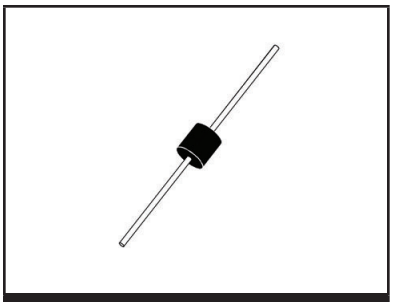
1500 WATT TVS COMPONENT



AXIAL LEAD PACKAGE

DESCRIPTION

The 1.5KE Series, are discrete 15,00 Watt, silicon transient voltage suppressors (TVS) designed for use in applications where large voltage transients can permanently damage voltage sensitive components and equipment.

The 1.5KE series is available in voltages ranging from 6.8V to 600V and is compatible with IEC 61000-4-5 (Surge) requirements.

FEATURES

- UL File Recognition #E208219
- Compatible with IEC 61000-4-5 (Surge)
- 1,500 Watts Peak Pulse Power per Line (tp = 10/1000µs)
- Unidirectional and Bidirectional Configurations
- Low Leakeage
- Excellent Clamping Capability
- Glass Passivated Chip
- Very Fast Response Time
- Easy Mounting to Printed Circuit Board
- Available in Multiple Voltages Ranging From 6.8V to 600V
- RoHS Complaint (Exemption #7)

APPLICATIONS

- DC & AC Applications
- Remote Transmission Lines
- Industrial Wiring

MECHANICAL CHARACTERISTICS

- Molded Case
- Approximate Weight: 0.84 grams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:
  Pure-Tin - Sn, 100: 260-270°C
- Flammability Rating UL 94V-0

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	**SYMBOL**	**VALUE**	**UNITS**
Operating Temperature	T_A	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Peak Pulse Power (tp =10/1000µs) - See Figure 1 and Note 2	P_{PP}	1,500	Watts
Power Dissipation on Infinite Heatsink at T_L = 75°C	P_D	6.5	Watts
Peak Forward Surge Current, 8.3ms single half sinewave - Unidirectional Only (Note 2)	I_{FSM}	200	Amps
Maximum Instantaneous Forward Voltage at 100A - Unidirectional Only (Note 3)	V_F	3.5/5.0	V

NOTE
1. Non-repetitive current pulse per Figure 2 and derated above TA = 25°C per Figure 2.
2. Measured on 8.3ms single half sinewave or equivalent square wave, duty cycle = 4 pulses per minute maximum.
3. V_F < 3.5V for devices of V_{BR} <200V and V_F <5.0V for devices of V_{BR} > 201V.

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1-3)	REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM REVERSE SURGE CURRENT	MAXIMUM REVERSE LEAKAGE CURRENT
	V_{RWM} VOLTS	MIN	MAX	@ I_T mA	@ I_P V_C VOLTS	@I_{PP} AMPS	@V_{RWM} I_R µA
1.5KE6.8	5.5	6.12	7.48	10	10.8	139.0	1000
1.5KE6.8A	5.8	6.46	7.14	10	10.5	143.0	1000
1.5KE7.5	6.1	6.75	8.25	10	11.7	128.0	500
1.5KE7.5A	6.4	7.13	7.88	10	11.3	133.0	500
1.5KE8.2	6.6	7.38	9.02	10	12.5	120.0	200
1.5KE8.2A	7.0	7.79	8.61	10	12.1	124.0	200
1.5KE9.1	7.4	8.19	10.01	1	13.8	109.0	50
1.5KE9.1A	7.8	8.65	9.56	1	13.4	112.0	50
1.5KE10	8.1	9.00	11.00	1	15.0	100.0	10
1.5KE10A	8.6	9.50	10.50	1	14.5	103.0	10
1.5KE11	8.9	9.90	12.10	1	16.2	92.6	5
1.5KE11A	9.4	10.45	11.55	1	15.6	96.2	5
1.5KE12	9.7	10.80	13.20	1	17.3	86.7	5
1.5KE12A	10.2	11.40	12.60	1	16.7	89.8	5
1.5KE13	10.5	11.70	14.30	1	19.0	79.0	1
1.5KE13A	11.1	12.35	13.65	1	18.2	82.4	1
1.5KE15	12.1	13.50	16.50	1	22.0	68.2	1
1.5KE15A	12.8	14.25	15.75	1	21.2	70.8	1
1.5KE16	12.9	14.40	17.60	1	23.5	63.8	1
1.5KE16A	13.6	15.20	16.80	1	22.5	66.7	1
1.5KE18	14.5	16.20	19.80	1	26.5	56.6	1
1.5KE18A	15.3	17.10	18.90	1	25.2	59.5	1

