



SYNSEMI SEMICONDUCTOR

# P4SMA6.8A thru P4SMA220CA

Surface Mount Transient Voltage Suppressors  
Peak Pulse Power 400W Breakdown Voltage 6.8 to 220V

## Features

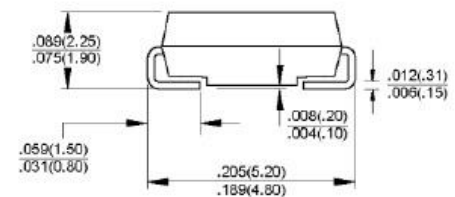
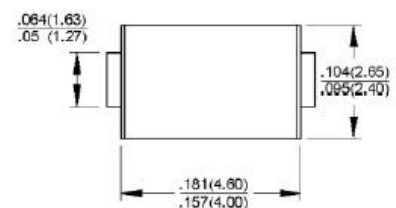
- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ◆ Optimized for LAN protection applications
- ◆ Ideal for ESD protection of data lines in accordance with IEC 1000-4-2 (IEC801-2)
- ◆ Ideal for EFT protection of data lines in accordance with IEC1000-4-4 (IEC801-4)
- ◆ Low profile package with built-in strain relief for surface mounted applications
- ◆ Glass passivated junction
- ◆ Low incremental surge resistance, excellent clamping capability
- ◆ 400W peak pulse power capability with a 10/1000us waveform, repetition rate (duty cycle): 0.01% (300W above 91V)
- ◆ Very Fast response time
- ◆ High temperature soldering guaranteed: 250°C/10 seconds at terminals

## Mechanical Data

- ◆ Case: JEDEC DO-214AC molded plastic over passivated chip
- ◆ Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- ◆ Polarity: For uni-directional types the band denotes the cathode, which is positive with respect to the anode under normal TVS operation
- ◆ Mounting Position: Any
- ◆ Weight: 0.002oz., 0.064g



DO-214AC (SMA)



Dimensions in inches and (millimeters)

## Devices for Bidirectional Applications

For bi-directional devices, use suffix CA (e.g. P4SMA10CA). Electrical characteristics apply in both directions.

## Maximum Ratings and Characteristics

(T<sub>A</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000us waveform <sup>(1)(2)</sup> (Fig. 1)	P <sub>PPM</sub>	400	W
Peak pulse current with a 10/1000us waveform <sup>(1)</sup> (Fig. 3)	I <sub>PPM</sub>	See Next Table	A
Power dissipation on infinite heatsink, T <sub>A</sub> = 50°C	P <sub>M(∞)</sub>	1.0	W
Peak forward surge current, 8.3ms single half sine-wave uni-directional only <sup>(3)</sup>	I <sub>FSM</sub>	40	A
Thermal resistance junction to ambient air <sup>(3)</sup>	R <sub>θJA</sub>	120	°C/W
Thermal resistance junction to leads	R <sub>θJL</sub>	30	°C/W
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

- Notes:**
1. Non-repetitive current pulse, per Fig. 3 and derated above T<sub>A</sub> = 25°C per Fig. 2. Rating is 300W above 91V.
  2. Mounted on 0.2 x 0.2" (5.0 x 5.0mm) copper pads to each terminal
  3. Mounted on minimum recommended pad layout

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## Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.  $V_F=3.5V$  at  $I_F=25A$  (uni-directional only)

