

DESCRIPTION

The P6KE series of transient voltage suppressors are designed to protect components from over voltages caused by electrostatic discharge (ESD), electrical fast transients (EFT), induced lightning, and system generated transients.

TVS diodes are characterized by their high surge capability, low operating and clamping voltages, and fast response time. This makes them ideal for use as board level protection of sensitive semiconductor components. The P6KE series is suitable protection for sensitive TTL and MOS ICs such as microprocessors, I/O transceivers, ASICs, transducers, and MOS memory.

APPLICATIONS:

- General Transient Protection
- Board Level Thru-Hole Applications
- Industrial & Commercial Electronics
- Portable electronics
- Networks

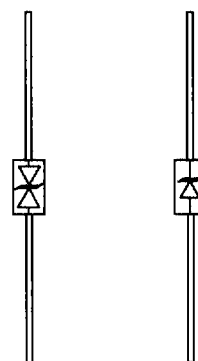
FEATURES:

- 600 watts Peak Pulse Power ($t_p = 10 \times 1000 \mu s$)
- Unidirectional or Bidirectional
- Wide voltage range (5.5V - 440V)
- Low clamping voltages
- Solid state silicon avalanche technology

MECHANICAL CHARACTERISTICS:

- JEDEC DO-15 Outline
- Molded epoxy case
- Marking : P/N, date code, and logo
- Unidirectional devices marked with polarity band

SCHEMATIC



MAXIMUM RATINGS

RATING	SYMBOL	VALUE	UNIT
Peak Pulse Power ($t_p = 10 \times 1000 \mu s$)	Ppk	600	Watts
Operating Temperature	Tj	-55 to +150	°C
Storage Temperature	Tstg	-55 to +150	°C

ELECTRICAL CHARACTERISTICS @ 25°C

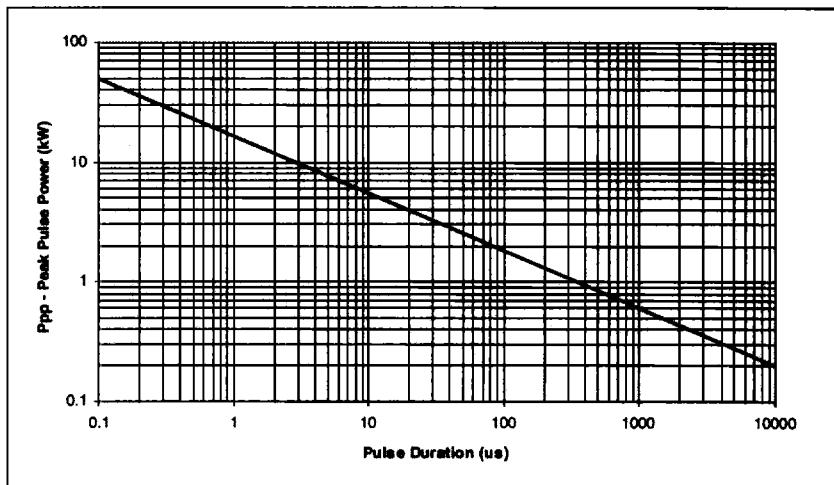
UNI-DIRECTIONAL PART NUMBER	BIDIRECTIONAL PART NUMBER	REVERSE STAND-OFF VOLTAGE V_{RWM} (V)	REVERSE LEAKAGE CURRENT I_R (μA)	BREAKDOWN VOLTAGE $V_{BR} @ I_T$ (V)		TEST CURRENT I_T (mA)	MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_C (V)	PEAK PULSE CURRENT I_{PP} (A)	MAX. VOLTAGE TEMPERATURE VARIATION OF V_{BR} (mV/°C)
See Note 1	See Note 1, 2			MIN	MAX				
P6KE6.8 ♦	P6KE6.8C	6.50	1000	6.12	7.48	10	10.8	58.0	5
P6KE6.8A ♦		6.80	1000	6.45	7.14	10	10.8	57.0	5
P6KE7.5 ♦	P6KE7.5C ♦	6.05	500	6.75	8.25	10	11.7	51.0	5
P6KE7.5A ♦	P6KE7.5CA ♦	6.40	500	7.13	7.88	10	11.3	53.0	5
P6KE8.2	P6KE8.2C	8.83	200	7.38	9.02	10	12.8	48.0	6
P6KE8.2A	P6KE8.2CA	7.02	200	7.79	8.61	10	12.1	50.0	6
P6KE9.1	P6KE9.1C	7.37	50	8.19	10.00	1	13.8	44.0	7
P6KE9.1A	P6KE9.1CA	7.78	50	8.65	9.50	1	13.4	45.0	7
P6KE10	P6KE10C	8.10	10	9.00	11.00	1	15.0	40.0	8
P6KE10A	P6KE10CA	8.65	10	9.50	10.50	1	14.5	41.0	8
P6KE11	P6KE11C	8.92	5	9.90	12.10	1	16.2	37.0	9
P6KE11A	P6KE11CA	9.40	5	10.50	11.60	1	15.6	38.0	9
P6KE12 ♦	P6KE12C ♦	8.72	5	10.80	13.20	1	17.3	35.0	10
P6KE12A ♦	P6KE12CA ♦	10.20	5	11.40	12.80	1	16.7	36.0	10
P6KE13	P6KE13C	10.50	5	11.70	14.30	1	19.0	32.0	11
P6KE13A	P6KE13CA	11.10	5	12.40	13.70	1	18.2	33.0	11

