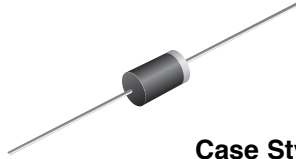


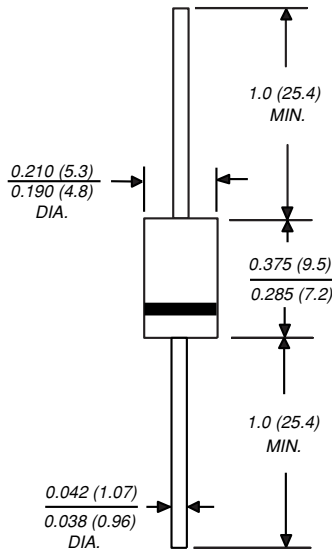


## Automotive Transient Voltage Suppressors

**Breakdown Voltage**  
6.8 to 43V  
**Peak Pulse Power**  
1500W



Case Style 1.5KA



Available in uni-directional only

Dimensions in inches and (millimeters)

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

Patented\*

### Features

- Designed for under the hood applications
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- 1500W peak pulse power surge capability with a 10/1000ms waveform, repetition rate (duty cycle): 0.01%
- Exclusive patented PAR<sup>®</sup> oxide passivated chip construction
- Excellent clamping capability
- Low incremental surge resistance
- Fast response time
- For devices with  $V_{(BR)D10V}$   $I_D$  are typically less than 1.0mA at  $T_A = 150^\circ\text{C}$
- High temperature soldering guaranteed: 300°C/10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3 kg) tension

### Mechanical Data

**Case:** Molded plastic 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:** 0.045 oz., 1.2 g

**Packaging codes/options:**

1/1.5K per Bulk Box, 15K/box

4/1.4K per 13" Reel (52mm Tape), 5.6K/box

23/1K per Ammo Box (52mm Tape), 9K/box

### Maximum Ratings and Thermal Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Peak pulse power dissipation with a 10/1000µs waveform <sup>(1)</sup> (Fig. 1)	PPPM	Minimum 1500	W
Peak pulse current at T <sub>A</sub> = 25°C with a 10/1000µs waveform <sup>(1)</sup> (Fig. 3)	IPPM	See Next Table	A
Steady state power dissipation at T <sub>L</sub> = 75°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>	200	A
Maximum instantaneous forward voltage at 100A <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<sub>A</sub> = 25°C per Fig. 2

