RECTRON
SEMICONDUCTOR
TECHNICAL SPECIFICATION

TVS
1.5KE
SERIES

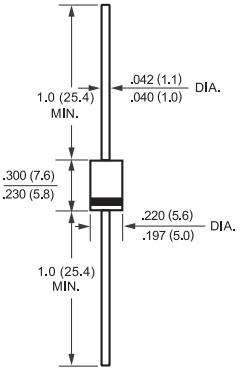
GPP TRANSIENT VOLTAGE SUPPRESSOR

1500 WATT PEAK POWER 5.0 WATT STEADY STATE

FEATURES

* Plastic package has underwriters laboratory
* Glass passivated chip construction
* 1500 watt surage capability at 1ms
* Excellent clamping capability
* Low zener impedance
* Fast response time

1.5KE



Dimensions in inches and (millimeters)

Ratings at 25 °C ambient temperature unless otherwise specified.

MAXIMUM RATINGS AND ELECTRICAL 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%.

DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA suffix for types 1.5KE 6.8 thru 1.5KE 400

Electrical characteristics apply in both direction

MAXIMUM RATINGS (At T_A = 25°C unless otherwise noted)

RATINGS	SYMBOL	VALUE	UNITS
Peak Power Dissipation at T_A = 25°C, T_P = 1mS (Note 1)	P_{PPM}	Minimum 1500	Watts
Steady State Power Dissipation at T_L = 75°C lead lengths, .375" (9.5 mm) (Note 2)	$P_{M(AV)}$	5.0	Watts
Peak Forward Surge Current, 8.3ms single half sine wave-superimposed on rated load(JEDEC METHOD) unidirectional only	I_{FSM}	200	Amps
Maximum Instantaneous Forward Current at 50.0A for unidirectional only (Note 3)	V_F	3.5/5.0	Volts
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to + 175	°C

NOTES : 1. Non-repetitive current pulse, per Fig.3 and derated above T_A = 25°C per Fig.2.
2. Mounted on copper pad area of 0.8X0.8" (20X20mm) per Fig.5.
3. V_F = 3.5V for devices of $V_{(BR)} \leq 200V$ and V_F = 5.0 Volts max.for devices of $V_{(BR)} > 200V$.

RATING AND CHARACTERISTIC CURVES (1.5KE6.8 THRU 1.5KE400CA)

