



P4SMA SERIES

Surface Mount Transient Voltage Suppressor



Voltage Range
6.8 to 200 Volts
400 Watts Peak Power

Features

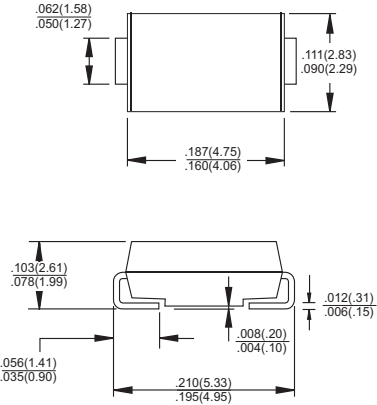
- ✧ For surface mounted application in order to optimize board space
- ✧ Low profile package
- ✧ Built-in strain relief
- ✧ Glass passivated junction
- ✧ Excellent clamping capability
- ✧ Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- ✧ Typical I_R less than $1 \mu A$ above 10V
- ✧ High temperature soldering guaranteed:
260°C / 10 seconds at terminals
- ✧ Plastic material used carries Underwriters Laboratory
Flammability Classification 94V-0
- ✧ 300 watts peak pulse power capability with a 10 x 1000 us
waveform by 0.01% duty cycle

Mechanical Data

- ✧ Case: Molded plastic
- ✧ Terminals: Solder plated
- ✧ Polarity: Indicated by cathode band
- ✧ Standard packaging: 12mm tape (EIA STD RS-481)

1. Weight: 0.064 gram

SMA/DO-214AC



Dimensions in inches and (millimeters)

Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

| Type Number | Symbol | Value | Units |
|--|----------------|--------------|-------|
| Peak Power Dissipation at $T_A=25^\circ C$, $T_p=1ms$ (Note 1) | P_{PK} | Minimum 400 | Watts |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 2, 3) | I_{FSM} | 40.0 | Amps |
| Maximum Instantaneous Forward Voltage at 25.0A for Unidirectional Only | V_F | 3.5 | Volts |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to + 150 | °C |

Notes: 1. Non-repetitive Current Pulse Per Fig. 3 and Derated above $T_A=25^\circ C$ Per Fig. 2.

2. Mounted on $5.0mm^2$ (.013 mm Thick) Copper Pads to Each Terminal.

3. 8.3ms Single Half Sine-wave or Equivalent Square Wave, Duty Cycle=4 Pulses Per Minute Maximum.

