1.5KE SERIES

TRANSIENT VOLTAGE SUPPRESSORS

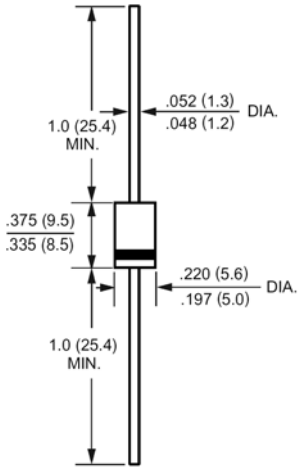
REVERSE VOLTAGE: **6.8 to 440 VOLTS**

PEAK PULSE POWER: **1500 WATTS**

FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- 600W peak pulse power capability on 10/1000μs 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

Epoxy: UL 94V-O rate flame retardant

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

Polarity: Color band denotes cathode except bipolar

Mounting position: Any

Weight: 0.045ounce, 1.2gram

Maximum Ratings and Electrical Characteristics

Ratings at 25℃ ambient temperature unless otherwise specified.

Single phase, half wave, 60H_Z, resistive or inductive load.

For capacitive load, derate current by 20%.

	Symbols	Limit	Units
Peak power dissipation with a 10/1000μs waveform (Note 1) (Fig. 1)	P_{PPM}	Minimum 1500	**Watts**
Peak pulse current with a 10/1000μs waveform (Note 1)	I_{PPM}	See Next Table	**Amp**
Steady state power dissipation at T_L = 75°C, lead lengths 0.375" (9.5mm) (Note 2)	$P_{M(AV)}$	6.5	**Watts**
Peak forward surge current, 8.3ms single half sine-wave unidirectional only (Note 3)	I_{FSM}	200	**Amp**
Maximum instantaneous forward voltage at 100A for unidirectional only (Note 4)	V_F	3.5/5.0	**Volts**
Operating junction and storage temperature range	T_J, Tstg	–55 to +150	℃

NOTES:

1- Non-repetitive current pulse, per Fig.3 and derated above T_A = 25℃ per Fig. 2

2- Mounted on copper pad area of 1.6 x 1.6” (40 x 40mm) per Fig. 5

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

4- V_F = 3.5V for 1.5KE200(A) & below; V_F = 5.0V for 1.5KE220(A) & above

Devices for Bidirectional Applications:

1- For bi-directional, use C or CA suffix for types 1.5KE6.8 thru types 1.5KE440A(e.g. 1.5KE6.8C, 1.5KE440CA).

2- Electrical characteristics apply in both directions.

