

# 1.5KE Series

## TRANSIENT VOLTAGE SUPPRESSOR

Reverse Voltage: 6.8 to 440V

Peak Pulse Power: 1500W

### Features

- Plastic package has UL flammability Classification 94V-0
- 600W peak pulse power capability on 10/1000 $\mu$ s waveform, repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time

### Mechanical Data

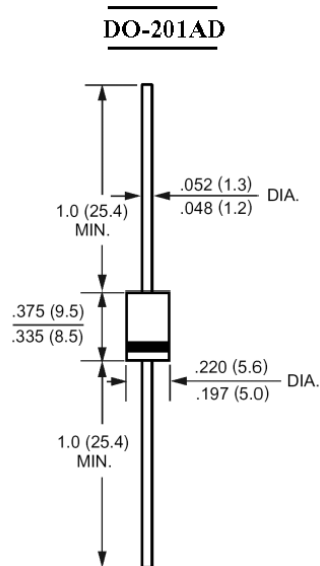
Case: Molded plastic, DO-201AD

Expoxy: UL 94V-0 rate flame retardant

Lead: Axial leads, solderable per MIL-STD-202, Method 208  
guaranteed

Polarity: Color band denotes cathode except bipolar

Mounting Position: Any



### Description

- Devices for bidirectional applications
- For bi-directional use C or CA suffix for types 1.5KE6.8 thru types 1.5KE440(e.g. 1.5KE6.8C,1.5KE440CA)
- Electrical characteristics apply in both directions

### Absolute Maximum Ratings and Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.

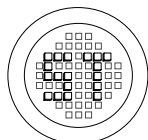
Parameter	Symbol	Value	Unit
Peak Power Dissipation with a 10/1000 $\mu$ s waveform <sup>1)</sup>	P <sub>PPM</sub>	min.1500	W
Steady State Power Dissipation at T <sub>L</sub> = 75 °C Lead lengths 0.375"(9.5 mm) <sup>2)</sup>	P <sub>M(AV)</sub>	6.5	W
Peak Forward Surge Current, 8.3ms Single half sine-wave unidirectional only <sup>3)</sup>	I <sub>FSM</sub>	200	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional only <sup>4)</sup>	V <sub>F</sub>	3.5/5	V
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>S</sub>	-55 to +150	°C

<sup>1)</sup> Non-repetitive current pulse, per Fig. 3 and derated above T<sub>A</sub> = 25 °C Fig. 2

<sup>2)</sup> Mounted on copper pad area of 1.6 X 1.6" (40 X 40 mm)

<sup>3)</sup> Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

<sup>4)</sup> V<sub>F</sub> = 3.5 V max. for 1.5KE200A & below; V<sub>F</sub> = 5 V max. for 1.5KE220 & above.



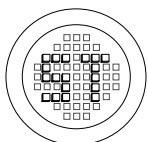
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# 1.5KE Series

Type	Reverse Stand-off Voltage $V_{WM}$ (V)	Breakdown Voltage <sup>1)</sup>		Test Current $I_T$ (mA)	Maximum Clamping Voltage VC(V) @ $I_{PPM}$	Maximum Peak Pulse Current <sup>2)</sup> $I_{PPM}$ (A)	Maximum Reverse Leakage <sup>3)</sup> $I_D$ ( $\mu$ A) @ $V_{WM}$
		$V_{BR}$ (V) Min. @ $I_T$	$V_{BR}$ (V) Max. @ $I_T$				
1.5KE6.8C	5.5	6.12	7.48	10	10.8	139	1000
1.5KE6.8CA	5.8	6.45	7.14	10	10.5	143	1000
1.5KE7.5C	6.05	6.75	8.25	10	11.7	128	500
1.5KE7.5CA	6.4	7.13	7.88	10	11.3	133	500
1.5KE8.2C	6.63	7.38	9.02	10	12.5	120	200
1.5KE8.2CA	7.02	7.79	8.61	10	12.1	124	200
1.5KE9.1C	7.37	8.19	10	1	13.8	109	50
1.5KE9.1CA	7.78	8.65	9.55	1	13.4	112	50
1.5KE10C	8.1	9	11	1	15	100	10
1.5KE10CA	8.55	9.5	10.5	1	14.5	103	10
1.5KE11C	8.92	9.9	12.1	1	16.2	92.6	5
1.5KE11CA	9.4	10.5	11.6	1	15.6	96.2	5
1.5KE12C	9.72	10.8	13.2	1	17.3	86.7	5
1.5KE12CA	10.2	11.4	12.6	1	16.7	89.8	5
1.5KE13C	10.5	11.7	14.3	1	19	78.9	5
1.5KE13CA	11.1	12.40	13.7	1	18.2	82.4	5
1.5KE15C	12.1	13.5	16.5	1	22	68.2	5
1.5KE15CA	12.8	14.3	15.8	1	21.2	70.8	5
1.5KE16C	12.9	14.4	17.6	1	23.5	63.8	5
1.5KE16CA	13.6	15.2	16.8	1	22.5	66.7	5
1.5KE18C	14.5	16.2	19.8	1	26.5	56.6	5
1.5KE18CA	15.3	17.1	18.9	1	25.2	59.5	5
1.5KE20C	16.2	18	22	1	29.1	51.5	5
1.5KE20CA	17.1	19	21	1	27.7	54.2	5
1.5KE22C	17.8	19.8	24.2	1	31.9	47	5
1.5KE22CA	18.8	20.9	23.1	1	30.6	49	5
1.5KE24C	19.4	21.6	26.4	1	34.7	43.2	5
1.5KE24CA	20.5	22.8	25.2	1	33.2	45.2	5
1.5KE27C	21.8	24.3	29.7	1	39.1	38.4	5
1.5KE27CA	23.1	25.7	28.4	1	37.5	40	5
1.5KE30C	24.3	27	33	1	43.5	34.5	5
1.5KE30CA	25.6	28.5	31.5	1	41.4	36.2	5
1.5KE33C	26.8	29.7	36.3	1	47.7	31.4	5
1.5KE33CA	28.2	31.4	34.7	1	45.7	32.8	5
1.5KE36C	29.1	32.4	39.6	1	52	28.8	5
1.5KE36CA	30.8	34.2	37.8	1	49.9	30.1	5
1.5KE39C	31.6	35.1	42.9	1	56.4	26.6	5
1.5KE39CA	33.3	37.1	41	1	53.9	27.8	5
1.5KE43C	34.8	38.7	47.3	1	61.9	24.2	5
1.5KE43CA	36.8	40.9	45.2	1	59.3	25.3	5
1.5KE47C	38.1	42.3	51.7	1	67.8	22.1	5
1.5KE47CA	40.2	44.7	49.4	1	64.8	23.1	5
1.5KE51C	41.3	45.9	56.1	1	73.5	20.4	5
1.5KE51CA	43.6	48.5	53.6	1	70.1	21.4	5



