



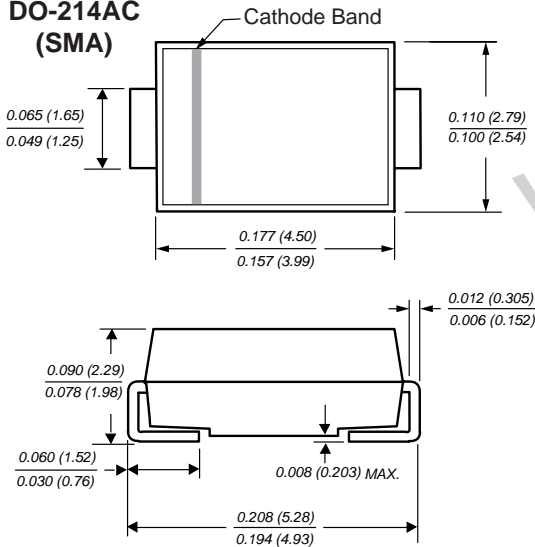
Surface Mount TRANSZORB® Transient Voltage Suppressors

V_(BR) Unidirectional
6.8 to 540V

V_(BR) Bidirectional
6.8 to 220V

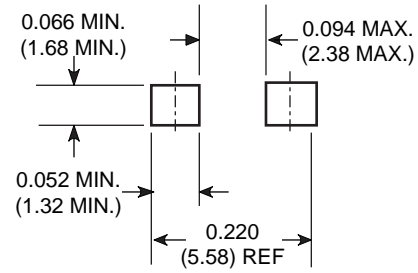
Peak Pulse Power 400W

**DO-214AC
(SMA)**



Extended
Voltage Range*

Mounting Pad Layout



Dimensions in inches
and (millimeters)

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 10/1000µs waveform, repetition rate (duty cycle): 0.01% (300W above 91V)
- Very Fast response time

* Voltages above 220V available Q3-2002

Mechanical Data

Case: JEDEC DO-214AC molded plastic over passivated chip

Terminals: Solder plated, solderable per MIL-STD-750, Method 2026. High temperature soldering guaranteed: 250°C/10 seconds at terminals.

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

Packaging Codes – Options (Antistatic):

- 51 – 1K per Bulk box, 20K/carton
- 61 – 1.8K per 7" plastic Reel (12mm tape), 36K/carton
- 5A – 7.5K per 13" plastic Reel (12mm tape), 75K/carton

Devices for Bidirectional Applications

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

Maximum Ratings & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter | Symbol | Value | Unit |
|--|-----------------------------------|----------------|------|
| Peak power dissipation with a 10/1000µs waveform ⁽¹⁾⁽²⁾ (Fig. 1) | PPPM | 400 | W |
| Peak pulse current with a 10/1000µs waveform ⁽¹⁾ (Fig. 3) | IPPM | See Next Table | A |
| Power dissipation on infinite heatsink, T _A = 50°C | PM(AV) | 1.0 | W |
| Peak forward surge current 8.3ms single half sine-wave uni-directional only ⁽²⁾ | IFSM | 40 | A |
| Thermal resistance junction to ambient air ⁽³⁾ | R _{θJA} | 120 | °C/W |
| Thermal resistance junction to leads | R _{θJL} | 30 | °C/W |
| Operating junction and storage temperature range | T _J , T _{STG} | -65 to +150 | °C |

Notes: (1) Non-repetitive current pulse, per Fig. 3 and derated above T_A = 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

P4SMA6.8A Series



Vishay Semiconductors
formerly General Semiconductor

Electrical Characteristics Ratings at 25°C ambient temperature unless otherwise specified. $V_f = 3.5V$ at $I_f = 25A$ (uni-directional only)

| General Semiconductor Part Number | Device Marking Code | | Breakdown Voltage $V_{(BR)}$ at $I_T^{(1)}$ (V) | | Test Current I_T (mA) | Stand-off Voltage V_{WM} (V) | Maximum Reverse Leakage at V_{WM} $I_D^{(4)}$ (μA) | Maximum Peak Pulse Current $I_{PPM}^{(2)}$ (A) | Maximum Clamping Voltage at I_{PPM} V_c (V) | Maximum Temp. 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 | 0.089 |
| 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 | 0.09 |
| 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 |
| P4SMA250A | 250A | — | 237 | 263 | 1.0 | 214 | 1.0 | 0.87 | 344 | 0.110 |
| P4SMA300A | 300A | — | 285 | 315 | 1.0 | 256 | 1.0 | 0.73 | 414 | 0.110 |
| P4SMA350A | 350A | — | 333 | 368 | 1.0 | 300 | 1.0 | 0.62 | 482 | 0.110 |
| P4SMA400A | 400A | — | 380 | 420 | 1.0 | 342 | 1.0 | 0.55 | 548 | 0.110 |
| P4SMA440A | 440A | — | 418 | 462 | 1.0 | 376 | 1.0 | 0.50 | 602 | 0.110 |
| P4SMA480A | 480A | — | 456 | 504 | 1.0 | 408 | 1.0 | 0.46 | 658 | 0.110 |
| P4SMA510A | 510A | — | 485 | 535 | 1.0 | 434 | 1.0 | 0.43 | 698 | 0.110 |
| P4SMA540A | 540A | — | 513 | 567 | 1.0 | 459 | 1.0 | 0.41 | 740 | 0.110 |