Maximum Ratings and Electrical Characteristics

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

Device Type	Breakdown Voltage		Test Current	Reverse Stand off Voltage	Maximum Reverse Leakage at V_{WM}	Maximum Peak Pulse Current	Maximum Clamping Voltage at I_{PPM}	Maximum Temperature Coefficient of V_{BR}
	V_{BR} at I_T (Note 1)		I_T	V_{WM}	I_D (Note 3)	I_{PPM} (Note 2)	V_C	/
	Volts $_{(min.)}$	Volts $_{(max.)}$	mAmps	Volts	uAmps	Amps	Volts	% / °C
1.5KE6.8	6.12	7.48	10	5.50	1000	139.0	10.8	0.057
1.5KE6.8A	6.45	7.14	10	5.80	1000	143.0	10.5	0.057
1.5KE7.5	6.75	8.25	10	6.05	500	128.0	11.7	0.061
1.5KE7.5A	7.13	7.88	10	6.40	500	133.0	11.3	0.061
1.5KE8.2	7.38	9.02	10	6.63	200	120.0	12.5	0.065
1.5KE8.2A	7.79	8.61	10	7.02	200	124.0	12.1	0.065
1.5KE9.1	8.19	10.0	1.0	7.37	50	109.0	13.8	0.068
1.5KE9.1A	8.65	9.55	1.0	7.78	50	112.0	13.4	0.068
1.5KE10	9.00	11.0	1.0	8.10	10	100.0	15.0	0.073
1.5KE10A	9.50	10.5	1.0	8.55	10	103.0	14.5	0.073
1.5KE11	9.90	12.1	1.0	8.92	5.0	92.6	16.2	0.075
1.5KE11A	10.5	11.6	1.0	9.40	5.0	96.2	15.6	0.075
1.5KE12	10.8	13.2	1.0	9.72	5.0	86.7	17.3	0.078
1.5KE12A	11.4	12.6	1.0	10.2	5.0	89.8	16.7	0.078
1.5KE13	11.7	14.3	1.0	10.5	5.0	78.9	19.0	0.081
1.5KE13A	12.4	13.7	1.0	11.1	5.0	82.4	18.2	0.081
1.5KE15	13.5	16.5	1.0	12.1	5.0	68.2	22.0	0.084
1.5KE15A	14.3	15.8	1.0	12.8	5.0	70.8	21.2	0.084
1.5KE16	14.4	17.6	1.0	12.9	5.0	63.8	23.5	0.086
1.5KE16A	15.2	16.8	1.0	13.6	5.0	66.7	22.5	0.086
1.5KE18	16.2	19.8	1.0	14.5	5.0	56.6	26.5	0.088
1.5KE18A	17.1	18.9	1.0	15.3	5.0	59.5	25.2	0.088
1.5KE20A	18.0	22.0	1.0	16.2	5.0	51.5	29.1	0.090
1.5KE20A	19.0	21.0	1.0	17.1	5.0	54.2	27.7	0.090
1.5KE22	19.8	24.2	1.0	17.8	5.0	47.0	31.9	0.092
1.5KE22A	20.9	23.1	1.0	18.8	5.0	49.0	30.6	0.092
1.5KE24	21.6	26.4	1.0	19.4	5.0	43.2	34.7	0.094
1.5KE24A	22.8	25.2	1.0	20.5	5.0	45.2	33.2	0.094
1.5KE27	24.3	29.7	1.0	21.8	5.0	38.4	39.1	0.096
1.5KE27A	25.7	28.4	1.0	23.1	5.0	40.0	37.5	0.096
1.5KE30	27.0	33.0	1.0	24.3	5.0	34.5	43.5	0.097
1.5KE30A	28.5	31.5	1.0	25.6	5.0	36.2	41.4	0.097
1.5KE33	29.7	36.3	1.0	26.8	5.0	31.4	47.7	0.098
1.5KE33A	31.4	34.7	1.0	28.2	5.0	32.8	45.7	0.098
1.5KE36	32.4	39.6	1.0	29.1	5.0	28.8	52.0	0.099
1.5KE36A	34.2	37.8	1.0	30.8	5.0	30.1	49.9	0.099
1.5KE39	35.1	42.9	1.0	31.6	5.0	26.6	56.4	0.100
1.5KE39A	37.1	41.0	1.0	33.3	5.0	27.8	53.9	0.100
1.5KE43	38.7	47.3	1.0	34.8	5.0	24.2	61.9	0.101
1.5KE43A	40.9	45.2	1.0	36.8	5.0	25.3	59.3	0.101
1.5KE47	42.3	51.7	1.0	38.1	5.0	22.1	67.8	0.101
1.5KE47A	44.7	49.4	1.0	40.2	5.0	23.1	64.8	0.101
1.5KE51	45.9	56.1	1.0	41.3	5.0	20.4	73.5	0.102
1.5KE51A	48.5	53.6	1.0	43.6	5.0	21.4	70.1	0.102
1.5KE56	50.4	61.8	1.0	45.4	5.0	18.6	80.5	0.103
1.5KE56A	53.2	58.8	1.0	47.8	5.0	19.5	77.0	0.103

