

# 1.5KE SERIES

$V_{BR}$  : 6.8 - 440 Volts

$P_{PK}$  : 1500 Watts

## FEATURES :

- \* Glass passivated junction chip
- \* 1500W surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time : typically less than 1.0 ps from 0 volt to  $V_{BR(min)}$
- \* Typical  $I_R$  less than  $1\mu A$  above 10V
- \* **Pb / RoHS Free**

## MECHANICAL DATA

- \* Case : DO-201 Molded plastic
- \* Epoxy : UL94V-0 rate flame retardant
- \* Lead : Axial lead solderable per MIL-STD-202, method 208 guaranteed
- \* Polarity : Color band denotes cathode end except Bipolar.
- \* Mounting position : Any
- \* Weight : 0.93 grams

## DEVICES FOR BIPOLAR APPLICATIONS

For Bi-directional use C or CA Suffix  
Electrical characteristics apply in both directions

## MAXIMUM RATINGS

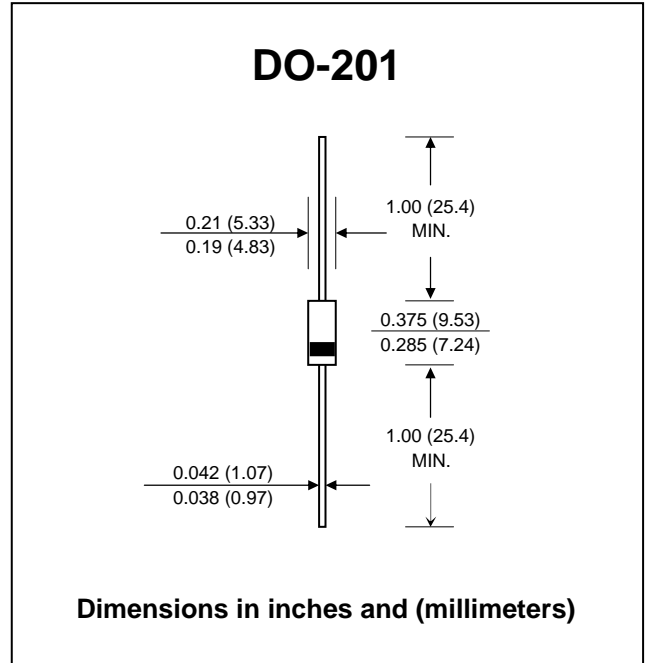
Rating at 25 °C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Unit
Peak Power Dissipation at $T_a = 25\text{ °C}$ , $T_p=1\text{ms}$ (Note1)	$P_{PK}$	Minimum 1500	W
Steady State Power Dissipation at $T_L = 75\text{ °C}$ Lead Lengths 0.375", (9.5mm) (Note 2)	$P_D$	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	$I_{FSM}$	200	A
Operating and Storage Temperature Range	$T_J, T_{STG}$	- 65 to + 175	°C

### Notes :

- (1) Non-repetitive Current pulse, per Fig. 5 and derated above  $T_a = 28\text{°C}$  per Fig. 1
- (2) Mounted on Copper Leaf area of  $1.57\text{ i}^2$  ( $40\text{mm}^2$ ).
- (3) 8.3 ms single half sine-wave, duty cycle = 4 pulses per minutes maximum.

