

## 1.5KE Series

Breakdown Voltage: 6.8 - 440 Volts

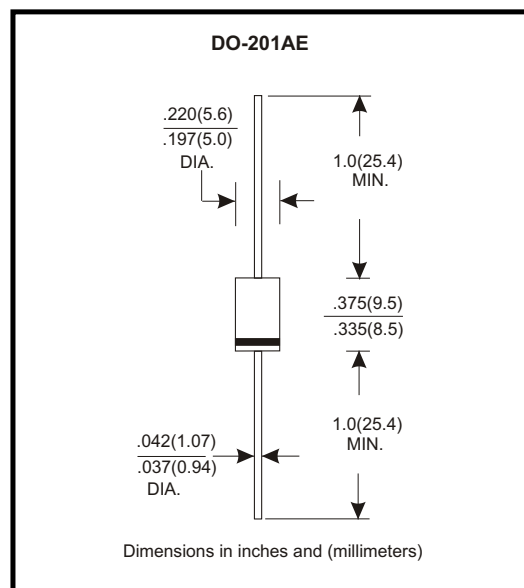
Power: 1500 Watt

### 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 1.0 ps from 0 Volts to  $B_v$  min
- Typical  $I_r$  less than  $1\mu A$  above 10V
- High temperature aging guaranteed:  $260^\circ C/10s$   $/.375"$  (9.5mm) lead length/5lbs., (2.3kg) tension

### Mechanical data

- Case: molded plastic
- Terminals: Auaxial leads, solderable per MIL-STD-202, method 208
- Polarity: color band denoted cathode except bipolar
- Weight: 1.2 GRAMS



## Maximum Ratings and Electrical Characteristics

RATINGS	SYMBOL	VALUE	UNITS
PEAK POWER DISSIPATION AT $T_A=25^\circ C$ , $T_P=1ms$ (NOTE1)	$P_{PK}$	MINIMUM 1500	WATTS
STEADY STATE POWER DISSIPATION AT $T_L=75^\circ C$ LEAD LENGTHS $.375"$ (9.5mm) (NOTE 2)	PD	5.0	WATTS
PEAK FORWARD SURGE CURRENT, 8.3ms SINGLE HALF SINE-WAVE SUPERIMPOSED ON RATED LOAD (JEDEC METHOD) (NOTE 3)	$I_{FSM}$	200	Amps
OPERATING AND STORAGE TEMPERATURE RANGE	$T_J, T_{STG}$	- 55 TO + 175	$^\circ C$

NOTE :

1. NON-REPETITIVE CURRENT PULSE, PER FIG.3 AND DERATED ABOVE  $T_A=25^\circ C$  PER FIG 2.
2. MOUNTED ON COPPER LEAF AREA OF  $0.79 \text{ IN}^2$  ( $20\text{mm}^2$ )
3. 8.3ms SINGLE HALF SINE-WAVE, DUTY CYCLE=4 PULSES PER MINUTES MAXIMUM
4. FOR BIDIRECTIONAL USE C SUFFIX FOR 10% TOLERANCE, CA SUFFIX FOR 5% TOLERANCE

