1.5KE Series

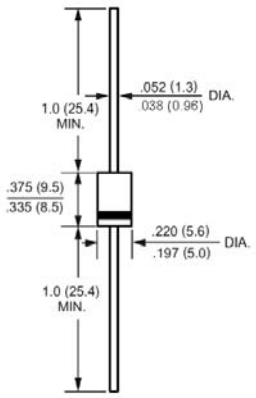
TRANSIENT VOLTAGE SUPPRESSOR

Reverse Voltage: 6.8 to 440 V
Peak Pulse Power: 1500 W

Features

- Plastic package has UL flammability Classification 94V-0
- 1500 W peak pulse power capability on 10/1000 μs waveform, repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time

DO-201AD



Dimensions in inches and (millimeters)

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, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20%.

Parameter	Symbol	Value	Unit
Peak Power Dissipation with a 10/1000 μs waveform [1]	P_{PPM}	Min.1500	W
Steady State Power Dissipation at T_L = 75 °C Lead lengths 0.375"(9.5 mm) [2]	$P_{M(AV)}$	6.5	W
Peak Forward Surge Current, 8.3 ms Single half sine-wave unidirectional only [3]	I_{FSM}	200	A
Maximum Instantaneous Forward Voltage at 100 A for Unidirectional only [4]	V_F	3.5/5	V
Operating Junction and Storage Temperature Range	T_J, T_{Stg}	- 55 to + 150	°C

[1] Non-repetitive current pulse, per Fig. 3 and derated above T_A = 25 °C Fig. 2

[2] Mounted on copper pad area of 1.6 X 1.6" (40 X 40 mm)

[3] Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

[4] V_F = 3.5 V max. for 1.5KE200A & below; V_F = 5 V max. for 1.5KE220 & above.

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Electrical Characteristics (T_a = 25 °C unless otherwise specified)

Uni-directional / Bi-directional Type	Reverse Stand-off Voltage V_{WM} (V)	Breakdown Voltage [1]		Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) at I_{PPM}	Maximum Peak Pulse Current [2] I_{PPM} (A)	Maximum Reverse Leakage [3] I_D (μA) at V_{WM}
		V_{BR} (V) Min. at I_T	V_{BR} (V) Max. at I_T				
1.5KE6.8 / C	5.5	6.12	7.48	10	10.8	139	1000
1.5KE6.8A / CA	5.8	6.45	7.14	10	10.5	143	1000
1.5KE7.5 / C	6.05	6.75	8.25	10	11.7	128	500
1.5KE7.5A / CA	6.4	7.13	7.88	10	11.3	133	500
1.5KE8.2 / C	6.63	7.38	9.02	10	12.5	120	200
1.5KE8.2A / CA	7.02	7.79	8.61	10	12.1	124	200
1.5KE9.1 / C	7.37	8.19	10	1	13.8	109	50
1.5KE9.1A / CA	7.78	8.65	9.55	1	13.4	112	50
1.5KE10 / C	8.1	9	11	1	15	100	10
1.5KE10A / CA	8.55	9.5	10.5	1	14.5	103	10
1.5KE11 / C	8.92	9.9	12.1	1	16.2	92.6	5
1.5KE11A / CA	9.4	10.5	11.6	1	15.6	96.2	5
1.5KE12 / C	9.72	10.8	13.2	1	17.3	86.7	5
1.5KE12A / CA	10.2	11.4	12.6	1	16.7	89.8	5
1.5KE13 / C	10.5	11.7	14.3	1	19	78.9	5
1.5KE13A / CA	11.1	12.4	13.7	1	18.2	82.4	5
1.5KE15 / C	12.1	13.5	16.5	1	22	68.2	5
1.5KE15A / CA	12.8	14.3	15.8	1	21.2	70.8	5
1.5KE16 / C	12.9	14.4	17.6	1	23.5	63.8	5
1.5KE16A / CA	13.6	15.2	16.8	1	22.5	66.7	5
1.5KE18 / C	14.5	16.2	19.8	1	26.5	56.6	5
1.5KE18A / CA	15.3	17.1	18.9	1	25.2	59.5	5
1.5KE20 / C	16.2	18	22	1	29.1	51.5	5
1.5KE20A / CA	17.1	19	21	1	27.7	54.2	5
1.5KE22 / C	17.8	19.8	24.2	1	31.9	47	5
1.5KE22A / CA	18.8	20.9	23.1	1	30.6	49	5
1.5KE24 / C	19.4	21.6	26.4	1	34.7	43.2	5
1.5KE24A / CA	20.5	22.8	25.2	1	33.2	45.2	5
1.5KE27 / C	21.8	24.3	29.7	1	39.1	38.4	5
1.5KE27A / CA	23.1	25.7	28.4	1	37.5	40	5
1.5KE30 / C	24.3	27	33	1	43.5	34.5	5
1.5KE30A / CA	25.6	28.5	31.5	1	41.4	36.2	5
1.5KE33 / C	26.8	29.7	36.3	1	47.7	31.4	5
1.5KE33A / CA	28.2	31.4	34.7	1	45.7	32.8	5
1.5KE36 / C	29.1	32.4	39.6	1	52	28.8	5
1.5KE36A / CA	30.8	34.2	37.8	1	49.9	30.1	5
1.5KE39 / C	31.6	35.1	42.9	1	56.4	26.6	5
1.5KE39A / CA	33.3	37.1	41	1	53.9	27.8	5
1.5KE43 / C	34.8	38.7	47.3	1	61.9	24.2	5
1.5KE43A / CA	36.8	40.9	45.2	1	59.3	25.3	5
1.5KE47 / C	38.1	42.3	51.7	1	67.8	22.1	5
1.5KE47A / CA	40.2	44.7	49.4	1	64.8	23.1	5
1.5KE51 / C	41.3	45.9	56.1	1	73.5	20.4	5
1.5KE51A / CA	43.6	48.5	53.6	1	70.1	21.4	5

