

# 1.5KA SERIES

## AUTOMOTIVE TRANSIENT VOLTAGE SUPPRESSOR

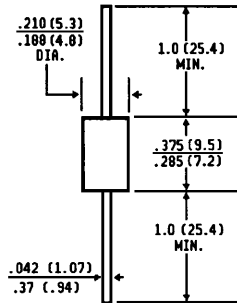
VOLTAGE- 6.8 to 43 Volts

1500 Watt Peak Power 5.0 Watt Steady State

### FEATURES

- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- ◆ Glass passivated junction
- ◆ Exclusive G.I. PAR construction
- ◆ 1500W surge capability at 1 ms
- ◆ Excellent clamping capability
- ◆ Low zener impedance
- ◆ Fast response time: typically less than 1.0 ps from 0 volts to BV min.
- ◆ Typical  $I_R$  less than 20  $\mu$  A above 10V at 175°C
- ◆ High temperature soldering guaranteed: 300°C/10 seconds/.375", (9.5mm) lead length/5lbs., (2.3 kg) tension
- ◆ Designed to handle under the hood applications

### DO-201



Dimensions in inches  
and  
(millimeters)

### MECHANICAL DATA

- Case :** Molded plastic over a passivated junction
- Terminals:** Axial leads, solderable per MIL-ST-202, Method 208
- Polarity:** Color band denoted cathode except Bipolar
- Mounting Position:** Any
- Weight :** 0.045 ounce, 1.2 grams

### DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types 1.5KA6.8 thru types 1.5KA43  
Electrical characteristics apply in both directions

### MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

RATING	SYMBOL	VALUE	UNITS
Peak Power Dissipation at $T_A = 25^\circ\text{C}$ , $T_p = 1\text{ms}$ (Note 1)	Ppk	Minimum 1500	Watts
Steady State Power Dissipation at $T_L = 75^\circ\text{C}$ Lead Lengths .375", (9.5mm) (Note 2)	PD	5.0	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	$I_{FSM}$	200	Amps
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +185	°C

#### NOTES:

1. Non-repetitive current pulse, per Fig. 3 and derated above  $T_A = 25^\circ\text{C}$  per Fig. 2.
2. Mounted on Copper Leaf area of 0.79 in<sup>2</sup> (20mm<sup>2</sup>).
3. 8.3ms single half sine-wave, duty cycle = 4 pulses per Minutes maximum.



