

# 1500W Transient Voltage Suppressor



SMD Diodes Specialist

## 1.5KE-G Series

Stand-off Voltage: 6.8 ~ 440V

Power Dissipation: 1500 Watts

RoHS Device

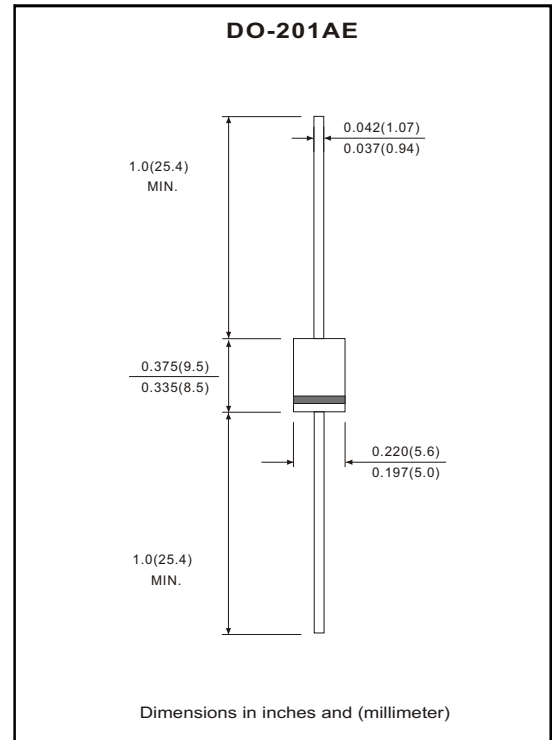


### Features

- Plastic package has underwriters laboratory flammability classification 94V-0
- 1500W, surge capability at 1mS.
- Excellent clamping capability.
- Low Zener impedance.
- Fast response time: typically less than 1.0pS from 0 volt to BV min.
- Typical  $I_R$  less than 1 $\mu$ A above 10V.
- High temperature soldering guaranteed:  
260°C/10S/0.375"(9.5mm) lead length/5lbs.,(2.3KG) tension

### Mechanical Data

- Case: Molded plastic DO-201AE
- Terminals: Axial leads, solderable per MIL-STD-202, Method 208
- Polarity: Color band denotes cathode except bipolar
- Weight: 1.2 gram



### Maximum Ratings and Electrical Characteristics

Parameter	Symbol	Value	Unit
Peak power dissipation at $T_A=25^\circ\text{C}$ $T_P=1\text{mS}$ (Note 1)	PPK	Maximum 1500	W
Steady state power dissipation at $T_L=75^\circ\text{C}$ Lead length 0.375" (9.5mm) (Note 2)	$P_D$	5.0	W
Peak forward surge current, 8.3mS single half sine-wave superimposed on rated load (JEDEC method) (Note 3)	$I_{FSM}$	200	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175	$^\circ\text{C}$

#### NTOES:

- (1) Non-repetitive current pulse, per fig.3 and derated above  $T_A=25^\circ\text{C}$  per fig. 2.
- (2) Mounted on copper land area of 0.79in<sup>2</sup>(20mm<sup>2</sup>).
- (3) 8.3mS single half-sine wave, duty cycle=4 pulses per minute maximum.
- (4) For bidirectional use C suffix for 10% tolerance, CA suffix for 5% tolerance.

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## RATING AND CHARACTERISTIC (1.5KE-G Series)