TYPICAL DEVICE CHARACTERISTICS

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER (Notes 1-3)	REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM REVERSE SURGE CURRENT	MAXIMUM REVERSE LEAKAGE CURRENT
	V_{RWM} VOLTS	MIN	MAX	@ I_T mA	@ I_P V_C VOLTS	@I_{PP} AMPS	@V_{RWM} I_R µA
1.5KE20	16.2	18.00	22.00	1	29.1	51.6	1
1.5KE20A	17.1	19.00	21.00	1	27.7	54.2	1
1.5KE22	17.8	19.80	24.20	1	31.9	47.0	1
1.5KE22A	18.8	20.90	23.10	1	30.6	49.0	1
1.5KE24	19.4	21.60	26.40	1	34.7	43.2	1
1.5KE24A	20.5	22.80	25.20	1	33.2	45.2	1
1.5KE27	21.8	24.30	29.70	1	39.1	38.4	1
1.5KE27A	23.1	25.65	28.35	1	37.5	40.0	1
1.5KE30	24.3	27.00	33.00	1	43.5	34.5	1
1.5KE30A	25.6	28.50	31.50	1	41.4	36.2	1
1.5KE33	26.8	29.70	36.30	1	47.7	31.5	1
1.5KE33A	28.2	31.35	34.65	1	45.7	32.8	1
1.5KE36	29.1	32.40	39.60	1	52.0	28.9	1
1.5KE36A	30.8	34.20	37.80	1	49.9	30.1	1
1.5KE39	31.6	35.10	42.90	1	56.4	26.6	1
1.5KE39A	33.3	37.05	40.95	1	53.9	27.8	1
1.5KE43	34.8	38.70	47.30	1	61.9	24.2	1
1.5KE43A	36.8	40.85	45.15	1	59.3	25.3	1
1.5KE47	38.1	42.30	51.70	1	67.8	22.1	1
1.5KE47A	40.2	44.65	49.35	1	64.8	23.2	1
1.5KE51	41.3	45.90	56.10	1	73.5	20.4	1
1.5KE51A	43.6	48.45	53.55	1	70.1	21.4	1
1.5KE56	45.4	50.40	61.60	1	80.5	18.6	1
1.5KE56A	47.8	53.20	58.80	1	77.0	19.5	1
1.5KE62	50.2	55.80	68.20	1	89.0	16.9	1
1.5KE62A	53.0	58.90	65.10	1	85.0	17.7	1
1.5KE68	55.1	61.20	74.80	1	98.0	15.3	1
1.5KE68A	58.1	64.60	71.40	1	92.0	16.3	1
1.5KE75	60.7	67.50	82.50	1	108.0	13.9	1
1.5KE75A	64.1	71.25	78.75	1	103.0	14.6	1
1.5KE82	66.4	73.80	90.20	1	118.0	12.7	1
1.5KE82A	70.1	77.90	86.10	1	113.0	13.3	1
1.5KE91	73.7	81.90	100.10	1	131.0	11.5	1
1.5KE91A	77.8	86.45	95.55	1	125.0	12.0	1