# 1500W Transient Voltage Suppressor

JEDEC TYPE NUMBER	GENERAL PART NUMBER	BREAKDOWN V <sub>BR</sub> (VOLTS)		@IT (mA)	WORKING PEAK REVERSE VOLTAGE V <sub>RWM</sub> (VOLTS)	MAXIMUM REVERSE LEAKAGE AT V <sub>RWM</sub> IR(μA)	MAXIMUM REVERSE SURGE CURRENT I <sub>RSM</sub> (AMPS)	MAX CLAMPING VOLTAGE V <sub>RWM</sub> (VOLTS)	MAXIMUM TEMPERATURE COEFFICIENT OF V <sub>BR</sub> (%C) V <sub>RSM</sub> (VOLTS)
		MIN	MAX						
1N6267	1.5KE6.8	6.12	7.48	10	5.50	1000	139	10.8	0.057
1N6267A	1.5KE6.8A	6.45	7.14	10	5.80	1000	143	10.5	0.057
1N6268	1.5KE7.5	6.75	8.25	10	6.05	500	128	11.7	0.061
1N6268A	1.5KE7.5A	7.13	7.88	10	6.40	500	132	11.3	0.061
1N6269	1.5KE8.2	7.38	9.02	10	6.63	200	120	12.5	0.065
1N6269A	1.5KE8.2A	7.79	8.00	10	7.02	200	124	12.1	0.065
1N6270	1.5KE9.1	8.19	10.0	1.0	7.37	50	109	13.8	0.068
1N6270A	1.5KE9.1A	8.65	9.55	1.0	7.78	50	112	13.4	0.068
1N6271	1.5KE10	9.00	11.0	1.0	8.10	10	100	15.0	0.073
1N6271A	1.5KE10A	9.50	10.5	1.0	8.55	10	103	14.5	0.073
1N6272	1.5KE11	9.90	12.1	1.0	8.92	5.0	93.0	16.2	0.075
1N6272A	1.5KE11A	10.5	11.6	1.0	9.40	5.0	96.0	15.6	0.075
1N6273	1.5KE12	10.8	13.2	1.0	9.72	5.0	87.0	17.3	0.078
1N6273A	1.5KE12A	11.4	12.6	1.0	10.2	5.0	90.0	16.7	0.078
1N6274	1.5KE13	11.7	14.3	1.0	10.5	5.0	79.0	19.0	0.081
1N6274A	1.5KE13A	12.4	13.7	1.0	11.1	5.0	82.0	18.2	0.081
1N6275	1.5KE15	13.5	16.5	1.0	12.1	5.0	68.0	22.0	0.084
1N6275A	1.5KE15A	14.3	15.8	1.0	12.8	5.0	71.0	21.2	0.084
1N6276	1.5KE16	14.4	17.6	1.0	12.9	5.0	64.0	23.5	0.086
1N6276A	1.5KE16A	15.2	16.8	1.0	13.6	5.0	67.0	22.5	0.086
1N6277	1.5KE18	16.2	19.8	1.0	14.5	5.0	56.5	26.5	0.088
1N6277A	1.5KE18A	17.1	18.9	1.0	15.3	5.0	59.5	25.2	0.088
1N6278	1.5KE20	18.0	22.0	1.0	16.2	5.0	51.5	29.1	0.090
1N6278A	1.5KE20A	19.0	21.0	1.0	17.1	5.0	54.0	27.7	0.090
1N6279	1.5KE22	19.8	24.2	1.0	17.8	5.0	47.0	31.9	0.092
1N6279A	1.5KE22A	20.9	23.1	1.0	18.8	5.0	49.0	30.6	0.092
1N6280	1.5KE24	21.6	26.4	1.0	19.4	5.0	43.0	34.7	0.094
1N6280A	1.5KE24A	22.8	25.2	1.0	20.5	5.0	45.0	33.2	0.094
1N6281	1.5KE27	24.3	29.7	1.0	21.8	5.0	38.5	39.1	0.096
1N6281A	1.5KE27A	25.7	28.4	1.0	23.1	5.0	40.0	37.5	0.096
1N6282	1.5KE30	27.0	33.0	1.0	24.3	5.0	34.5	43.5	0.097
1N6282A	1.5KE30A	28.5	31.5	1.0	25.6	5.0	36.0	41.4	0.097
1N6283	1.5KE33	29.7	36.3	1.0	26.8	5.0	31.5	47.7	0.098
1N6283A	1.5KE33A	31.4	34.7	1.0	28.2	5.0	33.0	45.7	0.098
1N6284	1.5KE36	32.4	39.6	1.0	29.1	5.0	29.0	52.0	0.099
1N6284A	1.5KE36A	34.2	37.8	1.0	30.8	5.0	30.0	49.9	0.099
1N6285	1.5KE39	35.1	42.9	1.0	31.6	5.0	26.5	56.4	0.100
1N6285A	1.5KE39A	37.1	41.0	1.0	33.3	5.0	28.0	53.9	0.100
1N6286	1.5KE43	38.7	47.3	1.0	34.8	5.0	24.0	61.9	0.101
1N6286A	1.5KE43A	40.9	45.2	1.0	36.8	5.0	25.3	59.3	0.101
1N6287	1.5KE47	42.3	51.7	1.0	36.1	5.0	22.2	67.8	0.101
1N6287A	1.5KE47A	44.7	49.4	1.0	40.2	5.0	23.2	64.8	0.101
1N6288	1.5KE51	45.9	56.1	1.0	41.3	5.0	20.4	73.5	0.102
1N6288A	1.5KE51A	48.5	53.6	1.0	43.6	5.0	21.4	70.1	0.102
1N6289	1.5KE56	50.4	61.8	1.0	45.4	5.0	18.6	80.5	0.103
1N6289A	1.5KE56A	53.2	58.8	1.0	47.8	5.0	19.5	77.0	0.103
1N6290	1.5KE62	55.8	68.2	1.0	50.2	5.0	16.9	89.0	0.104
1N6290A	1.5KE62A	58.9	65.1	1.0	53.0	5.0	17.7	85.0	0.104
1N6291	1.5KE68	61.2	74.8	1.0	55.1	5.0	15.3	98.0	0.104
1N6291A	1.5KE68A	64.6	71.4	1.0	58.1	5.0	16.3	92.0	01.04
1N6292	1.5KE75	67.5	82.5	1.0	60.7	5.0	13.9	108.0	0.105
1N6292A	1.5KE75A	71.3	78.8	1.0	64.1	5.0	14.6	103.0	0.105
1N6293	1.5KE82	73.8	90.2	1.0	66.4	5.0	12.7	118.0	0.105
1N6293A	1.5KE82A	77.9	86.1	1.0	70.1	5.0	13.3	113.0	0.105