ELECTRICAL CHARACTERISTICS @ 25°C (CONTINUED)

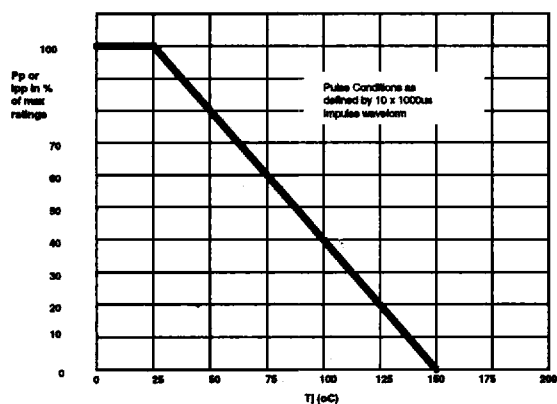
UNI-DIRECTIONAL PART NUMBER	BIDIRECTIONAL PART NUMBER	REVERSE STAND-OFF VOLTAGE V _{RWM} (V)	REVERSE LEAKAGE CURRENT I _R (μA)	BREAKDOWN VOLTAGE V _{BR} @ I _T (V)	TEST CURRENT I _T (mA)	MAXIMUM CLAMPING VOLTAGE @ I _{PP} V _C (V)	PEAK PULSE CURRENT I _{PP} (A)	MAX. VOLTAGE TEMPERATURE VARIATION OF V _{BR} (mV/°C)
See Note 1	See Note 1, 2			MIN MAX				
P6KE18 ♦	P6KE18C ♦	12.10	5	13.50 16.50	1	22.0	27.0	13
P6KE18A ♦	P6KE18CA ♦	12.80	5	14.30 15.80	1	21.2	28.0	12
P6KE18 ♦	P6KE18C ♦	12.90	5	14.40 17.80	1	23.8	26.0	16
P6KE18A ♦	P6KE18CA ♦	13.80	5	15.20 16.80	1	22.5	27.0	14
P6KE19 ♦	P6KE19C ♦	14.80	5	16.20 19.80	1	26.5	23.0	17
P6KE19A ♦	P6KE19CA ♦	15.20	5	17.10 18.90	1	25.2	24.0	19
P6KE20 ♦	P6KE20C ♦	16.20	5	18.00 22.00	1	29.1	21.0	20
P6KE20A ♦	P6KE20CA ♦	17.10	5	19.00 21.00	1	27.7	22.0	19
P6KE22 ♦	P6KE22C ♦	17.80	5	19.80 24.20	1	31.9	19.0	21
P6KE22A ♦	P6KE22CA ♦	18.80	5	20.90 23.10	1	30.6	20.0	20
P6KE24 ♦	P6KE24C ♦	19.40	5	21.60 26.40	1	34.7	17.0	25
P6KE24A ♦	P6KE24CA ♦	20.50	5	22.80 25.20	1	33.2	18.0	23
P6KE27 ♦	P6KE27C ♦	21.80	5	24.30 29.70	1	39.1	15.0	28
P6KE27A ♦	P6KE27CA ♦	23.10	5	25.70 28.40	1	37.5	16.0	25
P6KE30 ♦	P6KE30C ♦	24.30	5	27.00 33.00	1	43.6	14.0	31
P6KE30A ♦	P6KE30CA ♦	25.80	5	28.50 31.50	1	41.4	14.4	28
P6KE33 ♦	P6KE33C ♦	26.80	5	29.70 36.30	1	47.7	12.8	31
P6KE33A ♦	P6KE33CA ♦	28.20	5	31.40 34.70	1	45.7	13.2	30
P6KE36 ♦	P6KE36C ♦	28.10	5	32.40 39.60	1	52.0	11.8	35
P6KE36A ♦	P6KE36CA ♦	30.80	5	34.20 37.80	1	49.8	12.0	31
P6KE39 ♦	P6KE39C ♦	31.80	5	35.10 42.90	1	58.4	10.8	39
P6KE39A ♦	P6KE39CA ♦	33.30	5	37.10 41.00	1	53.9	11.2	36
P6KE43 ♦	P6KE43C ♦	34.80	5	38.70 47.30	1	61.9	9.8	46
P6KE43A ♦	P6KE43CA ♦	36.80	5	40.90 45.20	1	59.3	10.1	44
P6KE47 ♦	P6KE47C ♦	38.10	5	42.30 51.70	1	67.8	8.9	50
P6KE47A ♦	P6KE47CA ♦	40.20	5	44.70 49.40	1	64.8	9.3	48
P6KE51 ♦	P6KE51C ♦	41.30	5	45.90 56.10	1	73.5	8.2	55
P6KE51A ♦	P6KE51CA ♦	43.80	5	48.50 53.60	1	70.1	8.6	51
P6KE55 ♦	P6KE55C ♦	48.80	5	50.40 61.60	1	80.5	7.4	58
P6KE55A ♦	P6KE55CA ♦	47.80	5	53.20 58.80	1	77.0	7.8	56
P6KE62 ♦	P6KE62C ♦	50.20	5	55.80 68.20	1	89.0	6.8	65
P6KE62A ♦	P6KE62CA ♦	53.00	5	58.90 65.10	1	85.0	7.1	62
P6KE68 ♦	P6KE68C ♦	55.10	5	61.20 74.80	1	98.0	6.1	71