Devices for Bipolar Applications

1. For Bidirectional Use C or CA Suffix for Types P4SMA 6.8 through Types P4SMA200A.

2. Electrical Characteristics Apply in Both Directions.

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| Device | Device Marking Code | Breakdown Voltage | | Test Current @I _T (mA) | Stand-Off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (uA) | Maximum Peak Pulse Current I _{PPM} (Note 2)(Amps) | Maximum Clamping Voltage at I _{PPM} V _C (Volts) | Maximum Temperature Coefficient of V _{BR} (%/ °C) |
|-----------|---------------------|----------------------------------|-------|-----------------------------------|---|--|--|---|--|
| | | V _{BR} (Volts) (Note 1) | | | | | | | |
| | | Min | Max | | | | | | |
| P4SMA6.8 | ADJ | 6.12 | 7.48 | 10 | 5.50 | 1000 | 38 | 10.8 | 0.057 |
| P4SMA6.8A | AEJ | 6.46 | 7.14 | 10 | 5.80 | 1000 | 40 | 10.5 | 0.057 |
| P4SMA7.5 | AFJ | 6.75 | 8.25 | 10 | 6.05 | 500 | 35 | 11.7 | 0.061 |
| P4SMA7.5A | AGJ | 7.13 | 7.88 | 10 | 6.40 | 500 | 37 | 11.3 | 0.061 |
| P4SMA8.2 | AHJ | 7.38 | 9.02 | 10 | 6.63 | 200 | 33 | 12.5 | 0.065 |
| P4SMA8.2A | AKJ | 7.79 | 8.61 | 10 | 7.02 | 200 | 34 | 12.1 | 0.065 |
| P4SMA9.1 | ALJ | 8.19 | 10.0 | 1.0 | 7.37 | 50 | 30 | 13.8 | 0.068 |
| P4SMA9.1A | AMJ | 8.65 | 9.55 | 1.0 | 7.78 | 50 | 31 | 13.4 | 0.068 |
| P4SMA10 | ANJ | 9.00 | 11.0 | 1.0 | 8.10 | 10 | 28 | 15.0 | 0.073 |
| P4SMA10A | APJ | 9.50 | 10.5 | 1.0 | 8.55 | 10 | 29 | 14.5 | 0.073 |
| P4SMA11 | AQJ | 9.90 | 12.1 | 1.0 | 8.92 | 5.0 | 26 | 16.2 | 0.075 |
| P4SMA11A | ARJ | 10.5 | 11.6 | 1.0 | 9.40 | 5.0 | 27 | 15.6 | 0.075 |
| P4SMA12 | ASJ | 10.8 | 13.2 | 1.0 | 9.72 | 5.0 | 24 | 17.3 | 0.078 |
| P4SMA12A | ATJ | 11.4 | 12.6 | 1.0 | 10.2 | 5.0 | 25 | 16.7 | 0.078 |
| P4SMA13 | AUJ | 11.7 | 14.3 | 1.0 | 10.5 | 5.0 | 22 | 19.0 | 0.081 |
| P4SMA13A | AVJ | 12.4 | 13.7 | 1.0 | 11.1 | 5.0 | 23 | 18.2 | 0.081 |
| P4SMA15 | AWJ | 13.5 | 16.5 | 1.0 | 12.1 | 5.0 | 19 | 22.0 | 0.084 |
| P4SMA15A | AXJ | 14.3 | 15.8 | 1.0 | 12.8 | 5.0 | 20 | 21.2 | 0.084 |
| P4SMA16 | AYJ | 14.4 | 17.6 | 1.0 | 12.9 | 5.0 | 17.8 | 23.5 | 0.086 |
| P4SMA16A | AZJ | 15.2 | 16.8 | 1.0 | 13.6 | 5.0 | 18.6 | 22.5 | 0.086 |
| P4SMA18 | BDJ | 16.2 | 19.8 | 1.0 | 14.5 | 5.0 | 16 | 26.5 | 0.088 |
| P4SMA18A | BEJ | 17.1 | 18.9 | 1.0 | 15.3 | 5.0 | 16.5 | 25.5 | 0.088 |
| P4SMA20 | BFJ | 18.0 | 22.0 | 1.0 | 16.2 | 5.0 | 14 | 29.1 | 0.090 |
| P4SMA20A | BGJ | 19.0 | 21.0 | 1.0 | 17.1 | 5.0 | 15 | 27.7 | 0.090 |
| P4SMA22 | BHJ | 19.8 | 24.2 | 1.0 | 17.8 | 5.0 | 13 | 31.9 | 0.092 |
| P4SMA22A | BKJ | 20.9 | 23.1 | 1.0 | 18.8 | 5.0 | 13.7 | 30.6 | 0.092 |
| P4SMA24 | BLJ | 21.6 | 26.4 | 1.0 | 19.4 | 5.0 | 12 | 34.7 | 0.094 |
| P4SMA24A | BMJ | 22.8 | 25.2 | 1.0 | 20.5 | 5.0 | 12.6 | 33.2 | 0.094 |
| P4SMA27 | BNJ | 24.3 | 29.7 | 1.0 | 21.8 | 5.0 | 10.7 | 39.1 | 0.096 |
| P4SMA27A | BPJ | 25.7 | 28.4 | 1.0 | 23.1 | 5.0 | 11.0 | 37.5 | 0.096 |
| P4SMA30 | BQJ | 27.0 | 33.0 | 1.0 | 24.3 | 5.0 | 9.6 | 43.5 | 0.097 |
| P4SMA30A | BRJ | 28.5 | 31.5 | 1.0 | 25.6 | 5.0 | 10 | 41.4 | 0.097 |
| P4SMA33 | BSJ | 29.7 | 36.3 | 1.0 | 26.8 | 5.0 | 8.8 | 47.7 | 0.098 |
| P4SMA33A | BTJ | 31.4 | 34.7 | 1.0 | 28.2 | 5.0 | 9.0 | 45.7 | 0.098 |
| P4SMA36 | BUJ | 32.4 | 39.6 | 1.0 | 29.1 | 5.0 | 8.0 | 52.0 | 0.099 |
| P4SMA36A | BVJ | 34.2 | 37.8 | 1.0 | 30.8 | 5.0 | 8.4 | 49.9 | 0.099 |
| P4SMA39 | BWJ | 35.1 | 42.9 | 1.0 | 31.6 | 5.0 | 7.4 | 56.4 | 0.100 |
| P4SMA39A | BXJ | 37.1 | 41.0 | 1.0 | 33.3 | 5.0 | 7.7 | 53.9 | 0.100 |
| P4SMA43 | BYJ | 38.7 | 47.3 | 1.0 | 34.8 | 5.0 | 6.7 | 61.9 | 0.101 |
| P4SMA43A | BZJ | 40.9 | 45.2 | 1.0 | 36.8 | 5.0 | 7.0 | 59.3 | 0.101 |
| P4SMA47 | CDJ | 42.3 | 51.7 | 1.0 | 38.1 | 5.0 | 6.2 | 67.8 | 0.101 |
| P4SMA47A | CEJ | 44.7 | 49.4 | 1.0 | 40.2 | 5.0 | 6.4 | 64.8 | 0.101 |
| P4SMA51 | CFJ | 45.9 | 56.1 | 1.0 | 41.3 | 5.0 | 5.7 | 73.5 | 0.102 |
| P4SMA51A | CGJ | 48.5 | 53.6 | 1.0 | 43.6 | 5.0 | 6.0 | 70.1 | 0.102 |
| P4SMA56 | CHJ | 50.4 | 61.6 | 1.0 | 45.4 | 5.0 | 5.2 | 80.5 | 0.103 |
| P4SMA56A | CKJ | 53.2 | 58.8 | 1.0 | 47.8 | 5.0 | 5.4 | 77.0 | 0.103 |
| P4SMA62 | CLJ | 55.8 | 68.2 | 1.0 | 50.2 | 5.0 | 4.7 | 89.0 | 0.104 |
| P4SMA62A | CMJ | 58.9 | 65.1 | 1.0 | 53.0 | 5.0 | 5.0 | 85.0 | 0.104 |
| P4SMA68 | CNJ | 61.2 | 74.8 | 1.0 | 55.1 | 5.0 | 4.2 | 98.0 | 0.104 |
| P4SMA68A | CPJ | 64.6 | 71.4 | 1.0 | 58.1 | 5.0 | 4.5 | 92.0 | 0.104 |
| P4SMA75 | CQJ | 67.5 | 82.5 | 1.0 | 60.7 | 5.0 | 3.8 | 108.0 | 0.105 |
| P4SMA75A | CRJ | 71.3 | 78.8 | 1.0 | 64.1 | 5.0 | 4.0 | 103.0 | 0.105 |
| P4SMA82 | CSJ | 73.8 | 90.2 | 1.0 | 66.4 | 5.0 | 3.5 | 118.0 | 0.105 |
| P4SMA82A | CTJ | 77.9 | 86.1 | 1.0 | 70.1 | 5.0 | 3.7 | 113.0 | 0.105 |
| P4SMA91 | CUJ | 81.9 | 100.0 | 1.0 | 73.7 | 5.0 | 3.2 | 131.0 | 0.106 |
| P4SMA91A | CVJ | 86.5 | 95.5 | 1.0 | 77.8 | 5.0 | 3.3 | 125.0 | 0.106 |

