

1.5KE SERIES AND 1N6267 THRU 1N6303(C)A

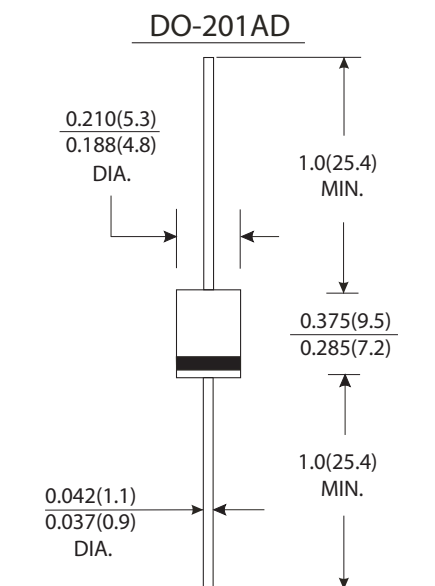
POWER 1500Watts
VOLTAGE 6.8 to 440 Volts

Features

- Underwriters Laboratory recognition under UL standard for safety 497B : Isolated loop circuit protection
- Glass passivated junction
- 1500W peak pulse power capability on 10/1000 μ S waveform, repetition rate(duty cycle) : 0.05%
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time
- Includes 1N6267 thru 1N6303A

Mechanical Data

- Case : JEDEC DO-201AD molded plastic body over passivated junction
- Terminals : Solder plated axial leads, solderable per MIL-STD-750, method 2026
- High temperature soldering guaranteed : 265 °C /10 seconds, 0.375"(9.5mm) lead length, 5lbs. (2.3Kg) tension
- Polarity : For uni-directional types the color band denotes cathode, which is positive with respect to the anode under normal TVS operation
- Mounting Position : Any
- Weight : 0.042 ounce, 0.18 gram
- Flammability : Epoxy is rated UL 94V-0



Dimensions in inches and (millimeters)

Devices For Bidirectional Applications

- For bi-directional use C or CA suffix for types 1.5KE6.8 thru types K1.5E440(e.g. 1.5KE6.8C, 1.5KE440CA), electrical characteristics apply in both directions.

Maximum Ratings And Electrical Characteristics

(Ratings at 25 °C ambient temperature unless otherwise specified)

	Symbols	Values	Units
Peak power dissipation with a 10/1000 μ S waveform (Note 1. Fig. 1)	PPPM	1500	Watts
Peak pulse current with a 10/1000 μ S waveform (Note 1)	IPPM	See next table	Amps
Steady state power dissipation at T _L =75 °C lead length 0.375"(9.5mm) (Note2)	PM(AV)	6.5	Watts
Peak forward surge current, 8.3ms single half sine-wave unidirectional only (Note 3)	IFSM	200	Amps
Maximum instantaneous forward voltage at 100A for unidirectional only (Note4)	V _F	3.5/5.0	Volts
Typical thermal resistance junction to lead	R θ JL	20	°C/W
Typical thermal resistance junction to ambient	R θ JA	75	°C/W
Operating junction and storage temperature range	T _J ,T _{STG}	-55 to +175	°C

Notes:

- Non repetitive current pulse, per Fig.3 and derated above T_A=25 °C per Fig.2
- Mounted on copper pads area of 1.6 × 1.6"(40 × 40mm) per Fig.5
- Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulse per minute maximum
- V_F=3.5 Volts for 1.5KE220(A) & below; V_F=5.0 Volts for 1.5KE250(A) & above

ELECTRICAL CHARACTERISTIC at (TA=25 °C unless other specified)