**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  unless otherwise noted)**

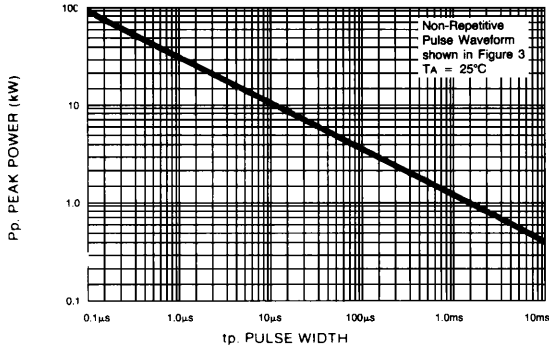
DEVICE	Breakdown Voltage			Working Peak Reverse Voltage at $V_{RM}$ (Volts)	Maximum Reverse Leakage at $V_{RM}$ $I_R$ ( $\mu\text{A}$ )	$T_C = 150^\circ\text{C}$ Maximum Reverse Leakage at $V_{RM}$ $I_R$ ( $\mu\text{A}$ )	Maximum Reverse Current $I_{RM}$ (Note 2) (Amps)	Maximum Reverse Voltage at $I_{RM}$ (Clamping Voltage) $V_{RSM}$ (Volts)	Maximum Temperature Coefficient of $V_{BR}$ ( % / $^\circ\text{C}$ )
	VBR@		IT (mA)						
	Volts (Note 1)	MIN							
1.5KA6.8	6.12	7.48	10	5.50	500	2000	149	10.8	0.057
1.5KA6.8A	6.45	7.14	10	5.80	500	2000	153	10.5	0.057
1.5KA7.5	6.75	8.25	10	6.05	250	1000	137	11.7	0.061
1.5KA7.5A	7.13	7.88	10	6.40	250	1000	143	11.3	0.061
1.5KA8.2	7.38	9.02	10	6.63	100	400	129	12.5	0.065
1.5KA8.2A	7.79	8.61	10	7.02	100	400	133	12.1	0.065
1.5KA9.1	8.19	10.0	1.0	7.37	25	100	117	13.8	0.068
1.5KA9.1A	8.65	9.55	1.0	7.78	25	100	120	13.4	0.068
1.5KA10	9.00	11.0	1.0	8.10	5	20	107	15.0	0.073
1.5KA10A	9.50	10.5	1.0	8.55	5	20	111	14.5	0.073
1.5KA11	9.90	12.1	1.0	8.92	2	10	99.5	16.2	0.075
1.5KA11A	10.5	11.6	1.0	9.40	2	10	103	15.6	0.076
1.5KA12	10.8	13.2	1.0	9.72	2	10	93.2	17.3	0.076
1.5KA12A	11.4	12.6	1.0	10.2	2	10	96.5	19.0	0.078
1.5KA13	11.7	14.3	1.0	10.5	2	10	84.8	18.2	0.081
1.5KA13A	12.4	13.7	1.0	11.1	2	10	88.6	22.0	0.081
1.5KA15	13.5	16.3	1.0	12.1	2	10	73.3	21.2	0.084
1.5KA15A	14.3	15.8	1.0	12.8	2	10	76.0	23.5	0.084
1.5KA16	14.4	17.6	1.0	12.9	2	10	68.6	23.5	0.086
1.5KA16A	15.2	16.8	1.0	13.6	2	10	71.6	22.5	0.086
1.5KA18	16.2	19.8	1.0	14.5	2	10	60.8	26.5	0.088
1.5KA18A	17.1	18.9	1.0	15.3	2	10	64.0	25.2	0.088
1.5KA20	18.0	22.0	1.0	16.2	2	10	55.4	29.1	0.090
1.5KA20A	19.0	21.0	1.0	17.1	2	10	58.2	27.7	0.090
1.5KA22	19.8	24.2	1.0	17.8	2	10	50.5	31.9	0.092
1.5KA22A	20.9	23.1	1.0	18.8	2	10	52.7	30.6	0.092
1.5KA24	21.6	26.4	1.0	19.4	2	10	46.5	34.7	0.094
1.5KA24A	22.8	25.2	1.0	20.5	2	10	48.6	33.2	0.094
1.5KA27	24.3	29.7	1.0	21.8	2	10	41.2	39.1	0.096
1.5KA27A	25.7	28.4	1.0	23.1	2	10	43.4	37.5	0.096
1.5KA30	27.0	33.0	1.0	24.3	2	10	37.0	43.5	0.097
1.5KA30A	28.5	31.5	1.0	25.6	2	10	38.9	41.4	0.097
1.5KA33	29.7	36.3	1.0	26.8	2	10	33.8	47.7	0.098
1.5KA33A	31.4	34.7	1.0	28.2	2	10	35.3	45.7	0.098
1.5KA36	32.4	39.6	1.0	29.1	2	10	31.0	52.0	0.099
1.5KA36A	34.2	37.8	1.0	30.8	2	10	32.3	49.9	0.099
1.5KA39	35.1	42.9	1.0	31.6	2	10	28.6	56.4	0.100
1.5KA39A	37.1	41.0	1.0	33.3	2	10	29.9	53.9	0.100
1.5KA43	38.7	47.3	1.0	34.8	2	10	26.0	61.9	0.101
1.5KA43A	40.9	45.2	1.0	36.8	2	10	27.2	59.3	0.101

