse current with a 10/1000 $\mu\text{s}$ waveform <sup>(1)</sup> (Fig. 3)                     | I <sub>PPM</sub>                  | See Next Table | A    |
| Steady state power dissipation at $T_L = 75^\circ\text{C}$ lead lengths 0.375" (9.5mm) <sup>(2)</sup> | P <sub>M(AV)</sub>                | 5.0            | W    |
| Peak forward surge current, 8.3ms single half sine-wave <sup>(3)</sup>                                | I <sub>FSM</sub>                  | 75             | A    |
| Maximum instantaneous forward voltage at 50A <sup>(3)</sup>                                           | V <sub>F</sub>                    | 3.5            | V    |
| Operating junction and storage temperature range                                                      | T <sub>J</sub> , T <sub>STG</sub> | -65 to +185    | °C   |

### Notes:

(1) Non-repetitive current pulse, per Fig. 3 and derated above  $T_A = 25^\circ\text{C}$  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

# P6KA6.8 thru P6KA43A

Vishay Semiconductors  
formerly General Semiconductor



## Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

| Device Type | Breakdown Voltage<br>V <sub>(BR)</sub> <sup>(1)</sup> at I <sub>T</sub><br>(V) |      | Test<br>Current<br>I <sub>T</sub><br>(A) | Stand-off<br>Voltage<br>V <sub>WM</sub><br>(V) | Maximum<br>Reverse<br>Leakage<br>at V <sub>WM</sub><br>I <sub>D</sub> (μA) | T <sub>J</sub> = 150°C<br>Maximum<br>Reverse<br>Leakage<br>at V <sub>WM</sub><br>I <sub>D</sub> (μA) | Peak Pulse<br>Current<br>I <sub>PPM</sub> <sup>(2)</sup><br>(A) | Maximum<br>Clamping<br>Voltage<br>at I <sub>PPM</sub><br>V <sub>C</sub> (V) | Maximum<br>Temp.<br>Coefficient<br>of<br>V <sub>(BR)</sub><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                                                                       | 50                                                                                                   | 43.5                                                            | 13.8                                                                        | 0.068                                                                  |
| P6KA9.1A    | 8.65                                                                           | 9.55 | 1.0                                      | 7.78                                           | 25.0                                                                       | 50                                                                                                   | 44.8                                                            | 13.4                                                                        | 0.068                                                                  |
| P6KA10      | 9.00                                                                           | 11.0 | 1.0                                      | 8.10                                           | 10.0                                                                       | 20                                                                                                   | 40.0                                                            | 15.0                                                                        | 0.073                                                                  |
| P6KA10A     | 9.50                                                                           | 10.5 | 1.0                                      | 8.55                                           | 10.0                                                                       | 20                                                                                                   | 41.4                                                            | 14.5                                                                        | 0.073                                                                  |
| P6KA11      | 9.90                                                                           | 12.1 | 1.0                                      | 8.92                                           | 5.0                                                                        | 5.0                                                                                                  | 37.0                                                            | 16.2                                                                        | 0.075                                                                  |
| P6KA11A     | 10.5                                                                           | 11.6 | 1.0                                      | 9.40                                           | 5.0                                                                        | 5.0                                                                                                  | 38.5                                                            | 15.6                                                                        | 0.076                                                                  |
| P6KA12      | 10.8                                                                           | 13.2 | 1.0                                      | 9.72                                           | 2.0                                                                        | 5.0                                                                                                  | 34.7                                                            | 17.3                                                                        | 0.076                                                                  |
| P6KA12A     | 11.4                                                                           | 12.6 | 1.0                                      | 10.2                                           | 2.0                                                                        | 5.0                                                                                                  | 35.9                                                            | 16.7                                                                        | 0.078                                                                  |
| P6KA13      | 11.7                                                                           | 14.3 | 1.0                                      | 10.5                                           | 2.0                                                                        | 5.0                                                                                                  | 31.6                                                            | 19.0                                                                        | 0.081                                                                  |
| P6KA13A     | 12.4                                                                           | 13.7 | 1.0                                      | 11.1                                           | 2.0                                                                        | 5.0                                                                                                  | 33.0                                                            | 18.2                                                                        | 0.081                                                                  |
| P6KA15      | 13.5                                                                           | 16.3 | 1.0                                      | 12.1                                           | 1.0                                                                        | 5.0                                                                                                  | 27.3                                                            | 22.0                                                                        | 0.084                                                                  |
| P6KA15A     | 14.3                                                                           | 15.8 | 1.0                                      | 12.8                                           | 1.0                                                                        | 5.0                                                                                                  | 28.3                                                            | 21.2                                                                        | 0.084                                                                  |
| P6KA16      | 14.4                                                                           | 17.6 | 1.0                                      | 12.9                                           | 1.0                                                                        | 5.0                                                                                                  | 25.5                                                            | 23.5                                                                        | 0.086                                                                  |
| P6KA16A     | 15.2                                                                           | 16.8 | 1.0                                      | 13.6                                           | 1.0                                                                        | 5.0                                                                                                  | 26.7                                                            | 22.5                                                                        | 0.08                                                                   |
| P6KA18      | 16.2                                                                           | 19.8 | 1.0                                      | 14.5                                           | 1.0                                                                        | 5.0                                                                                                  | 22.6                                                            | 26.5                                                                        | 0.088                                                                  |
| P6KA18A     | 17.1                                                                           | 18.9 | 1.0                                      | 15.3                                           | 1.0                                                                        | 5.0                                                                                                  | 23.8                                                            | 25.2                                                                        | 0.088                                                                  |
