DEC

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

POWER 1500Watts
VOLTAGE 6.8 to 440 Volts

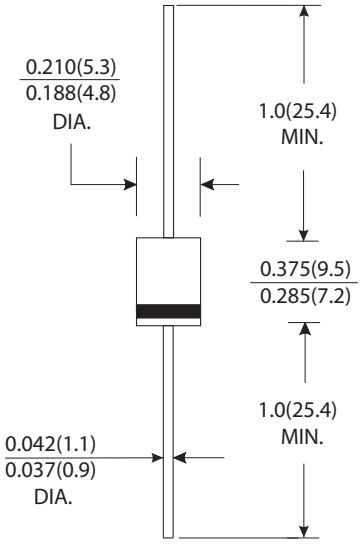
Features

- Underwriters Laboratory recognition under UL standard for safety 497B : Isolated loop circuit protection
- Glass passivated junction
- 1500W peak pulse power capability on 10/1000μS 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℃/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

DO-201AD



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℃ ambient temperature unless otherwise specified)

	Symbols	Values	Units
Peak power dissipation with a 10/1000μS waveform (Note 1. Fig. 1)	P_{PPM}	1500	Watts
Peak pulse current with a 10/1000μS waveform (Note 1)	I_{PPM}	See next table	Amps
Steady state power dissipation at T_L=75℃ lead length 0.375"(9.5mm) (Note2)	$P_{M(AV)}$	6.5	Watts
Peak forward surge current, 8.3mm single half sine-wave unidirectional only (Note 3)	I_{FSM}	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	$R\Theta_{JL}$	20	℃/W
Typical thermal resistance junction to ambient	$R\Theta_{JA}$	75	℃/W
Operating junction and storage temperature range	T_J,T_{STG}	-55 to +175	℃