P6KE68A ♦	P6KE68CA ♦	58.10	5	64.60 71.40	1	92.0	6.5	69
P6KE75 ♦	P6KE75C ♦	60.70	5	67.50 82.50	1	108.0	5.5	80
P6KE75A ♦	P6KE75CA ♦	64.10	5	71.30 78.80	1	103.0	5.8	76
P6KE82 ♦	P6KE82C ♦	68.40	5	73.80 90.20	1	118.0	5.1	90
P6KE82A ♦	P6KE82CA ♦	70.10	5	77.90 86.10	1	113.0	5.3	88
P6KE91 ♦	P6KE91C ♦	73.70	5	81.90 100.00	1	131.0	4.5	99
P6KE91A ♦	P6KE91CA ♦	77.80	5	86.50 95.50	1	125.0	4.8	94
P6KE100 ♦	P6KE100C ♦	81.00	5	90.00 110.00	1	144.0	4.2	109
P6KE100A ♦	P6KE100CA ♦	83.50	5	95.00 105.00	1	137.0	4.4	104
P6KE110 ♦	P6KE110C ♦	89.20	5	99.00 121.00	1	158.0	3.8	120
P6KE110A ♦	P6KE110CA ♦	94.00	5	105.00 118.00	1	152.0	4.0	115
P6KE120 ♦	P6KE120C ♦	97.30	5	108.00 132.00	1	173.0	3.5	131
P6KE120A ♦	P6KE120CA ♦	102.00	5	114.00 128.00	1	165.0	3.6	125
P6KE130 ♦	P6KE130C ♦	105.00	5	117.00 143.00	1	187.0	3.2	142
P6KE130A ♦	P6KE130CA ♦	111.00	5	124.00 137.00	1	179.0	3.3	136
P6KE150 ♦	P6KE150C ♦	121.00	5	135.00 165.00	1	215.0	2.8	164
P6KE150A ♦	P6KE150CA ♦	128.00	5	143.00 158.00	1	207.0	2.9	157
P6KE160 ♦	P6KE160C ♦	130.00	5	144.00 176.00	1	230.0	2.6	175
P6KE160A ♦	P6KE160CA ♦	136.00	5	152.00 168.00	1	218.0	2.7	167
P6KE170 ♦	P6KE170C ♦	138.00	5	153.00 187.00	1	244.0	2.5	186
P6KE170A ♦	P6KE170CA ♦	145.00	5	162.00 179.00	1	234.0	2.6	188
P6KE180 ♦	P6KE180C ♦	146.00	5	162.00 198.00	1	258.0	2.3	197
P6KE180A ♦	P6KE180CA ♦	154.00	5	171.00 189.00	1	246.0	2.4	188
P6KE200 ♦	P6KE200C ♦	162.00	5	180.00 220.00	1	287.0	2.1	219
P6KE200A ♦	P6KE200CA ♦	171.00	5	190.00 210.00	1	274.0	2.2	209
P6KE220 ♦	P6KE220C ♦	175.00	5	198.00 242.00	1	344.0	2.0	240
P6KE220A ♦	P6KE220CA ♦	185.00	5	209.00 231.00	1	328.0	2.0	230
P6KE250 ♦	P6KE250C ♦	202.00	5	225.00 275.00	1	360.0	2.0	270
P6KE250A ♦	P6KE250CA ♦	214.00	5	237.00 263.00	1	344.0	2.0	260
P6KE300 ♦	P6KE300C ♦	243.00	5	270.00 330.00	1	430.0	2.0	330
P6KE300A ♦	P6KE300CA ♦	256.00	5	285.00 315.00	1	414.0	2.0	315
P6KE350 ♦	P6KE350C ♦	284.00	5	315.00 385.00	1	504.0	2.0	385
P6KE350A ♦	P6KE350CA ♦	300.00	5	332.00 368.00	1	482.0	2.0	368
P6KE400 ♦	P6KE400C ♦	324.00	5	360.00 440.00	1	574.0	2.0	440
P6KE400A ♦	P6KE400CA ♦	342.00	5	380.00 420.00	1	548.0	2.0	420
P6KE440 ♦	P6KE440C ♦	359.00	5	398.00 484.00	1	631.0	2.0	480
P6KE440A ♦	P6KE440CA ♦	376.00	5	418.00 462.00	1	600.0	2.0	440