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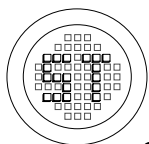
# 1.5KE Series

Type	Reverse Stand-off Voltage $V_{WM}$ (V)	Breakdown Voltage <sup>1)</sup>		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C$ (V) @ $I_{PPM}$	Maximum Peak Pulse Current <sup>2)</sup> $I_{PPM}$ (A)	Maximum Reverse Leakage <sup>3)</sup> $I_D$ ( $\mu$ A) @ $V_{WM}$
		$V_{BR}$ (V) Min. @ $I_T$	$V_{BR}$ (V) Max. @ $I_T$				
1.5KE56C	45.4	50.4	61.8	1	80.5	18.6	5
1.5KE56CA	47.8	53.2	58.8	1	77	19.5	5
1.5KE62C	50.2	55.8	68.2	1	89	16.9	5
1.5KE62CA	53	58.9	65.1	1	85	17.6	5
1.5KE68C	55.1	61.2	74.8	1	98	15.3	5
1.5KE68CA	58.1	64.6	71.4	1	92	16.3	5
1.5KE75C	60.7	67.5	82.5	1	108	13.9	5
1.5KE75CA	64.1	71.3	78.8	1	103	14.6	5
1.5KE82C	66.4	73.8	90.2	1	118	12.7	5
1.5KE82CA	70.1	77.9	86.1	1	113	13.3	5
1.5KE91C	73.7	81.9	100	1	131	11.5	5
1.5KE91CA	77.8	86.5	95.5	1	125	12	5
1.5KE100C	81	90	110	1	144	10.4	5
1.5KE100CA	85.5	95	105	1	137	10.9	5
1.5KE110C	89.2	99	121	1	158	9.5	5
1.5KE110CA	94	105	116	1	152	9.9	5
1.5KE120C	97.2	108	132	1	173	8.7	5
1.5KE120CA	102	114	126	1	165	9.1	5
1.5KE130C	105	117	143	1	187	8	5
1.5KE130CA	111	124	137	1	179	8.4	5
1.5KE150C	121	135	165	1	215	7	5
1.5KE150CA	128	143	158	1	207	7.2	5
1.5KE160C	130	144	176	1	230	6.5	5
1.5KE160CA	136	152	168	1	219	6.8	5
1.5KE170C	138	153	187	1	244	6.1	5
1.5KE170CA	145	162	179	1	234	6.4	5
1.5KE180C	146	162	198	1	258	5.8	5
1.5KE180CA	154	171	189	1	246	6.1	5
1.5KE200C	162	180	220	1	287	5.2	5
1.5KE200CA	171	190	210	1	274	5.5	5
1.5KE220C	175	198	242	1	344	4.4	5
1.5KE220CA	185	209	231	1	328	4.6	5
1.5KE250C	202	225	275	1	360	4.2	5
1.5KE250CA	214	237	263	1	344	4.4	5
1.5KE300C	243	270	330	1	430	3.5	5
1.5KE300CA	256	285	315	1	414	3.6	5
1.5KE350C	284	315	385	1	504	3	5
1.5KE350CA	300	333	368	1	482	3.1	5
1.5KE400C	324	360	440	1	574	2.6	5
1.5KE400CA	342	380	420	1	548	2.7	5
1.5KE440C	356	396	484	1	631	2.4	5
1.5KE440CA	376	418	462	1	602	2.5	5