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| Device | Device Marking Code | Breakdown Voltage | | Test Current @I _T (mA) | Stand-Off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (uA) | Maximum Peak Pulse Current IPPM (Note 2)(Amps) | Maximum Clamping Voltage at IPPM V _C (Volts) | Maximum Temperature Coefficient of V _{BR} (% / °C) |
|-----------|---------------------|----------------------------------|-------|-----------------------------------|---|--|--|---|---|
| | | V _{BR} (Volts) (Note 1) | | | | | | | |
| | | Min | Max | | | | | | |
| P4SMA100 | CWJ | 90.0 | 110.0 | 1.0 | 81.0 | 5.0 | 2.9 | 144.0 | 0.106 |
| P4SMA100A | CXJ | 95.0 | 105.0 | 1.0 | 85.5 | 5.0 | 3.0 | 137.0 | 0.106 |
| P4SMA110 | CYJ | 99.0 | 121.0 | 1.0 | 89.2 | 5.0 | 2.6 | 158.0 | 0.107 |
| P4SMA110A | CZJ | 105.0 | 116.0 | 1.0 | 94.0 | 5.0 | 2.7 | 152.0 | 0.107 |
| P4SMA120 | RDJ | 108.0 | 132.0 | 1.0 | 97.2 | 5.0 | 2.4 | 173.0 | 0.107 |
| P4SMA120A | REJ | 114.0 | 126.0 | 1.0 | 102.0 | 5.0 | 2.5 | 165.0 | 0.107 |
| P4SMA130 | RFJ | 117.0 | 143.0 | 1.0 | 105.0 | 5.0 | 2.2 | 187.0 | 0.107 |
| P4SMA130A | RGJ | 124.0 | 137.0 | 1.0 | 111.0 | 5.0 | 2.3 | 179.0 | 0.107 |
| P4SMA150 | RHJ | 135.0 | 165.0 | 1.0 | 121.0 | 5.0 | 1.9 | 215.0 | 0.108 |
| P4SMA150A | RKJ | 143.0 | 158.0 | 1.0 | 128.0 | 5.0 | 2.0 | 207.0 | 0.108 |
| P4SMA160 | RLJ | 144.0 | 176.0 | 1.0 | 130.0 | 5.0 | 1.8 | 230.0 | 0.108 |
| P4SMA160A | RMJ | 152.0 | 168.0 | 1.0 | 136.0 | 5.0 | 1.9 | 219.0 | 0.108 |
| P4SMA170 | RNJ | 153.0 | 187.0 | 1.0 | 138.0 | 5.0 | 1.7 | 244.0 | 0.108 |
| P4SMA170A | RPJ | 162.0 | 179.0 | 1.0 | 145.0 | 5.0 | 1.8 | 234.0 | 0.108 |
| P4SMA180 | RQJ | 162.0 | 198.0 | 1.0 | 146.0 | 5.0 | 1.6 | 258.0 | 0.108 |
| P4SMA180A | RRJ | 171.0 | 189.0 | 1.0 | 154.0 | 5.0 | 1.7 | 246.0 | 0.108 |
| P4SMA200 | RSJ | 180.0 | 220.0 | 1.0 | 162.0 | 5.0 | 1.4 | 287.0 | 0.108 |
| P4SMA200A | RTJ | 190.0 | 210.0 | 1.0 | 171.0 | 5.0 | 1.51 | 274.0 | 0.108 |