DEVICE	GENERAL PART NUMBER	BREAKDOWN $V_{BR}$ (VOLTS)		@ $I_T$ (mA)	WORKING PEAK REVERSE VOLTAGE $V_{RWM}$ (VOLTS)	MAXIMUM REVERSE LEAKAGE AT $V_{RWM}$ $I_R$ ( $\mu$ A)	MAXIMUM REVERSE CURRENT $I_{RSM}$ (AMPS)	MAX CLAMPING VOLTAGE $V_{RWM}$ (VOLTS)	MAXIMUM TEMPERATURE COEFFICIENT OF $V_{BR}$ (%C) $V_{RSM}$ (VOLTS)
		MIN	MAX						
1N6294	1.5KE91	81.9	100.0	1.0	73.7	5.0	11.4	131.8	0.106
1N6294A	1.5KE91A	86.5	95.50	1.0	77.8	5.0	12.0	125.0	0.106
1N6295	1.5KE100	90.0	110.0	1.0	81.0	5.0	10.4	144.0.	0.106
1N6295A	1.5KE100A	95.0	105.0	1.0	85.5	5.0	11.0	137.0	0.106
1N6296	1.5KE110	99.0	121.0	1.0	89.2	5.0	9.5	158.0	0.107
1N6296A	1.5KE110A	106.0	116.0	1.0	94.0	5.0	9.9	152.0	0.107
1N6297	1.5KE120	108.0	132.0	1.0	97.2	5.0	8.7	173.0	0.107
1N6297A	1.5KE120A	114.0	126.0	1.0	102.0	5.0	9.1	165.0	0.107
1N6298	1.5KE130	117.0	143.0	1.0	106.0	5.0	8.0	187.0	0.107
1N6298A	1.5KE130A	124.0	137.0	1.0	111.0	5.0	8.4	179.0	0.107
1N6299	1.5KE150	136.0	165.0	1.0	121.0	5.0	7.0	215.0	0.108
1N6299A	1.5KE150A	143.0	158.0	1.0	128.0	5.0	7.2	207.0	0.108
1N6300	1.5KE160	144.0	176.0	1.0	130.0	5.0	6.5	230.0	0.108
1N6300A	1.5KE160A	152.0	168.0	1.0	136.0	5.0	6.8	219.0	0.108
1N6301	1.5KE170	153.0	187.0	1.0	138.0	5.0	6.2	244.0	0.108
1N6301A	1.5KE170A	162.0	179.0	1.0	145.0	5.0	6.4	234.0	0.108
1N6302	1.5KE180	162.0	198.0	1.0	146.0	5.0	5.8	258.0	0.108
1N6302A	1.5KE180A	171.0	189.0	1.0	154.0	5.0	6.1	246.0	0.108
1N6303	1.5KE200	180.0	220.0	1.0	162.0	5.0	5.2	287.0	0.108
1N6303A	1.5KE200A	190.0	210.0	1.0	171.0	5.0	5.5	274.0	0.108
	1.5KE220	196.0	242.0	1.0	175.0	5.0	4.4	344.0	0.108
	1.5KE220A	209.0	231.0	1.0	185.0	5.0	4.6	328.0	0.108
	1.5KE250	225.0	275.0	1.0	202.0	5.0	4.2	360.0	0.110
	1.5KE250A	237.0	263.0	1.0	214.0	5.0	4.4	344.0	0.110
	1.5KE300	270.0	330.0	1.0	243.0	5.0	3.5	430.0	0.110
	1.5KE300A	285.0	315.0	1.0	256.0	5.0	3.6	414.0	0.110
	1.5KE350	315.0	385.0	1.0	284.0	5.0	3.0	504.0	0.110
	1.5KE350A	333.0	368.0	1.0	300.0	5.0	3.1	482.0	0.110
	1.5KE400	360.0	440.0	1.0	324.0	5.0	2.6	574.0	0.110
	1.5KE400A	380.0	420.0	1.0	342.0	5.0	2.7	548.0	0.110
	1.5KE440	396.0	484.0	1.0	356.0	5.0	2.4	631.0	0.110
	1.5KE440A	418.0	462.0	1.0	376.0	5.0	2.5	602.0	0.110

