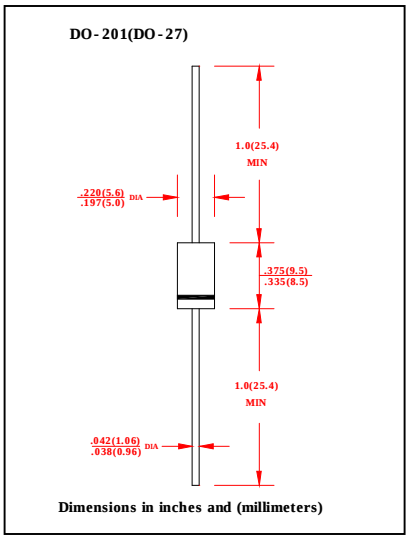
GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

1.5KE6.8 THRU 1.5KE440CA(GPP) — **Breakdown Voltage** **6.8 to 440 Volts**
1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION) — **Peak Pulse Power** **1500 Watts**

FEATURES



- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- Glass passivated junction or silastic guard junction (open junction)
- 1500W peak pulse power capability with a 10/1000μs Waveform, repetition rate (duty cycle): 0.05%
- Excellent clamping capability
- Low incremental surge resistance
- Fast response time: typically less than 1.0ps from 0 Volts to $V_{(BR)}$ for unidirectional and 5.0ns for bidirectional types
- Devices with $V_{(BR)} \geqslant 10V$, I_D are typically less than 1.0μA
- High temperature soldering guaranteed: 265℃/10 seconds, 0.375" (9.5mm) lead length, 51bs.(2.3kg) tension

MECHANICAL DATA

- Cass: molded plastic body over passivated junction
- Terminals: plated axial leads, solderable per MIL-STD-750, Method 2026
- Polarity: Color bands denotes positive end (cathode) except for bidirectional
- Mounting Position: any
- Weight: 0.045 ounces, 1.2 grams

DEVICES FOR BIDRECTIONAL APPLICATIONS

- For bidirectional use C or CA suffix for types 1.5KE6.8 thru types 1.5K440 (e.g. 1.5KE6.8C, 1.5KE440CA).Electrical Characteristics apply in both directions.
- Suffix A denotes ±5% tolerance device, No suffix A denotes ±10% tolerance device

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

- Ratings at 25℃ ambient temperature unless otherwise specified

Ratings	Symbols	Value	Unit
Peak Pulse power dissipation with a 10/1000μs waveform (NOTE1)	P_{PPM}	Minimum 400	Watts
Peak Pulse current with a 10/1000μs waveform (NOTE1,FIG.1)	I_{PPM}	See Table 1	Amps
Steady Stage Power Dissipation at T_L=75℃ Lead lengths 0.375"(9.5mm)(Note2)	$P_{M(AV)}$	5.0	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) unidirectional only	I_{FSM}	200.0	Amps
Maximum instantaneous forward voltage at 100.0A for unidirectional only (NOTE 3)	V_F	3.5/5.0	Volts
Operating Junction and Storage Temperature Range	T_J, T_{STG}	50 to +150	℃

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above T_A=25℃ per Fig.2
2. Mounted on copper pads ares of 0.8×0.8"(20×20mm) per Fig 5.
3. V_F=3.5 V for devices of $V_{(BR)} \leqslant 200V$, and V_F=5.0 Volts max. for devices of $V_{(BR)} > 200v$

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1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION)