Notes:

1. V_{BR} measured after I_T applied for 300us, I_T=square wave pulse or equivalent.
2. Surge current waveform per Figure 3 and derate per Figure 2.
3. For bipolar types having V_{WM} of 10 volts and under, the I_D limit is doubled.
4. For bidirectional use C or CA suffix for types P4SMA6.8 through P4SMA200A.
5. All terms and symbols are consistent with ANSI/IEEE C62.35.

RATINGS AND CHARACTERISTIC CURVES (P4SMA SERIES)

FIG.1- PEAK PULSE POWER RATING CURVE

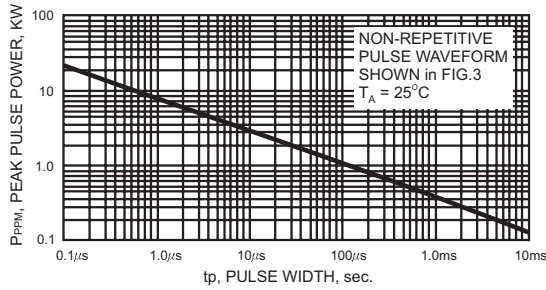


FIG.2- PULSE DERATING CURVE

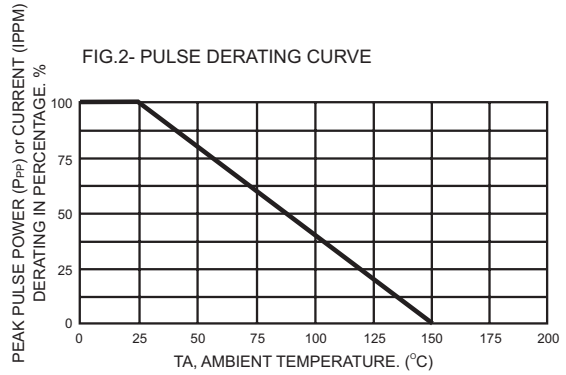


FIG.3- PULSE WAVEFORM

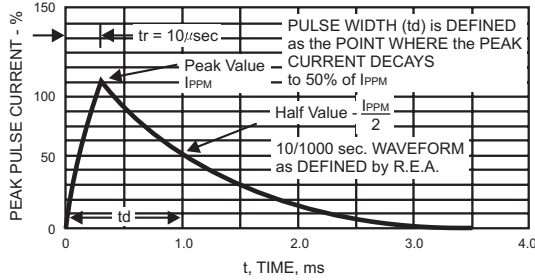


FIG.4- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

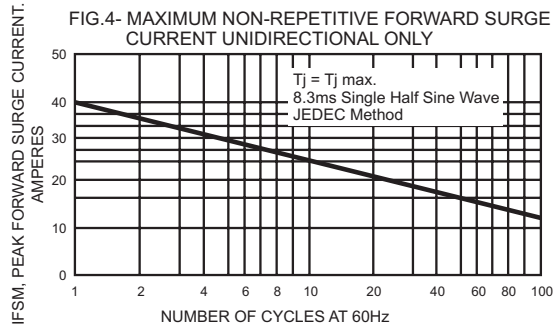


FIG.5- TYPICAL REVERSE LEAKAGE CHARACTERISTICS

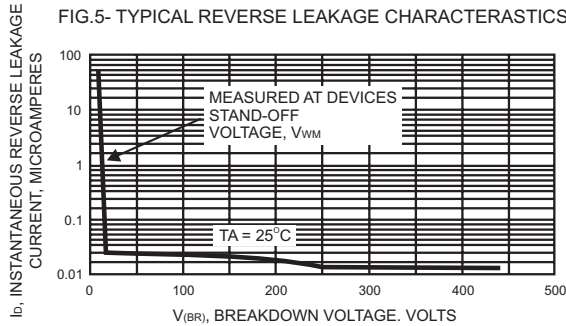


FIG.6- TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