FIG. 1 - PULSE POWER RATING CURVE

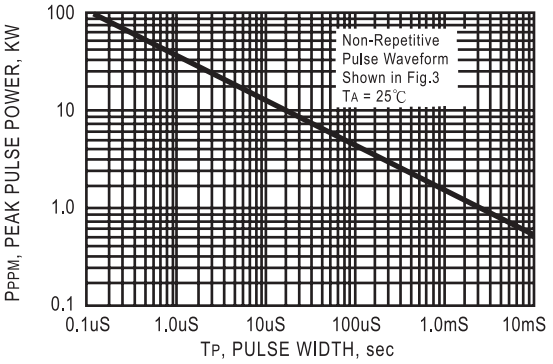


FIG. 2 - PULSE DERATING CURVE

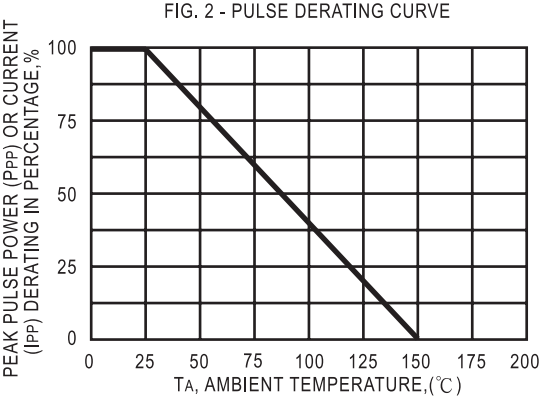


FIG. 3 - PULSE WAVEFORM

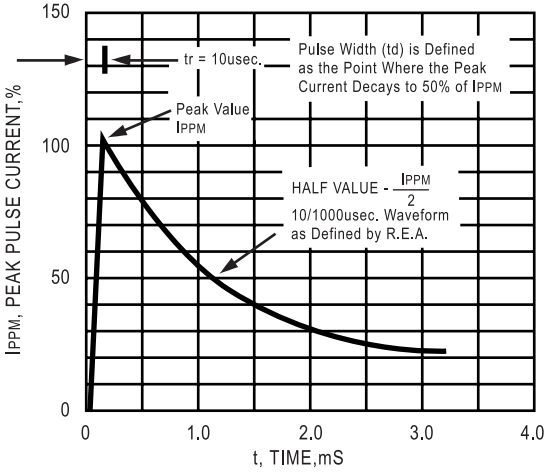


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

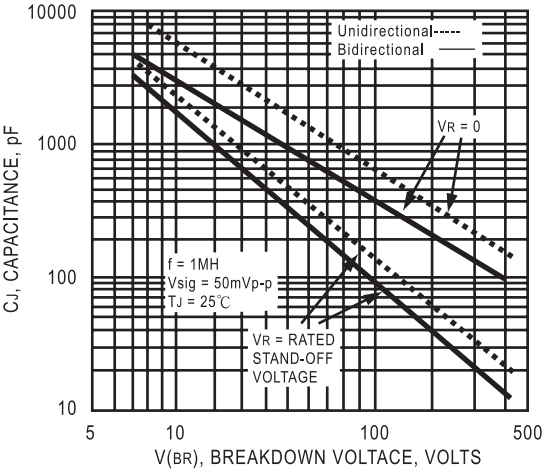


FIG. 5 - STEADY STATE POWER DERATING CURVE

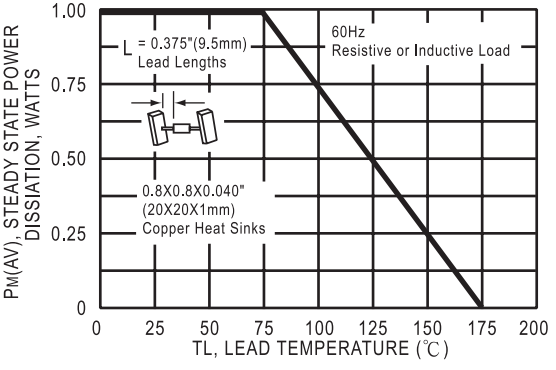
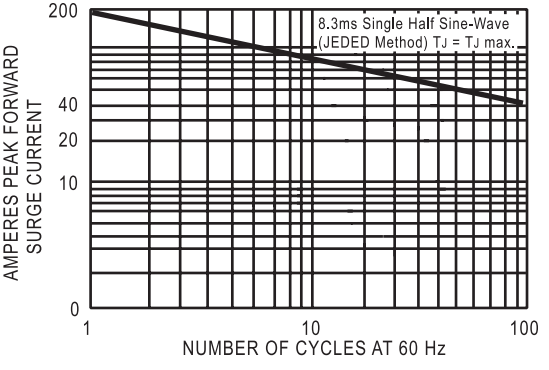


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL



RATING AND CHARACTERISTIC CURVES (1.5KE6.8 THRU 1.5KE400CA)