NOTE 1: "A" = ±5% of nominal V_{BR}; standard tolerance is ±10%.
 NOTE 2: Bidirectional devices have symmetrical avalanche characteristics in both directions.
 NOTE 3: For bidirectional devices with V_{RWM} ≤ 10 volts, the I_R limit is doubled.
 ♦ : Popular / Recommended part types

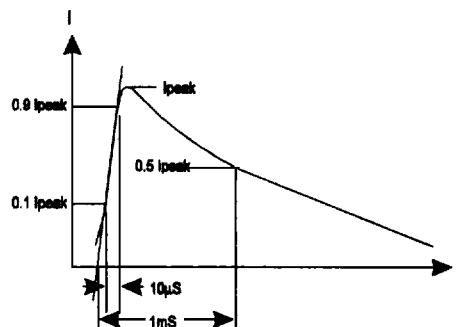
PEAK PULSE POWER vs. PULSE TIME



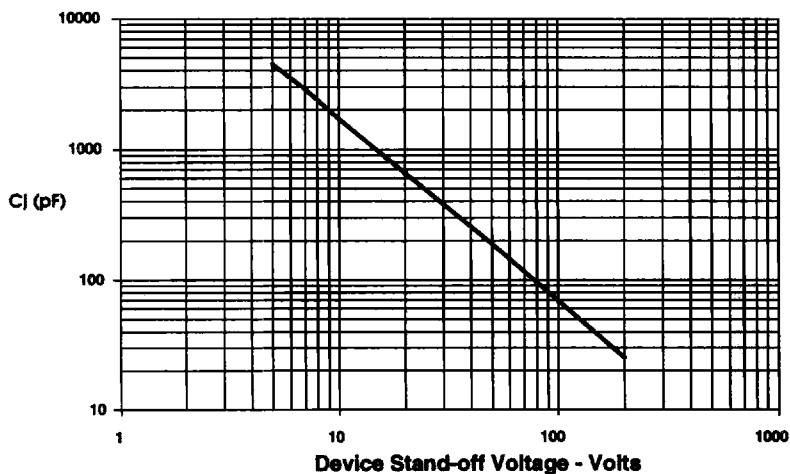
PULSE DERATING CURVE



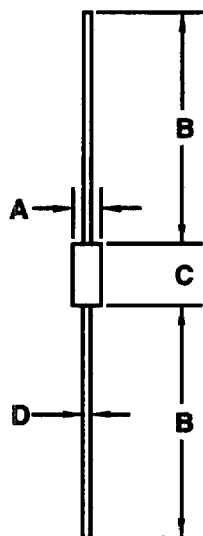
10x1000μs IMPULSE WAVEFORM



CAPACITANCE vs. WORKING VOLTAGE



MECHANICAL OUTLINE - DO-15



DIMENSIONS					
DIM #	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.104	.140	2.6	3.6	
B	1.00	—	25.4	—	
C	.230	.300	5.8	7.6	
D	.028	.034	.71	.86	

TYPICAL APPLICATION

IC PROTECTION

Transient protection for integrated circuits is recommended at the power supply line and signal line interfaces which exit the equipment. A generic application is shown below.

