

600 WATT TRANSIENT VOLTAGE P6SE SERIES SUPPRESSOR DIODES 5.50 TO 171.0 V_R (CM CASE)

FEATURES:

- 600 Watts Peak Power – 1 ms
- 5 Watts D.C. Power @ 75°C Lead Temp.
- Superfast Response (1×10^{-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 (1×10^{-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.

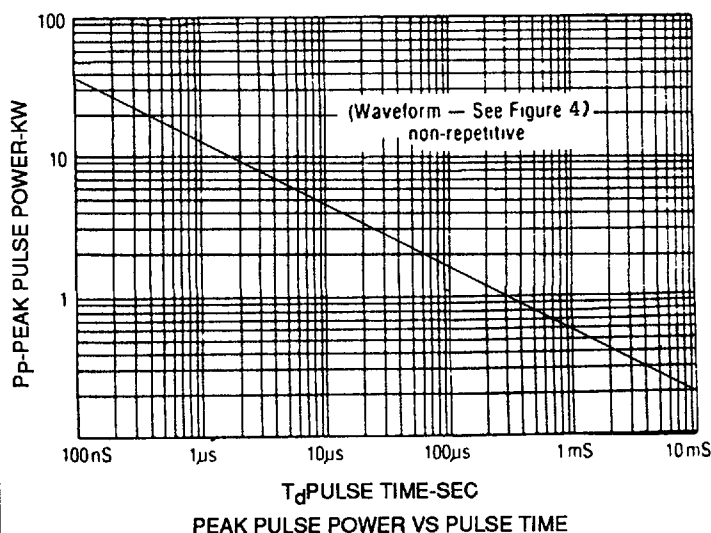
MAXIMUM RATINGS: (See Notes)

- 600 Watts of Peak Pulse Power dissipation at 25°C (see derating curve Fig. 3)
- t_{clamping} (0 volts to BV min): Less than 1×10^{-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



PEAK PULSE POWER VS PULSE TIME

FIG 2

TEMPERATURE RATING CURVE

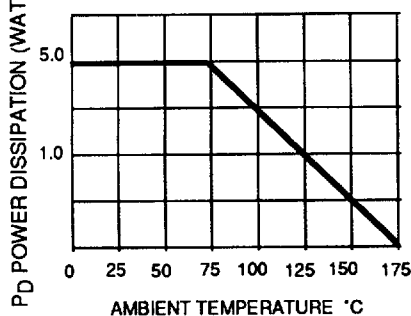


FIG 3

MAXIMUM ALLOWABLE
PEAK PULSE CURRENT

& POWER VS AMBIENT TEMPERATURE

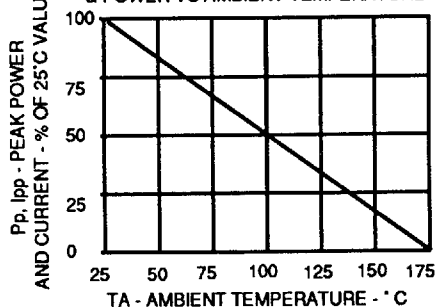
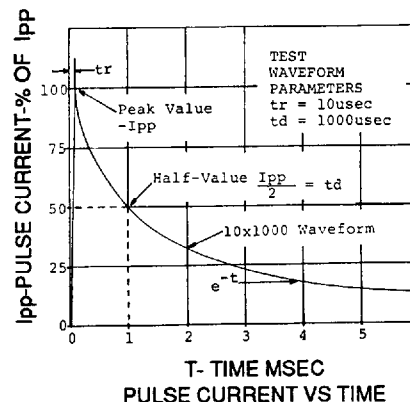


