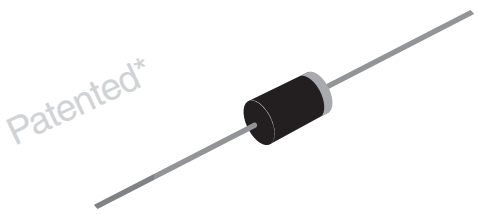
Automotive Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



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

Case Style 1.5KA

FEATURES

- Patented PAR® construction
- Available in uni-directional polarity only
- 1500 W peak pulse power capability with a 10/1000 µs waveform
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

RoHS COMPLIANT

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive and Telecommunication.

PRIMARY CHARACTERISTICS	
V_{BR}	6.8 V to 47 V
P_{PPM}	1500 W
P_D	6.5 W
I_{FSM}	200 A
T_J max.	185 °C

MECHANICAL DATA

Case: Molded epoxy body over passivated junction

Molding compound meets UL 94 V-0 flammability rating

Base P/NHE3 - RoHS compliant, high reliability/ automotive grade (AEC Q101 qualified)

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Peak pulse power dissipation with a 10/1000 µs waveform (1) (Fig. 1)	P_{PPM}	1500	W
Peak pulse current at T_A = 25 °C with a 10/1000 µs waveform (1) (Fig. 3)	I_{PPM}	See next table	A
Power dissipation on infinite heatsink at T_L = 75 °C (Fig. 5)	P_D	6.5	W
Peak forward surge current 8.3 ms single half sine-wave (2)	I_{FSM}	200	A
Maximum instantaneous forward voltage at 100 A (2)	V_F	3.5	V
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) 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)									
DEVICE TYPE	**BREAKDOWN VOLTAGE V_{BR} (1) AT I_T (V)**		**TEST CURRENT I_T (mA)**	**STAND-OFF VOLTAGE V_{WM} (V)**	**MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (µA)**	**T_J = 150 °C MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (µA)**	**PEAK PULSE CURRENT I_{PPM} (2) (A)**	**MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)**	**MAXIMUM TEMP. COEFFICIENT OF V_{BR} (%/°C)**
	MIN.	**MAX.**							
1.5KA6.8	6.12	7.48	10	5.50	1000	10 000	139	10.8	0.057
1.5KA6.8A	6.45	7.14	10	5.80	1000	10 000	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	20	24.2	61.9	0.101
1.5KA43A	40.9	45.2	1.0	36.8	1.0	20	25.3	59.3	0.101
1.5KA47	42.3	51.7	1.0	38.1	1.0	20	22.1	67.8	0.101
1.5KA47A	44.7	49.4	1.0	40.2	1.0	20	23.1	64.8	0.101

Notes:

(1) V_{BR} measured after I_T applied for 300 µs = 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

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
1.5KA6.8AHE3/54 (1)	0.916	54	1400	13" diameter paper tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

