DIGITRON™ Semiconductors

High-reliability discrete products and engineering services since 1977

1.5KE6.8-1.5KE400A

1500 WATT TRANSIENT VOLTAGE SUPPRESSORS

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.
- Voltages from 6.8 to 400 V Breakdown (V_{BR})
- Suppresses transients up to 1500 watts @ 10/1000 µs (see Figure 1)

MAXIMUM RATINGS

Parameter	Value
Peak Pulse Power Dissipation at 25°C:	1500 watts @ 10/1000µs
Impulse Repetition Rate (duty factor):	0.01%
$T_{clamping}$ (0 volts to $V_{(BR)}$ min):	<100 ps theoretical for unidirectional and <5 ns for bidirectional
Operating and Storage Temperature:	-65°C to +150°C
Thermal Resistance:	22°C/W junction to lead at 3/8"(10mm) from body, or 82°C/W junction to ambient when mounted on FR4 PC board with 4mm^2 copper pads (1oz) and track width 1mm, length 25mm
Steady-State Power Dissipation:	5 watts at T_L=40°C or 1.52 watts @ T_A=25°C when mounted on FR4 PC board described for thermal resistance
Forward Surge:	200 Amps peak impulse of 8.3ms half-sine wave at 25°C (unidirectional only)
Solder Temperature:	260°C for 10 s (maximum)

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Type Number	Rated Standoff Voltage V_{WM} (Note 1)	Breakdown Voltage $V_{(BR)}$ @ $I_{(BR)}$			Maximum Clamping Voltage V_C @ I_{PP}	Maximum Standby Current I_D @ V_{WM}	Maximum Pulse Current I_{PP} (Fig. 2)	Maximum Temperature Coefficient of $V_{(BR)}$ $\alpha_{V(BR)}$
	Volts	Volts Min	Volts Max	mA	Volts	µA	A	%/°C
1.5KE6.8	5.50	6.12	7.48	10	10.8	1000	139.0	.057
1.5KE6.8A	5.80	6.45	7.14	10	10.5	1000	143.0	.057
1.5KE7.5	6.05	6.75	8.25	10	11.7	500	128.0	.061
1.5KE7.5A	6.40	7.13	7.88	10	11.3	500	132.0	.061
1.5KE8.2	6.63	7.38	9.02	10	12.5	200	120.0	.065
1.5KE8.2A	7.02	7.79	8.61	10	12.1	200	124.0	.065
1.5KE9.1	7.37	8.19	10.00	1	13.8	50	109.0	.068
1.5KE9.1A	7.78	8.65	9.55	1	13.4	50	112.0	.068
1.5KE10	8.10	9.00	11.00	1	15.0	10	100.0	.073
1.5KE10A	8.55	9.50	10.50	1	14.5	10	103.0	.073
1.5KE11	8.92	9.90	12.10	1	16.2	5	92.6	.075
1.5KE11A	9.40	10.50	11.60	1	15.6	5	96.2	.075
1.5KE12	9.72	10.80	13.20	1	17.3	5	86.7	.078

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	Volts	Volts Min	Volts Max	mA	Volts	µA	A	%/°C
1.5KE12A	10.22	11.40	12.60	1	16.7	5	89.8	.078
1.5KE13	10.50	11.70	14.30	1	19.0	5	78.9	.081
1.5KE13A	11.10	12.40	13.70	1	18.2	5	82.4	.081
1.5KE15	12.10	13.50	16.50	1	22.0	5	68.2	.084
1.5KE15A	12.80	14.30	15.80	1	21.2	5	70.8	.084
1.5KE16	12.90	14.40	17.60	1	23.5	5	63.8	.086
1.5KE16A	13.60	15.20	16.80	1	22.5	5	66.7	.086
1.5KE18	14.50	16.20	19.80	1	26.5	5	56.6	.088
1.5KE18A	15.30	17.10	18.90	1	25.2	5	59.5	.088
1.5KE20	16.20	18.00	22.00	1	29.1	5	51.5	.090
1.5KE20A	17.10	19.00	21.00	1	27.7	5	54.2	.090
1.5KE22	17.80	19.80	24.20	1	31.9	5	47.0	.092
1.5KE22A	18.80	20.90	23.10	1	30.6	5	49.0	.092
1.5KE24	19.40	21.60	26.40	1	34.7	5	43.2	.094
1.5KE24A	20.50	22.80	25.20	1	33.2	5	45.2	.094
1.5KE27	21.80	24.30	29.70	1	39.1	5	38.4	.096
1.5KE27A	23.10	25.70	28.40	1	37.5	5	40.0	.096
1.5KE30	24.30	27.00	33.00	1	43.5	5	34.5	.097
1.5KE30A	25.60	28.50	31.50	1	41.4	5	36.2	.097
1.5KE33	26.80	29.70	36.30	1	47.7	5	31.4	.098
1.5KE33A	28.20	31.40	34.70	1	45.7	5	32.8	.098
1.5KE36	29.10	32.40	39.60	1	52.0	5	28.8	.099
1.5KE36A	30.80	34.20	37.80	1	49.9	5	30.1	.099
1.5KE39	31.60	35.10	42.90	1	56.4	5	26.6	.100
1.5KE39A	33.30	37.10	41.00	1	53.9	5	27.8	.100
1.5KE43	34.80	38.70	47.30	1	61.9	5	24.2	.101

