1.5KE SERIES

1500 WATT PEAK POWER TRANSIENT VOLTAGE SUPPRESSORS

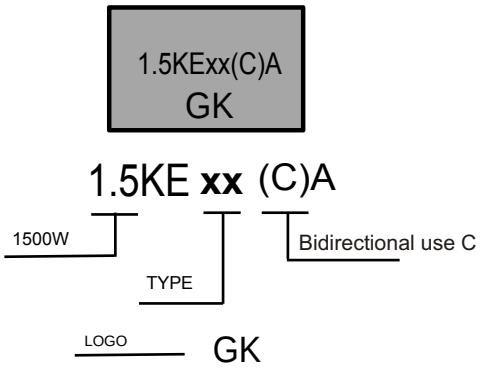
FEATURES

* 1500 Watts Surge Capability at 1ms
* Excellent clamping capability
* Low zener impedance
* Fast response time: Typically less than 1.0ps from 0 volt to BV min.
* Typical I_R less than 1 A above 10V
* High temperature soldering guaranteed: 260°C / 10 seconds / .375"(9.5mm) lead length, 5lbs.(2.3kg) tension

VOLTAGE RANGE
6.8 to 440 Volts
1500 Watts Peak Power
6.5 Watts Steady State

MECHANICAL DATA

* Case: Molded plastic
* Epoxy: UL 94V-0 rate flame retardant
* Lead: Axial leads, solderable per MIL-STD-202, method 208 guranteed
* Polarity: Color band denotes cathode end
* Mounting position: Any



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating 25°C ambient temperature uniess otherwies specified.
Single phase half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

RATINGS	SYMBOL	V	
Peak Power Dissipation at T_A=25°C, T_P=1ms(NOTE 1)	P_{PK}	Minimum 1500	Watts
Steady State Power Dissipation at T_L=75°C Lead Length .375"(9.5mm) (NOTE 2)	P_D	6.5	Watts
Peak Forward Surge Current at 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 +150	°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 0.8" X 0.8" (20mm X 20mm) per Fig.5.
3. 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum.

DEVICES FOR BIDIRECTIONAL APPLICATIONS

1. For Bidirectional use CA Suffix for types 1.5KE6.8 thru 1.5KE440.
2. Electrical characteristics apply in both directions.

