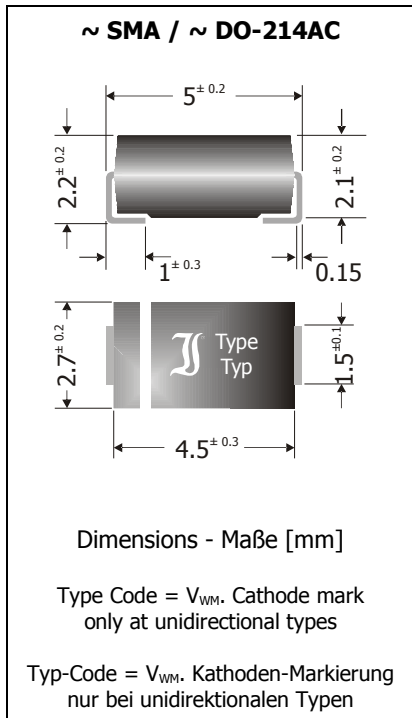


| | | |
|---|--|--|
| P4SMAJ5.0 ... P4SMAJ170CA SMD Transient Voltage Suppressor Diodes SMD Spannungs-Begrenzer-Dioden | P_{PPM} = 400W P_{M(AV)} = 1.0 W T_{jmax} = 150°C | V_{WM} = 5.0 ... 170 V V_{BR} = 6.8 ... 200 V |
|---|--|--|

Version 2016-05-30



Typical Applications

Over-voltage protection
 ESD protection
 Free-wheeling diodes
 Commercial grade ¹⁾

Features

Uni- and Bidirectional versions
 Peak pulse power of 400 W (10/1000 μs waveform)
 Very fast response time
 Further available: P4SMA220...550CA having V_{BR} = 220 ... 550 V
 Compliant to RoHS, REACH, Conflict Minerals ¹⁾



Mechanical Data ¹⁾

Taped and reeled 7500 / 13"
 Weight approx. 0.07 g
 Case material UL 94V-0
 Solder & assembly conditions 260°C/10s
 MSL = 1

Typische Anwendungen

Schutz gegen Überspannung
 ESD-Schutz
 Freilauf-Dioden
 Standardausführung ¹⁾

Besonderheiten

Uni- und Bidirektionale Versionen
 400 W Impuls-Verlustleistung (10/1000 μs Strom-Impuls)
 Sehr schnelle Ansprechzeit
 Auch erhältlich: P4SMA220...550CA mit V_{BR} = 220 ... 550V
 Konform zu RoHS, REACH, Konfliktmineralien ¹⁾

Mechanische Daten ¹⁾

Gegurtet auf Rolle
 Gewicht ca.
 Gehäusematerial
 Löt- und Einbaubedingungen

Searchdatasheet.com

For bidirectional types (suffix "C" or "CA"), electrical characteristics apply in both directions.
 Für bidirektionale Dioden (mit Suffix "C" oder "CA") gelten die elektrischen Werte in beiden Richtungen.

Maximum ratings ²⁾

Grenzwerte ²⁾

| | | | |
|--|-----------------------|--------------------|---------------------|
| Peak pulse power dissipation (10/1000 μs waveform) Impuls-Verlustleistung (Strom-Impuls 10/1000 μs) | T _A = 25°C | P _{PPM} | 400 W ³⁾ |
| Steady state power dissipation – Verlustleistung im Dauerbetrieb | T _T = 75°C | P _{M(AV)} | 1 W |
| Peak forward surge current (half sine) – Stoßstrom (Sinushalbw.) 60 Hz | T _A = 25°C | I _{FSM} | 40 A ⁴⁾ |
| Junction temperature – Sperrschichttemperatur | | T _j | -50...+150°C |
| Storage temperature – Lagerungstemperatur | | T _s | -50...+150°C |