Part No.	Breakdown Voltage		@I <sub>T</sub> (mA)	Working Peak Reverse Voltage V <sub>RWM</sub> (V)	Maximum Reverse Leakage at V <sub>RWM</sub> I <sub>R</sub> (μA)	Maximum Reverse Current I <sub>RSM</sub> (A)	Maximum Clamping Voltage V <sub>RWM</sub> (V)	Maximum Temperature Coefficient of V <sub>BR</sub> (% C)
	V <sub>BR</sub> (V)							
	MIN.	MAX.						
1.5KE6.8(C)-G	6.12	7.48	10	5.50	1000	139.0	10.8	0.057
1.5KE6.8(C)A-G	6.45	7.14	10	5.80	1000	143.0	10.5	0.057
1.5KE7.5(C)-G	6.75	8.25	10	6.05	500	128.0	11.7	0.061
1.5KE7.5(C)A-G	7.13	7.88	10	6.40	500	132.0	11.3	0.061
1.5KE8.2(C)-G	7.38	9.02	10	6.63	200	120.0	12.5	0.065
1.5KE8.2(C)A-G	7.79	8.00	10	7.02	200	124.0	12.1	0.065
1.5KE9.1(C)-G	8.19	10.0	1.0	7.37	50	109.0	13.8	0.068
1.5KE9.1(C)A-G	8.65	9.55	1.0	7.78	50	112.0	13.4	0.068
1.5KE10(C)-G	9.00	11.0	1.0	8.10	10	100.0	15.0	0.073
1.5KE10(C)A-G	9.50	10.5	1.0	8.55	10	103.0	14.5	0.073
1.5KE11(C)-G	9.90	12.1	1.0	8.92	5.0	93.0	16.2	0.075
1.5KE11(C)A-G	10.5	11.6	1.0	9.40	5.0	96.0	15.6	0.075
1.5KE12(C)-G	10.8	13.2	1.0	9.72	5.0	87.0	17.3	0.078
1.5KE12(C)A-G	11.4	12.6	1.0	10.2	5.0	90.0	16.7	0.078
1.5KE13(C)-G	11.7	14.3	1.0	10.5	5.0	79.0	19.0	0.081
1.5KE13(C)A-G	12.4	13.7	1.0	11.1	5.0	82.0	18.2	0.081
1.5KE15(C)-G	13.5	16.5	1.0	12.1	5.0	68.0	22.0	0.084
1.5KE15(C)A-G	14.3	15.8	1.0	12.8	5.0	71.0	21.2	0.084
1.5KE16(C)-G	14.4	17.6	1.0	12.9	5.0	64.0	23.5	0.086
1.5KE16(C)A-G	15.2	16.8	1.0	13.6	5.0	67.0	22.5	0.086
1.5KE18(C)-G	16.2	19.8	1.0	14.5	5.0	56.5	26.5	0.088