FIG. 7 - INCREMENTAL CLAMPING VOLTAGE CURVE UNIDIRECTIONAL

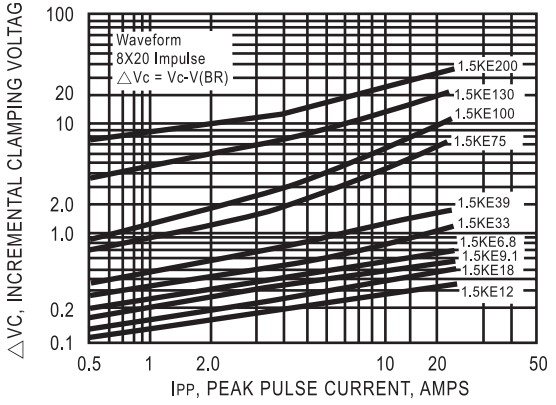


FIG. 7 - INCREMENTAL CLAMPING VOLTAGE CURVE UNIDIRECTIONAL

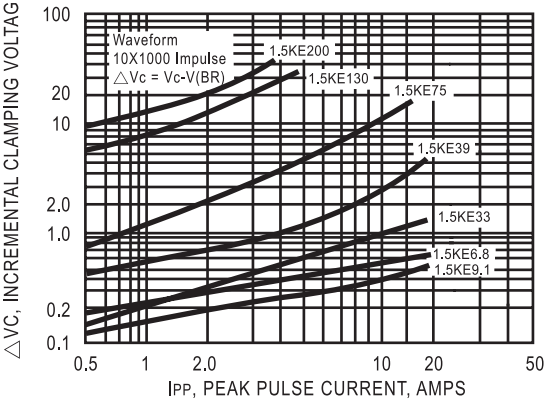


FIG. 9 - INCREMENTAL CLAMPING VOLTAGE CURVE UNIDIRECTIONAL

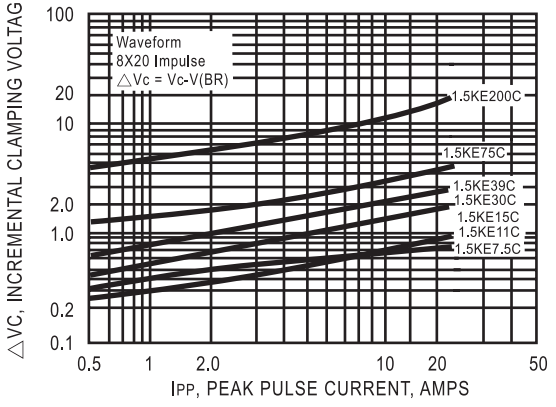


FIG. 7 - INCREMENTAL CLAMPING VOLTAGE CURVE UNIDIRECTIONAL

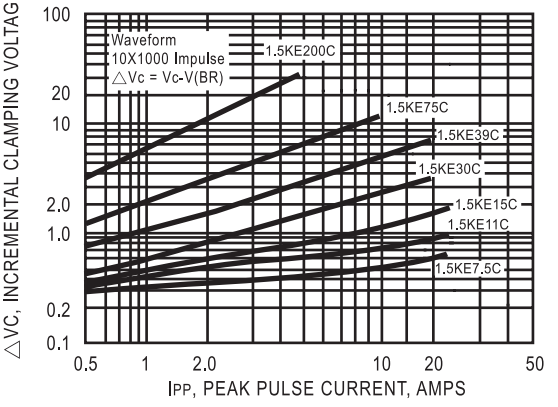


FIG. 11 -INSTANTANEOUS FORWARD VOLTAGE CHARACTERISTICS CURVE

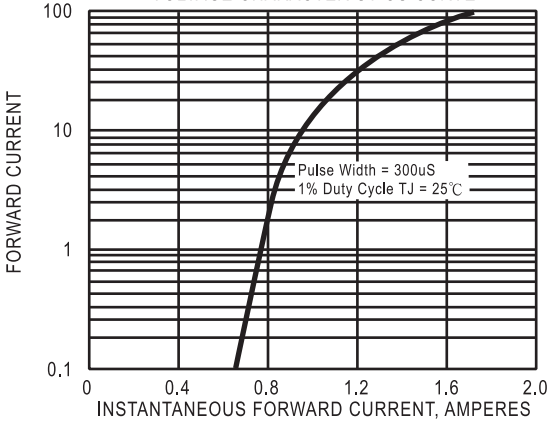
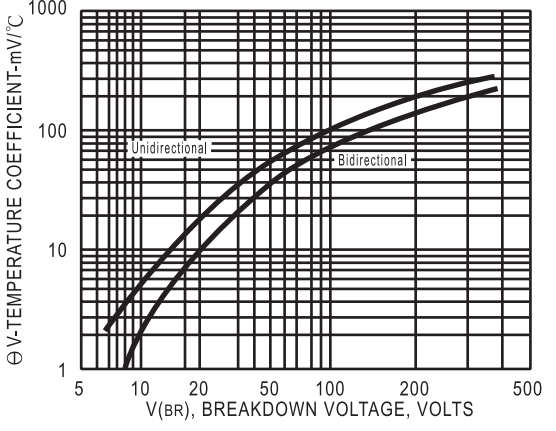