Characteristics

Kennwerte

| | | | |
|--|--|------------------|------------------------|
| Max. instantaneous forward voltage Augenblickswert der Durchlass-Spannung | I _F = 25 A V _{BR} ≤ 200 V | V _F | < 3.5 V ⁴⁾ |
| Thermal resistance junction to ambient – Wärmewiderstand Sperrschicht – Umgebung | | R _{thA} | < 70 K/W ⁵⁾ |
| Thermal resistance junction to terminal – Wärmewiderstand Sperrschicht – Anschluss | | R _{thT} | < 30 K/W |

1 Please note the [detailed information on our website](#) or at the beginning of the data book
 Bitte beachten Sie die [detaillierten Hinweise auf unserer Internetseite](#) bzw. am Anfang des Datenbuches

2 T_j = 25°C unless otherwise specified – T_j = 25°C wenn nicht anders angegeben

3 Non-repetitive pulse see curve I_{pp} = f(t) / P_{pp} = f(t)
 Höchstzulässiger Spitzenwert eines einmaligen Impulses, siehe Kurve I_{pp} = f(t) / P_{pp} = f(t)

4 Unidirectional diodes only – Nur für unidirektionale Dioden

5 Mounted on P.C. board with 25 mm² copper pads at each terminal
 Montage auf Leiterplatte mit 25 mm² Kupferbelag (Lötpad) an jedem Anschluss

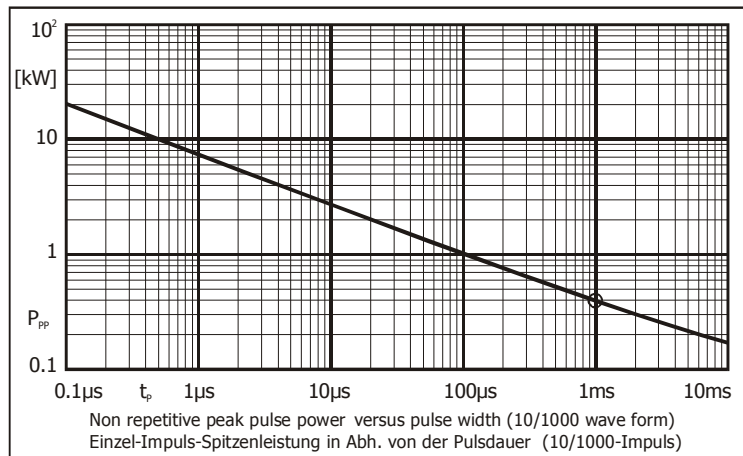
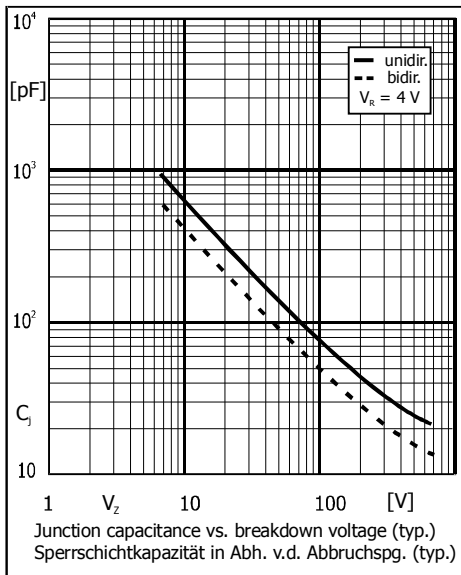
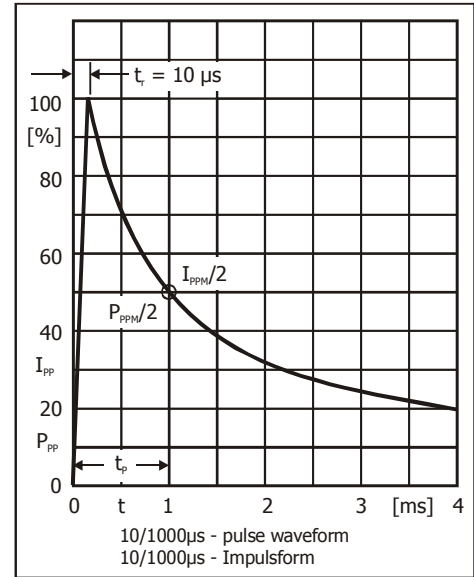
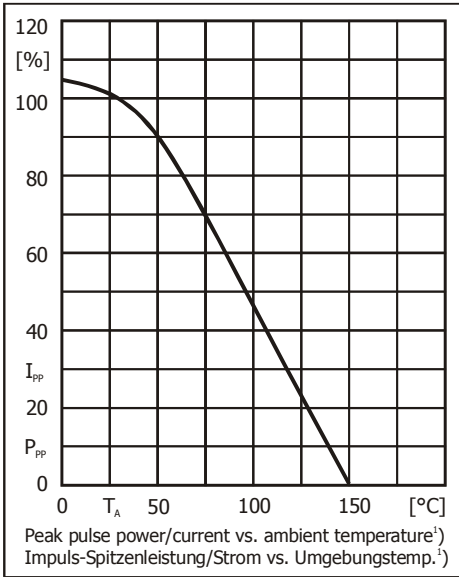
Characteristics (T_j = 25°C)
Kennwerte (T_j = 25°C)

