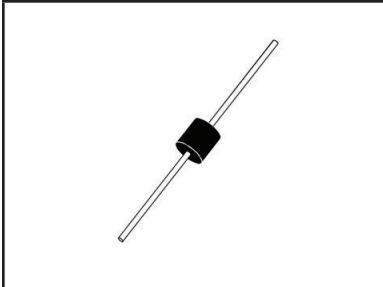


**600 WATT TVS COMPONENT****AXIAL LEAD PACKAGE****DESCRIPTION**

The P6KE Series, are discrete 600 Watt, silicon transient voltage suppressors (TVS) designed for use in applications where large voltage transients can permanently damage voltage sensitive components and equipment.

The P6KE series is available in voltages ranging from 6.8V to 600V and is compatible with IEC 61000-4-5 (Surge) requirements.

**FEATURES**

- UL Registered
- Compatible with IEC 61000-4-5 (Surge)
- 600 Watts Peak Pulse Power per Line ( $t_p = 10/1000\mu s$ )
- Unidirectional and Bidirectional Configurations
- Low Leakage
- 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: 0.38 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	$P_{PP}$	600	Watts
Power Dissipation on Infinite Heatsink at $T_L = 75°C$	$P_D$	5.0	Watts
Peak Forward Surge Current, 8.3ms single half sinewave - Unidirectional Only (Note 2)	$I_{FSM}$	100	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  $T_A = 25°C$  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  $V_{RWM}$ VOLTS	BREAKDOWN VOLTAGE  $V_{(BR)} @ I_T$ VOLTS		TEST CURRENT  @ $I_T$ mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ $I_P$ $V_C$ VOLTS	MAXIMUM REVERSE SURGE CURRENT  @ $I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE CURRENT  @ $V_{RWM}$ $I_R$ µA
		MIN	MAX				
P6KE6.8	5.5	6.12	7.48	10	10.8	55.6	1000
P6KE6.8A	5.8	6.46	7.14	10	10.5	57.1	1000
P6KE7.5	6.1	6.75	8.25	10	11.7	51.3	500
P6KE7.5A	6.4	7.13	7.88	10	11.3	53.1	500
P6KE8.2	6.6	7.38	9.02	10	12.5	48.0	200
P6KE8.2A	7.0	7.79	8.61	10	12.1	49.6	200
P6KE9.1	7.4	8.19	10.01	1	13.8	43.5	50
P6KE9.1A	7.8	8.65	9.56	1	13.4	44.8	50
P6KE10	8.1	9.00	11.00	1	15.0	40.0	10
P6KE10A	8.6	9.50	10.50	1	14.5	41.4	10
P6KE11	8.9	9.90	12.10	1	16.2	37.0	5
P6KE11A	9.4	10.45	11.55	1	15.6	38.5	5
P6KE12	9.7	10.80	13.20	1	17.3	34.7	5
P6KE12A	10.2	11.40	12.60	1	16.7	35.9	5
P6KE13	10.5	11.70	14.30	1	19.0	31.6	1
P6KE13A	11.1	12.35	13.65	1	18.2	33.0	1
P6KE15	12.1	13.50	16.50	1	22.0	27.3	1
P6KE15A	12.8	14.25	15.75	1	21.2	28.3	1
P6KE16	12.9	14.40	17.60	1	23.5	25.5	1
P6KE16A	13.6	15.20	16.80	1	22.5	26.7	1
P6KE18	14.5	16.20	19.80	1	26.5	22.6	1
P6KE18A	15.3	17.10	18.90	1	25.2	23.8	1