Breakdown Voltage **6.8 to 440 Volts**
Peak Pulse Power **1500 Watts**

Electrical Characteristic at (T_A=25℃ unless otherwise noted) TABLE1

Device Type	Breakdown Voltage $V_{(BR)}$(Volts) (Note 1)		Test Current at I_T (mA)	Stand-off Voltage V_{WM} (Volts)	Maximum Reverse Leakage at V_{WM} I_D (μA)	Maximum Peak Pulse Current I_{PPM} (Note 2) (Amps)	Maximum Clamping Voltage at I_{PPM} V_C(Volts)	Maximum Temperature Coefficient of $V_{(BR)}$ (%/℃)
	MIN	MAX						
1.5KE6.8/J	6.12	7.48	10	5.5	1000	139	10.8	0.057
1.5KE6.8A/J	6.45	7.14	10	5.8	1000	143	10.5	0.057
1.5KE7.5/J	6.75	8.25	10	6.05	500	128	11.7	0.061
1.5KE7.5A/J	7.13	7.88	10	6.4	500	133	11.3	0.061
1.5KE8.2/J	7.38	9.02	10	6.63	200	120	12.5	0.065
1.5KE8.2A/J	7.79	8.61	10	7.02	200	124	12.1	0.065
1.5KE9.1/J	8.19	10	1	7.37	50	109	13.8	0.068
1.5KE9.1A/J	7.65	9.55	1	7.78	50	112	13.4	0.068
1.5KE10/J	9	11	1	8.1	10	100	15	0.073
1.5KE10A/J	9.5	10.5	1	8.55	10	103	14.5	0.073
1.5KE11/J	9.9	12.1	1	8.92	5	92.6	16.2	0.075
1.5KE11A/J	10.5	11.6	1	9.4	5	96.2	15.6	0.075
1.5KE12/J	10.8	13.2	1	9372	5	86.7	17.3	0.076
1.5KE12A/J	11.4	12.6	1	10.2	5	89.8	16.7	0.078
1.5KE13/J	11.7	14.3	1	10.5	5	78.9	19	0.081
1.5KE13A/J	12.4	13.7	1	11.1	5	82.4	18.2	0.081
1.5KE15/J	13.5	16.5	1	12.1	5	68.2	22	0.084
1.5KE15A/J	14.3	15.8	1	12.8	5	70.8	21.2	0.084
1.5KE16/J	14.4	17.6	1	12.9	5	63.8	23.5	0.086
1.5KE16A/J	15.2	16.8	1	13.6	5	66.7	22.5	0.086
1.5KE18/J	16.2	19.8	1	14.5	5	56.6	26.5	0.088
1.5KE18A/J	17.1	18.9	1	15.3	5	59.5	25.2	0.089
1.5KE20/J	18	22	1	16.2	5	51.5	29.1	0.09
1.5KE20A/J	19	21	1	17.1	5	54.2	27.7	0.09
1.5KE22/J	19.8	24.2	1	17.8	5	47	31.9	0.092
1.5KE22A/J	20.9	23.1	1	18.8	5	49	30.6	0.092
1.5KE24/J	21.6	26.4	1	19.4	5	43.2	34.7	0.094
1.5KE24A/J	22.8	25.2	1	20.5	5	45.2	33.2	0.094
1.5KE27/J	24.3	29.7	1	21.8	5	38.4	39.1	0.096
1.5KE27A/J	25.7	28.4	1	23.1	5	40	37.5	0.096
1.5KE30/J	27	33	1	24.3	5	34.5	43.5	0.097
1.5KE30A/J	28.5	31.5	1	25.6	5	36.2	41.4	0.097
1.5KE33/J	29.7	36.3	1	26.8	5	31.4	47.7	0.098
1.5KE33A/J	31.4	34.7	1	28.2	5	32.8	45.7	0.098
1.5KE36/J	32.4	39.6	1	29.1	5	28.8	52	0.099
1.5KE36A/J	34.2	37.8	1	30.8	5	30.1	49.9	0.099
1.5KE39/J	35.1	42.9	1	31.6	5	26.6	56.4	0.1
1.5KE39A/J	37.1	41	1	33.3	5	27.8	53.9	0.1
1.5KE43/J	38.7	47.3	1	34.8	5	24.2	61.9	0.101
1.5KE43A/J	40.9	45.2	1	36.8	5	25.3	59.3	0.101
1.5KE47/J	42.3	51.7	1	38.1	5	22.1	67.8	0.101
1.5KE47A/J	44.7	49.4	1	40.2	5	23.1	64.8	0.101
1.5KE51/J	45.7	56.1	1	41.3	5	20.4	73.5	0.102
1.5KE51A/J	48.5	43.6	1	43.6	5	21.4	70.1	0.102
1.5KE56/J	50.4	61.6	1	45.4	5	18.6	80.5	0.103
1.5KE56A/J	53.2	58.8	1	47.8	5	19.5	77	0.103
1.5KE62/J	55.8	68.8	1	50.2	5	16.9	89	0.104
1.5KE62A/J	58.9	65.1	1	53	5	17.6	85	0.104