RATING AND CHARACTERISTIC CURVES

FIG.1-PEAK PULSE POWER DERATING CURVE

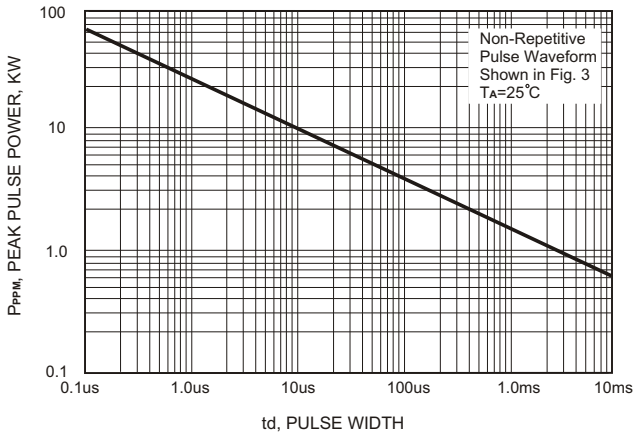


FIG.2-PULSE DERATING CURVE

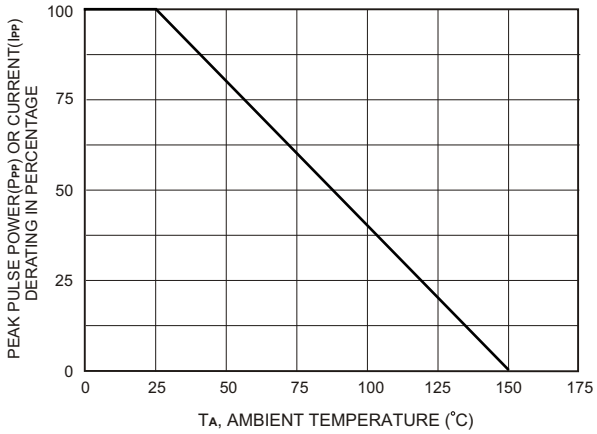


FIG.3-PULSE WAVE FORM

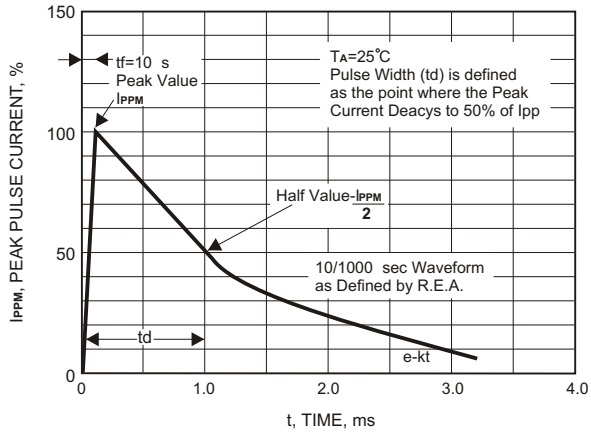


FIG.4-TYPICAL JUNCTION CAPACITANCE

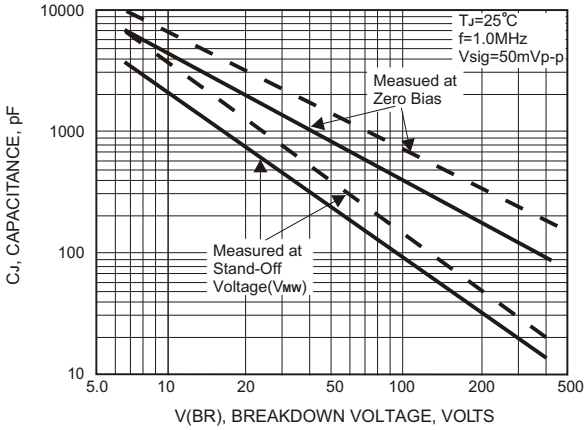


FIG.5-STEADY STATE POWER DERATING CURVE

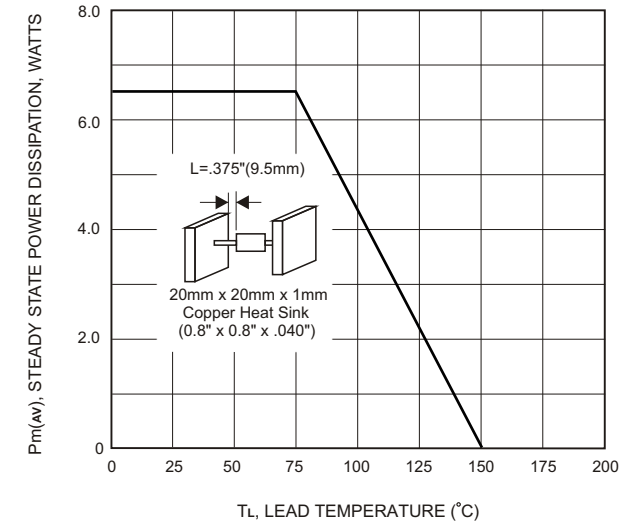
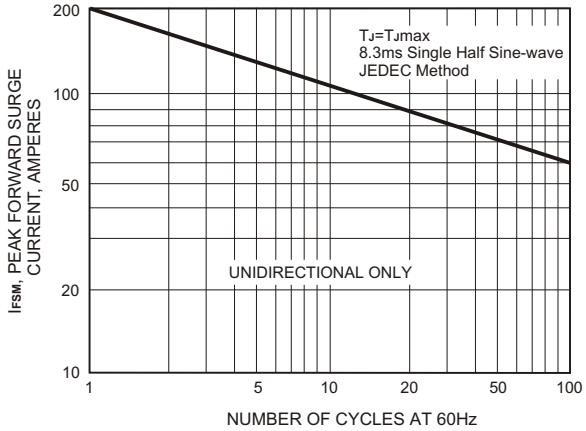