## TYPICAL DEVICE CHARACTERISTICS

## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1-3)	REVERSE STAND-OFF VOLTAGE  $V_{RWM}$ VOLTS	BREAKDOWN VOLTAGE		TEST CURRENT  @ $I_T$ mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ $I_P$ $V_C$ VOLTS	MAXIMUM REVERSE SURGE CURRENT  @ $I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE CURRENT  @ $V_{RWM}$ $I_R$ $\mu A$
		$V_{(BR)}$ @ $I_T$ VOLTS					
		MIN	MAX				
P6KE20	16.2	18.00	22.00	1	29.1	20.6	1
P6KE20A	17.1	19.00	21.00	1	27.7	21.7	1
P6KE22	17.8	19.80	24.20	1	31.9	18.8	1
P6KE22A	18.8	20.90	23.10	1	30.6	19.6	1
P6KE24	19.4	21.60	26.40	1	34.7	17.3	1
P6KE24A	20.5	22.80	25.20	1	33.2	18.1	1
P6KE27	21.8	24.30	29.70	1	39.1	15.4	1
P6KE27A	23.1	25.65	28.35	1	37.5	16.0	1
P6KE30	24.3	27.00	33.00	1	43.5	13.8	1
P6KE30A	25.6	28.50	31.50	1	41.4	14.5	1
P6KE33	26.8	29.70	36.30	1	47.7	12.6	1
P6KE33A	28.2	31.35	34.65	1	45.7	13.1	1
P6KE36	29.1	32.40	39.60	1	52.0	11.5	1
P6KE36A	30.8	34.20	37.80	1	49.9	12.0	1
P6KE39	31.6	35.10	42.90	1	56.4	10.6	1
P6KE39A	33.3	37.05	40.95	1	53.9	11.1	1
P6KE43	34.8	38.70	47.30	1	61.9	9.7	1
P6KE43A	36.8	40.85	45.15	1	59.3	10.1	1
P6KE47	38.1	42.30	51.70	1	67.8	8.9	1
P6KE47A	40.2	44.65	49.35	1	64.8	9.3	1
P6KE51	41.3	45.90	56.10	1	73.5	8.2	1
P6KE51A	43.6	48.45	53.55	1	70.1	8.6	1
P6KE56	45.4	50.40	61.60	1	80.5	7.5	1
P6KE56A	47.8	53.20	58.80	1	77.0	7.8	1
P6KE62	50.2	55.80	68.20	1	89.0	6.7	1
P6KE62A	53.0	58.90	65.10	1	85.0	7.1	1
P6KE68	55.1	61.20	74.80	1	98.0	6.1	1
P6KE68A	58.1	64.60	71.40	1	92.0	6.5	1
P6KE75	60.7	67.50	82.50	1	108.0	5.6	1
P6KE75A	64.1	71.25	78.75	1	103.0	5.8	1
P6KE82	66.4	73.80	90.20	1	118.0	5.1	1
P6KE82A	70.1	77.90	86.10	1	113.0	5.3	1
P6KE91	73.7	81.90	100.10	1	131.0	4.6	1
P6KE91A	77.8	86.45	95.55	1	125.0	4.8	1