(2) Mounted on copper pad area of 1.6 x 1.6" (40 x 40mm) per Fig. 5

(3) 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minutes maximum

# 1.5KA6.8 thru 1.5KA43A



Vishay Semiconductors  
formerly General Semiconductor

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

Device Type	Breakdown Voltage V <sub>(BR)</sub> <sup>(1)</sup> at I <sub>T</sub> (V)		Test Current I <sub>T</sub> (mA)	Stand-off Voltage V <sub>WM</sub> (Volts)	Maximum Reverse Leakage at V <sub>WM</sub> I <sub>D</sub> (μA)	T <sub>J</sub> =150°C Maximum Reverse Leakage at V <sub>WM</sub> I <sub>D</sub> (μA)	Peak Pulse Current I <sub>PPM</sub> (Note 2) (Amps)	Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>C</sub> (Volts)	Maximum Temp. Coefficient of V <sub>(BR)</sub> (% / °C)
	Min	Max							
1.5KA6.8	6.12	7.48	10	5.50	1000	10000	139	10.8	0.057
1.5KA6.8A	6.45	7.14	10	5.80	1000	10000	143	10.5	0.057
1.5KA7.5	6.75	8.25	10	6.05	500	5000	128	11.7	0.061
1.5KA7.5A	7.13	7.88	10	6.40	500	5000	133	11.3	0.061
1.5KA8.2	7.38	9.02	10	6.63	200	2000	120	12.5	0.065
1.5KA8.2A	7.79	8.61	10	7.02	200	2000	124	12.1	0.065
1.5KA9.1	8.19	10.0	1.0	7.37	50	500	109	13.8	0.068
1.5KA9.1A	8.65	9.55	1.0	7.78	50	500	112	13.4	0.068
1.5KA10	9.00	11.0	1.0	8.10	20	200	100	15.0	0.073
1.5KA10A	9.50	10.5	1.0	8.55	20	200	103	14.5	0.073
1.5KA11	9.90	12.1	1.0	8.92	5.0	50	92.6	16.2	0.075
1.5KA11A	10.5	11.6	1.0	9.40	5.0	50	96.2	15.6	0.076
1.5KA12	10.8	13.2	1.0	9.72	2.0	10	86.7	17.3	0.076
1.5KA12A	11.4	12.6	1.0	10.2	2.0	10	89.8	16.7	0.078
1.5KA13	11.7	14.3	1.0	10.5	2.0	10	78.9	19.0	0.081
1.5KA13A	12.4	13.7	1.0	11.1	2.0	10	82.4	18.2	0.081
1.5KA15	13.5	16.3	1.0	12.1	1.0	10	68.2	22.0	0.084
1.5KA15A	14.3	15.8	1.0	12.8	1.0	10	70.8	21.2	0.084
1.5KA16	14.4	17.6	1.0	12.9	1.0	10	63.8	23.5	0.086
1.5KA16A	15.2	16.8	1.0	13.6	1.0	10	66.7	22.5	0.086
1.5KA18	16.2	19.8	1.0	14.5	1.0	10	56.6	26.5	0.088
1.5KA18A	17.1	18.9	1.0	15.3	1.0	10	59.5	25.2	0.088
1.5KA20	18.0	22.0	1.0	16.2	1.0	10	51.5	29.1	0.090
1.5KA20A	19.0	21.0	1.0	17.1	1.0	10	54.2	27.7	0.090
1.5KA22	19.8	24.2	1.0	17.8	1.0	10	47.0	31.9	0.092
1.5KA22A	20.9	23.1	1.0	18.8	1.0	10	49.0	30.6	0.092
1.5KA24	21.6	26.4	1.0	19.4	1.0	10	43.2	34.7	0.094
1.5KA24A	22.8	25.2	1.0	20.5	1.0	10	45.2	33.2	0.094
1.5KA27	24.3	29.7	1.0	21.8	1.0	10	38.4	39.1	0.096
1.5KA27A	25.7	28.4	1.0	23.1	1.0	10	40.0	37.5	0.096
1.5KA30	27.0	33.0	1.0	24.3	1.0	10	34.5	43.5	0.097
1.5KA30A	28.5	31.5	1.0	25.6	1.0	10	36.2	41.4	0.097
1.5KA33	29.7	36.3	1.0	26.8	1.0	10	31.4	47.7	0.098
1.5KA33A	31.4	34.7	1.0	28.2	1.0	10	32.8	45.7	0.098
1.5KA36	32.4	39.6	1.0	29.1	1.0	10	28.8	52.0	0.099
1.5KA36A	34.2	37.8	1.0	30.8	1.0	10	30.1	49.9	0.099
1.5KA39	35.1	42.9	1.0	31.6	1.0	10	26.6	56.4	0.100
1.5KA39A	37.1	41.0	1.0	33.3	1.0	10	27.8	53.9	0.100
1.5KA43	38.7	47.3	1.0	34.8	1.0	10	24.2	61.9	0.101
1.5KA43A	40.9	45.2	1.0	36.8	1.0	10	25.3	59.3	0.101

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

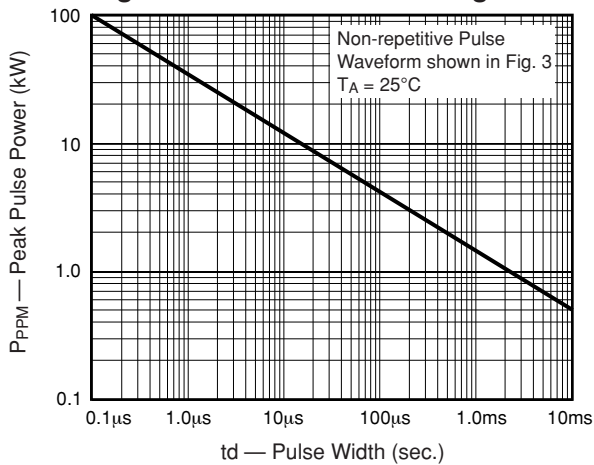
(2) Surge current waveform per Fig. 3 and derate per Fig. 2