- Notes:** (1) Pulse test: $t_p \leq 50ms$
(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_D limit is doubled

Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

Fig. 1 – Peak Pulse Power Rating Curve

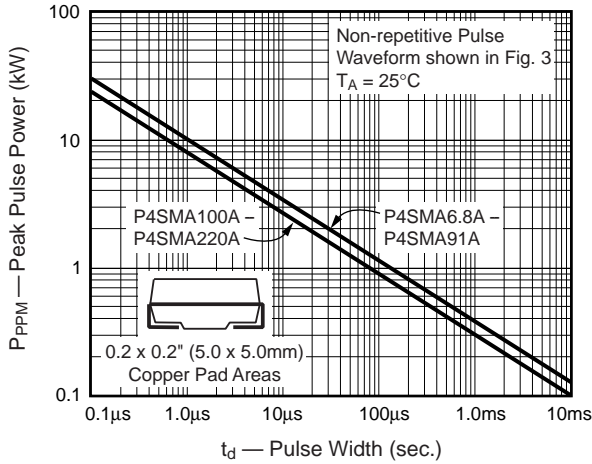


Fig. 2 – Pulse Derating Curve

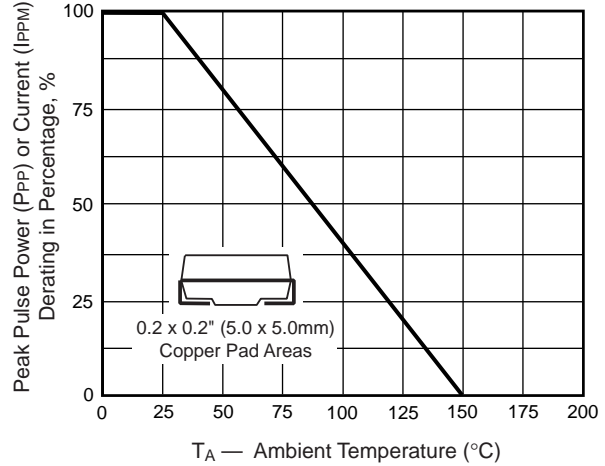


Fig. 3 – Pulse Waveform

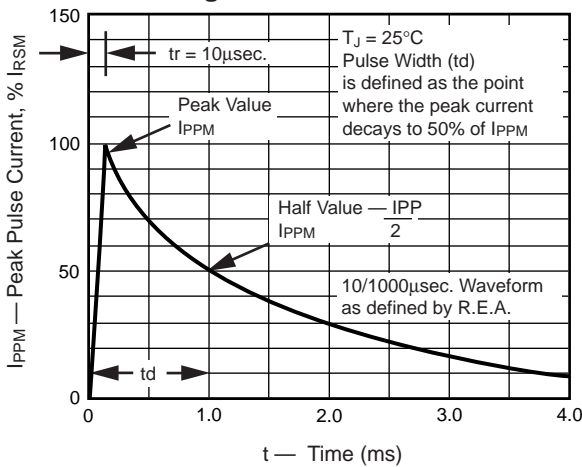


Fig. 4 – Typical Junction Capacitance

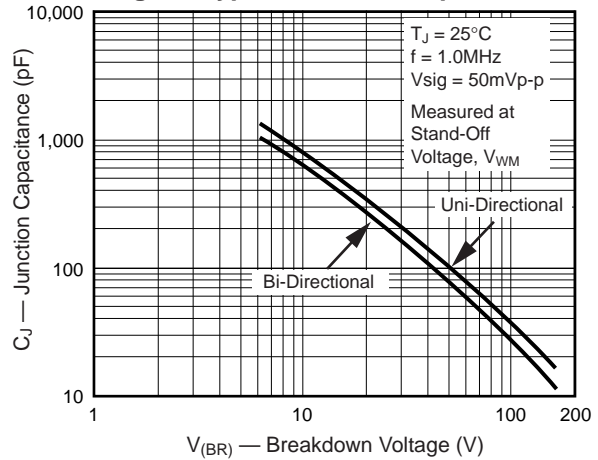


Fig. 5 – Typical Transient Thermal Impedance

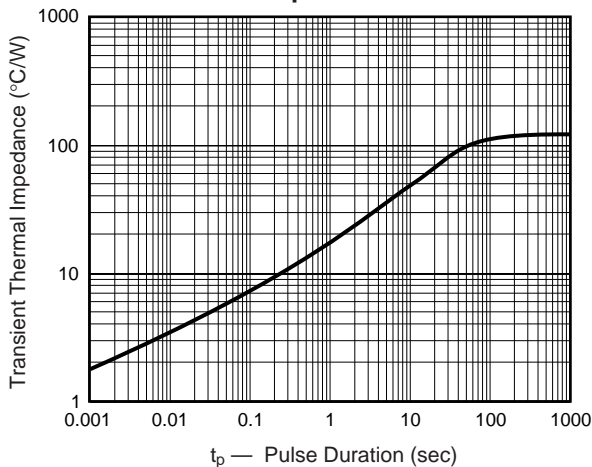


Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