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

DEC

ELECTRICAL CHARACTERISTIC at (TA=25℃ 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 $V_{(BR)}$ (% /℃)
		Min	Max						
1N6267(C)	1.5KE6.8(C)	6.12	7.48	10	5.50	1000	139	10.8	0.057
1N6267(C)A	1.5KE6.8(C)A	6.45	7.14	10	5.80	1000	143	10.5	0.057
1N6268(C)	1.5KE7.5(C)	6.75	8.25	10	6.05	500	128	11.7	0.061
1N6268(C)A	1.5KE7.5(C)A	7.13	7.88	10	6.40	500	133	11.3	0.061
1N6269(C)	1.5KE8.2(C)	7.38	9.02	10	6.63	200	120	12.5	0.065
1N6269(C)A	1.5KE8.2(C)A	7.79	8.61	10	7.02	200	124	12.1	0.065
1N6270(C)	1.5KE9.1(C)	8.19	10.0	1.0	7.37	50	109	13.8	0.068
1N6270(C)A	1.5KE9.1(C)A	8.65	9.55	1.0	7.78	50	112	13.4	0.068
1N6271(C)	1.5KE10(C)	9.00	11.0	1.0	8.10	10	100	15.0	0.073
1N6271(C)A	1.5KE10(C)A	9.50	10.5	1.0	8.55	10	103	14.5	0.073
1N6272(C)	1.5KE11(C)	9.90	12.1	1.0	8.92	5.0	92.6	16.2	0.075
1N6272(C)A	1.5KE11(C)A	10.5	11.6	1.0	9.40	5.0	96.2	15.6	0.075
1N6273(C)	1.5KE12(C)	10.8	13.2	1.0	9.72	5.0	86.7	17.3	0.076
1N6273(C)A	1.5KE12(C)A	11.4	12.6	1.0	10.2	5.0	89.8	16.7	0.078
1N6274(C)	1.5KE13(C)	11.7	14.3	1.0	10.5	5.0	78.9	19.0	0.081
1N6274(C)A	1.5KE13(C)A	12.4	13.7	1.0	11.1	5.0	82.4	18.2	0.081
1N6275(C)	1.5KE15(C)	13.5	16.5	1.0	12.1	1.0	68.2	22.0	0.084
1N6275(C)A	1.5KE15(C)A	14.3	15.8	1.0	12.8	1.0	70.8	21.2	0.084
1N6276(C)	1.5KE16(C)	14.4	17.6	1.0	12.9	1.0	63.8	23.5	0.086
1N6276(C)A	1.5KE16(C)A	15.2	16.8	1.0	13.6	1.0	66.7	22.5	0.086
1N6277(C)	1.5KE18(C)	16.2	19.8	1.0	14.5	1.0	56.6	26.5	0.088
1N6277(C)A	1.5KE18(C)A	17.1	18.9	1.0	15.3	1.0	59.5	25.2	0.089
1N6278(C)	1.5KE20(C)	18.0	22.0	1.0	16.2	1.0	51.5	29.1	0.090
1N6278(C)A	1.5KE20(C)A	19.0	21.0	1.0	17.1	1.0	54.2	27.7	0.090
1N6279(C)	1.5KE22(C)	19.8	24.2	1.0	17.8	1.0	47.0	31.9	0.092
1N6279(C)A	1.5KE22(C)A	20.9	23.1	1.0	18.8	1.0	49.0	30.6	0.092
1N6280(C)	1.5KE24(C)	21.6	26.4	1.0	19.4	1.0	43.2	34.7	0.094
1N6280(C)A	1.5KE24(C)A	22.8	25.2	1.0	20.5	1.0	45.2	33.2	0.094
1N6281(C)	1.5KE27(C)	24.3	29.7	1.0	21.8	1.0	38.4	39.1	0.096
1N6281(C)A	1.5KE27(C)A	25.7	28.4	1.0	23.1	1.0	40.0	37.5	0.096
1N6282(C)	1.5KE30(C)	27.0	33.0	1.0	24.3	1.0	34.5	43.5	0.097
1N6282(C)A	1.5KE30(C)A	28.5	31.5	1.0	25.6	1.0	36.2	41.4	0.097
1N6283(C)	1.5KE33(C)	29.7	36.3	1.0	26.8	1.0	31.4	47.7	0.098
1N6283(C)A	1.5KE33(C)A	31.4	34.7	1.0	28.2	1.0	32.8	45.7	0.098
1N6284(C)	1.5KE36(C)	32.4	39.6	1.0	29.1	1.0	28.8	52.0	0.099
1N6284(C)A	1.5KE36(C)A	34.2	37.8	1.0	30.8	1.0	30.1	49.9	0.099
1N6285(C)	1.5KE39(C)	35.1	42.9	1.0	31.6	1.0	26.6	56.4	0.100
1N6285(C)A	1.5KE39(C)A	37.1	41.0	1.0	33.3	1.0	27.8	53.9	0.100
1N6286(C)	1.5KE43(C)	38.7	47.3	1.0	34.8	1.0	24.2	61.9	0.101
1N6286(C)A	1.5KE43(C)A	40.9	45.2	1.0	36.8	1.0	25.3	59.3	0.101
1N6287(C)	1.5KE47(C)	42.3	51.7	1.0	38.1	1.0	22.1	67.8	0.101
1N6287(C)A	1.5KE47(C)A	44.7	49.4	1.0	40.2	1.0	23.1	64.8	0.101
1N6288(C)	1.5KE51(C)	45.9	56.1	1.0	41.3	1.0	20.4	73.5	0.102
1N6288(C)A	1.5KE51(C)A	48.5	53.6	1.0	43.6	1.0	21.4	70.1	0.102
1N6289(C)	1.5KE56(C)	50.4	61.8	1.0	45.4	1.0	18.6	80.5	0.103
1N6289(C)A	1.5KE56(C)A	53.2	58.8	1.0	47.8	1.0	19.5	77.0	0.103
1N6290(C)	1.5KE62(C)	55.8	68.2	1.0	50.2	1.0	16.9	89.0	0.104
1N6290(C)A	1.5KE62(C)A	58.9	65.1	1.0	53.0	1.0	17.6	85.0	0.104
1N6291(C)	1.5KE68(C)	61.2	74.8	1.0	55.1	1.0	15.3	98.0	0.104
1N6291(C)A	1.5KE68(C)A	64.6	71.4	1.0	58.1	1.0	16.3	92.0	0.104
1N6292(C)	1.5KE75(C)	67.5	82.5	1.0	60.7	1.0	13.9	109	0.105

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ELECTRICAL CHARACTERISTIC at (TA=25℃ 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	1.5KE 110(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 (1×10^{-9} seconds bidirectional); therefore, they can protect integrated circuits, MOS devices, hybrids, and other voltage sensitive semiconductors and components. TVS diodes can also be used in series or parallel to increase the peak power ratings.