| Type Typ | | Stand-off voltage Sperrspannung | Max. rev. current Max. Sperrstrom at / bei V _{WM} ¹⁾ | Breakdown voltage at I _T = 1 mA Abbruch-Spannung bei I _T = 1 mA *) at / bei I _T = 10 mA | | Max. clamping voltage Max. Begrenzer-Spannung at / bei I _{PPM} (10/1000 μs) | |
|----------------|---------------|---------------------------------------|--|--|-------------------------|--|----------------------|
| unidirectional | bidirectional | V _{WM} [V] | I _D [μA] | V _{BR} min [V] | V _{BR} max [V] | V _C [V] | I _{PPM} [A] |
| P4SMAJ5.0 | P4SMAJ5.0C | 5.0 | 800 | 6.4 *) | 7.8 *) | 10.3 | 38.8 |
| P4SMAJ5.0A | P4SMAJ5.0CA | 5.0 | 800 | 6.4 *) | 7.0 *) | 9.2 | 43.5 |
| P4SMAJ6.5 | P4SMAJ6.5C | 6.5 | 500 | 7.2 *) | 8.8 *) | 12.3 | 32.5 |
| P4SMAJ6.5A | P4SMAJ6.5CA | 6.5 | 500 | 7.2 *) | 8.0 *) | 11.2 | 35.7 |
| P4SMAJ7.0 | P4SMAJ7.0C | 7.0 | 200 | 7.8 *) | 9.5 *) | 13.3 | 30.1 |
| P4SMAJ7.0A | P4SMAJ7.0CA | 7.0 | 200 | 7.8 *) | 8.7 *) | 12.0 | 33.3 |
| P4SMAJ7.5 | P4SMAJ7.5C | 7.5 | 100 | 8.3 | 10.1 | 14.3 | 28.0 |
| P4SMAJ7.5A | P4SMAJ7.5CA | 7.5 | 100 | 8.3 | 9.2 | 12.9 | 31.0 |
| P4SMAJ8.0 | P4SMAJ8.0C | 8.0 | 50 | 8.9 | 10.9 | 15.0 | 26.7 |
| P4SMAJ8.0A | P4SMAJ8.0CA | 8.0 | 50 | 8.9 | 9.9 | 13.6 | 29.4 |
| P4SMAJ8.5 | P4SMAJ8.5C | 8.5 | 10 | 9.4 | 11.5 | 15.9 | 25.2 |
| P4SMAJ8.5A | P4SMAJ8.5CA | 8.5 | 10 | 9.4 | 10.4 | 14.4 | 27.8 |
| P4SMAJ9.0 | P4SMAJ9.0C | 9.0 | 5 | 10.0 | 12.2 | 16.9 | 23.7 |
| P4SMAJ9.0A | P4SMAJ9.0CA | 9.0 | 5 | 10.0 | 11.1 | 15.4 | 26.0 |
| P4SMAJ10 | P4SMAJ10C | 10 | 5 | 11.1 | 13.5 | 18.8 | 21.3 |
| P4SMAJ10A | P4SMAJ10CA | 10 | 5 | 11.1 | 12.3 | 17.0 | 23.5 |
| P4SMAJ11 | P4SMAJ11C | 11 | 5 | 12.2 | 14.9 | 20.1 | 19.9 |
| P4SMAJ11A | P4SMAJ11CA | 11 | 5 | 12.2 | 13.5 | 18.2 | 22.0 |
| P4SMAJ12 | P4SMAJ12C | 12 | 5 | 13.3 | 16.2 | 22.0 | 18.2 |