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1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION)

Breakdown Voltage **6.8 to 440 Volts**
Peak Pulse Power **1500 Watts**

Electrical Characteristic at (T_A =25℃ unless otherwise noted) TABLE 1 (Cont'd)

Device Type	Breakdown Voltage $V_{(BR)}$(Volts) (Note 1)		Test Current at I_T (mA)	Stand-off Voltage V_{WM} (Volts)	Maximum Reverse Leakage at V_{WM} I_D (μ A) (Note3)	Maximum Peak Pulse Current I_{PPM} (Note 2) (Amps)	Maximum Clamping Voltage at I_{PPM} V_C(Volts)	Maximum Temperature Coefficient of $V_{(BR)}$ (%/℃)
	MIN	MAX						
1.5KE68/J	61.2	74.8	1	55.1	5	15.3	98	0.104
1.5KE68A/J	64.6	71.4	1	58.1	5	16.3	92	0.104
1.5KE75/J	67.5	82.5	1	60.7	5	13.9	105	0.105
1.5KE75A/J	71.3	78.8	1	64.1	5	14.6	103	0.105
1.5KE82/J	73.8	90.2	1	66.4	5	12.7	118	0.105
1.5KE82A/J	77.9	86.1	1	70.1	5	13.3	113	0.105
1.5KE91/J	81.9	100	1	73.7	5	11.5	131	0.106
1.5KE91A/J	86.5	95.5	1	77.8	5	12	125	0.106
1.5KE100/J	90	110	1	81	5	10.4	144	0.106
1.5KE100A/J	95	105	1	85.5	5	10.9	137	0.106
1.5KE110/J	99	121	1	89.2	5	9.5	158	0.107
1.5KE110A/J	105	116	1	94	5	9.9	152	0.107
1.5KE120/J	108	132	1	97.2	5	8.7	173	0.107
1.5KE120A/J	114	126	1	102	5	9.1	165	0.107
1.5KE130/J	117	143	1	105	5	8	187	0.107
1.5KE130A/J	124	137	1	111	5	8.4	179	0.107
1.5KE150/J	135	165	1	121	5	7	215	0.108
1.5KE150A/J	143	159	1	128	5	7.2	207	0.108
1.5KE160/J	144	175	1	130	5	6.5	230	0.108
1.5KE160A/J	152	167	1	136	5	6.8	219	0.108
1.5KE170/J	153	187	1	138	5	6.1	244	0.108
1.5KE170A/J	162	179	1	145	5	6.4	234	0.108
1.5KE180/J	162	197	1	146	5	5.8	258	0.108
1.5KE180A/J	171	189	1	154	5	6.1	246	0.108
1.5KE200/J	180	220	1	162	5	5.2	287	0.108
1.5KE200A/J	190	210	1	171	5	5.5	274	0.108
1.5KE220/J	198	242	1	175	5	4.4	344	0.108
1.5KE220A/J	209	231	1	185	5	4.6	328	0.108
1.5KE250/J	25	275	1	202	5	4.2	360	0.11
1.5KE250A/J	237	267	1	214	5	4.4	344	0.11
1.5KE300/J	270	330	1	243	5	3.5	430	0.11
1.5KE300A/J	285	315	1	245	5	3.6	414	0.11
1.5KE350/J	315	385	1	284	5	3	504	0.11
1.5KE350A/J	332	368	1	300	5	3.1	482	0.11
1.5KE400/J	360	440	1	324	5	2.6	574	0.11
1.5KE400A/J	380	420	1	342	5	2.7	548	0.11
1.5KE440/J	396	484	1	356	5	2.4	631	0.11
1.5KE440A/J	418	462	1	376	5	2.5	602	0.11