Device type	Device marking code		Breakdown voltage $V_{(BR)}$ (Volts) <sup>(1)</sup>		Test current at $I_F$ (mA)	Stand-off voltage $V_{WM}$ (Volts)	Maximum reverse leakage at $V_{WM}$ $I_{R0}$ <sup>(3)</sup> (uA)	Maximum peak pulse current $I_{PPM}$ <sup>(2)</sup> (A)	Maximum clamping voltage at $I_{PPM}$ $V_C$ (Volts)	Maximum temperature coefficient of $V_{(BR)}$ (% / °C)
	UNI	BI	Min.	Max.						
P4SMA6.8A	6V8A	6V8C	6.45	7.14	10	5.80	1000	38.1	10.5	0.057
P4SMA7.5A	7V5A	7V5C	7.13	7.88	10	6.40	500	35.4	11.3	0.061
P4SMA8.2A	8V2A	8V2C	7.79	8.61	10	7.02	200	33.1	12.1	0.065
P4SMA9.1A	9V1A	9V1C	8.65	9.55	1.0	7.78	50	29.9	13.4	0.068
P4SMA10A	10A	10C	9.50	10.5	1.0	8.55	10	27.6	14.5	0.073
P4SMA11A	11A	11C	10.5	11.6	1.0	9.40	5.0	25.6	15.6	0.075
P4SMA12A	12A	12C	11.4	12.6	1.0	10.2	1.0	24.0	16.7	0.078
P4SMA13A	13A	13C	12.4	13.7	1.0	11.1	1.0	22.0	18.2	0.081
P4SMA15A	15A	15C	14.3	15.8	1.0	12.8	1.0	18.9	21.2	0.084
P4SMA16A	16A	16C	15.2	16.8	1.0	13.6	1.0	17.8	22.5	0.086
P4SMA18A	18A	18C	17.1	18.9	1.0	15.3	1.0	15.9	25.2	0.088
P4SMA20A	20A	20C	19.0	21.0	1.0	17.1	1.0	14.4	27.7	0.090
P4SMA22A	22A	22C	20.9	23.1	1.0	18.8	1.0	13.1	30.6	0.092
P4SMA24A	24A	24C	22.8	25.2	1.0	20.5	1.0	12.0	33.2	0.094
P4SMA27A	27A	27C	25.7	28.4	1.0	23.1	1.0	10.7	37.5	0.096
P4SMA30A	30A	30C	28.5	31.5	1.0	25.6	1.0	9.7	41.4	0.097
P4SMA33A	33A	33C	31.4	34.7	1.0	28.2	1.0	8.8	45.7	0.098
P4SMA36A	36A	36C	34.2	37.8	1.0	30.8	1.0	8.0	49.9	0.099
P4SMA39A	39A	39C	37.1	41.0	1.0	33.3	1.0	7.4	53.9	0.100
P4SMA43A	43A	43C	40.9	45.2	1.0	36.8	1.0	6.7	59.3	0.101
P4SMA47A	47A	47C	44.7	49.4	1.0	40.2	1.0	6.2	64.8	0.101
P4SMA51A	51A	51C	48.5	53.6	1.0	43.6	1.0	5.7	70.1	0.102
P4SMA56A	56A	56C	53.2	58.8	1.0	47.8	1.0	5.2	77.0	0.103
P4SMA62A	62A	62C	58.9	65.1	1.0	53.0	1.0	4.7	85.0	0.104
P4SMA68A	68A	68C	64.6	71.4	1.0	58.1	1.0	4.3	92.0	0.104
P4SMA75A	75A	75C	71.3	78.8	1.0	64.1	1.0	3.9	104	0.105
P4SMA82A	82A	82C	77.9	86.1	1.0	70.1	1.0	3.5	113	0.105
P4SMA91A	91A	91C	86.5	95.5	1.0	77.8	1.0	3.2	125	0.106
P4SMA100A	100A	100C	95.0	105	1.0	85.5	1.0	2.2	137	0.106
P4SMA110A	110A	110C	105	116	1.0	94.0	1.0	2.0	152	0.107
P4SMA120A	120A	120C	114	126	1.0	102	1.0	1.8	165	0.107
P4SMA130A	130A	130C	124	137	1.0	111	1.0	1.7	179	0.107
P4SMA150A	150A	150C	143	158	1.0	128	1.0	1.4	207	0.106
P4SMA160A	160A	160C	152	168	1.0	136	1.0	1.4	219	0.108
P4SMA170A	170A	170C	162	179	1.0	145	1.0	1.3	234	0.108
P4SMA180A	180A	180C	171	189	1.0	154	1.0	1.2	246	0.108
P4SMA200A	200A	200C	190	210	1.0	171	1.0	1.1	274	0.108
P4SMA220A	220A	220C	209	231	1.0	185	1.0	0.9	328	0.108

- Notes:**
1.  $V_{(BR)}$  measured after  $I_F$  applied for 300us,  $I_F$ =square wave pulse or equivalent
  2. Surge current waveform per Fig. 3 and derate per Fig. 2
  3. All terms and symbols are consistent with ANSI/IEEE CA62.35
  4. For bidirectional types with  $V_R$  10 Volts and less, the  $I_R$  limit is doubled

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## RATINGS AND CHARACTERISTIC CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