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

Fig. 1ÐPeak Pulse Power Rating Curve

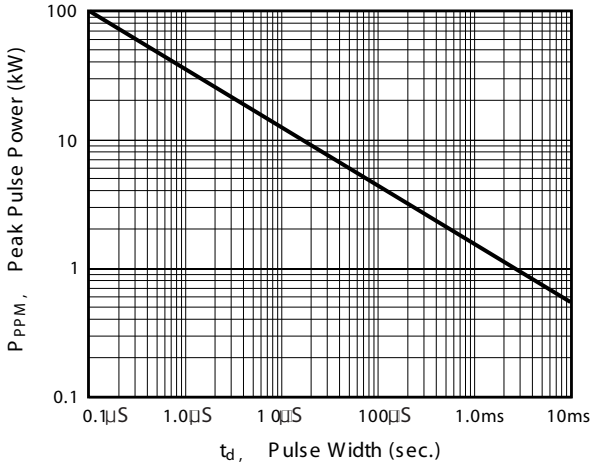


Fig. 2ÐPulse Derating Curve

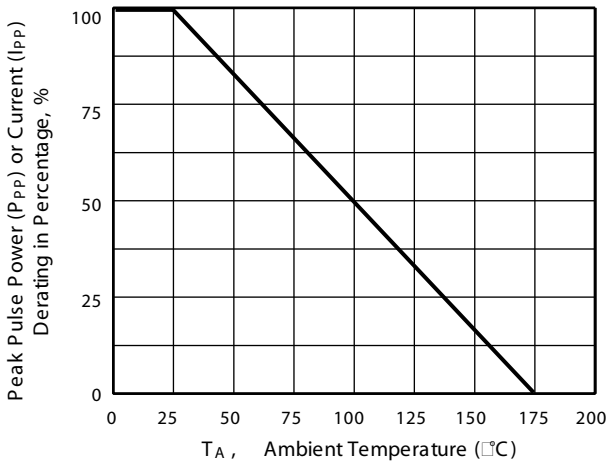


Fig. 3Ð Pulse Waveform

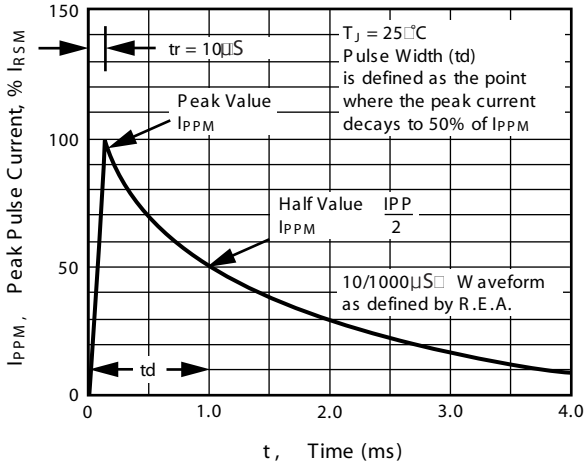


Fig. 4 - Typical Junction Capacitance

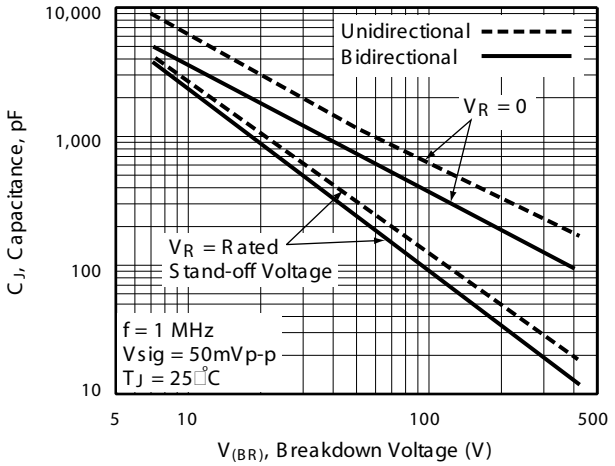


Fig. 5Ð Steady State Power Derating Curve

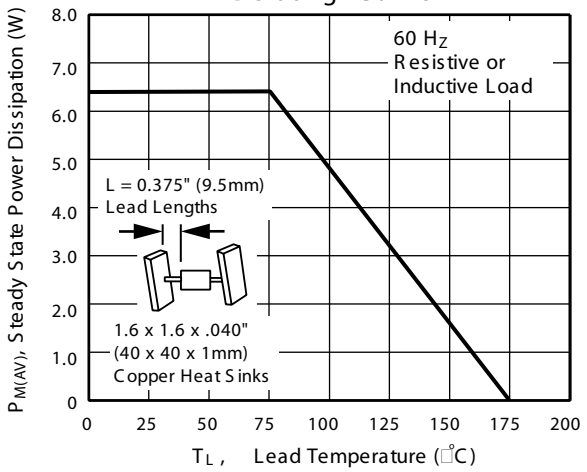