- NOTES : 1.  $V_{BR}$  MEASURED AFTER  $I_T$  APPLIED FOR 300  $\mu$ S,  $I_T$ =SQUARE WAVE PULSE OR EQUIVALENT  
2. SURGE CURRENT WAVEFORM PER FIGURE 3 AND DERATED PER FIGURE 2.  
3.  $V_F$ =3.5V MAX,  $I_F$ =100A (1.5KE6.8 THRU 1.5KE91A)  
 $V_F$ =5.0V MAX,  $I_F$ =100A (1.5KE100 THRU 1.5KE440A) PER 1/2 SQUARE OR EQUIVALENT SINE WAVE.  
PW=8.3ms, DUTY CYCLE=4 PULSES PER MINUTE MXIMUM  
4. FOR BIPOLAR TYPES HAVING  $V_{RWM}$  OF 10 VOLTS AND UNDER, THE  $I_R$  LIMIT IS DOUBLED

## Rating and Characteristic Curves (1.5KE6.8 THRU 1.5KE440CA)

FIG. 1 - PEAK PULSE POWER RATING CURVE

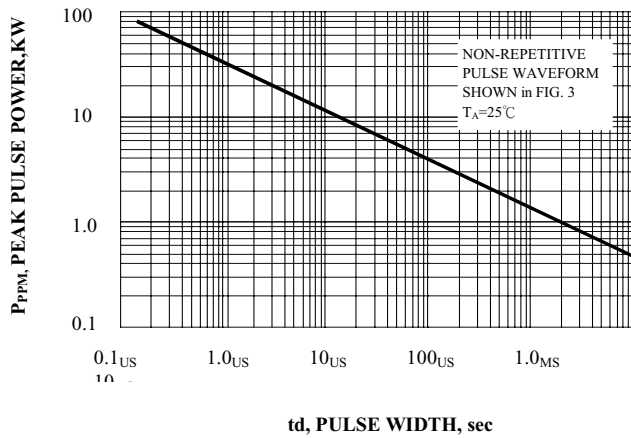


FIG. 2 - PULSE DERATING CURVE

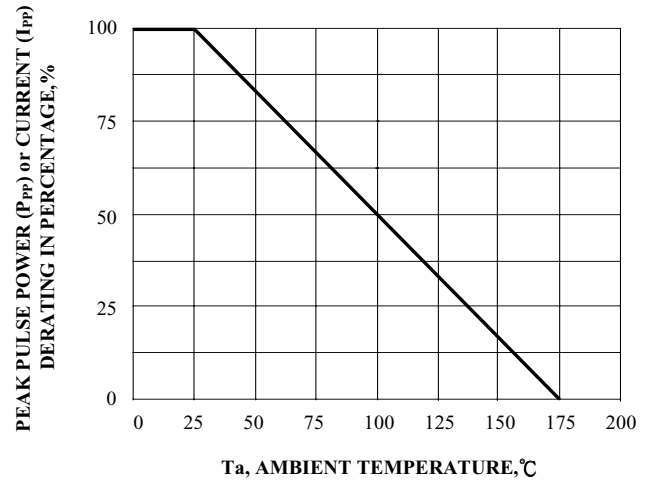


FIG. 3 - PULSE WAVEFORM

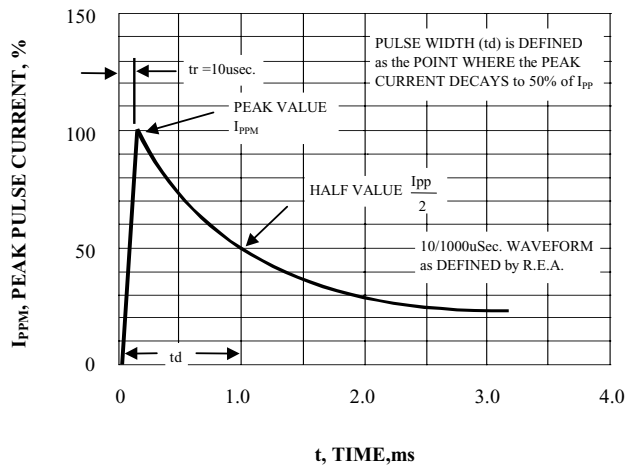


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

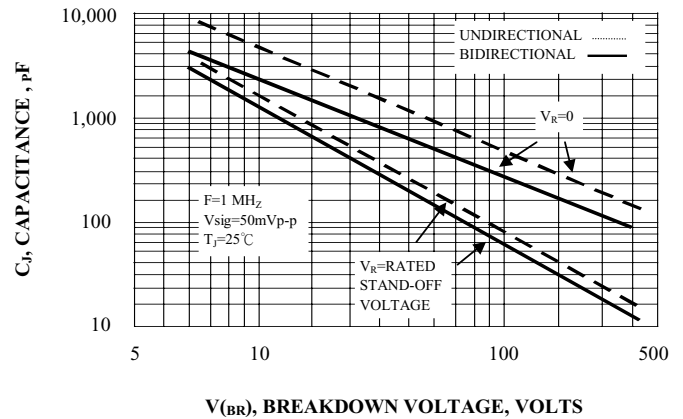


FIG. 5 - STEADY STATE POWER DERATING

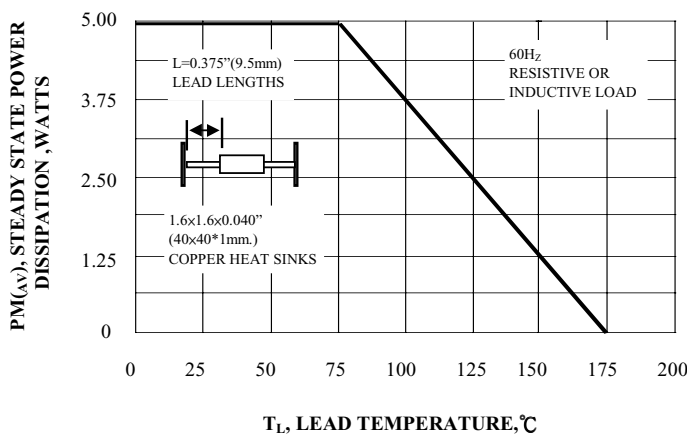
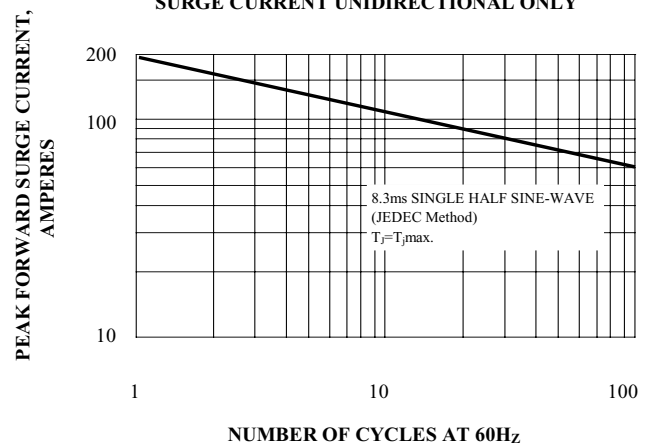
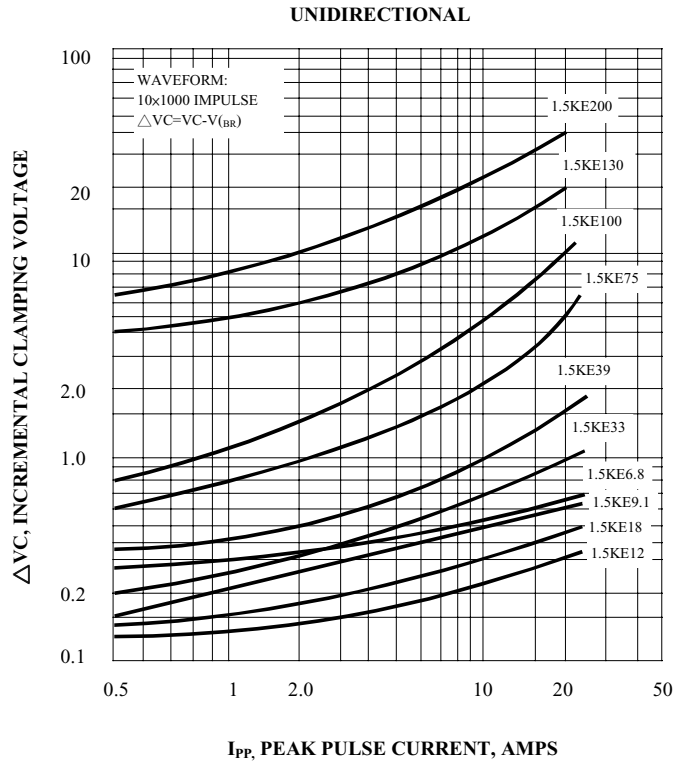