Maximum Ratings and Electrical Characteristics

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

Device Type	Breakdown Voltage		Test Current	Reverse Stand off Voltage	Maximum Reverse Leakage at V_{WM}	Maximum Peak Pulse Current	Maximum Clamping Voltage at I_{PPM}	Maximum Temperature Coefficient of V_{BR}
	V_{BR} at I_T (Note 1)		I_T	V_{WM}	I_D (Note 3)	I_{PPM} (Note 2)	V_C	/
	Volts (min.)	Volts (max.)	mAmps	Volts	uAmps	Amps	Volts	% / °C
1.5KE62	55.8	68.2	1.0	50.2	5.0	16.9	89.0	0.104
1.5KE62A	58.9	65.1	1.0	53.0	5.0	17.6	85.0	0.104
1.5KE68	61.2	74.8	1.0	55.1	5.0	15.3	98.0	0.104
1.5KE68A	64.6	71.4	1.0	58.1	5.0	16.3	92.0	0.104
1.5KE75	67.5	82.5	1.0	60.7	5.0	13.9	108	0.105
1.5KE75A	71.3	78.8	1.0	64.1	5.0	14.6	103	0.105
1.5KE82	73.8	90.2	1.0	66.4	5.0	12.7	118	0.105
1.5KE82A	77.9	86.1	1.0	70.1	5.0	13.3	113	0.105
1.5KE91	81.9	100	1.0	73.7	5.0	11.5	131	0.106
1.5KE91A	86.5	95.5	1.0	77.8	5.0	12.0	125	0.106
1.5KE100	90.0	110	1.0	81.0	5.0	10.4	144	0.106
1.5KE100A	95.0	105	1.0	85.5	5.0	10.9	137	0.106
1.5KE110	99.0	121	1.0	89.2	5.0	9.5	158	0.107
1.5KE110A	105	116	1.0	94.0	5.0	9.9	152	0.107
1.5KE120	108	132	1.0	97.2	5.0	8.7	173	0.107
1.5KE120A	114	126	1.0	102	5.0	9.1	165	0.107
1.5KE130	117	143	1.0	105	5.0	8.0	187	0.107
1.5KE130A	124	137	1.0	111	5.0	8.4	179	0.107
1.5KE150	135	165	1.0	121	5.0	7.0	215	0.108
1.5KE150A	143	158	1.0	128	5.0	7.2	207	0.108
1.5KE160	144	176	1.0	130	5.0	6.5	230	0.108
1.5KE160A	152	168	1.0	136	5.0	6.8	219	0.108
1.5KE170	153	187	1.0	138	5.0	6.1	244	0.108
1.5KE170A	162	179	1.0	145	5.0	6.4	234	0.108
1.5KE180	162	198	1.0	146	5.0	5.8	258	0.108
1.5KE180A	171	189	1.0	154	5.0	6.1	246	0.108
1.5KE200	180	220	1.0	162	5.0	5.2	287	0.108
1.5KE200A	190	210	1.0	171	5.0	5.5	274	0.108
1.5KE220	198	242	1.0	175	5.0	4.4	344	0.108
1.5KE220A	209	231	1.0	185	5.0	4.6	328	0.108
1.5KE250	225	275	1.0	202	5.0	4.2	360	0.110
1.5KE250A	237	263	1.0	214	5.0	4.4	344	0.110
1.5KE300	270	330	1.0	243	5.0	3.5	430	0.110
1.5KE300A	285	315	1.0	256	5.0	3.6	414	0.110
1.5KE350	315	385	1.0	284	5.0	3.0	504	0.110
1.5KE350A	333	368	1.0	300	5.0	3.1	482	0.110
1.5KE400	360	440	1.0	324	5.0	2.6	574	0.110
1.5KE400A	380	420	1.0	342	5.0	2.7	548	0.110
1.5KE440	396	484	1.0	356	5.0	2.4	631	0.110
1.5KE440A	418	462	1.0	376	5.0	2.5	602	0.110

NOTES:

1- Pulse test: tp ≤ 50ms

2- Surge current waveform per Fig. 3 and derated per Fig. 2

3- For bidirectional types having V_{WM} of 10 volts and less, the I_D limit is doubled