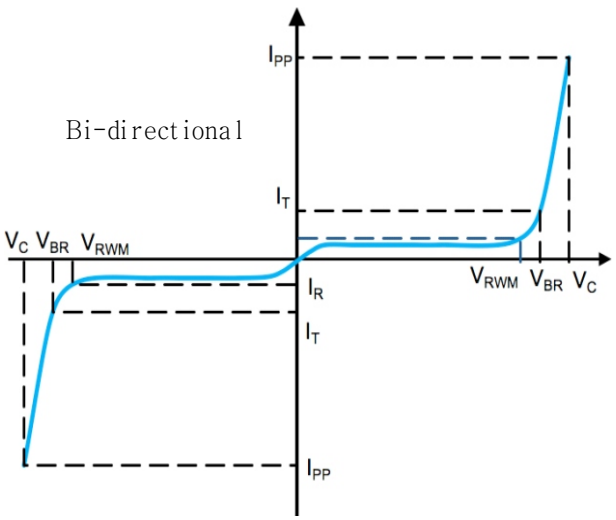
FIG.6-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT, UNIDIRECTIONAL

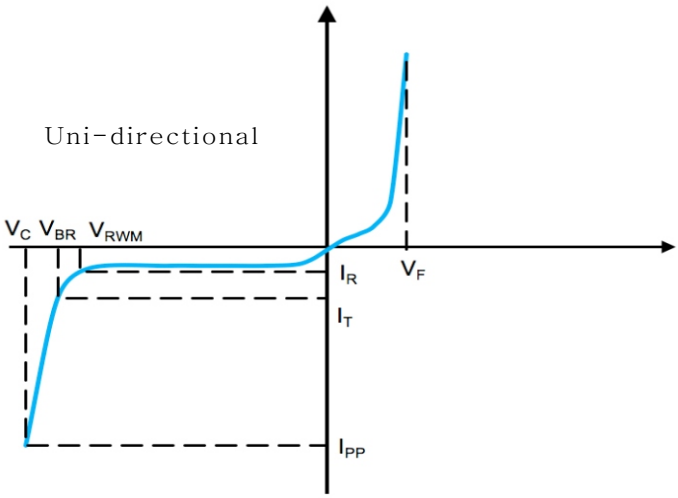


UNI DIRECTIONAL PART NUMBER	REVERSE STAND-OFF VOLTAGE VRWM (V)	BREAKDOWN VOLTAGE VBR (V) MIN. @IT	BREAKDOWN VOLTAGE VRB (V) MAX. @IT	TEST CURRENT IT (mA)	MAXIMUM CLAMPING VOLTAGE @Ipp Vc (V)	PEAK PULSE CURRENT Ipp (A)	REVERSE LEAKAGE @ VRWM IR(uA)
1.5KE6.8(C)A	5.80	6.45	7.14	10	10.5	144.8	1000
1.5KE7.5(C)A	6.40	7.13	7.88	10	11.3	134.5	500
1.5KE8.2(C)A	7.02	7.79	8.61	10	12.1	125.6	200
1.5KE9.1(C)A	7.78	8.65	9.50	1	13.4	113.4	50
1.5KE10(C)A	8.55	9.50	10.50	1	14.5	104.8	10
1.5KE11(C)A	9.40	10.50	11.60	1	15.6	97.4	5
1.5KE12(C)A	10.20	11.40	12.60	1	16.7	91.0	5
1.5KE13(C)A	11.10	12.40	13.70	1	18.2	83.5	5
1.5KE15(C)A	12.80	14.30	15.80	1	21.2	71.7	5
1.5KE16(C)A	13.60	15.20	16.80	1	22.5	67.6	5
1.5KE18(C)A	15.30	17.10	18.90	1	25.2	60.3	5
1.5KE20(C)A	17.10	19.00	21.00	1	27.7	54.9	5
1.5KE22(C)A	18.80	20.90	23.10	1	30.6	49.7	5
1.5KE24(C)A	20.50	22.80	25.20	1	33.2	45.8	5
1.5KE27(C)A	23.10	25.70	28.40	1	37.5	40.5	5
1.5KE30(C)A	25.60	28.50	31.50	1	41.4	36.7	5
1.5KE33(C)A	28.20	31.40	34.70	1	45.7	33.3	5
1.5KE36(C)A	30.80	34.20	37.80	1	49.9	30.5	5
1.5KE39(C)A	33.30	37.10	41.00	1	53.9	28.2	5
1.5KE43(C)A	36.80	40.90	45.20	1	59.3	25.6	5
1.5KE47(C)A	40.20	44.70	49.40	1	64.8	23.5	5
1.5KE51(C)A	43.60	48.50	53.60	1	70.1	21.7	5
1.5KE56(C)A	47.80	53.20	58.80	1	77.0	19.7	5
1.5KE62(C)A	53.00	58.90	65.10	1	85.0	17.9	5
1.5KE68(C)A	58.10	64.60	71.40	1	92.0	16.5	5
1.5KE75(C)A	64.10	71.30	78.80	1	103.0	14.8	5