## TYPICAL DEVICE CHARACTERISTICS

## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1-3)	REVERSE STAND-OFF VOLTAGE  $V_{RWM}$ VOLTS	BREAKDOWN VOLTAGE		TEST CURRENT  @ $I_T$ mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ $I_p$ $V_c$ VOLTS	MAXIMUM REVERSE SURGE CURRENT  @ $I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE CURRENT  @ $V_{RWM}$ $I_R$ $\mu A$
		$V_{(BR)}$ @ $I_T$ VOLTS					
		MIN	MAX				
P6KE100	81.0	90.00	110.00	1	144.0	4.2	1
P6KE100A	85.5	95.00	105.00	1	137.0	4.4	1
P6KE110	89.2	99.00	121.00	1	158.0	3.8	1
P6KE110A	94.0	104.50	115.50	1	152.0	4.0	1
P6KE120	97.2	108.00	132.00	1	173.0	3.5	1
P6KE120A	102.0	114.00	126.00	1	165.0	3.6	1
P6KE130	105.0	117.00	143.00	1	187.0	3.2	1
P6KE130A	111.0	123.50	136.50	1	179.0	3.4	1
P6KE150	121.0	135.00	165.00	1	215.0	2.8	1
P6KE150A	128.0	142.50	157.50	1	207.0	2.9	1
P6KE160	130.0	144.00	176.00	1	230.0	2.6	1
P6KE160A	136.0	152.00	168.00	1	219.0	2.7	1
P6KE170	138.0	153.00	187.00	1	244.0	2.5	1
P6KE170A	145.0	161.50	178.50	1	234.0	2.6	1
P6KE180	146.0	162.00	198.00	1	258.0	2.3	1
P6KE180A	154.0	171.00	189.00	1	246.0	2.4	1
P6KE200	162.0	180.00	220.00	1	287.0	2.1	1
P6KE200A	171.0	190.00	210.00	1	274.0	2.2	1
P6KE220	175.0	198.00	242.00	1	344.0	1.7	1
P6KE220A	185.0	209.00	231.00	1	328.0	1.8	1
P6KE250	202.0	225.00	275.00	1	360.0	1.7	1
P6KE250A	214.0	237.50	262.50	1	344.0	1.7	1
P6KE300	243.0	270.00	330.00	1	430.0	1.4	1
P6KE300A	256.0	285.00	315.00	1	414.0	1.5	1
P6KE350	284.2	315.00	385.00	1	504.0	1.2	1
P6KE350A	299.3	332.50	367.50	1	482.0	1.2	1
P6KE380	308.6	342.00	418.00	1	547.2	1.1	1
P6KE380A	324.9	361.00	399.00	1	524.4	1.1	1
P6KE400	324.8	360.00	440.00	1	574.0	1.1	1
P6KE400A	342.0	380.00	420.00	1	548.0	1.1	1
P6KE440	357.3	396.00	484.00	1	634.0	1.0	1
P6KE440A	376.2	418.00	462.00	1	607.0	1.0	1
P6KE480A	408.0	456.00	504.00	1	658.0	0.9	1
P6KE500	406.0	450.00	550.00	1	720.0	0.8	1

## TYPICAL DEVICE CHARACTERISTICS

## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

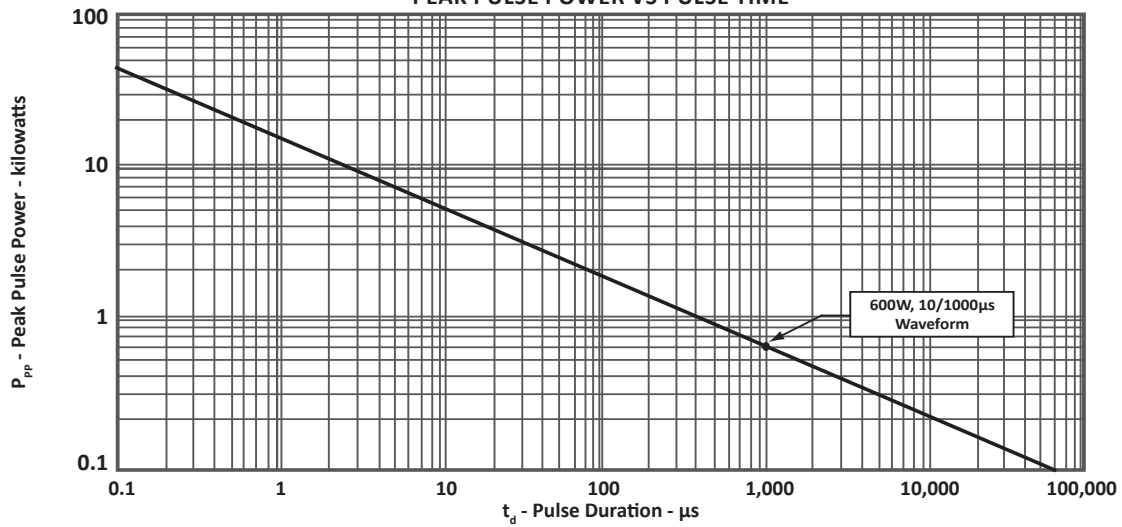
PART NUMBER (Notes 1-3)	REVERSE STAND-OFF VOLTAGE  $V_{RWM}$ VOLTS	BREAKDOWN VOLTAGE		TEST CURRENT  @ $I_T$ mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ $I_p$ $V_c$ VOLTS	MAXIMUM REVERSE SURGE CURRENT  @ $I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE CURRENT  @ $V_{RWM}$ $I_R$ $\mu A$
		$V_{(BR)} @ I_T$ VOLTS					
		MIN	MAX				
P6KE500A	427.5	475.00	525.00	1	690.0	0.9	1
P6KE520	422.2	468.00	572.00	1	748.8	0.8	1
P6KE520A	444.6	494.00	546.00	1	717.6	0.8	1
P6KE550	446.6	495.00	605.00	1	792.0	0.8	1
P6KE550A	470.3	522.50	577.50	1	759.0	0.8	1
P6KE600	487.2	540.00	660.00	1	864.0	0.7	1
P6KE600A	513.0	570.00	630.00	1	828.0	0.7	1