## TRANSIENT VOLTAGE SUPPRESSOR





**ELECTRICAL CHARACTERISTICS** (Rating at 25 °C ambient temperature unless otherwise specified)

Type Number	Breakdown Voltage @ $I_t$ ( Note 1 )		Working Peak Reverse Voltage	Maximum Reverse Leakage @ $V_{RWM}$	Maximum Reverse Current	Maximum Clamping Voltage @ $I_{RSM}$	Maximum Temperature Co-efficient of $V_{BR}$ (% / °C)	
	$V_{BR}$ (V)							$I_t$
	Min.	Max.	(mA)	$V_{RWM}$ (V)	$I_R$ ( $\mu$ A)	$I_{RSM}$ (A)	$V_{RSM}$ (V)	
1.5KE6.8	6.12	7.48	10	5.50	1000	139	10.8	0.057
1.5KE6.8A	6.45	7.14	10	5.80	1000	143	10.5	0.057
1.5KE7.5	6.75	8.25	10	6.05	500	128	11.7	0.061
1.5KE7.5A	7.13	7.88	10	6.40	500	132	11.3	0.061
1.5KE8.2	7.38	9.02	10	6.63	200	120	12.5	0.065
1.5KE8.2A	7.79	8.61	10	7.02	200	124	12.1	0.065
1.5KE9.1	8.19	10.0	1.0	7.37	50	109	13.8	0.068
1.5KE9.1A	8.65	9.55	1.0	7.78	50	112	13.4	0.068
1.5KE10	9.00	11.0	1.0	8.10	10	100	15.0	0.073
1.5KE10A	9.50	10.5	1.0	8.55	10	103	14.5	0.073
1.5KE11	9.90	12.1	1.0	8.92	5.0	93.0	16.2	0.075
1.5KE11A	10.5	11.6	1.0	9.40	5.0	96.0	15.6	0.075
1.5KE12	10.8	13.2	1.0	9.72	5.0	87.0	17.3	0.078
1.5KE12A	11.4	12.6	1.0	10.2	5.0	90.0	16.7	0.078
1.5KE13	11.7	14.3	1.0	10.5	5.0	79.0	19.0	0.081
1.5KE13A	12.4	13.7	1.0	11.1	5.0	82.0	18.2	0.081
1.5KE15	13.5	16.5	1.0	12.1	1.0	68.0	22.0	0.084
1.5KE15A	14.3	15.8	1.0	12.8	1.0	71.0	21.2	0.084
1.5KE16	14.4	17.6	1.0	12.9	1.0	64.0	23.5	0.086
1.5KE16A	15.2	16.8	1.0	13.6	1.0	67.0	22.5	0.086
1.5KE18	16.2	19.8	1.0	14.5	1.0	56.5	26.5	0.088
1.5KE18A	17.1	18.9	1.0	15.3	1.0	59.5	25.2	0.088
1.5KE20	18.0	22.0	1.0	16.2	1.0	51.5	29.1	0.090
1.5KE20A	19.0	21.0	1.0	17.1	1.0	54.0	27.7	0.090
1.5KE22	19.8	24.2	1.0	17.8	1.0	47.0	31.9	0.092
1.5KE22A	20.9	23.1	1.0	18.8	1.0	49.0	30.6	0.092
1.5KE24	21.6	26.4	1.0	19.4	1.0	43.0	34.7	0.094
1.5KE24A	22.8	25.2	1.0	20.5	1.0	45.0	33.2	0.094
1.5KE27	24.3	29.7	1.0	21.8	1.0	38.5	39.1	0.096
1.5KE27A	25.7	28.4	1.0	23.1	1.0	40.0	37.5	0.096
1.5KE30	27.0	33.0	1.0	24.3	1.0	34.5	43.5	0.097
1.5KE30A	28.5	31.5	1.0	25.6	1.0	36.0	41.4	0.097
1.5KE33	29.7	36.3	1.0	26.8	1.0	31.5	47.7	0.098
1.5KE33A	31.4	34.7	1.0	28.2	1.0	33.0	45.7	0.098
1.5KE36	32.4	39.6	1.0	29.1	1.0	29.0	52.0	0.099
1.5KE36A	34.2	37.8	1.0	30.8	1.0	30.0	49.9	0.099
1.5KE39	35.1	42.9	1.0	31.6	1.0	26.5	56.4	0.100
1.5KE39A	37.1	41.0	1.0	33.3	1.0	28.0	53.9	0.100
1.5KE43	38.7	47.3	1.0	34.8	1.0	24.0	61.9	0.101
1.5KE43A	40.9	45.2	1.0	36.8	1.0	25.3	59.3	0.101
1.5KE47	42.3	51.7	1.0	38.1	1.0	22.2	67.8	0.101
1.5KE47A	44.7	49.4	1.0	40.2	1.0	23.2	64.8	0.101
1.5KE51	45.9	56.1	1.0	41.3	1.0	20.4	73.5	0.102
1.5KE51A	48.5	53.6	1.0	43.6	1.0	21.4	70.1	0.102
1.5KE56	50.4	61.6	1.0	45.4	1.0	18.6	80.5	0.103
1.5KE56A	53.2	58.8	1.0	47.8	1.0	19.5	77.0	0.103