1.5KE18(C)A-G	17.1	18.9	1.0	15.3	5.0	59.5	25.2	0.088
1.5KE20(C)-G	18.0	22.0	1.0	16.2	5.0	51.5	29.1	0.090
1.5KE20(C)A-G	19.0	21.0	1.0	17.1	5.0	54.0	27.7	0.090
1.5KE22(C)-G	19.8	24.2	1.0	17.8	5.0	47.0	31.9	0.092
1.5KE22(C)A-G	20.9	23.1	1.0	18.8	5.0	49.0	30.6	0.092
1.5KE24(C)-G	21.6	26.4	1.0	19.4	5.0	43.0	34.7	0.094
1.5KE24(C)A-G	22.8	25.2	1.0	20.5	5.0	45.0	33.2	0.094
1.5KE27(C)-G	24.3	29.7	1.0	21.8	5.0	38.2	39.1	0.096
1.5KE27(C)A-G	25.7	28.4	1.0	23.1	5.0	40.3	37.5	0.096
1.5KE30(C)-G	27.0	33.0	1.0	24.3	5.0	34.5	43.5	0.097
1.5KE30(C)A-G	28.5	31.5	1.0	25.6	5.0	36.0	41.4	0.097
1.5KE33(C)-G	29.7	36.3	1.0	26.8	5.0	31.5	47.7	0.098
1.5KE33(C)A-G	31.4	34.7	1.0	28.2	5.0	33.0	45.7	0.098
1.5KE36(C)-G	32.4	39.6	1.0	29.1	5.0	29.0	52.0	0.099
1.5KE36(C)A-G	34.2	37.8	1.0	30.8	5.0	30.0	49.0	0.099
1.5KE39(C)-G	35.1	42.9	1.0	31.6	5.0	26.5	56.4	0.100
1.5KE39(C)A-G	37.1	41.0	1.0	33.3	5.0	28.0	53.9	0.100
1.5KE43(C)-G	38.7	47.3	1.0	34.8	5.0	24.0	61.9	0.101
1.5KE43(C)A-G	40.9	45.2	1.0	36.8	5.0	25.3	59.3	0.101
1.5KE47(C)-G	42.3	51.7	1.0	36.1	5.0	22.2	67.8	0.101
1.5KE47(C)A-G	44.7	49.4	1.0	40.2	5.0	23.2	64.8	0.101
1.5KE51(C)-G	45.9	56.1	1.0	41.3	5.0	20.4	73.5	0.102
1.5KE51(C)A-G	48.5	53.6	1.0	43.6	5.0	21.4	70.1	0.102
1.5KE56(C)-G	50.4	61.8	1.0	45.4	5.0	18.6	80.5	0.103
1.5KE56(C)A-G	53.2	58.8	1.0	47.8	5.0	19.5	77.0	0.103
1.5KE62(C)-G	55.8	68.2	1.0	50.2	5.0	16.9	89.0	0.104
1.5KE62(C)A-G	58.9	65.1	1.0	53.0	5.0	17.7	85.0	0.104