TYPICAL DEVICE CHARACTERISTICS

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER (Notes 1-3)	REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM REVERSE SURGE CURRENT	MAXIMUM REVERSE LEAKAGE CURRENT
	V_{RWM} VOLTS	MIN	MAX	@ I_T mA	@ I_P V_C VOLTS	@I_{PP} AMPS	@V_{RWM} I_R µA
1.5KE100	81.0	90.00	110.00	1	144.0	10.4	1
1.5KE100A	85.5	95.00	105.00	1	137.0	11.0	1
1.5KE110	89.2	99.00	121.00	1	158.0	9.5	1
1.5KE110A	94.0	104.50	115.50	1	152.0	9.9	1
1.5KE120	97.2	108.00	132.00	1	173.0	8.7	1
1.5KE120A	102.0	114.00	126.00	1	165.0	9.1	1
1.5KE130	105.0	117.00	143.00	1	187.0	8.0	1
1.5KE130A	111.0	123.50	136.50	1	179.0	8.4	1
1.5KE150	121.0	135.00	165.00	1	215.0	7.0	1
1.5KE150A	128.0	142.50	157.50	1	207.0	7.3	1
1.5KE160	130.0	144.00	176.00	1	230.0	6.5	1
1.5KE160A	136.0	152.00	168.00	1	219.0	6.9	1
1.5KE170	138.0	153.00	187.00	1	244.0	6.2	1
1.5KE170A	145.0	161.50	178.50	1	234.0	6.4	1
1.5KE180	146.0	162.00	198.00	1	258.0	5.8	1
1.5KE180A	154.0	171.00	189.00	1	246.0	6.1	1
1.5KE200	162.0	180.00	220.00	1	287.0	5.2	1
1.5KE200A	171.0	190.00	210.00	1	274.0	5.5	1
1.5KE220	175.0	198.00	242.00	1	344.0	4.4	1
1.5KE220A	185.0	209.00	231.00	1	328.0	4.6	1
1.5KE250	202.0	225.00	275.00	1	360.0	4.2	1
1.5KE250A	214.0	237.50	262.50	1	344.0	4.4	1
1.5KE300	243.0	270.00	330.00	1	430.0	3.5	1
1.5KE300A	256.0	285.00	315.00	1	414.0	3.6	1
1.5KE350	284.2	315.00	385.00	1	504.0	3.0	1
1.5KE350A	299.3	332.50	367.50	1	482.0	3.1	1
1.5KE380	308.6	342.00	418.00	1	547.2	2.7	1
1.5KE380A	324.9	361.00	399.00	1	524.4	2.9	1
1.5KE400	324.8	360.00	440.00	1	574.0	2.6	1
1.5KE400A	342.0	380.00	420.00	1	548.0	2.7	1
1.5KE440	357.3	396.00	484.00	1	631.0	2.4	1
1.5KE440A	376.2	418.00	462.00	1	602.0	2.5	1
1.5KE500	406.0	450.00	550.00	1	720.0	2.1	1
1.5KE500A	427.5	475.00	525.00	1	690.0	2.2	1

TYPICAL DEVICE CHARACTERISTICS

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1-3)	REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM REVERSE SURGE CURRENT	MAXIMUM REVERSE LEAKAGE CURRENT
	V_{RWM} VOLTS	MIN	MAX	@ I_T mA	@ I_P V_C VOLTS	@I_{PP} AMPS	@V_{RWM} I_R µA
1.5KE520	422.2	468.00	572.00	1	748.8	2.0	1
1.5KE520A	444.6	494.00	546.00	1	717.6	2.1	1
1.5KE550	446.6	495.00	605.00	1	792.0	1.9	1
1.5KE550A	470.3	522.50	577.50	1	759.0	2.0	1
1.5KE600	487.2	540.00	660.00	1	864.0	1.7	1
1.5KE600A	513.0	570.00	630.00	1	828.0	1.8	1

NOTE
1. Suffix 'A' denotes 5% tolerance, without 'A' denotes 10% tolerance.
2. Add suffix 'C' or 'CA' after part number to specify a bidirectional device.
3. For bidirectional devices having a V_{RWM} of 10 Volts and under, the I_R limit is double.