JEDEC Type Number	General Semiconductor Part Number	Breakdown Voltage V _(BR) at I _T ⁽¹⁾ (V)		Test Current I _T (mA)	Stand-off Voltage V _{WM} (V)	Maximum Reverse Leakage at V _{WM} I _D ⁽⁴⁾ (μA)	Maximum Peak Pulse Current I _{PPM} ⁽²⁾ (A)	Maximum Clamping Voltage at I _{PPM} V _C (V)	Maximum Temp. Coefficient of V _(BR) (% /°C)
		Min	Max						
1N6267(C)	1.5KE 6.8(C)	6.12	7.48	10	5.50	1000	139	10.8	0.057
1N6267(C)A	1.5KE 6.8(C)A	6.45	7.14	10	5.80	1000	143	10.5	0.057
1N6268(C)	1.5KE 7.5(C)	6.75	8.25	10	6.05	500	128	11.7	0.061
1N6268(C)A	1.5KE 7.5(C)A	7.13	7.88	10	6.40	500	133	11.3	0.061
1N6269(C)	1.5KE 8.2(C)	7.38	9.02	10	6.63	200	120	12.5	0.065
1N6269(C)A	1.5KE 8.2(C)A	7.79	8.61	10	7.02	200	124	12.1	0.065
1N6270(C)	1.5KE 9.1(C)	8.19	10.0	1.0	7.37	50	109	13.8	0.068
1N6270(C)A	1.5KE 9.1(C)A	8.65	9.55	1.0	7.78	50	112	13.4	0.068
1N6271(C)	1.5KE 10(C)	9.00	11.0	1.0	8.10	10	100	15.0	0.073
1N6271(C)A	1.5KE 10(C)A	9.50	10.5	1.0	8.55	10	103	14.5	0.073
1N6272(C)	1.5KE 11(C)	9.90	12.1	1.0	8.92	5.0	92.6	16.2	0.075
1N6272(C)A	1.5KE 11(C)A	10.5	11.6	1.0	9.40	5.0	96.2	15.6	0.075
1N6273(C)	1.5KE 12(C)	10.8	13.2	1.0	9.72	5.0	86.7	17.3	0.076
1N6273(C)A	1.5KE 12(C)A	11.4	12.6	1.0	10.2	5.0	89.8	16.7	0.078
1N6274(C)	1.5KE 13(C)	11.7	14.3	1.0	10.5	5.0	78.9	19.0	0.081
1N6274(C)A	1.5KE 13(C)A	12.4	13.7	1.0	11.1	5.0	82.4	18.2	0.081
1N6275(C)	1.5KE 15(C)	13.5	16.5	1.0	12.1	1.0	68.2	22.0	0.084
1N6275(C)A	1.5KE 15(C)A	14.3	15.8	1.0	12.8	1.0	70.8	21.2	0.084
1N6276(C)	1.5KE 16(C)	14.4	17.6	1.0	12.9	1.0	63.8	23.5	0.086
1N6276(C)A	1.5KE 16(C)A	15.2	16.8	1.0	13.6	1.0	66.7	22.5	0.086
1N6277(C)	1.5KE 18(C)	16.2	19.8	1.0	14.5	1.0	56.6	26.5	0.088
1N6277(C)A	1.5KE 18(C)A	17.1	18.9	1.0	15.3	1.0	59.5	25.2	0.089
1N6278(C)	1.5KE 20(C)	18.0	22.0	1.0	16.2	1.0	51.5	29.1	0.090
