

# 600 WATT TRANSIENT VOLTAGE P6SE SERIES SUPPRESSOR DIODES 5.50 TO 171.0 V<sub>R</sub> (CM CASE)

## FEATURES:

- 600 Watts Peak Power – 1 ms
- 5 Watts D.C. Power @ 75°C Lead Temp.
- Superfast Response ( $1 \times 10^{-12}$  sec.)
- High Temperature Operation
- Low Clamping Voltage
- Metallurgically Bonded

## DESCRIPTION

... a low cost commercial product for use in applications where large voltage transients can permanently damage voltage-sensitive components.

This series has a peak pulse power rating of 600 watts for one millisecond. The response time of the clamping action of these devices is theoretically instantaneous ( $1 \times 10^{-12}$  sec); therefore, they are designed to protect integrated Circuits, MOS devices, Hybrids, and other voltage-sensitive semiconductors and components. This series of devices can also be used in series or parallel to increase the peak power ratings.

## MAXIMUM RATINGS: (See Notes)

- 600 Watts of Peak Pulse Power dissipation at 25°C (see derating curve Fig. 3)
- $t_{clamping}$  (0 volts to BV min): Less than  $1 \times 10^{-12}$  seconds
- Operating and Storage temperatures: -65° to +175°C
- Forward surge rating: 100 amps, 1/120 second at 25°C\*
- Steady State power dissipation: 5.0 watts  $T_L = 75^\circ\text{C}$ , Lead Length = 3/8"
- Repetition rate (duty cycle): .01%

## Notes:

- (1) Exceeding these ratings may impair operation of the semiconductor device.
- (2) The applied current pulse is as shown in the "Pulse Current vs. Time" plot. Maximum Rate of Applications is 2 pulses per minute (Fig. 4).
- \* (3) The applied current is 1/2 cycle of a 60 Hz waveform, with a maximum rate of application of 4 pulses per minute.