TYPICAL DEVICE CHARACTERISTICS

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

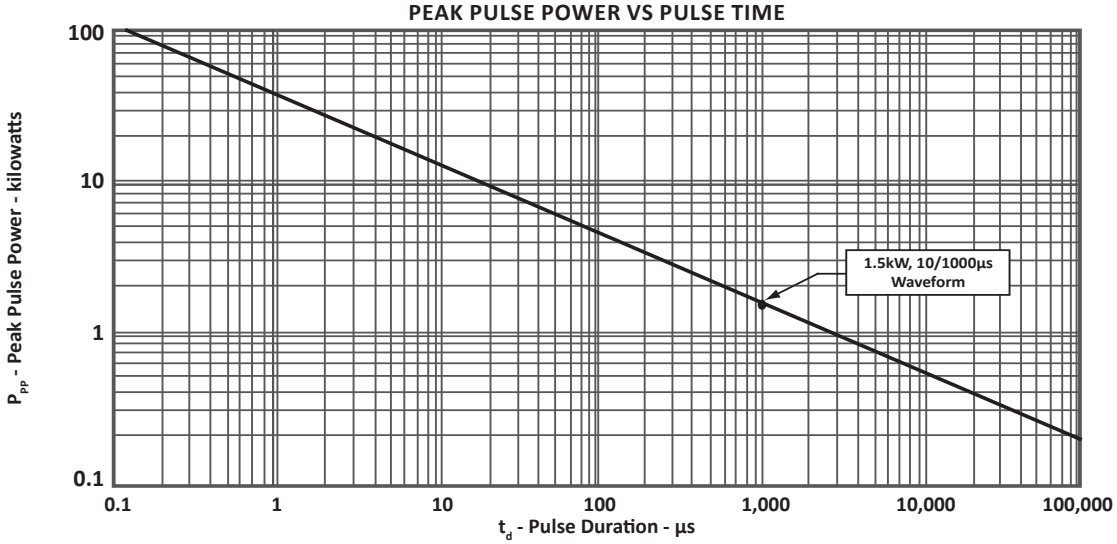


FIGURE 2
PULSE WAVEFORM

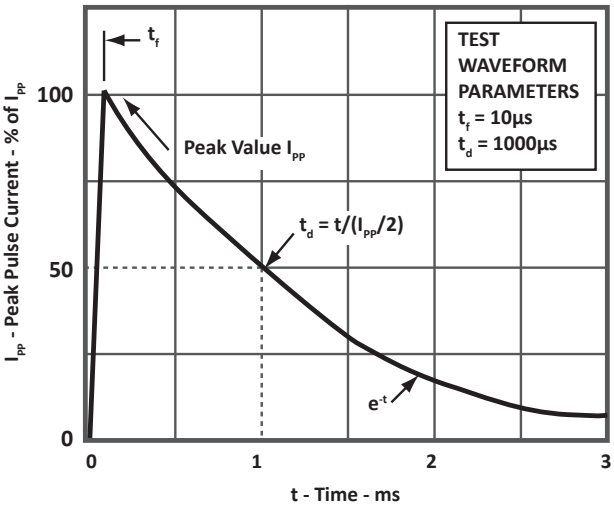
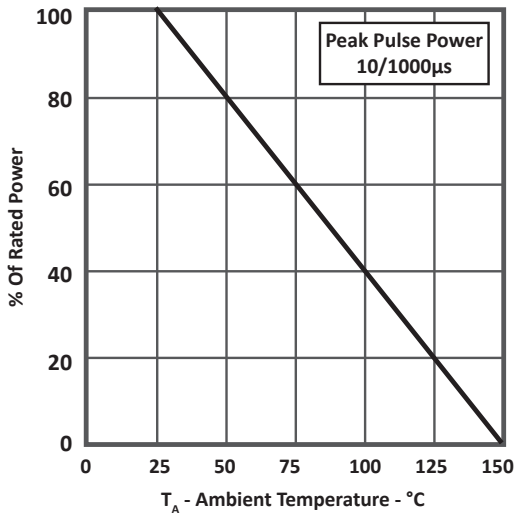