1N6278(C)A	1.5KE 20(C)A	19.0	21.0	1.0	17.1	1.0	54.2	27.7	0.090
1N6279(C)	1.5KE 22(C)	19.8	24.2	1.0	17.8	1.0	47.0	31.9	0.092
1N6279(C)A	1.5KE 22(C)A	20.9	23.1	1.0	18.8	1.0	49.0	30.6	0.092
1N6280(C)	1.5KE 24(C)	21.6	26.4	1.0	19.4	1.0	43.2	34.7	0.094
1N6280(C)A	1.5KE 24(C)A	22.8	25.2	1.0	20.5	1.0	45.2	33.2	0.094
1N6281(C)	1.5KE 27(C)	24.3	29.7	1.0	21.8	1.0	38.4	39.1	0.096
1N6281(C)A	1.5KE 27(C)A	25.7	28.4	1.0	23.1	1.0	40.0	37.5	0.096
1N6282(C)	1.5KE 30(C)	27.0	33.0	1.0	24.3	1.0	34.5	43.5	0.097
1N6282(C)A	1.5KE 30(C)A	28.5	31.5	1.0	25.6	1.0	36.2	41.4	0.097
1N6283(C)	1.5KE 33(C)	29.7	36.3	1.0	26.8	1.0	31.4	47.7	0.098
1N6283(C)A	1.5KE 33(C)A	31.4	34.7	1.0	28.2	1.0	32.8	45.7	0.098
1N6284(C)	1.5KE 36(C)	32.4	39.6	1.0	29.1	1.0	28.8	52.0	0.099
1N6284(C)A	1.5KE 36(C)A	34.2	37.8	1.0	30.8	1.0	30.1	49.9	0.099
1N6285(C)	1.5KE 39(C)	35.1	42.9	1.0	31.6	1.0	26.6	56.4	0.100
1N6285(C)A	1.5KE 39(C)A	37.1	41.0	1.0	33.3	1.0	27.8	53.9	0.100
1N6286(C)	1.5KE 43(C)	38.7	47.3	1.0	34.8	1.0	24.2	61.9	0.101
1N6286(C)A	1.5KE 43(C)A	40.9	45.2	1.0	36.8	1.0	25.3	59.3	0.101
1N6287(C)	1.5KE 47(C)	42.3	51.7	1.0	38.1	1.0	22.1	67.8	0.101
1N6287(C)A	1.5KE 47(C)A	44.7	49.4	1.0	40.2	1.0	23.1	64.8	0.101
1N6288(C)	1.5KE 51(C)	45.9	56.1	1.0	41.3	1.0	20.4	73.5	0.102
1N6288(C)A	1.5KE 51(C)A	48.5	53.6	1.0	43.6	1.0	21.4	70.1	0.102
1N6289(C)	1.5KE 56(C)	50.4	61.8	1.0	45.4	1.0	18.6	80.5	0.103
1N6289(C)A	1.5KE 56(C)A	53.2	58.8	1.0	47.8	1.0	19.5	77.0	0.103
1N6290(C)	1.5KE 62(C)	55.8	68.2	1.0	50.2	1.0	16.9	89.0	0.104
1N6290(C)A	1.5KE 62(C)A	58.9	65.1	1.0	53.0	1.0	17.6	85.0	0.104
1N6291(C)	1.5KE 68(C)	61.2	74.8	1.0	55.1	1.0	15.3	98.0	0.104
1N6291(C)A	1.5KE 68(C)A	64.6	71.4	1.0	58.1	1.0	16.3	92.0	0.104
1N6292(C)	1.5KE 75(C)	67.5	82.5	1.0	60.7	1.0	13.9	109	0.105