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	Volts	Volts Min	Volts Max	mA	Volts	µA	A	%/°C
1.5KE43A	36.80	40.90	45.20	1	59.3	5	25.3	.101
1.5KE47	38.10	42.30	51.70	1	67.8	5	22.1	.101
1.5KE47A	40.20	44.70	49.40	1	64.8	5	23.1	.101
1.5KE51	41.30	45.90	56.10	1	73.5	5	20.4	.102
1.5KE51A	43.60	48.50	53.60	1	70.1	5	21.4	.102
1.5KE56	45.40	50.40	61.60	1	80.5	5	18.6	.103
1.5KE56A	47.80	53.20	58.80	1	77.0	5	19.5	.103
1.5KE62	50.20	55.80	68.20	1	89.0	5	16.9	.104
1.5KE62A	53.00	58.90	65.10	1	85.0	5	17.6	.104
1.5KE68	55.10	61.20	74.80	1	98.0	5	15.3	.104
1.5KE68A	58.10	64.60	71.40	1	92.0	5	16.3	.104
1.5KE75	60.70	67.50	82.50	1	108.0	5	13.9	.105
1.5KE75A	64.10	71.30	78.80	1	103.0	5	14.6	.105
1.5KE82	66.40	73.80	90.20	1	118.0	5	12.7	.105
1.5KE82A	70.10	77.90	86.10	1	113.0	5	13.3	.105
1.5KE91	73.70	81.90	100.00	1	131.0	5	11.5	.106
1.5KE91A	77.80	86.50	95.50	1	125.0	5	12.0	.106
1.5KE100	81.00	90.00	110.00	1	144.0	5	10.4	.106
1.5KE100A	85.50	95.00	105.00	1	137.0	5	10.9	.106
1.5KE110	89.20	99.00	121.00	1	158.0	5	9.5	.107
1.5KE110A	94.00	105.00	116.00	1	152.0	5	9.9	.107
1.55KE120	97.20	108.00	132.00	1	173.0	5	8.7	.107
1.5KE120A	102.00	114.00	126.00	1	165.0	5	9.1	.107
1.5KE130	105.00	117.00	143.00	1	187.0	5	8.0	.107
1.5KE130A	111.00	124.00	137.00	1	179.0	5	8.4	.107
1.5KE150	121.00	135.00	165.00	1	215.0	5	7.0	.108

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	Volts	Volts Min	Volts Max	mA	Volts	µA	A	%/°C
1.5KE150A	128.00	143.00	158.00	1	207.0	5	7.2	.108
1.5KE160	130.00	144.00	176.00	1	230.0	5	6.5	.108
1.5KE160A	136.00	152.00	168.00	1	219.0	5	6.8	.108
1.5KE170	138.00	153.00	187.00	1	244.0	5	6.1	.108
1.5KE170A	145.00	162.00	179.00	1	234.0	5	6.4	.108
1.5KE180	146.00	162.00	198.00	1	258.0	5	5.8	.108
1.5KE180A	154.00	171.00	189.00	1	246.0	5	6.1	.108
1.5KE200	162.00	180.00	220.00	1	287.0	5	5.2	.108
1.5KE200A	171.00	190.00	210.00	1	274.0	5	5.5	.108
1.5KE220	175.00	198.00	242.00	1	344.0	5	4.4	.110
1.5KE220A	185.00	209.00	231.00	1	328.0	5	4.6	.110
1.5KE250	202.00	225.00	275.00	1	360.0	5	4.2	.110
1.5KE250A	214.00	237.00	263.00	1	344.0	5	4.4	.110
1.5KE300	243.00	270.00	330.00	1	430.0	5	3.5	.111
1.5KE300A	256.00	285.00	315.00	1	414.0	5	3.6	.111
1.5KE350	284.00	315.00	385.00	1	504.0	5	3.0	.111
1.5KE350A	300.00	332.00	368.00	1	482.0	5	3.1	.111
1.5KE400	324.00	360.00	440.00	1	574.0	5	2.6	.111
1.5KE400A	324.00	380.00	420.00	1	548.0	5	2.7	.111