FIGURE 3
POWER DERATING CURVE



TYPICAL DEVICE CHARACTERISTICS

FIGURE 4
TYPICAL JUNCTION CAPACITANCE

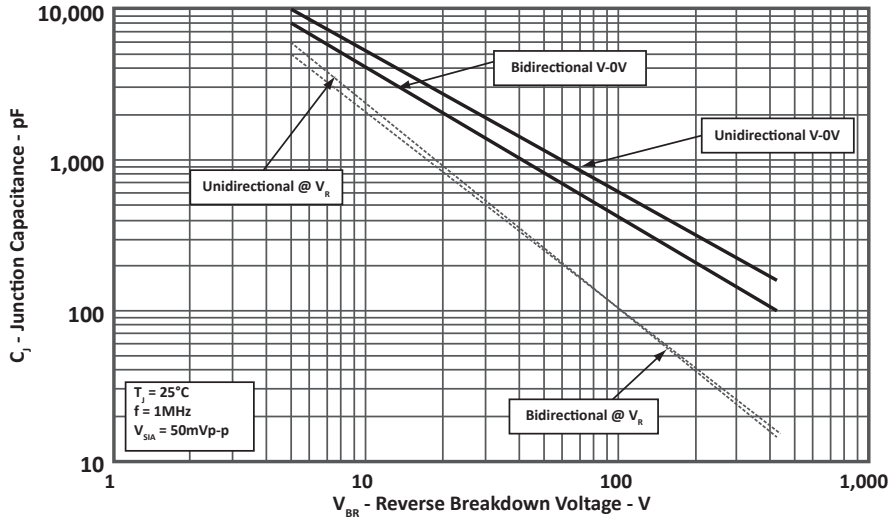


FIGURE 5
MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

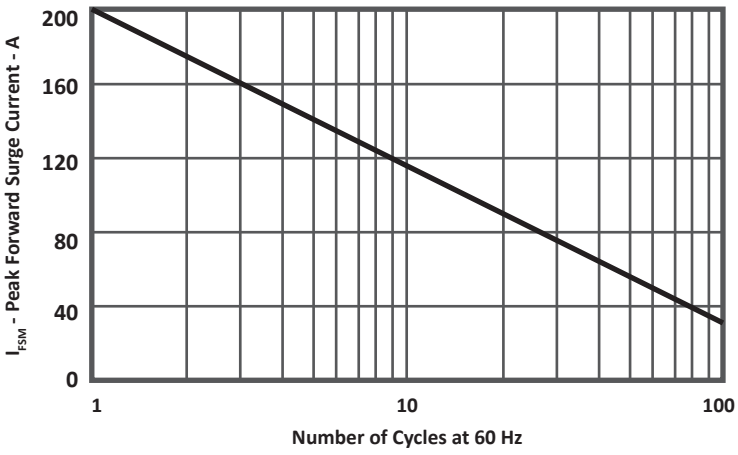
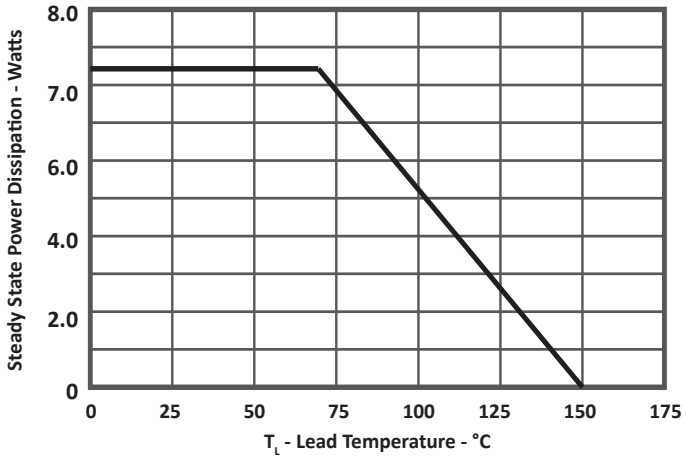