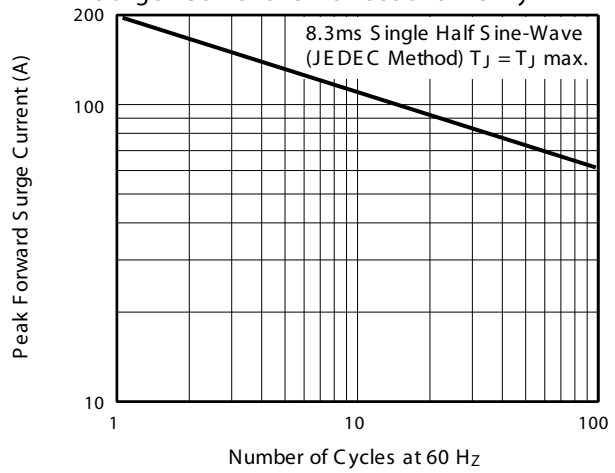


Fig. 6 - Maximum Non-repetitive Peak Forward Surge Current Unidirectional Only



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

Fig. 7Ð Incremental Clamping Voltage Curve (Unidirectional)

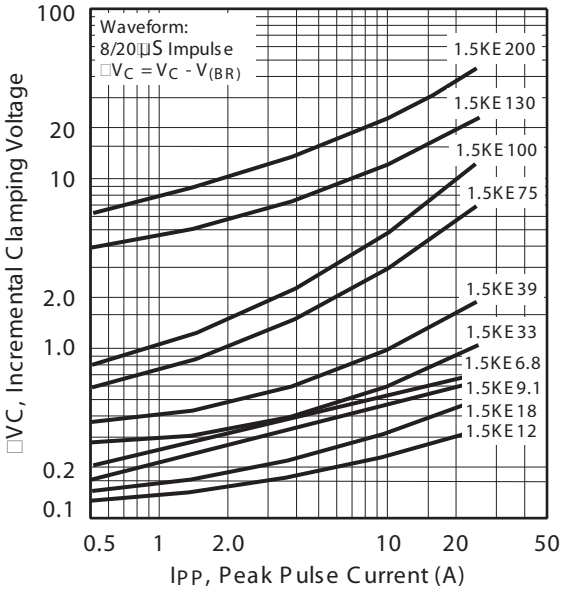


Fig. 8Ð Incremental Clamping Voltage Curve (Unidirectional)

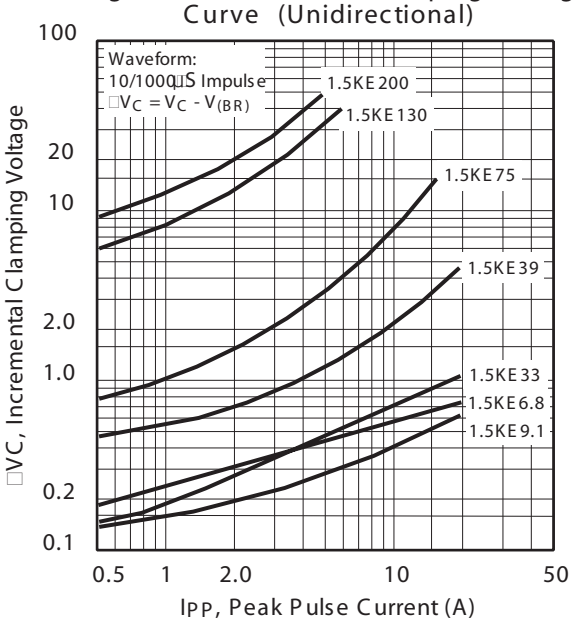


Fig. 7Ð Incremental Clamping Voltage Curve (Bidirectional)