ELECTRICAL CHARACTERISTIC at (TA=25 °C unless other specified)

JEDEC Type Number	General Semiconductor Part Number	Breakdown Voltage V _(BR) at I _T ⁽¹⁾ (V)		Test Current I _T (mA)	Stand-off Voltage V _{WM} (V)	Maximum Reverse Leakage at V _{WM} I _D ⁽⁴⁾ (μA)	Maximum Peak Pulse Current I _{PPM} ⁽²⁾ (A)	Maximum Clamping Voltage at I _{PPM} V _C (V)	Maximum Temp. Coefficient of V _(BR) (% / °C)
		Min	Max						
1N6292(C)A	1.5KE75(C)A	71.3	78.8	1.0	64.1	1.0	14.6	104	0.105
1N6293(C)	1.5KE82(C)	73.8	90.2	1.0	66.4	1.0	12.7	118	0.105
1N6293(C)A	1.5KE82(C)A	77.9	86.1	1.0	70.1	1.0	13.3	113	0.105
1N6294(C)	1.5KE91(C)	81.9	100.0	1.0	73.7	1.0	11.5	131	0.106
1N6294(C)A	1.5KE91(C)A	86.5	95.5	1.0	77.8	1.0	12.0	125	0.106
1N6295(C)	1.5KE100(C)	90.0	110	1.0	81.0	1.0	10.4	144	0.106
1N6295(C)A	1.5KE100(C)A	95.0	105	1.0	85.5	1.0	10.9	137	0.106
1N6296(C)	1.5KE110(C)	99.0	121	1.0	89.2	1.0	9.5	158	0.107
1N6296(C)A	1.5KE110(C)A	105	116	1.0	94.0	1.0	9.9	152	0.107
1N6297(C)	1.5KE120(C)	108	132	1.0	97.2	1.0	8.7	173	0.107
1N6297(C)A	1.5KE120(C)A	114	126	1.0	102	1.0	9.1	165	0.107
1N6298(C)	1.5KE130(C)	117	143	1.0	105	1.0	8.0	187	0.107
1N6298(C)A	1.5KE130(C)A	124	137	1.0	111	1.0	8.4	179	0.107
1N6299(C)	1.5KE150(C)	136	165	1.0	121	1.0	7.0	215	0.108
1N6299(C)A	1.5KE150(C)A	143	158	1.0	128	1.0	7.2	207	0.106
1N6300(C)	1.5KE160(C)	144	176	1.0	130	1.0	6.5	230	0.106
1N6300(C)A	1.5KE160(C)A	152	168	1.0	136	1.0	6.8	219	0.108
1N6301(C)	1.5KE170(C)	153	187	1.0	138	1.0	6.1	244	0.108
1N6301(C)A	1.5KE170(C)A	162	179	1.0	145	1.0	6.4	234	0.108
1N6302(C)	1.5KE180(C)	162	198	1.0	146	1.0	5.8	258	0.108
1N6302(C)A	1.5KE180(C)A	171	189	1.0	154	1.0	6.1	246	0.108
1N6303(C)	1.5KE200(C)	180	220	1.0	162	1.0	5.2	287	0.108
1N6303(C)A	1.5KE200(C)A	190	210	1.0	171	1.0	5.5	274	0.108
	1.5KE220(C)	198	242	1.0	175	1.0	4.4	344	0.108
	1.5KE220(C)A	209	231	1.0	185	1.0	4.6	328	0.108
	1.5KE250(C)	225	275	1.0	202	1.0	4.2	360	0.110
	1.5KE250(C)A	237	263	1.0	214	1.0	4.4	344	0.110
	1.5KE300(C)	270	330	1.0	243	1.0	3.5	430	0.110
	1.5KE300(C)A	285	315	1.0	256	1.0	3.6	414	0.110
	1.5KE350(C)	315	385	1.0	284	1.0	3.0	504	0.110
	1.5KE350(C)A	333	368	1.0	300	1.0	3.1	482	0.110
	1.5KE400(C)	360	440	1.0	324	1.0	2.6	574	0.110
	1.5KE400(C)A	380	420	1.0	342	1.0	2.7	548	0.110
	1.5KE440(C)	396	484	1.0	356	1.0	2.4	631	0.110
	1.5KE440(C)A	418	462	1.0	376	1.0	2.5	602	0.110

Notes: (1) Pulse test: t_p ≤ 50ms

(2) Surge current waveform per Fig. 3 and derate per Fig. 2

(3) All terms and symbols are consistent with ANSI/IEEE CA62.35

(4) For bidirectional types with V_R 10 volts and less the I_D limit is doubled

Application

¥This series of Silicon Transient Suppressors is used in applications where large voltage transients can permanently damage voltage-sensitive components.

¥The TVS diode can be used in applications where induced lightning on rural or remote transmission lines presents a hazard to electronic circuitry (ref: R.E.A. specification P.E. 60).

¥This Transient Voltage Suppressor diode has a pulse power rating of 1500 watts for one millisecond. The response time of TVS diode clamping action is effectively instantaneous (1 x 10⁻⁹ seconds bidirectional); therefore, they can protect integrated circuits, MOS devices, hybrids, and other voltage sensitive semi-conductors and components. TVS diodes can also be used in series or parallel to increase the peak power ratings.