<sup>1)</sup> Pulse test:  $t_p \leq 50$  ms

<sup>2)</sup> Surge current waveform per Fig. 3 and derated per Fig. 2

<sup>3)</sup> For bidirectional types having  $V_{WM}$  of 10 V and less, the  $I_D$  limited is doubled



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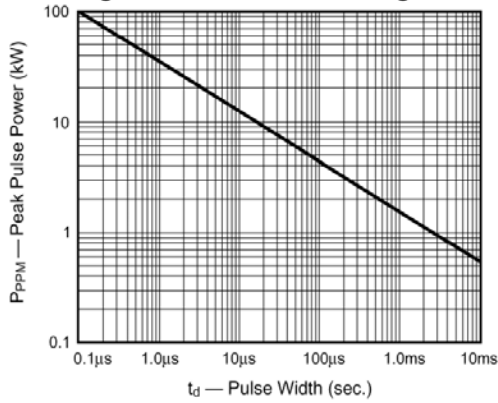


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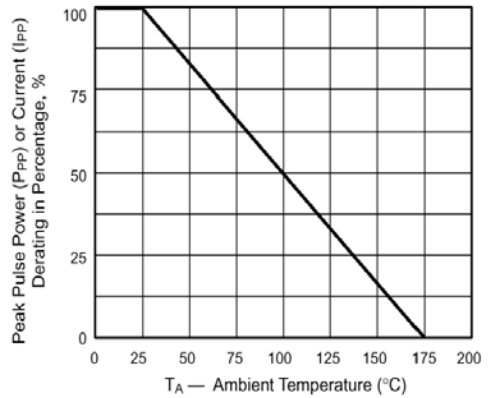
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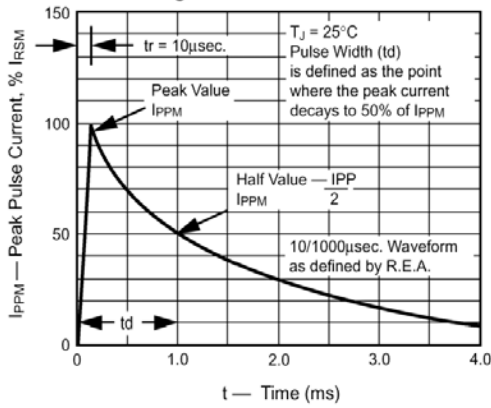
**Fig. 1 – Peak Pulse Power Rating Curve**



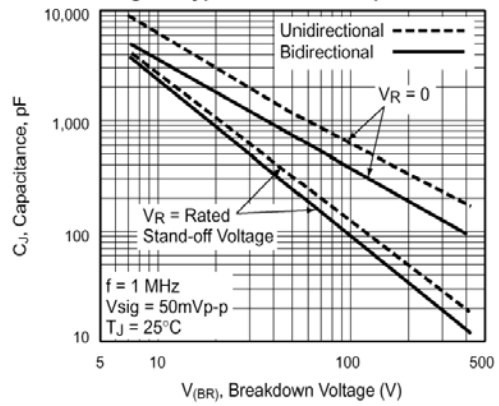
**Fig. 2 – Pulse Derating Curve**



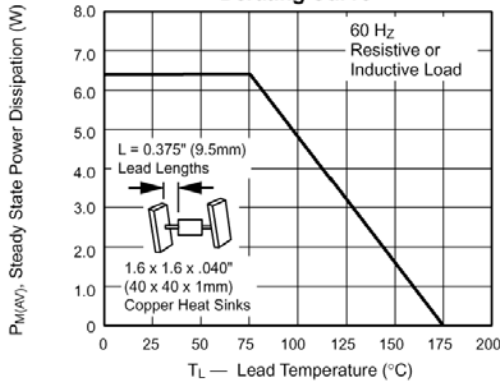
**Fig. 3 – Pulse Waveform**



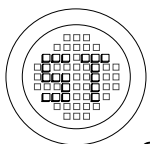
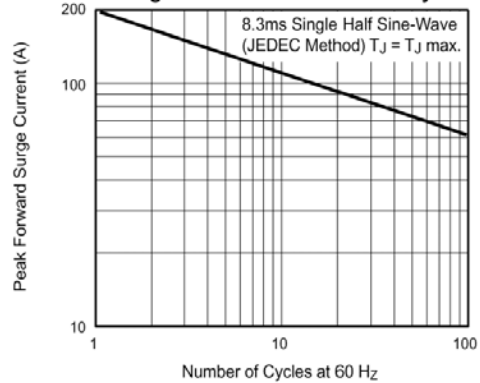
**Fig. 4 - Typical Junction Capacitance**



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



**Fig. 6 - Maximum Non-repetitive Peak Forward Surge Current Unidirectional Only**



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