**NOTES:**

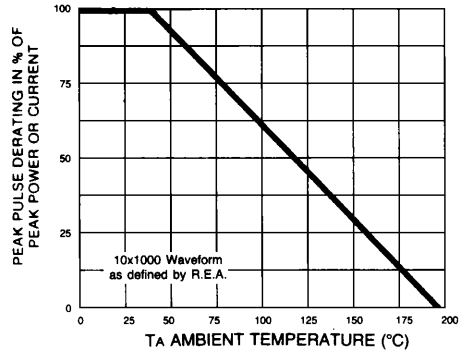
1.  $V_{BR}$  measured after IT applied for 300  $\mu\text{s}$ . IT = Square Wave Pulse or equivalent.
2. Surge current Waveform per Figure 3 and Derate per Figure 2.
3.  $V_F = 3.5\text{V mas.}$ ,  $I_F = 100\text{A}$  for all types per 1/2 Square or Equivalent Sine Wave. PW = 8.3 ms, Duty Cycle = 4 Pulses per Minute Maximum.

# RATINGS AND CHARACTERISTIC CURVES 1.5KA SERIES

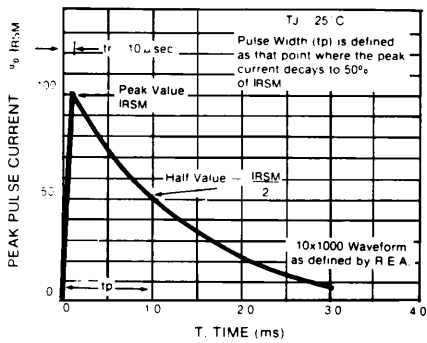
**FIGURE 1 — PULSE RATING CURVE**



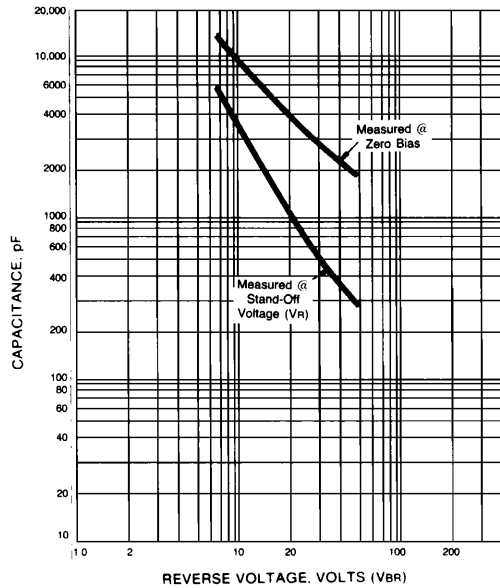
**FIGURE 2 — PULSE DERATING CURVE**



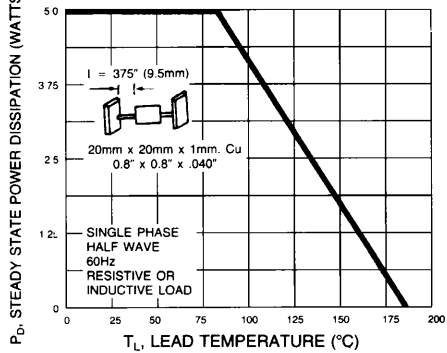
**FIGURE 3 — PULSE WAVEFORM**



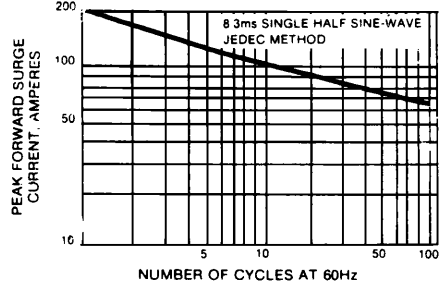
**FIGURE 4 — TYPICAL JUNCTION CAPACITANCE**



**FIGURE 5 — STEADY STATE POWER DERATING**



**FIGURE 6 — MAXIMUM NON-REPETITIVE SURGE CURRENT**



**GENERAL  
INSTRUMENT**