FIG. 12 - BREAKDOWN VOLTAGE TEMPEATURE COEFFICIENT CURVE



TRANSIENT VOLTAGE SUPPRESSORS

1500W SERIES TVS DIODES／ 1.5KE (CASE 10) 1500W

TYPE	Breakdown Voltage			Reverse Stand off Voltage V_{WM} (Volts)	Maximum Reverse Leakage at V_{WM} I_D(uA)	Maximum Peak Pulse Current I_{PPM} (Amps)	Maximum Clamping Voltage at I_{PPM} V_C (Volts)
	V_{BR} (Volts)		@I_T				
	MIN.	MAX.	(mA)				
1.5KE6.8	6.12	7.48	10	5.50	1000	145	10.8
1.5KE6.8A	6.45	7.14	10	5.80	1000	150	10.5
1.5KE7.5	6.75	8.25	10	6.05	500	134	11.7
1.5KE7.5A	7.13	7.88	10	6.40	500	139	11.3
1.5KE8.2	7.38	9.02	10	6.63	200	126	12.5
1.5KE8.2A	7.79	8.61	10	7.02	200	130	12.1
1.5KE9.1	8.19	10.0	1.0	7.37	50	114	13.8
1.5KE9.1A	8.69	9.55	1.0	7.78	50	117	13.4
1.5KE10	9.00	11.0	1.0	8.10	10	105	15.0
1.5KE10A	9.50	10.5	1.0	8.55	10	108	14.5
1.5KE11	9.90	12.1	1.0	8.92	5.0	97	16.2
1.5KE11A	10.5	11.6	1.0	9.40	5.0	100	15.6
1.5KE12	10.8	13.2	1.0	9.72	5.0	91.0	17.3
1.5KE12A	11.4	12.6	1.0	10.2	5.0	94	16.7
1.5KE13	11.7	14.3	1.0	10.5	5.0	82	19.0
1.5KE13A	12.4	13.7	1.0	11.1	5.0	86	18.2
1.5KE15	13.5	16.5	1.0	12.1	5.0	71	22.0
1.5KE15A	14.3	15.8	1.0	12.8	5.0	74	21.2
1.5KE16	14.4	17.6	1.0	12.9	5.0	67	23.5
1.5KE16A	15.2	16.8	1.0	13.6	5.0	70	22.5
1.5KE18	16.2	19.8	1.0	14.5	5.0	59	26.5
1.5KE18A	17.1	18.9	1.0	15.3	5.0	60	25.2
1.5KE20	18.0	22.0	1.0	16.2	5.0	54	29.1
1.5KE20A	19.0	21.0	1.0	17.1	5.0	56	27.7
1.5KE22	19.8	24.2	1.0	17.8	5.0	49	31.9
1.5KE22A	20.9	23.1	1.0	18.8	5.0	51	30.6
1.5KE24	21.6	26.4	1.0	19.4	5.0	45	34.7
1.5KE24A	22.8	25.2	1.0	20.5	5.0	47	33.2
1.5KE27	24.3	29.7	1.0	21.8	5.0	40	39.1
1.5KE27A	25.7	28.4	1.0	23.1	5.0	42	37.5
1.5KE30	27.0	33.0	1.0	24.3	5.0	36	43.5
1.5KE30A	28.5	31.5	1.0	25.6	5.0	38	41.4
1.5KE33	29.7	36.3	1.0	26.8	5.0	33	47.7
1.5KE33A	31.4	34.7	1.0	28.2	5.0	34	45.7
1.5KE36	32.4	39.6	1.0	29.1	5.0	30	52.0
1.5KE36A	34.2	37.8	1.0	30.8	5.0	31	49.9
1.5KE39	35.1	42.9	1.0	31.6	5.0	27	56.4
1.5KE39A	37.1	41.0	1.0	33.3	5.0	29	53.9
1.5KE43	38.7	47.3	1.0	34.8	5.0	25	61.9
1.5KE43A	40.9	45.2	1.0	36.8	5.0	26	59.3
1.5KE47	42.3	51.7	1.0	38.1	5.0	23	67.8
1.5KE47A	44.7	49.4	1.0	40.2	5.0	24	64.8
1.5KE51	45.9	56.1	1.0	41.3	5.0	21	73.5
1.5KE51A	48.5	53.6	1.0	43.6	5.0	22	70.1
1.5KE56	50.4	61.6	1.0	45.4	5.0	19	80.5
1.5KE56A	53.2	58.8	1.0	47.8	5.0	20	77.0