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

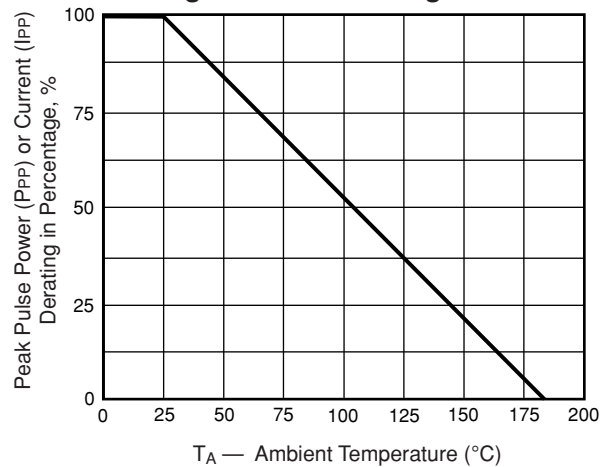


**Ratings and Characteristic Curves** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

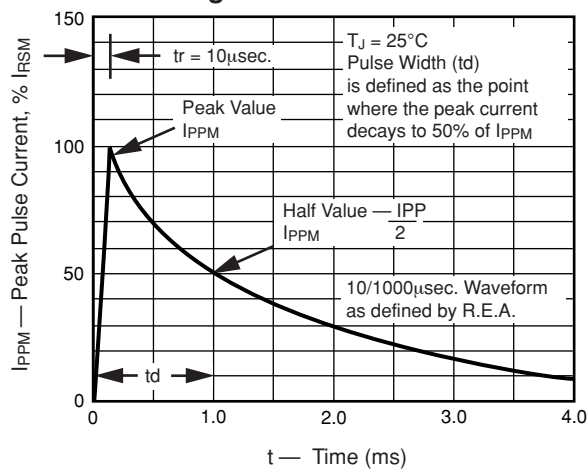
**Fig. 1 – Peak Pulse Power Rating Curve**



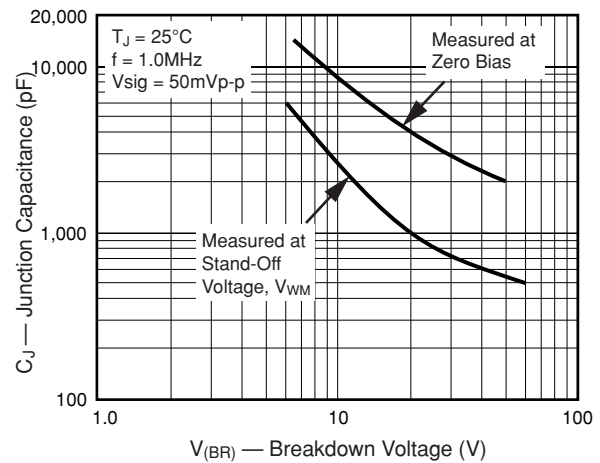
**Fig. 2 – Pulse Derating Curve**



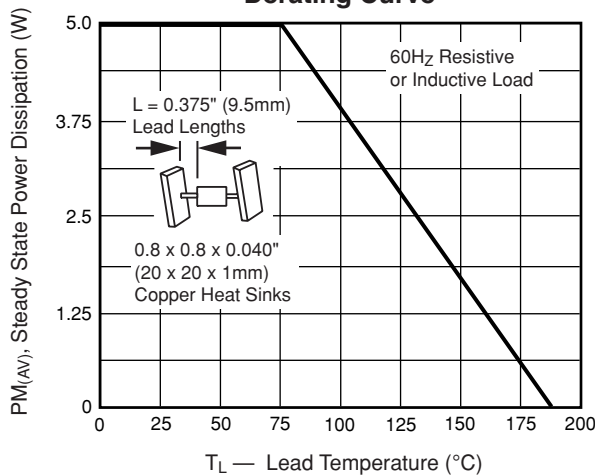
**Fig. 3 – Pulse Waveform**



**Fig. 4 – Typical Junction Capacitance □ Unidirectional**



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



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