RATINGS AND CHARACTERISTIC CURVES 1.5KE SERIES AND 1N6267 THRU 1N6303(C)A

Fig. 1 Peak Pulse Power Rating Curve

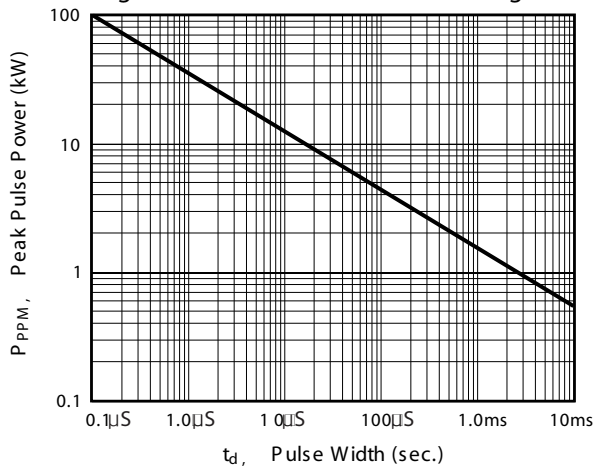


Fig. 2 Pulse Derating Curve

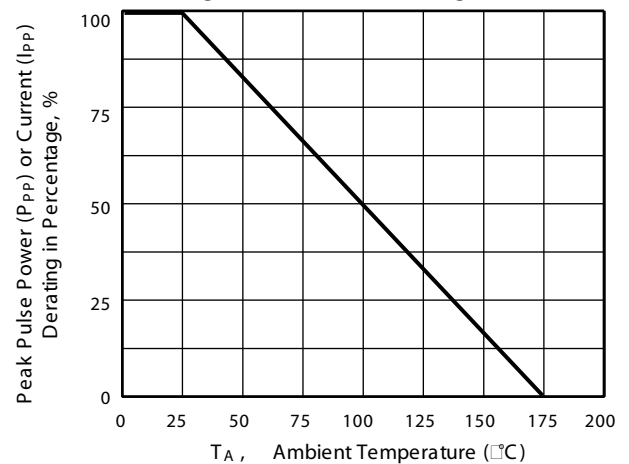


Fig. 3 Pulse Waveform

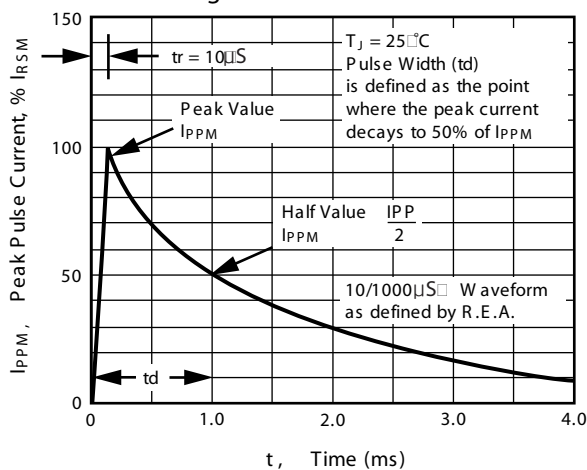


Fig. 4 - Typical Junction Capacitance

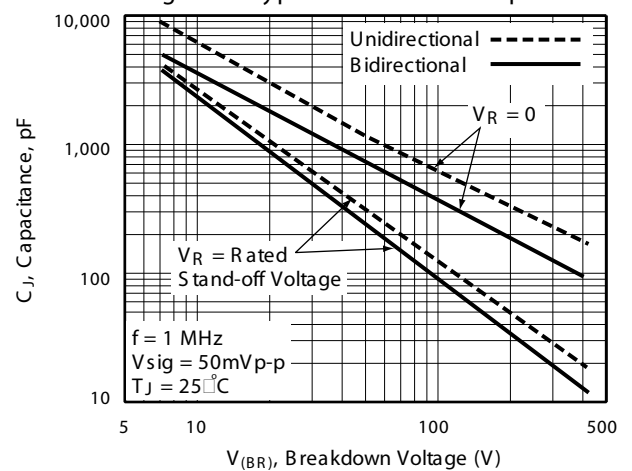


Fig. 5 Steady State Power Derating Curve