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Part No.	Breakdown Voltage		Working Peak Reverse Voltage $V_{RWM}(V)$	Maximum Reverse Leakage at $V_{RWM}$ $I_R(\mu A)$	Maximum Reverse Current $I_{RSM}(A)$	Maximum Clamping Voltage $V_{RWM}(V)$	Maximum Temperature Coefficient of $V_{BR}$ (%C)	
	$V_{BR}(V)$							@ $I_T(mA)$
	MIN.	MAX.						
1.5KE68(C)-G	61.2	74.8	1.0	55.1	5.0	15.3	98.0	0.104
1.5KE68(C)A-G	64.6	71.4	1.0	58.1	5.0	16.3	92.0	0.104
1.5KE75(C)-G	67.5	82.5	1.0	60.7	5.0	13.9	108.0	0.105
1.5KE75(C)A-G	71.3	78.8	1.0	64.1	5.0	14.6	103.0	0.105
1.5KE82(C)-G	73.8	90.2	1.0	66.4	5.0	12.7	118.0	0.105
1.5KE82(C)A-G	77.9	86.1	1.0	70.1	5.0	13.3	113.0	0.105
1.5KE91(C)-G	81.9	100.0	1.0	73.7	5.0	11.4	131.8	0.106
1.5KE91(C)A-G	86.5	95.5	1.0	77.8	5.0	12.0	125.0	0.106
1.5KE100(C)-G	90.0	110.0	1.0	81.0	5.0	10.4	144.0	0.106
1.5KE100(C)A-G	95.0	105.0	1.0	85.5	5.0	11.0	137.0	0.106
1.5KE110(C)-G	99.0	121.0	1.0	89.2	5.0	9.5	158.0	0.107
1.5KE110(C)A-G	106.0	116.0	1.0	94.0	5.0	9.9	152.0	0.107
1.5KE120(C)-G	108.0	132.0	1.0	97.2	5.0	8.7	173.0	0.107
1.5KE120(C)A-G	114.0	126.0	1.0	102.0	5.0	9.1	165.0	0.107
1.5KE130(C)-G	117.0	143.0	1.0	106.0	5.0	8.0	187.0	0.107
1.5KE130(C)A-G	124.0	137.0	1.0	111.0	5.0	8.4	179.0	0.107
1.5KE150(C)-G	136.0	165.0	1.0	121.0	5.0	7.0	215.0	0.108
1.5KE150(C)A-G	143.0	158.0	1.0	128.0	5.0	7.2	207.0	0.108
1.5KE160(C)-G	144.0	176.0	1.0	130.0	5.0	6.5	230.0	0.108
1.5KE160(C)A-G	152.0	168.0	1.0	136.0	5.0	6.8	219.0	0.108
1.5KE170(C)-G	153.0	187.0	1.0	138.0	5.0	6.2	244.0	0.108
1.5KE170(C)A-G	162.0	179.0	1.0	145.0	5.0	6.4	234.0	0.108
1.5KE180(C)-G	162.0	198.0	1.0	146.0	5.0	5.8	258.0	0.108
1.5KE180(C)A-G	171.0	189.0	1.0	154.0	5.0	6.1	246.0	0.108
1.5KE200(C)-G	180.0	220.0	1.0	162.0	5.0	5.2	287.0	0.108
1.5KE200(C)A-G	190.0	210.0	1.0	171.0	5.0	5.5	274.0	0.108
1.5KE220(C)-G	196.0	242.0	1.0	175.0	5.0	4.40	344.0	0.108
1.5KE220(C)A-G	209.0	231.0	1.0	185.0	5.0	4.60	328.0	0.108
1.5KE250(C)-G	225.0	275.0	1.0	202.0	5.0	4.20	360.0	0.110
1.5KE250(C)A-G	237.0	263.0	1.0	214.0	5.0	4.40	344.0	0.110
1.5KE300(C)-G	270.0	330.0	1.0	243.0	5.0	3.20	430.0	0.110
1.5KE300(C)A-G	285.0	315.0	1.0	256.0	5.0	3.60	414.0	0.110
1.5KE350(C)-G	315.0	385.0	1.0	284.0	5.0	3.00	504.0	0.110
1.5KE350(C)A-G	333.0	368.0	1.0	300.0	5.0	3.10	482.0	0.110
1.5KE400(C)-G	360.0	440.0	1.0	324.0	5.0	2.60	574.0	0.110
1.5KE400(C)A-G	380.0	420.0	1.0	342.0	5.0	2.70	548.0	0.110
1.5KE440(C)-G	396.0	484.0	1.0	356.0	5.0	2.4	631.0	0.110
1.5KE440(C)A-G	418.0	462.0	1.0	376.0	5.0	2.50	602.0	0.110