| P6KA20      | 18.0                                                                           | 22.0 | 1.0                                      | 16.2                                           | 1.0                                                                        | 5.0                                                                                                  | 20.6                                                            | 29.1                                                                        | 0.090                                                                  |
| P6KA20A     | 19.0                                                                           | 21.0 | 1.0                                      | 17.1                                           | 1.0                                                                        | 5.0                                                                                                  | 21.7                                                            | 27.7                                                                        | 0.090                                                                  |
| P6KA22      | 19.8                                                                           | 24.2 | 1.0                                      | 17.8                                           | 1.0                                                                        | 5.0                                                                                                  | 18.8                                                            | 31.9                                                                        | 0.092                                                                  |
| P6KA22A     | 20.9                                                                           | 23.1 | 1.0                                      | 18.8                                           | 1.0                                                                        | 5.0                                                                                                  | 19.6                                                            | 30.6                                                                        | 0.092                                                                  |
| P6KA24      | 21.6                                                                           | 26.4 | 1.0                                      | 19.4                                           | 1.0                                                                        | 5.0                                                                                                  | 17.3                                                            | 34.7                                                                        | 0.094                                                                  |
| P6KA24A     | 22.8                                                                           | 25.2 | 1.0                                      | 20.5                                           | 1.0                                                                        | 5.0                                                                                                  | 18.1                                                            | 33.6                                                                        | 0.094                                                                  |
| P6KA27      | 24.3                                                                           | 29.7 | 1.0                                      | 21.8                                           | 1.0                                                                        | 5.0                                                                                                  | 15.3                                                            | 39.1                                                                        | 0.096                                                                  |
| P6KA27A     | 25.7                                                                           | 28.4 | 1.0                                      | 23.1                                           | 1.0                                                                        | 5.0                                                                                                  | 16.0                                                            | 37.5                                                                        | 0.096                                                                  |
| P6KA30      | 27.0                                                                           | 33.0 | 1.0                                      | 24.3                                           | 1.0                                                                        | 5.0                                                                                                  | 13.8                                                            | 43.5                                                                        | 0.097                                                                  |
| P6KA30A     | 28.5                                                                           | 31.5 | 1.0                                      | 25.6                                           | 1.0                                                                        | 5.0                                                                                                  | 14.5                                                            | 41.4                                                                        | 0.097                                                                  |
| P6KA33      | 29.7                                                                           | 36.3 | 1.0                                      | 26.8                                           | 1.0                                                                        | 5.0                                                                                                  | 12.6                                                            | 47.7                                                                        | 0.098                                                                  |
| P6KA33A     | 31.4                                                                           | 34.7 | 1.0                                      | 28.2                                           | 1.0                                                                        | 5.0                                                                                                  | 13.1                                                            | 45.7                                                                        | 0.098                                                                  |
| P6KA36      | 32.4                                                                           | 39.6 | 1.0                                      | 29.1                                           | 1.0                                                                        | 5.0                                                                                                  | 11.5                                                            | 52.0                                                                        | 0.099                                                                  |
| P6KA36A     | 34.2                                                                           | 37.8 | 1.0                                      | 30.8                                           | 1.0                                                                        | 5.0                                                                                                  | 12.0                                                            | 49.9                                                                        | 0.099                                                                  |
| P6KA39      | 35.1                                                                           | 42.9 | 1.0                                      | 31.6                                           | 1.0                                                                        | 5.0                                                                                                  | 10.6                                                            | 56.4                                                                        | 0.100                                                                  |
| P6KA39A     | 37.1                                                                           | 41.0 | 1.0                                      | 33.3                                           | 1.0                                                                        | 5.0                                                                                                  | 11.1                                                            | 53.9                                                                        | 0.100                                                                  |
| P6KA43      | 38.7                                                                           | 47.3 | 1.0                                      | 34.8                                           | 1.0                                                                        | 5.0                                                                                                  | 9.7                                                             | 61.9                                                                        | 0.101                                                                  |
| P6KA43A     | 40.9                                                                           | 45.2 | 1.0                                      | 36.8                                           | 1.0                                                                        | 5.0                                                                                                  | 10.1                                                            | 59.3                                                                        | 0.101                                                                  |

### Notes:

(1) V<sub>(BR)</sub> measured after I<sub>T</sub> applied for 300μs. I<sub>T</sub>=square wave pulse or equivalent