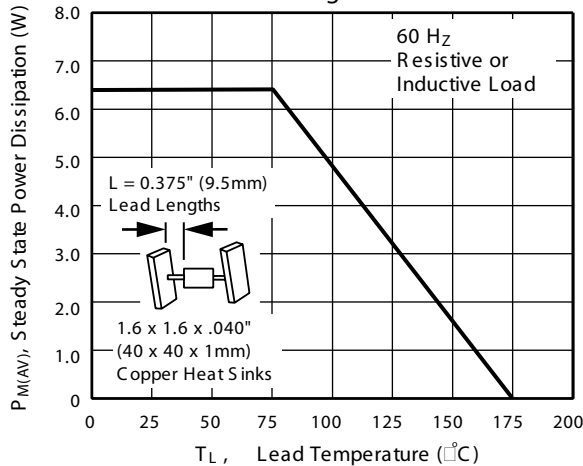


Fig. 6 - Maximum Non-repetitive Peak Forward Surge Current Unidirectional Only

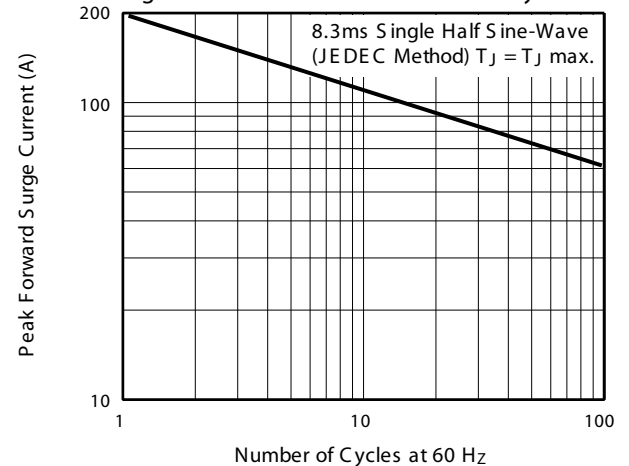


Fig. 7D Incremental Clamping Voltage Curve (Unidirectional)

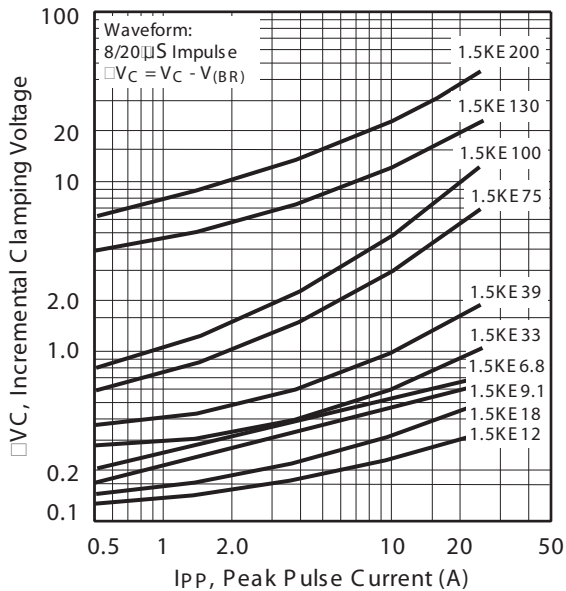


Fig. 8D Incremental Clamping Voltage Curve (Unidirectional)

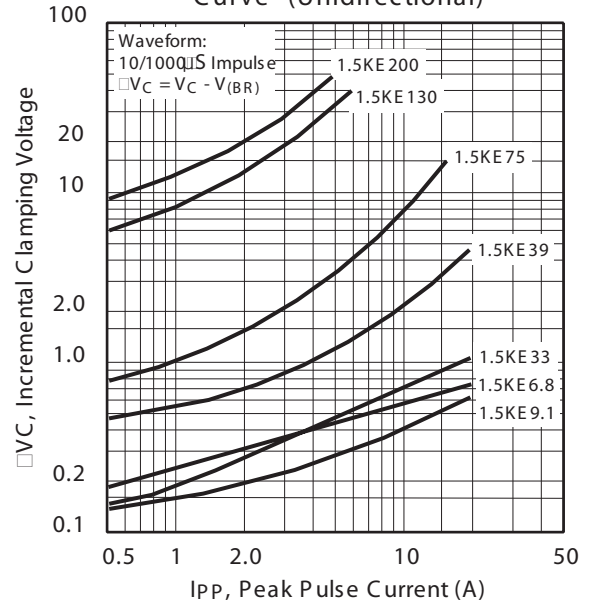


Fig. 7D Incremental Clamping Voltage Curve (Bidirectional)