Notes:

1. Normal selection criteria fro TVS devices is by rated stand-off voltage (V_{WM}) and should be equal or greater than dc or continuous peak operating voltage.
2. TVS devices are tested to maximum peak pulse current (I_{PP}) with clamping voltage monitored. This surge capability is one of the most significant electrical characteristics of the device and should be considered as part of customer quality inspections.
3. For Bidirectional part number add C or CA as suffix. For Bidirectional types having V_{WM} of 8 volts and under, the I_D leakage current is doubled. For bipolar capacitance will be .5 that shown in Fig. 2 for zero bias.
4. For unidirectional, the forward voltage (V_F) is 3.5 volts maximum at 100 Amps peak 8.3 ms half-sine wave.

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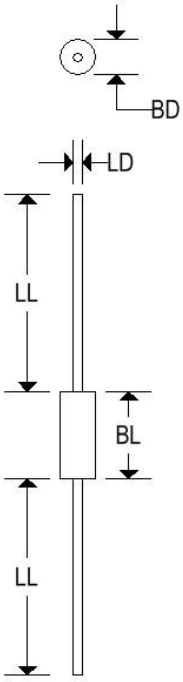
MECHANICAL CHARACTERISTICS

Case	DO-201
Marking	Alpha-numeric
Normal polarity	Cathode band



	DO-201			
	Inches		Millimeters	
	Min	Max	Min	Max
BD	0.190	0.250	4.826	6.350
BL	0.285	0.375	7.239	9.525
LD	0.038	0.042	0.965	1.067
LL	1.000	-	25.400	-

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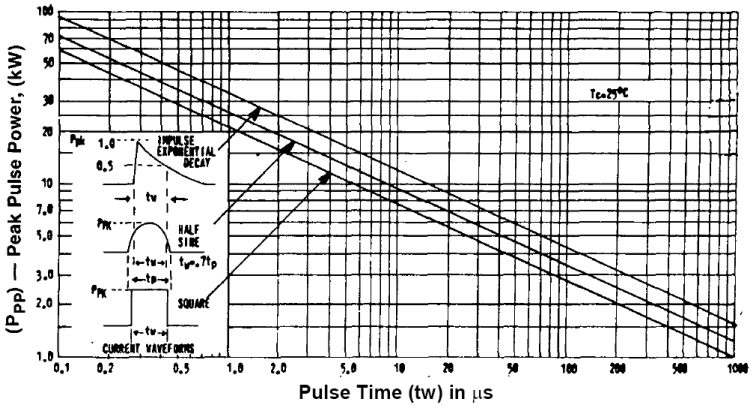

FIGURE 1
Peak Pulse Power vs. Pulse Time (t_W) in μs

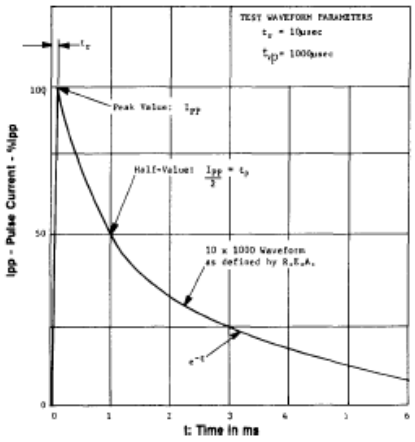

FIGURE 2 Pulse Wave Form

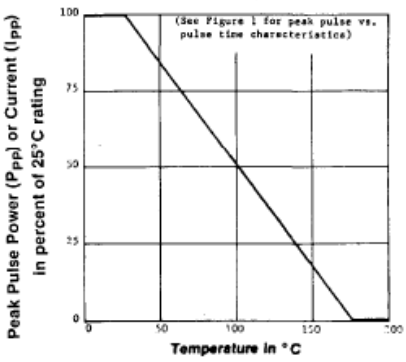

FIGURE 3 Derating Curve

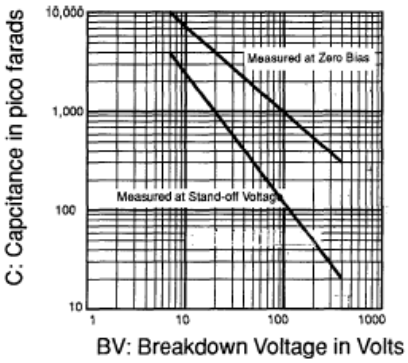

FIGURE 4 Typical Capacitance vs. Breakdown Voltage