UNI DIRECTIONAL PART NUMBER	REVERSE STAND-OFF VOLTAGE VRWM (V)	BREAKDOWN VOLTAGE VBR (V) MIN. @IT	BREAKDOWN VOLTAGE VRB (V) MAX. @IT	TEST CURRENT IT (mA)	MAXIMUM CLAMPING VOLTAGE @Ipp Vc (V)	PEAK PULSE CURRENT Ipp (A)	REVERSE LEAKAGE @ VRWM IR(uA)
1.5KE82(C)A	70.10	77.90	86.10	1	113.0	13.5	5
1.5KE91(C)A	77.80	86.50	95.50	1	125.0	12.2	5
1.5KE100(C)A	85.50	95.00	105.00	1	137.0	11.1	5
1.5KE110(C)A	94.00	105.00	116.00	1	152.0	10.0	5
1.5KE120(C)A	102.00	114.00	126.00	1	165.0	9.2	5
1.5KE130(C)A	111.00	124.00	137.00	1	179.0	8.5	5
1.5KE150(C)A	128.00	143.00	158.00	1	207.0	7.3	5
1.5KE160(C)A	136.00	152.00	168.00	1	219.0	6.9	5
1.5KE170(C)A	145.00	162.00	179.00	1	234.0	6.5	5
1.5KE180(C)A	154.00	171.00	189.00	1	246.0	6.2	5
1.5KE200(C)A	171.00	190.00	210.00	1	274.0	5.5	5
1.5KE220(C)A	185.00	209.00	231.00	1	328.0	4.6	5
1.5KE250(C)A	214.00	237.00	263.00	1	344.0	4.4	5
1.5KE300(C)A	256.00	285.00	315.00	1	414.0	3.7	5
1.5KE350(C)A	300.00	332.00	368.00	1	482.0	3.2	5
1.5KE400(C)A	342.00	380.00	420.00	1	548.0	2.8	5
1.5KE440(C)A	376.00	418.00	462.00	1	600.0	2.5	5

I-V Curve Characteristics



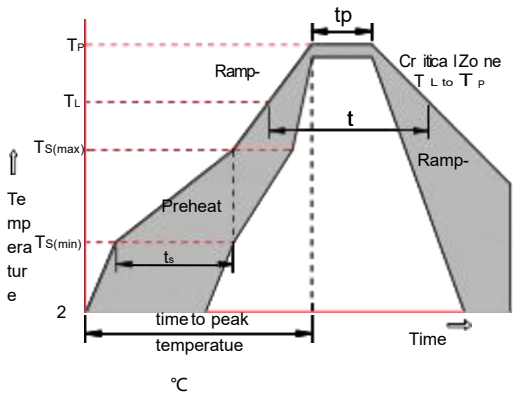


P_{PPM}	Peak Pulse Power Dissipation - Max power dissipation
V_{RWM}	Reverse Stand-off Voltage - Maximum voltage that can be applied to TVS without operation
V_{BR}	Breakdown Voltage – Maximum voltage that flows though the TVS at a specified current (I_T)
V_C	Clamping Voltage – Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)
I_R	Reverse Leakage Current – Current measured at V_R
V_F	Forward Voltage Drop for Uni-directional

Soldering parameters

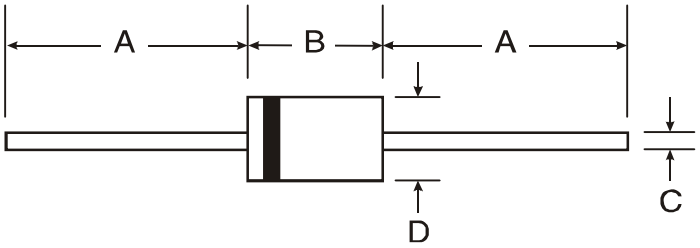
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

FIG5: Reflow condition



Package Dimensions & Suggested Pad Layout

DO-27



DO-27		
Dim	**Min**	**Max**
A	24.00	-
B	7.20	9.50
C	1.15	1.25
D	5.00	5.60
All Dimensions in mm		