| P4SMAJ12A | P4SMAJ12CA | 12 | 5 | 13.3 | 14.8 | 19.9 | 20.1 |
| P4SMAJ13 | P4SMAJ13C | 13 | 5 | 14.4 | 17.6 | 23.8 | 16.8 |
| P4SMAJ13A | P4SMAJ13CA | 13 | 5 | 14.4 | 16.0 | 21.5 | 18.6 |
| P4SMAJ14 | P4SMAJ14C | 14 | 5 | 15.6 | 19.0 | 25.8 | 15.5 |
| P4SMAJ14A | P4SMAJ14CA | 14 | 5 | 15.6 | 17.3 | 23.2 | 17.2 |
| P4SMAJ15 | P4SMAJ15C | 15 | 5 | 16.7 | 20.4 | 26.9 | 14.9 |
| P4SMAJ15A | P4SMAJ15CA | 15 | 5 | 16.7 | 18.6 | 24.4 | 16.4 |
| P4SMAJ16 | P4SMAJ16C | 16 | 5 | 17.8 | 21.7 | 28.8 | 13.9 |
| P4SMAJ16A | P4SMAJ16CA | 16 | 5 | 17.8 | 19.8 | 26.0 | 15.4 |
| P4SMAJ17 | P4SMAJ17C | 17 | 5 | 18.9 | 23.1 | 30.5 | 13.1 |
| P4SMAJ17A | P4SMAJ17CA | 17 | 5 | 18.9 | 21.0 | 27.6 | 14.5 |
| P4SMAJ18 | P4SMAJ18C | 18 | 5 | 20.0 | 24.4 | 32.2 | 12.4 |
| P4SMAJ18A | P4SMAJ18CA | 18 | 5 | 20.0 | 22.2 | 29.2 | 13.7 |
| P4SMAJ20 | P4SMAJ20C | 20 | 5 | 22.2 | 27.1 | 35.8 | 11.2 |
| P4SMAJ20A | P4SMAJ20CA | 20 | 5 | 22.2 | 24.6 | 32.4 | 12.3 |
| P4SMAJ22 | P4SMAJ22C | 22 | 5 | 24.4 | 29.8 | 39.4 | 10.2 |
| P4SMAJ22A | P4SMAJ22CA | 22 | 5 | 24.4 | 27.1 | 35.5 | 11.3 |
| P4SMAJ24 | P4SMAJ24C | 24 | 5 | 26.7 | 32.6 | 43.0 | 9.3 |
| P4SMAJ24A | P4SMAJ24CA | 24 | 5 | 26.7 | 29.6 | 38.9 | 10.3 |
| P4SMAJ26 | P4SMAJ26C | 26 | 5 | 28.9 | 35.3 | 46.6 | 8.6 |
| P4SMAJ26A | P4SMAJ26CA | 26 | 5 | 28.9 | 32.1 | 42.1 | 9.5 |
| P4SMAJ28 | P4SMAJ28C | 28 | 5 | 31.1 | 37.9 | 50.0 | 8.0 |
| P4SMAJ28A | P4SMAJ28CA | 28 | 5 | 31.1 | 34.5 | 45.4 | 8.8 |
| P4SMAJ30 | P4SMAJ30C | 30 | 5 | 33.3 | 40.1 | 53.5 | 7.5 |
| P4SMAJ30A | P4SMAJ30CA | 30 | 5 | 33.3 | 36.9 | 48.4 | 8.3 |
| P4SMAJ33 | P4SMAJ33C | 33 | 5 | 36.7 | 44.8 | 59.0 | 6.8 |
| P4SMAJ33A | P4SMAJ33CA | 33 | 5 | 36.7 | 40.7 | 53.3 | 7.5 |
| P4SMAJ36 | P4SMAJ36C | 36 | 5 | 40.0 | 48.4 | 64.3 | 6.2 |