FIG 4



ELECTRICAL CHARACTERISTICS at 25°C

SEMICON PART NUMBER	(Note1) REVERSE STAND-OFF VOLTAGE V_R VOLTS	BREAKDOWN VOLTAGE @ I_T mA		(Note2) MAXIMUM CLAMPING VOLTAGE @ I_{PP} (1 mSEC) V_C VOLTS	† MAXIMUM REVERSE LEAKAGE @ V_R I_R μA	MAXIMUM PEAK PULSE CURRENT I_{PP} A	MAXIMUM TEMPERATURE COEFFICIENT OF BV %/ °C	
	V_R VOLTS	BV VOLTS	I_T mA	V_C VOLTS	I_R μA	I_{PP} A	% / °C	
		MIN						MAX
P6SE6.8 P6SE6.8A P6SE7.5 P6SE7.5A P6SE8.2 P6SE8.2A	5.50 5.80 6.05 6.40 6.63 7.02	6.12 6.45 6.75 7.13 7.38 7.79	7.48 7.14 8.25 7.88 9.02 8.61	10 10 10 10 10 10	10.8 10.5 11.7 11.3 12.5 12.1	1000 1000 500 500 200 200	56 57 51 53 48 50	.057 .057 .061 .061 .065 .065
P6SE9.1 P6SE9.1A P6SE10 P6SE10A P6SE11 P6SE11A	7.37 7.78 8.10 8.55 8.92 9.40	8.19 8.65 9.00 9.5 9.9 10.5	10.0 9.55 11.0 10.5 12.1 11.6	1 1 1 1 1 1	13.8 13.4 15.0 14.5 16.2 15.6	50 50 10 10 5 5	44 45 40 41 37 38	.068 .068 .073 .073 .075 .075
P6SE12 P6SE12A P6SE13 P6SE13A P6SE15 P6SE15A	9.72 10.2 10.5 11.1 12.1 12.8	10.8 11.4 11.7 12.4 13.5 14.3	13.2 12.6 14.3 13.7 16.5 15.8	1 1 1 1 1 1	17.3 16.7 19.0 18.2 22.0 21.2	5 5 5 5 5 5	35 36 32 33 27 28	.078 .078 .081 .081 .084 .084
P6SE16 P6SE16A P6SE18 P6SE18A P6SE20 P6SE20A	12.9 13.6 14.5 15.3 16.2 17.1	14.4 15.2 16.2 17.1 18.0 19.0	17.6 16.8 19.8 18.9 22.0 21.0	1 1 1 1 1 1	23.5 22.5 26.5 25.2 29.1 27.7	5 5 5 5 5 5	26 27 23 24 21 22	.086 .086 .088 .088 .090 .090
P6SE22 P6SE22A P6SE24 P6SE24A P6SE27 P6SE27A	17.8 18.8 19.4 20.5 21.8 23.1	19.8 20.9 21.6 22.8 24.3 25.7	24.2 23.1 26.4 25.2 29.7 28.4	1 1 1 1 1 1	31.9 30.6 34.7 33.2 39.1 37.5	5 5 5 5 5 5	19 20 17 18 15 16	.092 .092 .094 .094 .096 .096
P6SE30 P6SE30A P6SE33 P6SE33A P6SE36 P6SE36A	24.3 25.6 26.8 28.2 29.1 30.8	27.0 28.5 29.7 31.4 32.4 34.2	33.0 31.5 36.3 34.7 39.6 37.8	1 1 1 1 1 1	43.5 41.4 47.7 45.7 52.0 49.9	5 5 5 5 5 5	14 14.4 12.6 13.2 11.6 12.0	.097 .097 .098 .098 .099 .099
P6SE39 P6SE39A P6SE43 P6SE43A P6SE47 P6SE47A	31.6 33.3 34.8 36.8 38.1 40.2	35.1 37.1 38.7 40.9 42.3 44.7	42.9 41.0 47.3 45.2 51.7 49.4	1 1 1 1 1 1	56.4 53.9 61.9 59.3 67.8 64.8	5 5 5 5 5 5	10.6 11.2 9.6 10.1 8.9 9.3	.100 .100 .101 .101 .101 .101
P6SE51 P6SE51A P6SE56 P6SE56A P6SE62 P6SE62A	41.3 43.6 45.4 47.8 50.2 53.0	45.9 48.5 50.4 53.2 55.8 58.9	56.1 53.6 61.6 58.8 68.2 65.1	1 1 1 1 1 1	73.5 70.1 80.5 77.0 89.0 85.0	5 5 5 5 5 5	8.2 8.6 7.4 7.8 6.8 7.1	.102 .102 .103 .103 .104 .104
P6SE68 P6SE68A P6SE75 P6SE75A P6SE82 P6SE82A	55.1 58.1 60.7 64.1 66.4 70.1	61.2 64.6 67.5 71.3 73.8 77.9	74.8 71.4 82.5 78.8 90.2 86.1	1 1 1 1 1 1	98.0 92.0 108.0 103.0 118.0 113.0	5 5 5 5 5 5	6.1 6.5 5.5 5.8 5.1 5.3	.104 .104 .105 .105 .105 .105
P6SE91 P6SE91A P6SE100 P6SE100A P6SE110 P6SE110A	73.7 77.8 81.0 85.5 89.2 94.0	81.9 86.5 90.0 95.0 99.0 105.0	100.0 95.5 110.0 105.0 121.0 111.0	1 1 1 1 1 1	131.0 125.0 144.0 137.0 158.0 152.0	5 5 5 5 5 5	4.5 4.8 4.2 4.4 3.8 4.0	.106 .106 .106 .106 .107 .107
P6SE120 P6SE120A P6SE130 P6SE130A P6SE150 P6SE150A	97.2 102.0 105.0 111.0 121.0 128.0	108.0 114.0 117.0 124.0 135.0 143.0	132.0 126.0 143.0 137.0 165.0 158.0	1 1 1 1 1 1	173.0 165.0 187.0 179.0 215.0 207.0	5 5 5 5 5 5	3.5 3.6 3.2 3.3 2.8 2.9	.107 .107 .107 .107 .108 .108
P6SE160 P6SE160A P6SE170 P6SE170A	130.0 136.0 138.0 145.0	144.0 152.0 153.0 162.0	176.0 168.0 187.0 179.0	1 1 1 1	230.0 219.0 244.0 234.0	5 5 5 5	2.6 2.7 2.5 2.6	.108 .108 .108 .108
P6SE180 P6SE180A P6SE200 P6SE200A	146.0 154.0 162.0 171.0	162.0 171.0 180.0 190.0	198.0 189.0 220.0 210.0	1 1 1 1	258.0 246.0 287.0 274.0	5 5 5 5	2.3 2.4 2.1 2.2	.108 .108 .108 .108

V_F 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_R) which should be equal to or greater than the DC or continuous peak operating voltage level.

† For bipolar types P6SE7.5C thru P6SE11C I_R MAX must be double that specified for single polarity types.

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