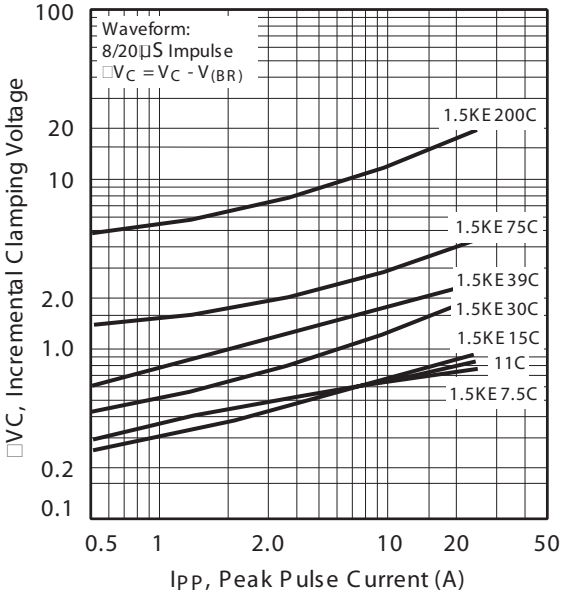
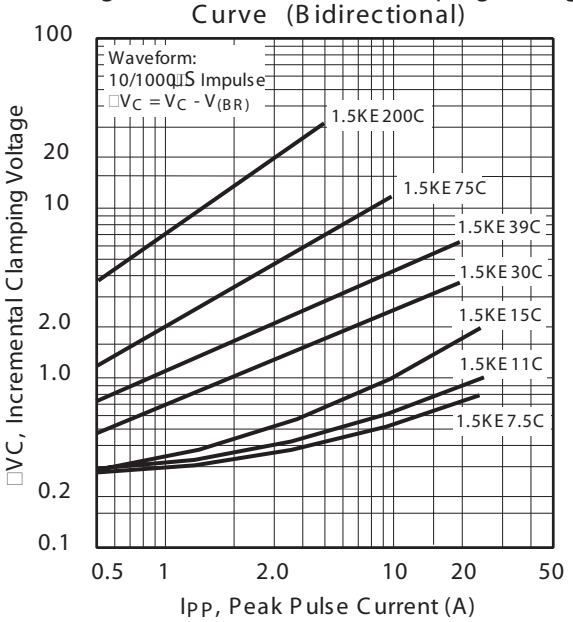


Fig. 10Ð Incremental Clamping Voltage Curve (Bidirectional)



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

Fig. 11Ð Instantaneous Forward Voltage Characteristics Curve

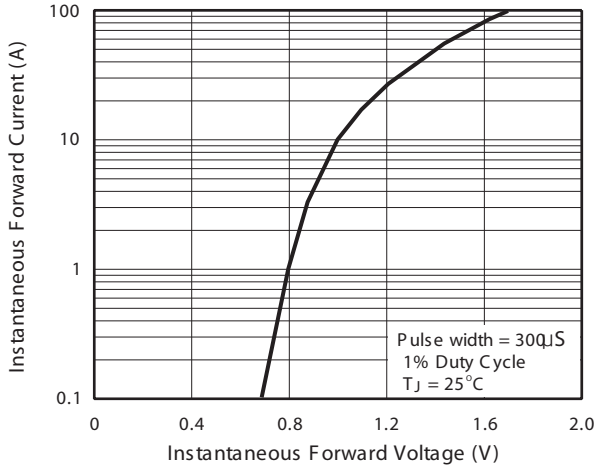


Fig. 12Ð Typical Transient Thermal Impedance

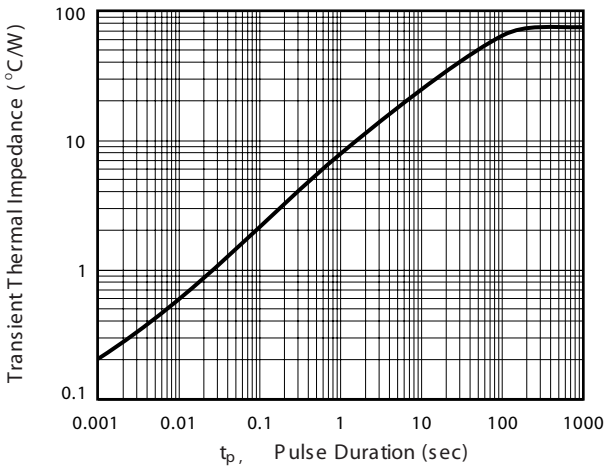


Fig. 13ÐTypical Reverse Leakage Characteristics