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Electrical Characteristics (T_a = 25 °C unless otherwise specified)

Uni-directional / Bi-directional Type	Reverse Stand-off Voltage V_{WM} (V)	Breakdown Voltage [1]		Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) at I_{PPM}	Maximum Peak Pulse Current [2] I_{PPM} (A)	Maximum Reverse Leakage [3] I_D (μA) at V_{WM}
		V_{BR} (V) Min. at I_T	V_{BR} (V) Max. at I_T				
1.5KE56 / C	45.4	50.4	61.8	1	80.5	18.6	5
1.5KE56A / CA	47.8	53.2	58.8	1	77	19.5	5
1.5KE62 / C	50.2	55.8	68.2	1	89	16.9	5
1.5KE62A / CA	53	58.9	65.1	1	85	17.6	5
1.5KE68 / C	55.1	61.2	74.8	1	98	15.3	5
1.5KE68A / CA	58.1	64.6	71.4	1	92	16.3	5
1.5KE75 / C	60.7	67.5	82.5	1	108	13.9	5
1.5KE75A / CA	64.1	71.3	78.8	1	103	14.6	5
1.5KE82 / C	66.4	73.8	90.2	1	118	12.7	5
1.5KE82A / CA	70.1	77.9	86.1	1	113	13.3	5
1.5KE91 / C	73.7	81.9	100	1	131	11.5	5
1.5KE91A / CA	77.8	86.5	95.5	1	125	12	5
1.5KE100 / C	81	90	110	1	144	10.4	5
1.5KE100A / CA	85.5	95	105	1	137	10.9	5
1.5KE110 / C	89.2	99	121	1	158	9.5	5
1.5KE110A / CA	94	105	116	1	152	9.9	5
1.5KE120 / C	97.2	108	132	1	173	8.7	5
1.5KE120A / CA	102	114	126	1	165	9.1	5
1.5KE130 / C	105	117	143	1	187	8	5
1.5KE130A / CA	111	124	137	1	179	8.4	5
1.5KE150 / C	121	135	165	1	215	7	5
1.5KE150A / CA	128	143	158	1	207	7.2	5
1.5KE160 / C	130	144	176	1	230	6.5	5
1.5KE160A / CA	136	152	168	1	219	6.8	5
1.5KE170 / C	138	153	187	1	244	6.1	5
1.5KE170A / CA	145	162	179	1	234	6.4	5
1.5KE180 / C	146	162	198	1	258	5.8	5
1.5KE180A / CA	154	171	189	1	246	6.1	5
1.5KE200 / C	162	180	220	1	287	5.2	5
1.5KE200A / CA	171	190	210	1	274	5.5	5
1.5KE220 / C	175	198	242	1	344	4.4	5
1.5KE220A / CA	185	209	231	1	328	4.6	5
1.5KE250 / C	202	225	275	1	360	4.2	5
1.5KE250A / CA	214	237	263	1	344	4.4	5
1.5KE300 / C	243	270	330	1	430	3.5	5
1.5KE300A / CA	256	285	315	1	414	3.6	5
1.5KE350 / C	284	315	385	1	504	3	5
1.5KE350A / CA	300	333	368	1	482	3.1	5
1.5KE400 / C	324	360	440	1	574	2.6	5
1.5KE400A / CA	342	380	420	1	548	2.7	5
1.5KE440 / C	356	396	484	1	631	2.4	5
1.5KE440A / CA	376	418	462	1	602	2.5	5