FIG 1

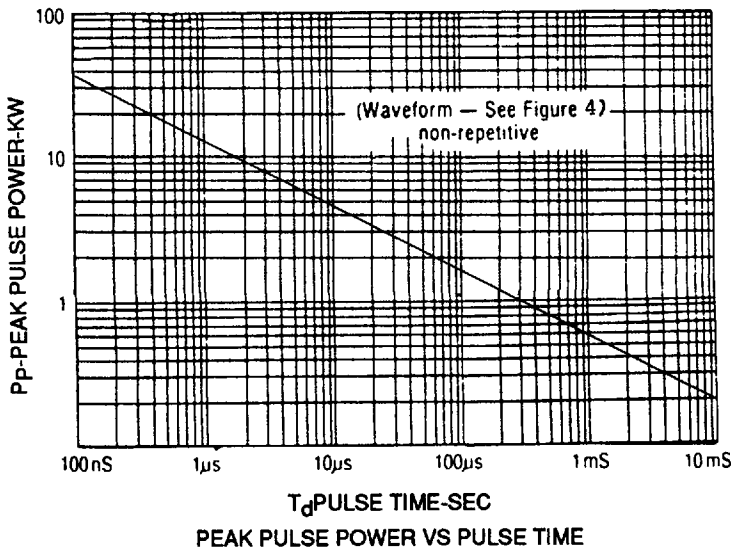


FIG 2  
TEMPERATURE RATING CURVE

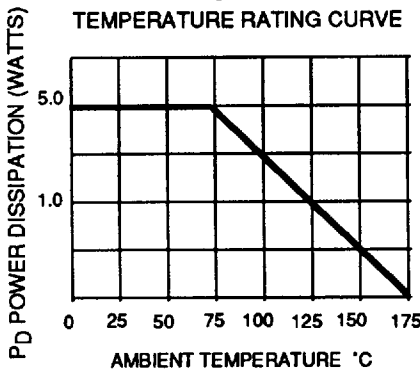


FIG 3  
MAXIMUM ALLOWABLE  
PEAK PULSE CURRENT  
& POWER VS AMBIENT TEMPERATURE

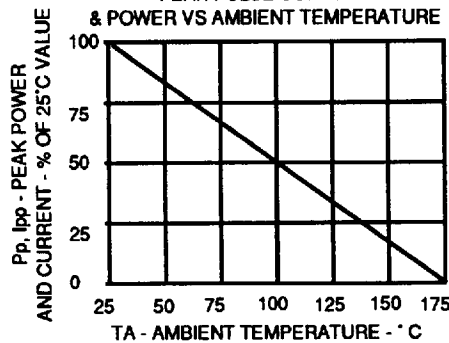
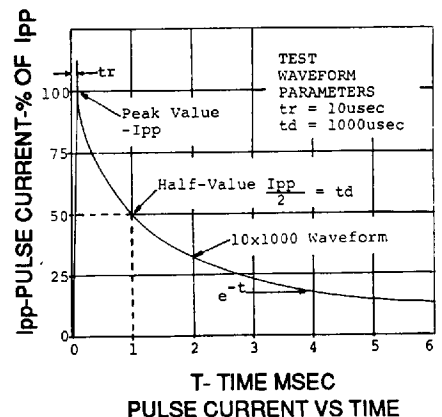