Notes:/

(1) $V_{(BR)}$ measured after I_T applied for 300ms I_T =square wave pulse or equivalent
(2) Surge current waveform per Figure 3 and derate per Fig.2
(3) All terms and symbols are consistent with ANSI/IEEE C62.35
(4) For bidirectional type having V_{WM} of 10 volts and less, the I_D limit is doubled

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1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION) — **Peak Pulse Power 1500 Watts**

RATING AND CHARACTERISTIC CURVES 1.5KE6.8/J THRU 1.5KE440CA/J

FIG.1- PEAK PULSE POWER RATING CURVE

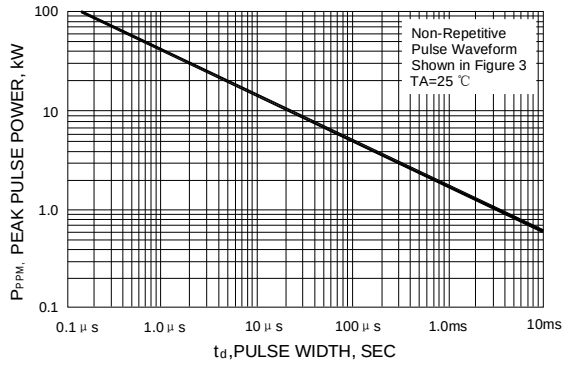


FIG.2- PULSE DERATING CURVE

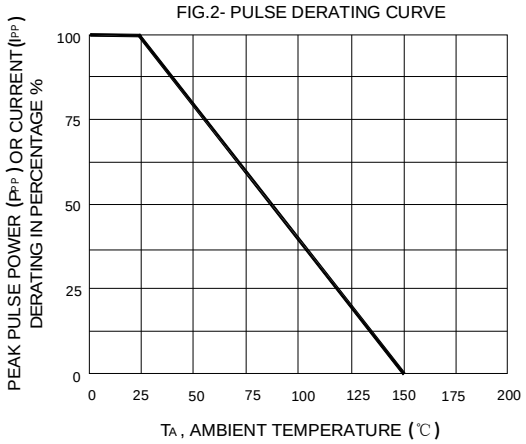


FIG.3- PULSE WAVEFORM

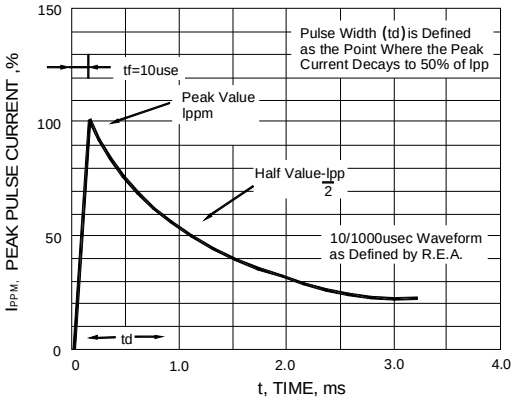


FIG.4- TYPICAL JUNCTION CAPACITANCE

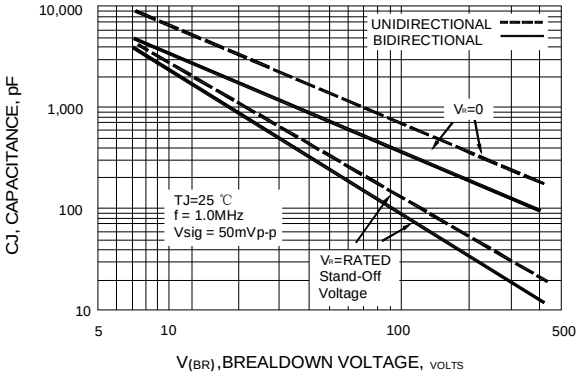


FIG.5- STEADY STATE POWER DERATING CURVE

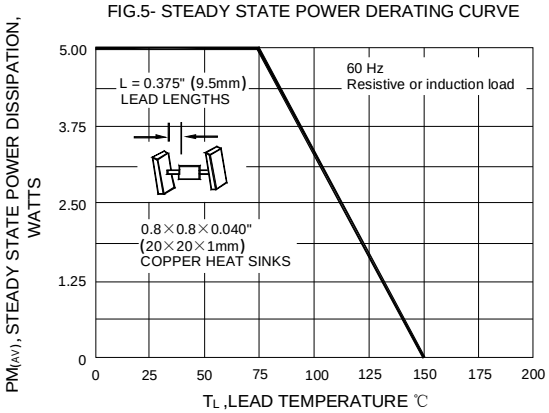
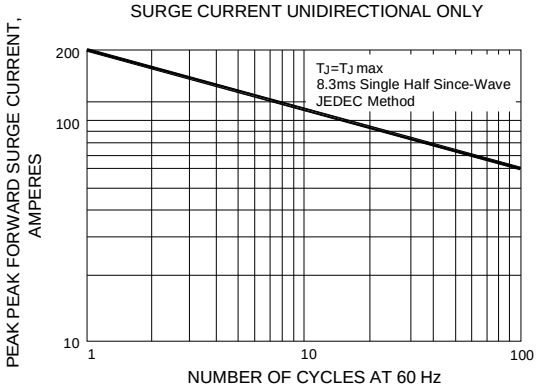


FIG.6 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY



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1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION) — **Peak Pulse Power 1500 Watts**