## ELECTRICAL CHARACTERISTICS (Rating at 25 °C ambient temperature unless otherwise specified)

Type Number	Breakdown Voltage @ $I_t$ ( Note 1 )		Working Peak Reverse Voltage $V_{RWM}$	Maximum Reverse Leakage @ $V_{RWM}$ $I_R$	Maximum Reverse Current $I_{RSM}$	Maximum Clamping Voltage @ $I_{RSM}$ $V_{RSM}$	Maximum Temperature Co-efficient of $V_{BR}$ (% / °C)	
	$V_{BR}$ (V)							
	Min.	Max.	(mA)	(V)	( $\mu$ A)	(A)	(V)	(% / °C)
1.5KE62	55.8	68.2	1.0	50.2	1.0	16.9	89.0	0.104
1.5KE62A	58.9	65.1	1.0	53.0	1.0	17.7	85.0	0.104
1.5KE68	61.2	74.8	1.0	55.1	1.0	15.3	98.0	0.104
1.5KE68A	64.6	71.4	1.0	58.1	1.0	16.3	92.0	0.104
1.5KE75	67.5	82.5	1.0	60.7	1.0	13.9	108	0.105
1.5KE75A	71.3	78.8	1.0	64.1	1.0	14.6	103	0.105
1.5KE82	73.8	90.2	1.0	66.4	1.0	12.7	118	0.105
1.5KE82A	77.9	86.1	1.0	70.1	1.0	13.3	113	0.105
1.5KE91	81.9	100	1.0	73.7	1.0	11.4	131	0.106
1.5KE91A	86.5	95.5	1.0	77.8	1.0	12.0	125	0.106
1.5KE100	90.0	110	1.0	81.0	1.0	10.4	144	0.106
1.5KE100A	95.0	105	1.0	85.5	1.0	11.0	137	0.106
1.5KE110	99.0	121	1.0	89.2	1.0	9.5	158	0.107
1.5KE110A	105	116	1.0	94.0	1.0	9.9	152	0.107
1.5KE120	108	132	1.0	97.2	1.0	8.7	173	0.107
1.5KE120A	114	126	1.0	102	1.0	9.1	165	0.107
1.5KE130	117	143	1.0	105	1.0	8.0	187	0.107
1.5KE130A	124	137	1.0	111	1.0	8.4	179	0.107
1.5KE150	135	165	1.0	121	1.0	7.0	215	0.108
1.5KE150A	143	158	1.0	128	1.0	7.2	207	0.108
1.5KE160	144	176	1.0	130	1.0	6.5	230	0.108
1.5KE160A	152	168	1.0	136	1.0	6.8	219	0.108
1.5KE170	153	187	1.0	138	1.0	6.2	244	0.108
1.5KE170A	162	179	1.0	145	1.0	6.4	234	0.108
1.5KE180	162	198	1.0	146	1.0	5.8	258	0.108
1.5KE180A	171	189	1.0	154	1.0	6.1	246	0.108
1.5KE200	180	220	1.0	162	1.0	5.2	287	0.108
1.5KE200A	190	210	1.0	171	1.0	5.5	274	0.108
1.5KE220	198	242	1.0	175	1.0	4.3	344	0.108
1.5KE220A	209	231	1.0	185	1.0	4.6	328	0.108
1.5KE250	225	275	1.0	202	1.0	4.2	360	0.110
1.5KE250A	237	263	1.0	214	1.0	4.4	344	0.110
1.5KE300	270	330	1.0	243	1.0	3.5	430	0.110
1.5KE300A	285	315	1.0	256	1.0	3.6	414	0.110
1.5KE350	315	385	1.0	284	1.0	3.0	504	0.110
1.5KE350A	332	368	1.0	300	1.0	3.1	482	0.110
1.5KE400	360	440	1.0	324	1.0	2.6	574	0.110
1.5KE400A	380	420	1.0	342	1.0	2.7	548	0.110
1.5KE440	396	484	1.0	356	1.0	2.4	631	0.110
1.5KE440A	418	462	1.0	376	1.0	2.5	602	0.110

### Notes:

- (1)  $V_{BR}$  measured after  $I_t$  applied for 300  $\mu$ s.,  $I_t$  = square wave pulse or equivalent.
- (2)  $V_F$  = 3.5  $V_{max.}$ ,  $I_F$  = 100 Amps. ( 6.8 Volts thru 91 Volts )  
 $V_F$  = 5.0  $V_{max.}$ ,  $I_F$  = 100 Amps. ( 100 Volts thru 440 Volts ) per 1/2 square or equivalent sine wave.  
 PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.
- (3) "1.5" will be omitted in marking on the diode.