4- All terms and symbols are consistent with ANSI/IEEE C62.35

RATINGS AND CHARACTERISTIC CURVES

Fig. 1 – Peak Pulse Power Rating Curve

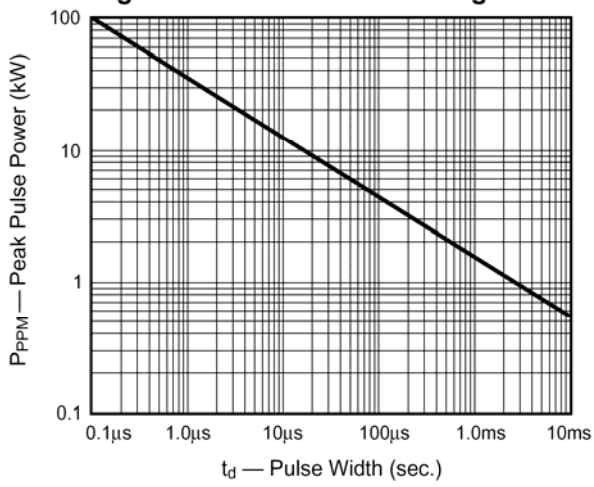


Fig. 2 – Pulse Derating Curve

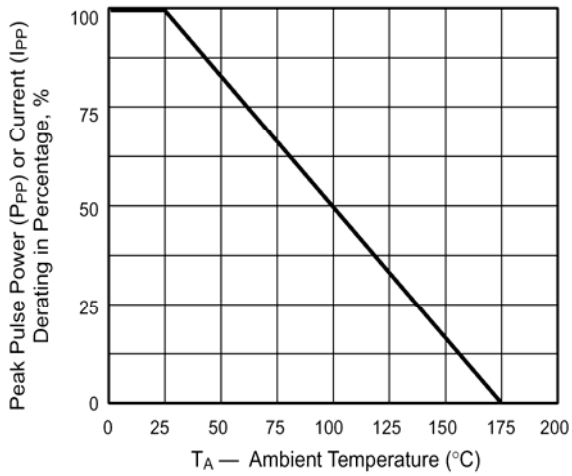


Fig. 3 – Pulse Waveform

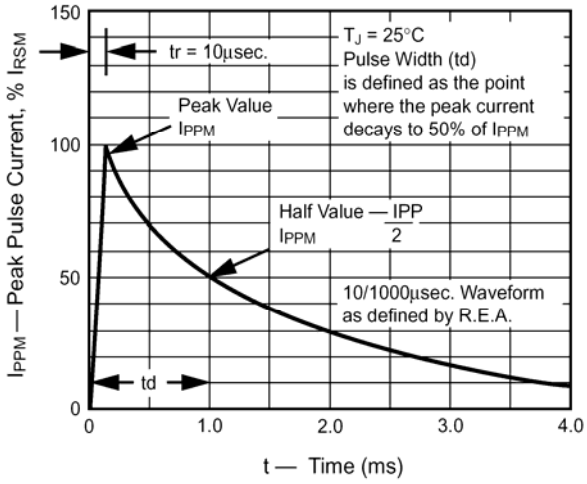


Fig. 4 - Typical Junction Capacitance

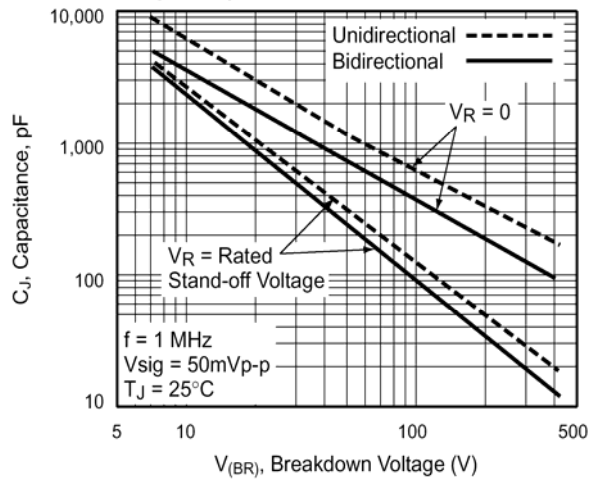


Fig. 5 – Steady State Power Derating Curve

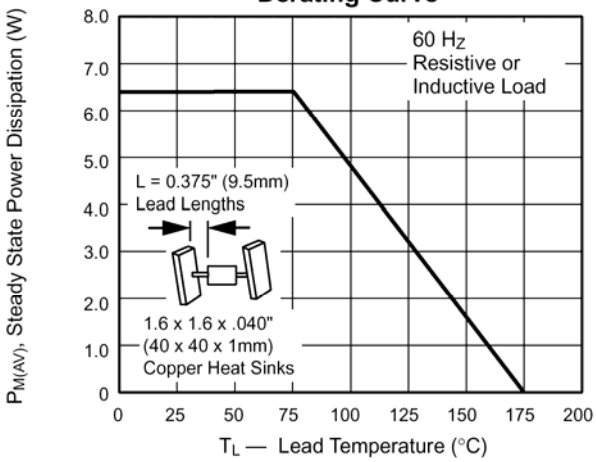
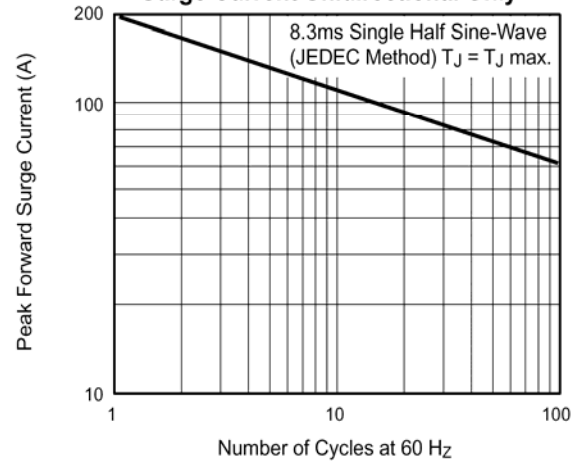



Fig. 6 - Maximum Non-repetitive Peak Forward Surge Current Unidirectional Only