## NOTE

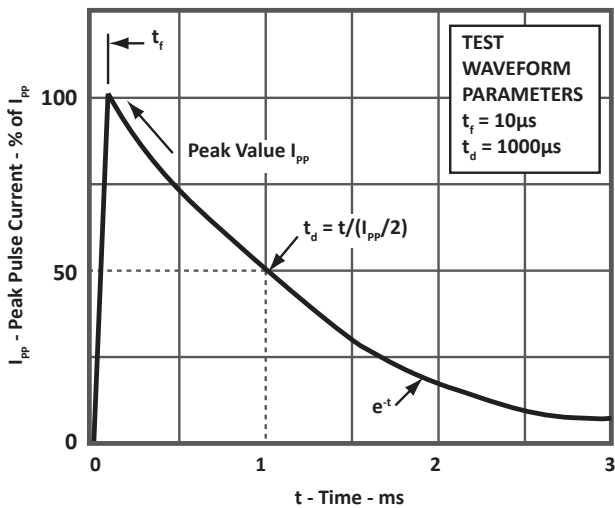
- Suffix 'A' denotes 5% tolerance, without 'A' denotes 10% tolerance.
- Add suffix 'C' or 'CA' after part number to specify a bidirectional device.
- For bidirectional devices having a  $V_{RWM}$  of 10 Volts and under, the  $I_R$  limit is double.

**TYPICAL DEVICE CHARACTERISTICS**

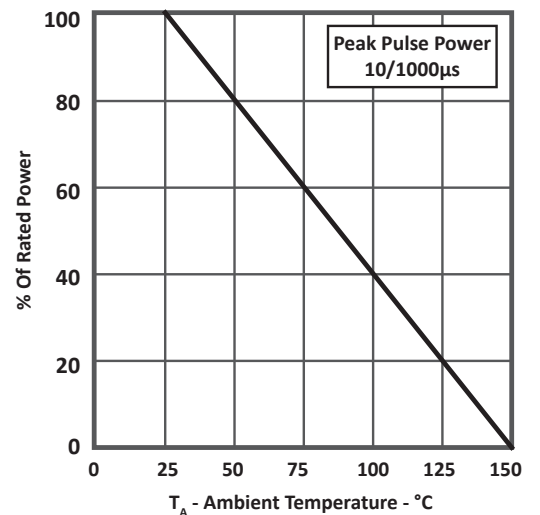
**FIGURE 1  
PEAK PULSE POWER VS PULSE TIME**