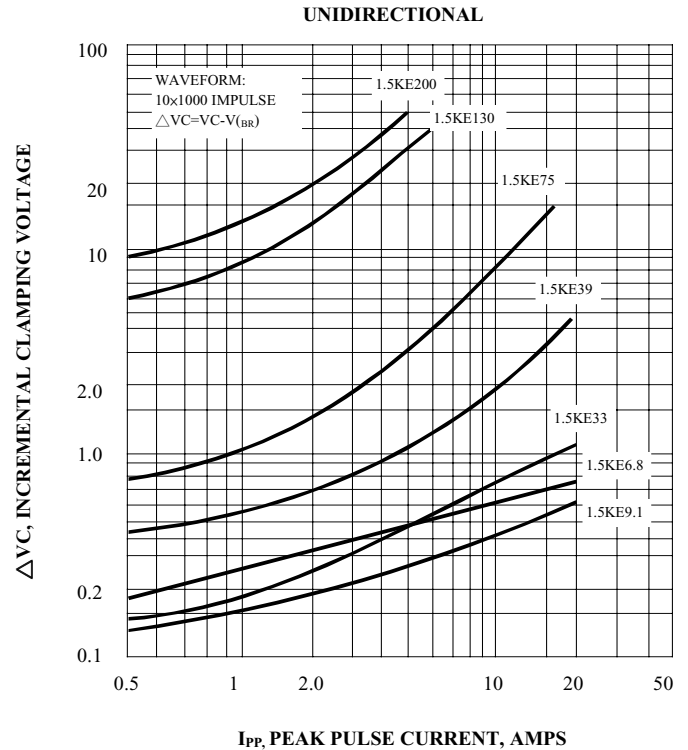
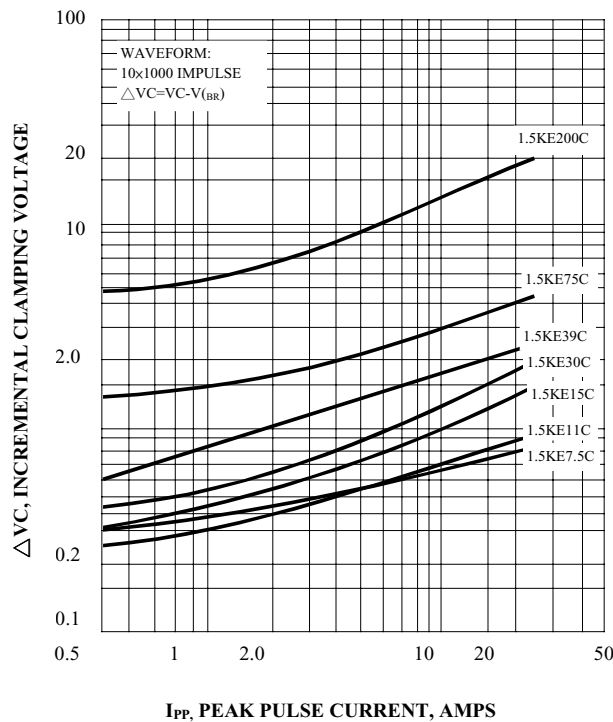
FIG. 6 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY



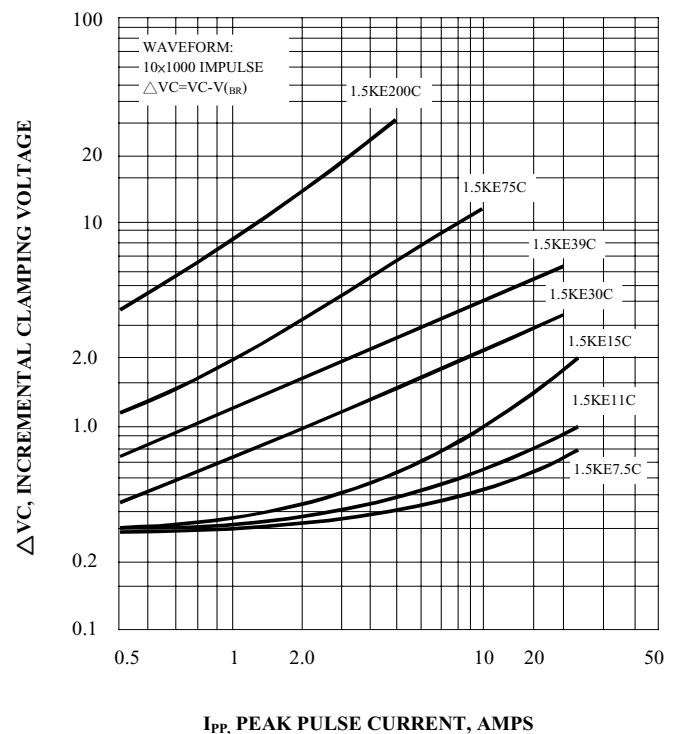
## Rating and Characteristic Curves (1.5KE6.8 THRU 1.5KE440CA)



**FIG. 9 - INCREMENTAL CLAMPING VOLTAGE CURVE  
BIDIRECTIONAL**

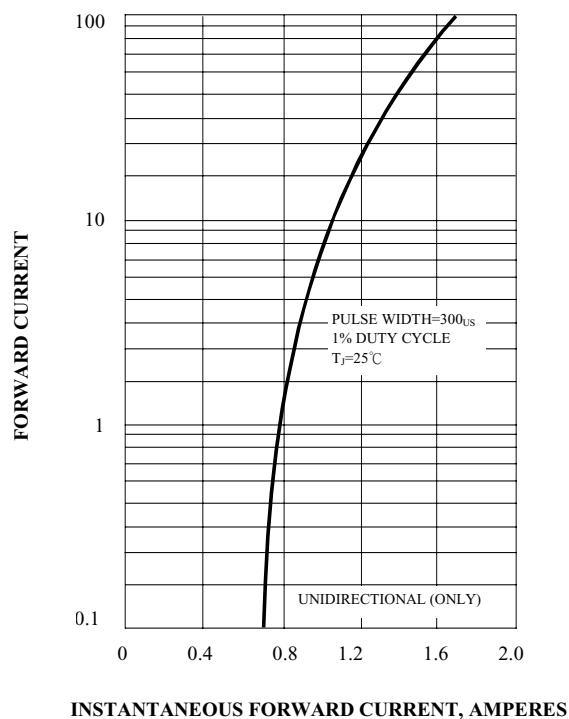


**FIG. 10 - INCREMENTAL CLAMPING VOLTAGE CURVE  
BIDIRECTIONAL**



## Rating and Characteristic Curves (1.5KE6.8 THRU 1.5KE440CA)

**FIG. 11 - INSTANTANEOUS FORWARD VOLTAGE CHARACTERISTICS CURVE**



**FIG. 12 - BREAKDOWN VOLTAGE TEMPERATURE COEFFICIENT CURVE**