### NOTES:

- $V_{BR}$  measured after  $I_T$  applied for 300 $\mu$ S,  $I_T$ =square wave pulse or equivalent.
- Surge current wave form per fig.3 and derated per fig.2.
- $V_F=3.5V$  at  $I_F=50A$  (P6KE6.8-G thru P6KE91A-G)  
 $V_F=5.0V$  at  $I_F=50A$  (p6KE100-G thru P6KE400A-G on 1/2 square or equivalent sine wave.  
 $P_w=8.3mS$ , duty cycle=4 pulses per minute max..
- For bipolar types having  $V_{RWM}$  of 10 Volts and under, the  $I_R$  limit is doubled.

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## RATING AND CHARACTERISTIC CURVES (1.5KE-G Series)

Fig.1 Peak Pulse Power Rating Curve

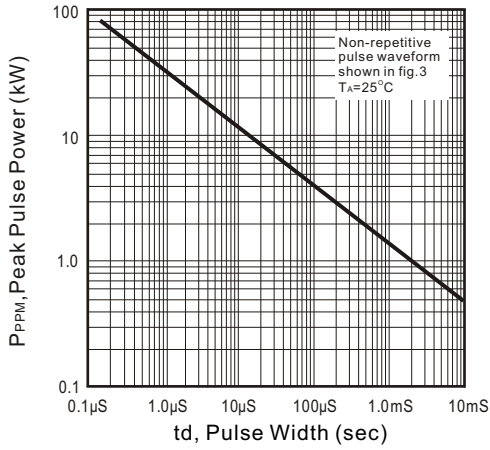


Fig.2 Pulse Derating Curve

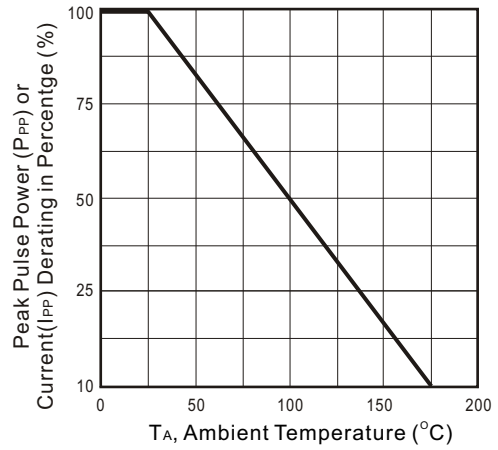


Fig.3 Pulse Wave Form

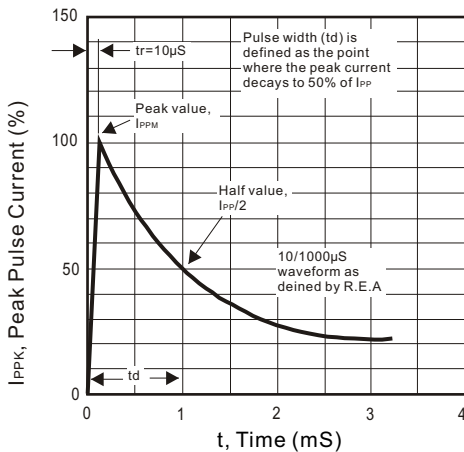


Fig.4 Typical Junction Capacitance Unidirectional

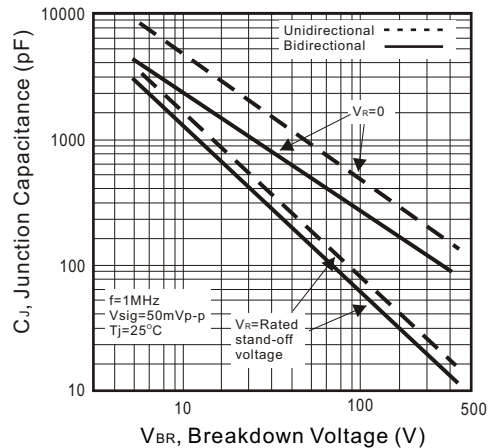


Fig.5 Steady State Power Derating Curve

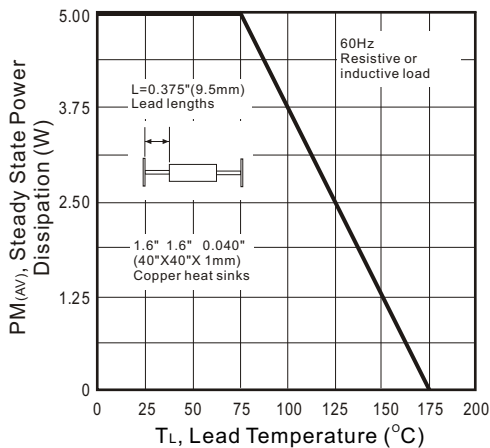
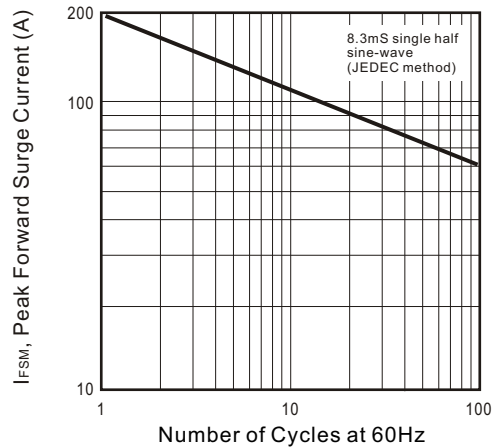


Fig.6 Maximum Non-repetitive Forward Surge Current Unidirectional



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Fig.7 Incremental Clamping Voltage Curve Unidirectional