**FIGURE 2  
PULSE WAVEFORM**

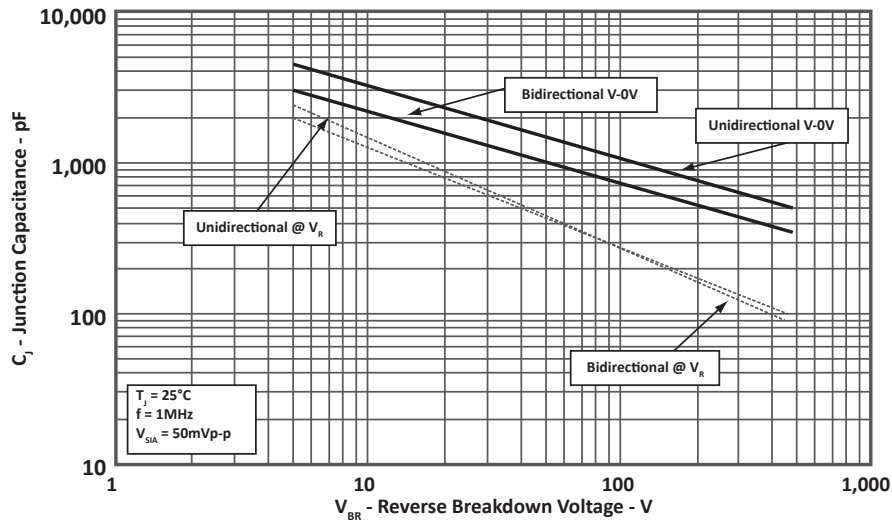


**FIGURE 3  
POWER DERATING CURVE**

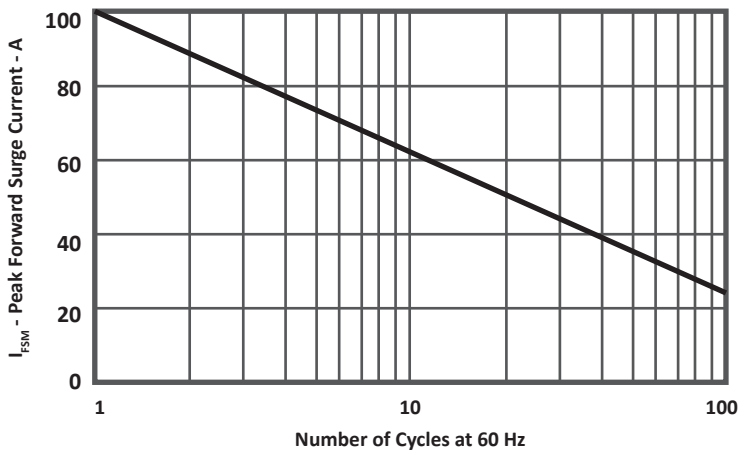


**TYPICAL DEVICE CHARACTERISTICS**

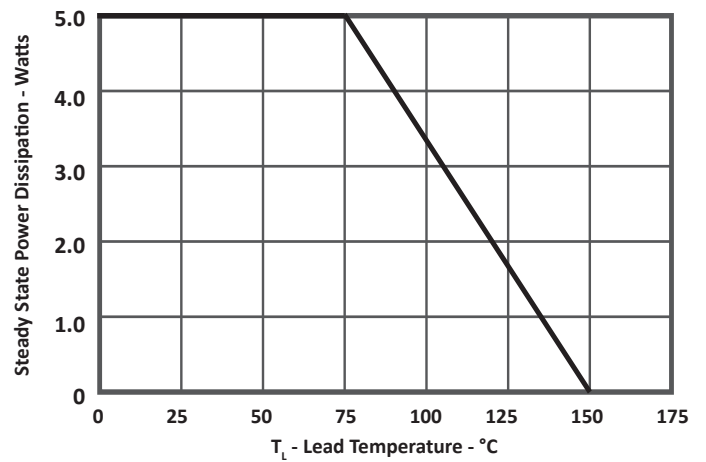
**FIGURE 4  
TYPICAL JUNCTION CAPACITANCE**