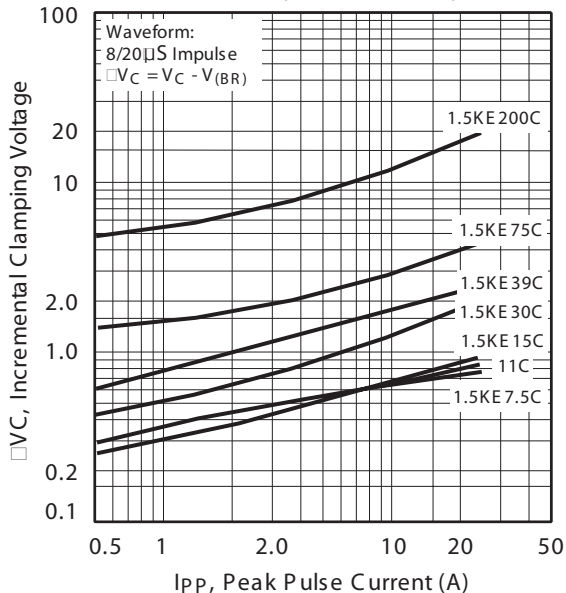
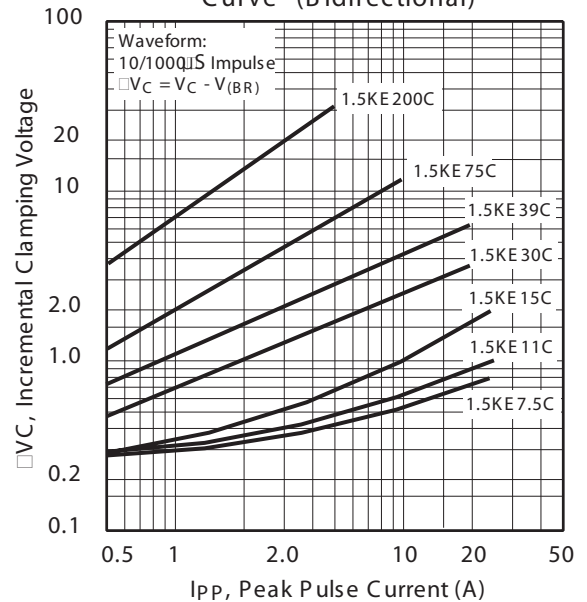


Fig. 10D Incremental Clamping Voltage Curve (Bidirectional)



RATINGS AND CHARACTERISTIC CURVES 1.5KE SERIES AND 1N6267 THRU 1N6303(C)A

Fig. 11D Instantaneous Forward Voltage Characteristics Curve

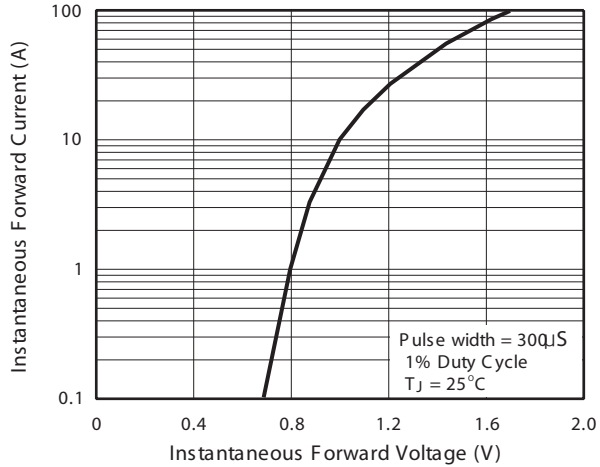


Fig. 12D Typical Transient Thermal Impedance

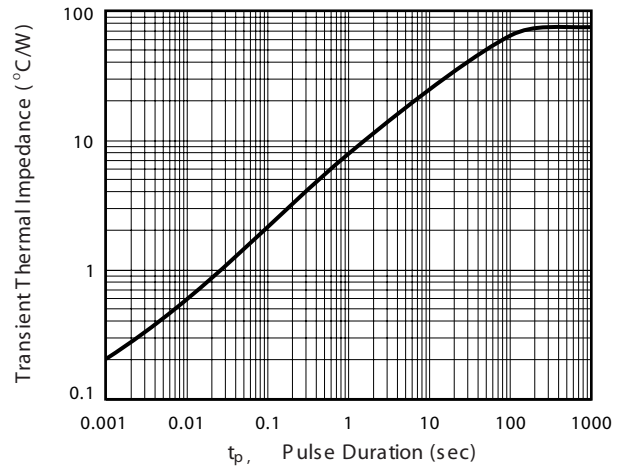


Fig. 13D Typical Reverse Leakage Characteristics