FIG 4



**ELECTRICAL CHARACTERISTICS at 25°C**

SEMICON PART NUMBER	(Note1)	BREAKDOWN VOLTAGE @		I <sub>T</sub> mA	(Note2)	† MAXIMUM REVERSE LEAKAGE @V <sub>R</sub> I <sub>R</sub> µA	MAXIMUM PEAK PULSE CURRENT I <sub>pp</sub> A	MAXIMUM TEMPERATURE COEFFICIENT OF BV %/°C
	REVERSE STAND-OFF VOLTAGE	BV			MAXIMUM CLAMPING VOLTAGE @ I <sub>pp</sub> (1 mSEC)			
	V <sub>R</sub> VOLTS	MIN	MAX		V <sub>C</sub> VOLTS			
P6SE6.8	5.50	6.12	7.48	10	10.8	1000	56	.057
P6SE6.8A	5.80	6.45	7.14	10	10.5	1000	57	.057
P6SE7.5	6.05	6.75	8.25	10	11.7	500	51	.061
P6SE7.5A	6.40	7.13	7.88	10	11.3	500	53	.061
P6SE8.2	6.63	7.38	9.02	10	12.5	200	48	.065
P6SE8.2A	7.02	7.79	8.61	10	12.1	200	50	.065
P6SE9.1	7.37	8.19	10.0	1	13.8	50	44	.068
P6SE9.1A	7.78	8.65	9.55	1	13.4	50	45	.068
P6SE10	8.10	9.00	11.0	1	15.0	10	40	.073
P6SE10A	8.55	9.5	10.5	1	14.5	10	41	.073
P6SE11	8.92	9.9	12.1	1	16.2	5	37	.075
P6SE11A	9.40	10.5	11.6	1	15.6	5	38	.075
P6SE12	9.72	10.8	13.2	1	17.3	5	35	.078
P6SE12A	10.2	11.4	12.6	1	16.7	5	36	.078
P6SE13	10.5	11.7	14.3	1	19.0	5	32	.081
P6SE13A	11.1	12.4	13.7	1	18.2	5	33	.081
P6SE15	12.1	13.5	16.5	1	22.0	5	27	.084
P6SE15A	12.8	14.3	15.8	1	21.2	5	28	.084
P6SE16	12.9	14.4	17.6	1	23.5	5	26	.086
P6SE16A	13.6	15.2	16.8	1	22.5	5	27	.086
P6SE18	14.5	16.2	19.8	1	26.5	5	23	.088
P6SE18A	15.3	17.1	18.9	1	25.2	5	24	.088
P6SE20	16.2	18.0	22.0	1	29.1	5	21	.090
P6SE20A	17.1	19.0	21.0	1	27.7	5	22	.090
P6SE22	17.8	19.8	24.2	1	31.9	5	19	.092
P6SE22A	18.8	20.9	23.1	1	30.6	5	20	.092
P6SE24	19.4	21.6	26.4	1	34.7	5	17	.094
P6SE24A	20.5	22.8	25.2	1	33.2	5	18	.094
P6SE27	21.8	24.3	29.7	1	39.1	5	15	.096
P6SE27A	23.1	25.7	28.4	1	37.5	5	16	.096
P6SE30	24.3	27.0	33.0	1	43.5	5	14	.097
P6SE30A	25.6	28.5	31.5	1	41.4	5	14.4	.097
P6SE33	26.8	29.7	36.3	1	47.7	5	12.6	.098
P6SE33A	28.2	31.4	34.7	1	45.7	5	13.2	.098
P6SE36	29.1	32.4	39.6	1	52.0	5	11.6	.099
P6SE36A	30.8	34.2	37.8	1	49.9	5	12.0	.099
P6SE39	31.6	35.1	42.9	1	56.4	5	10.6	.100
P6SE39A	33.3	37.1	41.0	1	53.9	5	11.2	.100
P6SE43	34.8	38.7	47.3	1	61.9	5	9.6	.101
P6SE43A	36.8	40.9	45.2	1	59.3	5	10.1	.101
P6SE47	38.1	42.3	51.7	1	67.8	5	8.9	.101
P6SE47A	40.2	44.7	49.4	1	64.8	5	9.3	.101
P6SE51	41.3	45.9	56.1	1	73.5	5	8.2	.102
P6SE51A	43.6	48.5	53.6	1	70.1	5	8.6	.102
P6SE56	45.4	50.4	61.6	1	80.5	5	7.4	.103
P6SE56A	47.8	53.2	58.8	1	77.0	5	7.8	.103
P6SE62	50.2	55.8	68.2	1	89.0	5	6.8	.104
P6SE62A	53.0	58.9	65.1	1	85.0	5	7.1	.104
P6SE68	55.1	61.2	74.8	1	98.0	5	6.1	.104
P6SE68A	58.1	64.6	71.4	1	92.0	5	6.5	.104
P6SE75	60.7	67.5	82.5	1	108.0	5	5.5	.105
P6SE75A	64.1	71.3	78.8	1	103.0	5	5.8	.105
P6SE82	66.4	73.8	90.2	1	118.0	5	5.1	.105
P6SE82A	70.1	77.9	86.1	1	113.0	5	5.3	.105
P6SE91	73.7	81.9	100.0	1	131.0	5	4.5	.106
P6SE91A	77.8	86.5	95.5	1	125.0	5	4.8	.106
P6SE100	81.0	90.0	110.0	1	144.0	5	4.2	.106
P6SE100A	85.5	95.0	105.0	1	137.0	5	4.4	.106
P6SE110	89.2	99.0	121.0	1	158.0	5	3.8	.107
P6SE110A	94.0	105.0	111.0	1	152.0	5	4.0	.107
P6SE120	97.2	108.0	132.0	1	173.0	5	3.5	.107
P6SE120A	102.0	114.0	126.0	1	165.0	5	3.6	.107
P6SE130	105.0	117.0	143.0	1	187.0	5	3.2	.107
P6SE130A	111.0	124.0	137.0	1	179.0	5	3.3	.107
P6SE150	121.0	135.0	165.0	1	215.0	5	2.8	.108
P6SE150A	128.0	143.0	158.0	1	207.0	5	2.9	.108
P6SE160	130.0	144.0	176.0	1	230.0	5	2.6	.108
P6SE160A	136.0	152.0	168.0	1	219.0	5	2.7	.108
P6SE170	138.0	153.0	187.0	1	244.0	5	2.5	.108
P6SE170A	145.0	162.0	179.0	1	234.0	5	2.6	.108
P6SE180	148.0	162.0	198.0	1	258.0	5	2.3	.108
P6SE180A	154.0	171.0	189.0	1	246.0	5	2.4	.108
P6SE200	162.0	180.0	220.0	1	287.0	5	2.1	.108
P6SE200A	171.0	190.0	210.0	1	274.0	5	2.2	.108

V<sub>F</sub> at 50 amps peak, 8.3 msec sine wave equals 3.5 volts maximum

**Note 1:** These devices are normally selected according to the reverse "Stand Off Voltage" (V<sub>R</sub>) which should be equal to or greater than the DC or continuous peak operating voltage level.

† For bipolar types P6SE7.5C thru P6SE11C I<sub>R</sub> MAX must be double that specified for single polarity types.

**Note 2:** Max. clamping voltage = Approx. 1.3 x BV