## RATING AND CHARACTERISTIC CURVES ( 1.5KE SERIES )

FIG.1 - PULSE DERATING CURVE

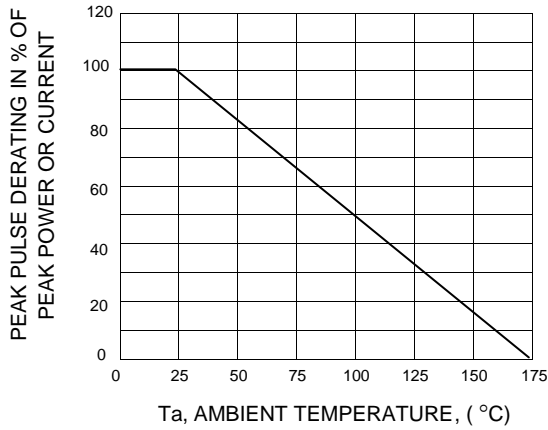


FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

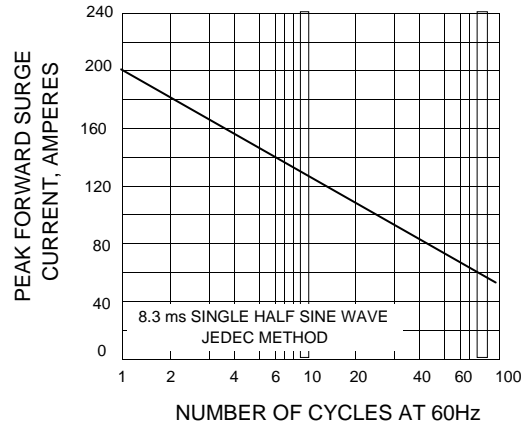


FIG.3 - STEADY STATE POWER DERATING

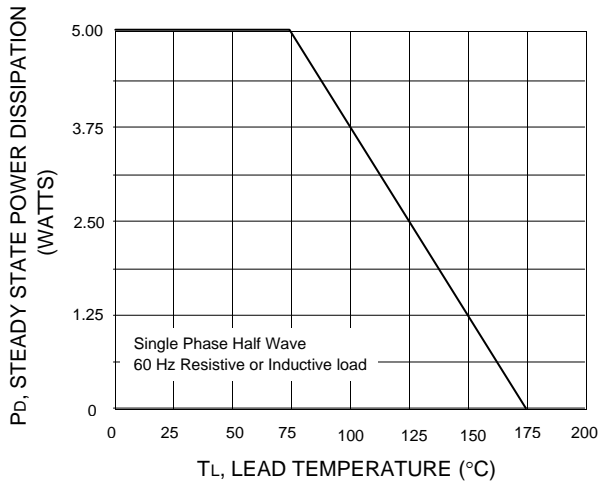


FIG.4 - PULSE RATING CURVE

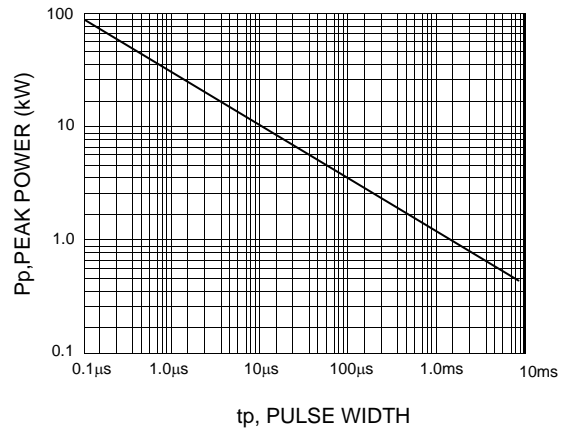


FIG.5 - PULSE WAVEFORM

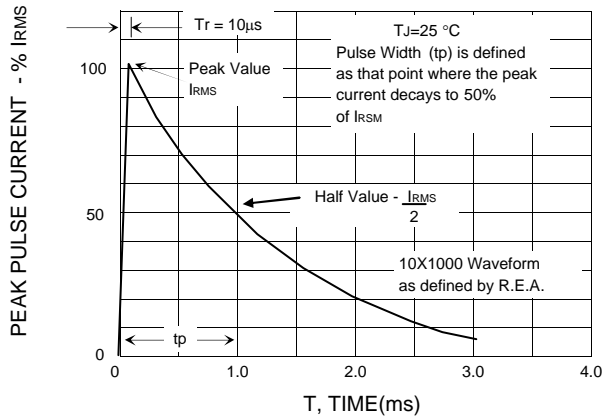


FIG. 6 - TYPICAL JUNCTION CAPACITANCE