[1] Pulse test: tp ≤ 50 ms

[2] Surge current waveform per Fig. 3 and derated per Fig. 2

[3] For bidirectional types having V_{WM} of 10 V and less, the I_D limited is doubled

Fig. 1 – Peak Pulse Power Rating Curve

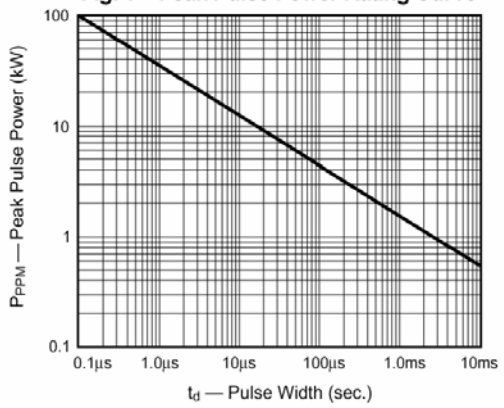

Fig. 2 – Pulse Derating Curve

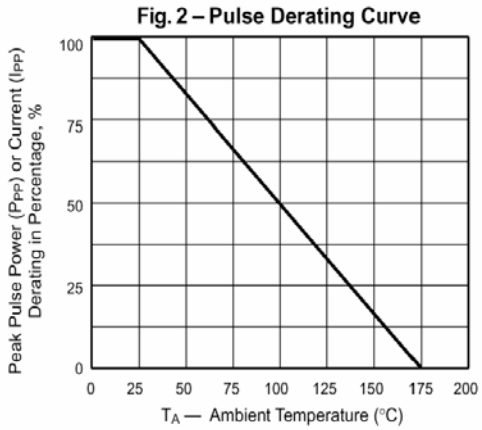

Fig. 3 – Pulse Waveform

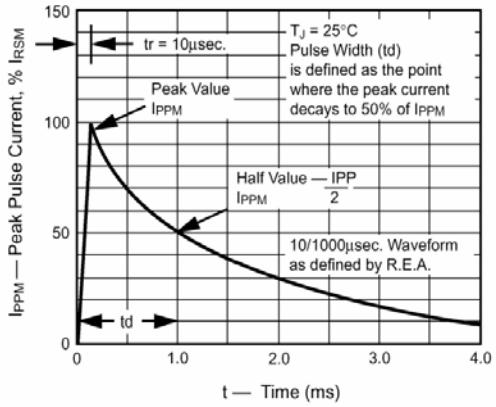

Fig. 4 - Typical Junction Capacitance

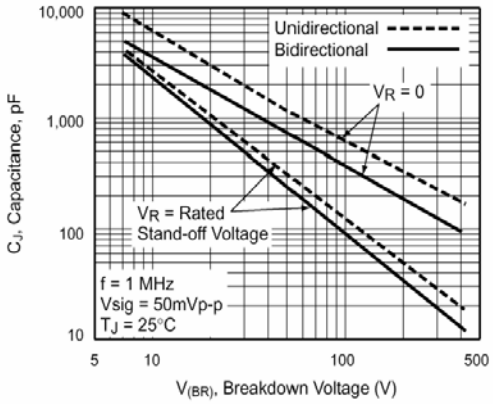

Fig. 5 – Steady State Power Derating Curve

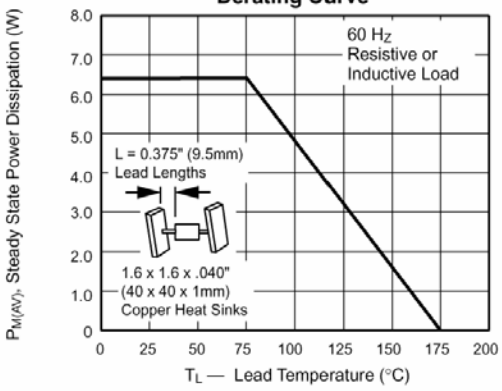

Fig. 6 - Maximum Non-repetitive Peak Forward Surge Current Unidirectional Only