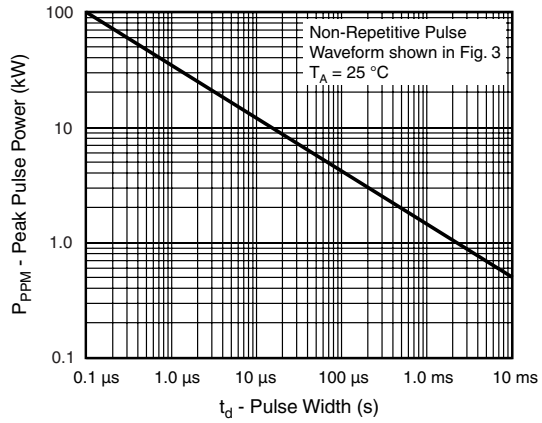


Figure 1. Peak Pulse Power Rating Curve

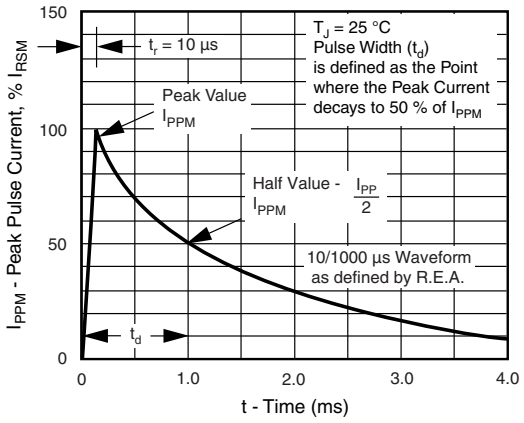


Figure 3. Pulse Waveform

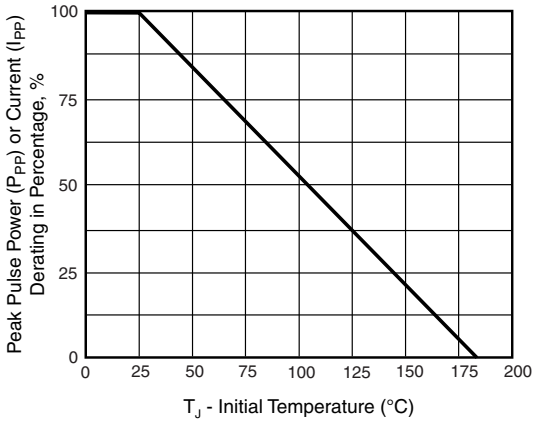


Figure 2. Pulse Power or Current vs. Initial Junction Temperature

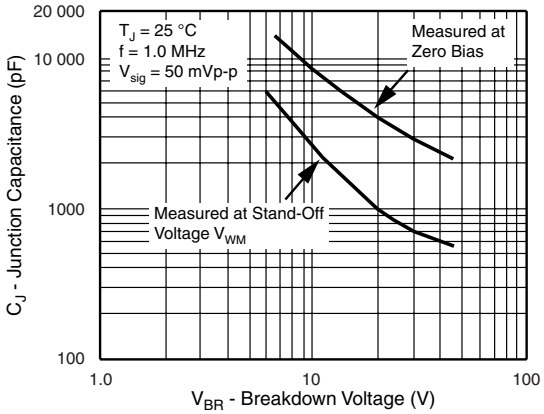


Figure 4. Typical Junction Capacitance Unidirectional

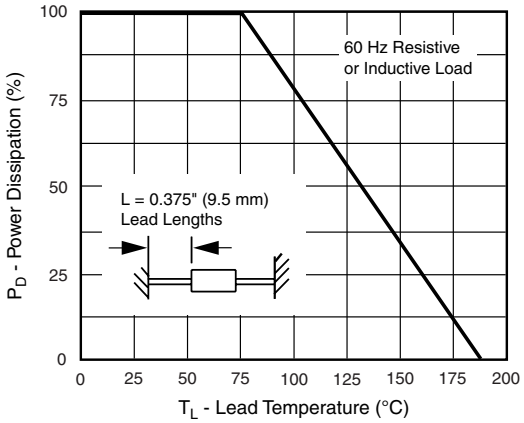


Figure 5. Power Derating Curve

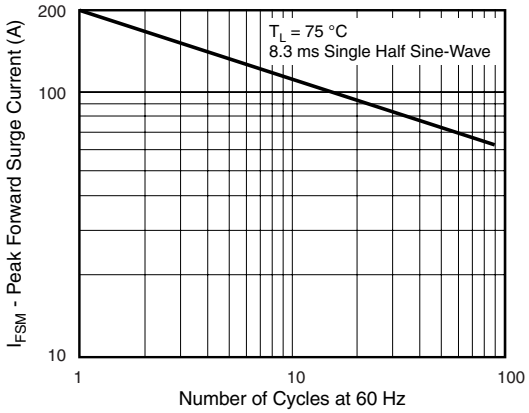
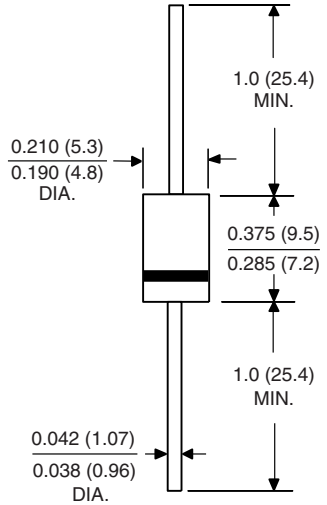


Figure 6. Maximum Non-Repetitive/Peak Forward Surge Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

Case Style 1.5KA



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