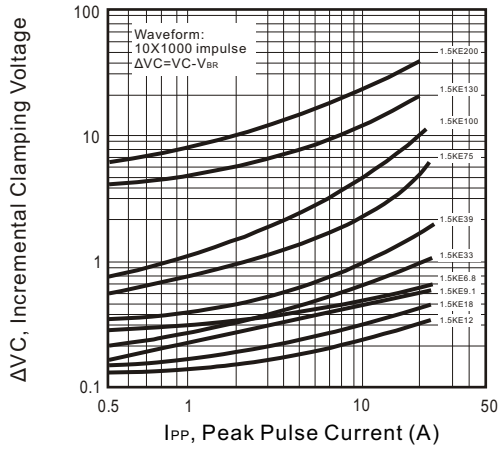


Fig.8 Incremental Clamping Voltage Curve Unidirectional

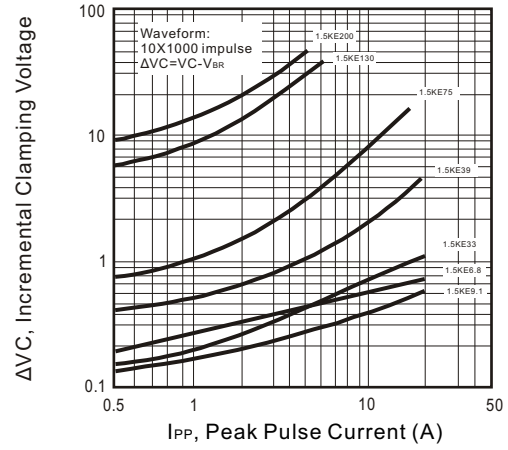


Fig.9 Incremental Clamping Voltage Curve Bidirectional

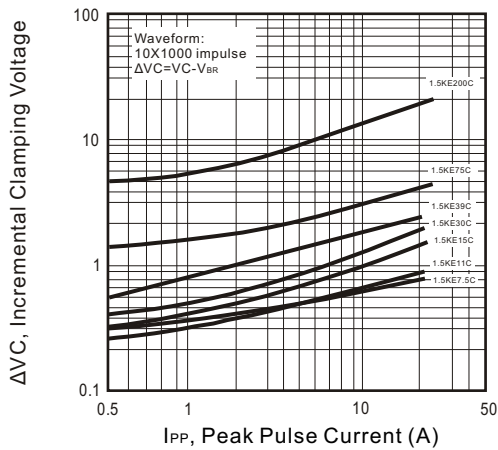


Fig.10 Incremental Clamping Voltage Curve Bidirectional

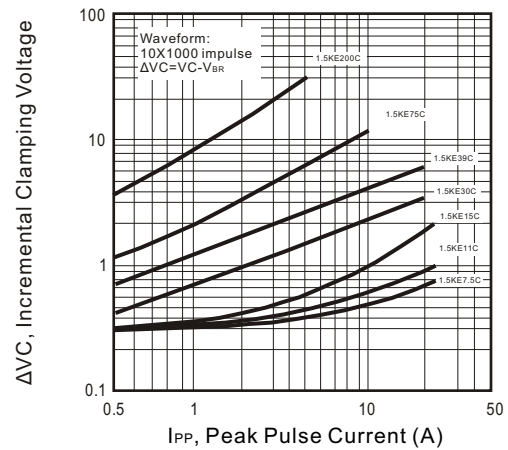


Fig.11 Instantaneous Forward Voltage Characteristics Curve

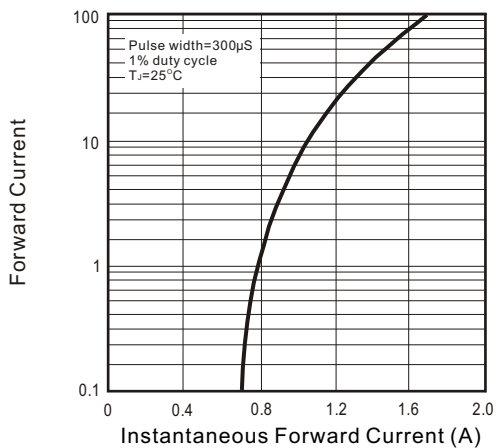


Fig.12 Breakdown Voltage Temperature Coefficient Curve