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TYPE	Breakdown Voltage			Reverse Stand off Voltage V_{WM} (Volts)	Maximum Reverse Leakage at V_{WM} I_D(uA)	Maximum Peak Pulse Current I_{PPM} (Amps)	Maximum Clamping Voltage at I_{PPM} V_C (Volts)
	V_{BR} (Volts)		@I_T				
	MIN.	MAX.	(mA)				
1.5KE62	55.8	68.2	1.0	50.2	5.0	17	89.0
1.5KE62A	58.9	65.1	1.0	53.0	5.0	18	85.0
1.5KE68	61.2	74.8	1.0	55.1	5.0	16	98.0
1.5KE68A	64.6	71.4	1.0	58.1	5.0	17	92.0
1.5KE75	67.5	82.5	1.0	60.7	5.0	14	109
1.5KE75A	71.3	78.8	1.0	64.1	5.0	15	104
1.5KE82	73.8	90.2	1.0	66.4	5.0	13	118
1.5KE82A	77.9	86.1	1.0	70.1	5.0	13.9	113
1.5KE91	81.9	100	1.0	73.7	5.0	12	131
1.5KE91A	86.5	95.5	1.0	77.8	5.0	12.6	125
1.5KE100	90.0	110	1.0	81.0	5.0	10.9	144
1.5KE100A	95.0	105	1.0	85.5	5.0	11.4	137
1.5KE110	99.0	121	1.0	89.2	5.0	9.9	158
1.5KE110A	105	116	1.0	94.0	5.0	10.3	152
1.5KE120	108	132	1.0	97.2	5.0	9.1	173
1.5KE120A	114	126	1.0	102	5.0	9.5	165
1.5KE130	117	143	1.0	105	5.0	8.4	187
1.5KE130A	124	137	1.0	111	5.0	8.7	179
1.5KE150	135	165	1.0	121	5.0	7.3	215
1.5KE150A	143	158	1.0	128	5.0	7.6	207
1.5KE160	144	176	1.0	130	5.0	6.8	230
1.5KE160A	152	168	1.0	136	5.0	7.1	219
1.5KE170	153	187	1.0	138	5.0	6.4	244
1.5KE170A	162	179	1.0	145	5.0	6.7	234
1.5KE180	162	198	1.0	146	5.0	6.1	258
1.5KE180A	171	189	1.0	154	5.0	6.4	246
1.5KE200	180	220	1.0	162	5.0	5.4	287
1.5KE200A	190	210	1.0	171	5.0	5.7	274
1.5KE220	198	242	1.0	175	5.0	4.5	344
1.5KE220A	209	231	1.0	185	5.0	4.8	328
1.5KE250	225	275	1.0	202	5.0	4.3	360
1.5KE250A	237	263	1.0	214	5.0	4.5	344
1.5KE300	270	330	1.0	243	5.0	3.6	430
1.5KE300A	285	315	1.0	256	5.0	3.8	414
1.5KE350	315	385	1.0	284	5.0	3.1	504
1.5KE350A	332	368	1.0	300	5.0	3.2	482
1.5KE400	360	440	1.0	324	5.0	2.7	574
1.5KE400A	380	420	1.0	342	5.0	2.8	548

NOTES : 1. V_{BR} measured after I_T applied for 300ms. I_T = square pluse or equivalent.

2. For bidirectional use C or CA suffixs for all types (ex. 1.5KE6.8C, 1.5KE400CA) electrical characteristics apply in both directions.

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