**FIGURE 5  
MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT**



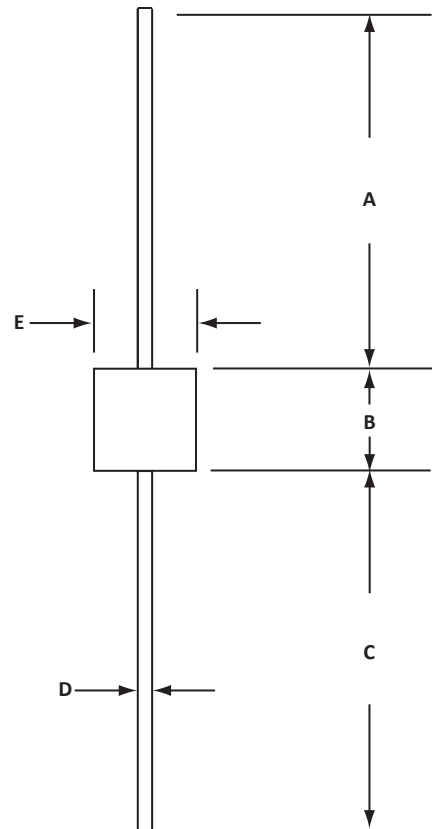
**FIGURE 6  
STEADY STATE POWER DERATING CURVE**



**AXIAL LEAD PACKAGE INFORMATION**

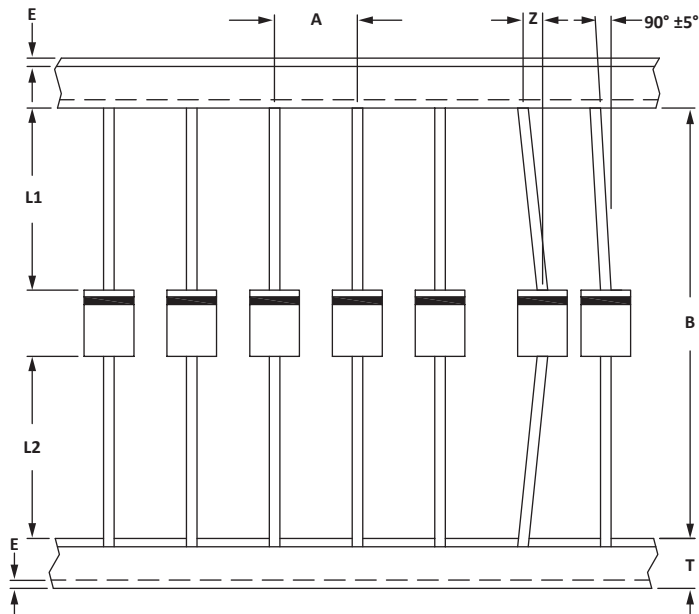
OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	25.4	-	1.00	-
B	5.85	7.63	0.230	0.300
C	25.4	-	1.00	-
D	0.71 DIA.	0.84 DIA.	0.028 DIA.	0.033 DIA.
E	2.60	3.61	0.102	0.142

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





## TAPE AND REEL



## SPECIFICATIONS

REEL DIA.	A	B	E <sub>MAX</sub>	L1	L2	T	Z <sub>MAX</sub>
330mm (13")	5.0 ± 0.5	52.0 ± 0.5	3.00	22.6 ± 0.5	22.6 ± 0.5	6.0 ± 0.4	1.20

## NOTES

- Dimensions are in millimeters.
- Axial lead product is taped and reeled in accordance with RS-296-E.
- 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
P6KExxx	N/A	-T13	4,000	13"	n/a
P6KExxxA	N/A	-T13	4,000	13"	n/a
P6KExxxC	N/A	-T13	4,000	13"	n/a
P6KExxxCA	N/A	-T13	4,000	13"	n/a

## COMPANY INFORMATION

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### COMPANY PROFILE

In business more than 25 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 LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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