RATING AND CHARACTERISTIC CURVES 1.5KE6.8/J THRU 1.5KE440CA/J

FIG.7- INCREMENTAL CLAMPING VOLTAGE CURVE
UNIDIRECTIONAL

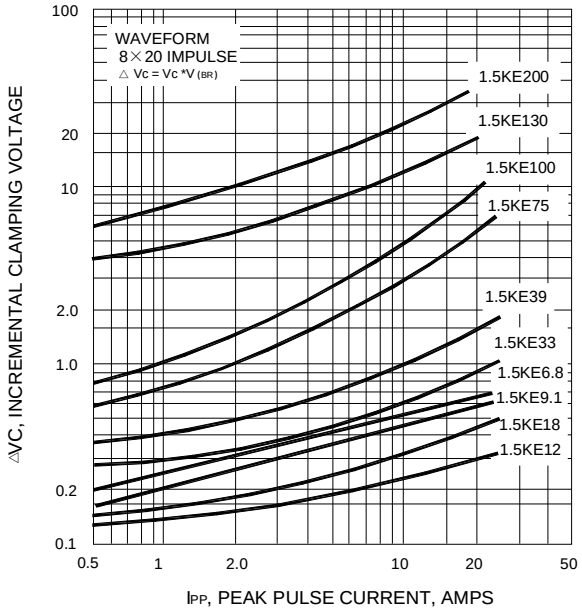


FIG.8- INCREMENTAL CLAMPING VOLTAGE CURVE
UNIDIRECTIONAL

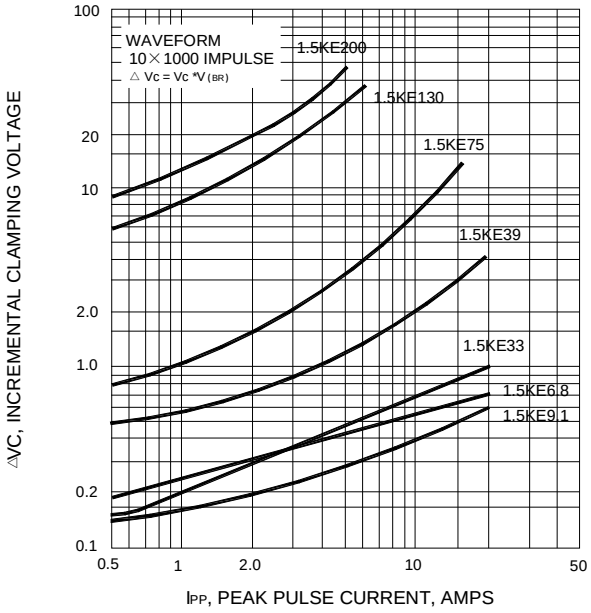


FIG.9- INCREMENTAL CLAMPING VOLTAGE CURVE
BIDIRECTIONAL

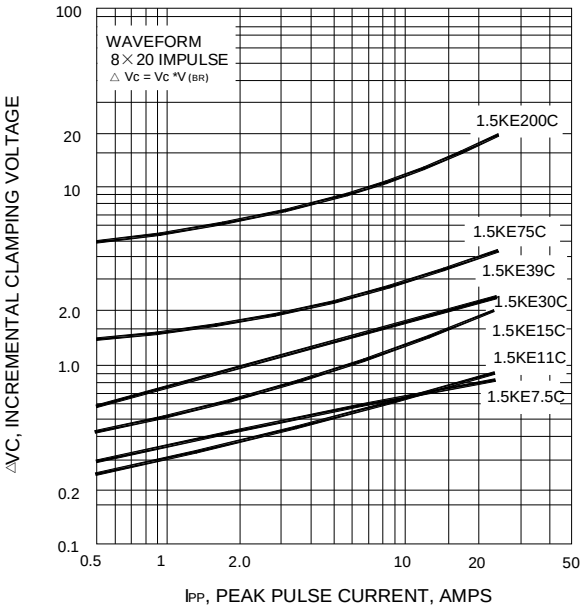