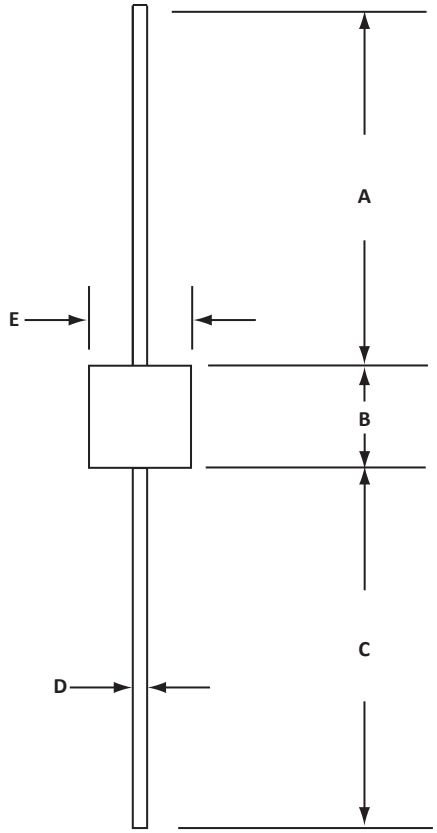
FIGURE 6
STEADY STATE POWER DERATING CURVE



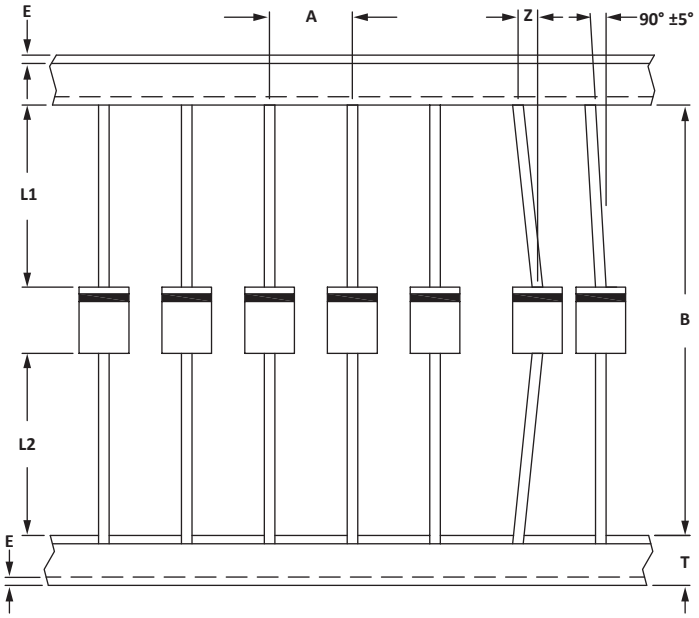
AXIAL LEAD PACKAGE INFORMATION

OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	24.5	-	1.00	-
B	7.24	9.53	0.285	0.375
C	24.5	-	1.00	-
D	0.97 DIA.	1.07 DIA.	0.038 DIA.	0.042 DIA.
E	4.79	5.30	0.189	0.209

NOTES
1. Dimensions are exclusive of mold flash and metal burrs.



TAPE AND REEL



SPECIFICATIONS							
REEL DIA.	A	B	E_{MAX}	L1	L2	T	Z_{MAX}
330mm (13”)	10.0 ± 0.5	52.0 ± 0.5	1.00	21.8 ± 0.5	21.8 ± 0.5	6.0 ± 0.4	1.20

NOTES
1. Dimensions are in millimeters.
2. Axial lead product is taped and reeled in accordance with RS-296-E.
3. Marking on Part - part number, logo and polarity band (Unidirectional Only).

ORDERING INFORMATION					
BASE PART NUMBER (xx = Voltage)	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
1.5KExxx	N/A	-T13	1,200	13”	n/a
1.5KExxxA	N/A	-T13	1,200	13”	n/a
1.5KExxxC	N/A	-T13	1,200	13”	n/a
1.5KExxxCA	N/A	-T13	1,200	13”	n/a

COMPANY INFORMATION

COMPANY PROFILE

In business more than 20 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers high performance interface and linear products. They include analog switches; multiplexers; LED drivers; LED wafer die for ESD protection; audio control ICs; RF and related high frequency products.

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