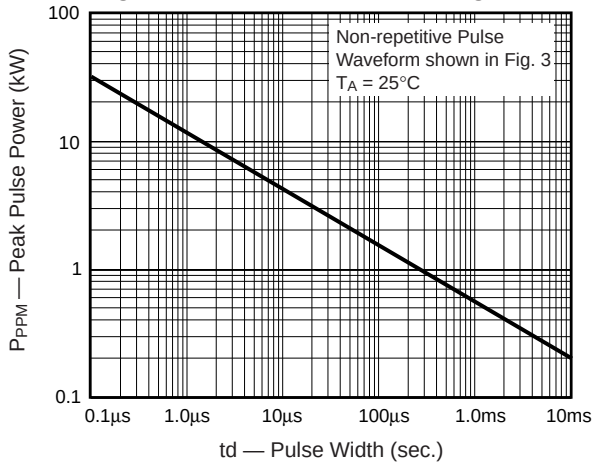
(2) Surge current waveform per Fig. 3 and derate per Fig. 2

(3) All terms and symbols are consistent with ANSI/IEEE C62.35

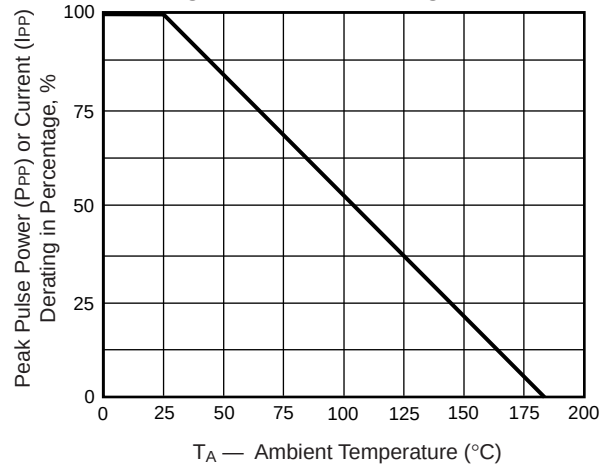


**Ratings and  
Characteristic Curves** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

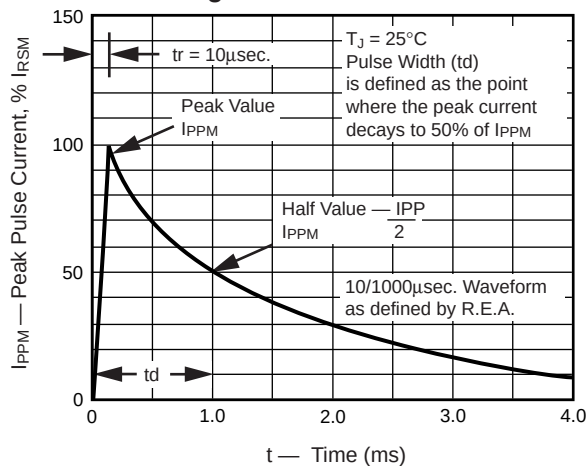
**Fig. 1 – Peak Pulse Power Rating Curve**



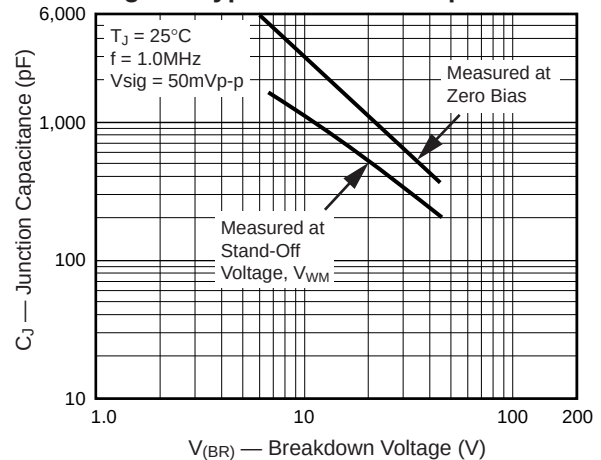
**Fig. 2 – Pulse Derating Curve**



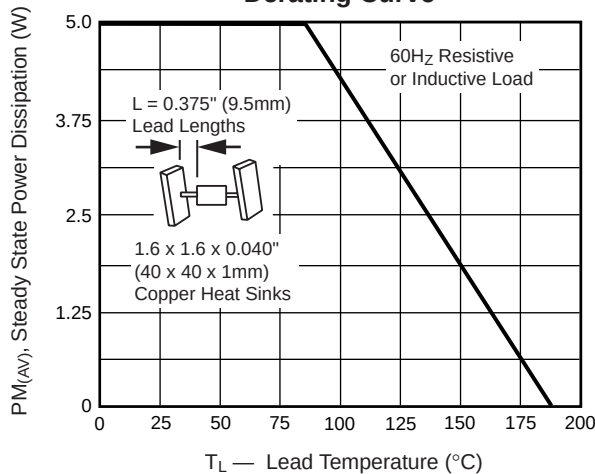
**Fig. 3 – Pulse Waveform**



**Fig. 4 – Typical Junction Capacitance**



**Fig. 5 – Steady State Power  
Derating Curve**



**Fig. 6 – Maximum Non-Repetitive/Peak  
Forward Surge Current**