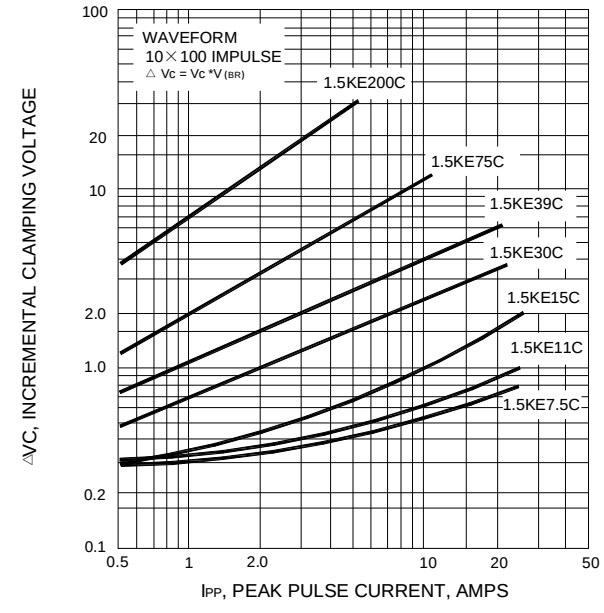


FIG.10- INCREMENTAL CLAMPING VOLTAGE CURVE
BIDIRECTIONAL



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RATING AND CHARACTERISTIC CURVES 1.5KE6.8/J THRU 1.5KE440CA/J

FIG.11- INSTANTANEOUS FORWARD VOLTAGE CHARAVTERISTICS CURVE

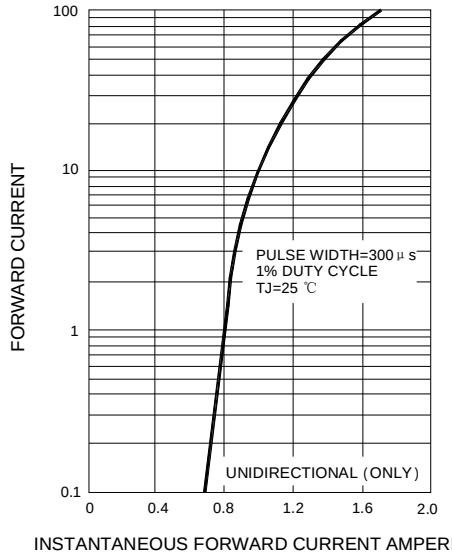

FIG.12- BREAKDOWN VOLTAGE TEMPERATURE COEFFICIENT CURVE