1 For bi-directional types having V_{WM} ≤ 10V, the reverse current limit is doubled
 Bidirektionale Typen mit V_{WM} ≤ 10V haben die doppelte Sperrstromgrenze

Characteristics (T_j = 25°C)Kennwerte (T_j = 25°C)

| Type Typ | | Stand-off voltage Sperrspannung | Max. rev. current Max. Sperrstrom at / bei V _{WM}) | Breakdown voltage at I _T = 1 mA Abbruch-Spannung bei I _T = 1 mA (*) at / bei I _T = 10 mA | | Max. clamping voltage Max. Begrenzer-Spannung at / bei I _{PPM} (10/1000 μs) | |
|--------------------------------|---------------|---------------------------------------|--|---|-------------------------|--|----------------------|
| unidirectional | bidirectional | V _{WM} [V] | I _D [μA] | V _{BR} min [V] | V _{BR} max [V] | V _C [V] | I _{PPM} [A] |
| P4SMAJ36A | P4SMAJ36CA | 36 | 5 | 40.0 | 44.4 | 58.1 | 6.9 |
| P4SMAJ40 | P4SMAJ40C | 40 | 5 | 44.4 | 54.2 | 71.4 | 5.6 |
| P4SMAJ40A | P4SMAJ40CA | 40 | 5 | 44.4 | 49.3 | 64.5 | 6.2 |
| P4SMAJ43 | P4SMAJ43C | 43 | 5 | 47.8 | 58.3 | 76.7 | 5.2 |
| P4SMAJ43A | P4SMAJ43CA | 43 | 5 | 47.8 | 53.1 | 69.4 | 5.8 |
| P4SMAJ45 | P4SMAJ45C | 45 | 5 | 50.0 | 61.0 | 80.3 | 5.0 |
| P4SMAJ45A | P4SMAJ45CA | 45 | 5 | 50.0 | 55.5 | 72.7 | 5.5 |
| P4SMAJ48 | P4SMAJ48C | 48 | 5 | 53.3 | 65.0 | 85.5 | 4.7 |
| P4SMAJ48A | P4SMAJ48CA | 48 | 5 | 53.3 | 59.2 | 77.4 | 5.2 |
| P4SMAJ51 | P4SMAJ51C | 51 | 5 | 56.7 | 69.2 | 91.1 | 4.4 |
| P4SMAJ51A | P4SMAJ51CA | 51 | 5 | 56.7 | 62.9 | 82.4 | 4.9 |
| P4SMAJ54 | P4SMAJ54C | 54 | 5 | 60.0 | 73.2 | 96.3 | 4.2 |
| P4SMAJ54A | P4SMAJ54CA | 54 | 5 | 60.0 | 66.6 | 87.1 | 4.6 |
| P4SMAJ58 | P4SMAJ58C | 58 | 5 | 64.4 | 78.6 | 103 | 3.9 |
| P4SMAJ58A | P4SMAJ58CA | 58 | 5 | 64.4 | 71.5 | 93.6 | 4.3 |
| P4SMAJ60 | P4SMAJ60C | 60 | 5 | 66.7 | 81.4 | 107 | 3.7 |
| P4SMAJ60A | P4SMAJ60CA | 60 | 5 | 66.7 | 74.0 | 96.8 | 4.1 |
| P4SMAJ64 | P4SMAJ64C | 64 | 5 | 71.1 | 86.7 | 114 | 3.5 |
| P4SMAJ64A | P4SMAJ64CA | 64 | 5 | 71.1 | 78.9 | 103 | 3.9 |
| P4SMAJ70 | P4SMAJ70C | 70 | 5 | 77.8 | 94.9 | 125 | 3.2 |
| P4SMAJ70A | P4SMAJ70CA | 70 | 5 | 77.8 | 86.4 | 113 | 3.5 |
| P4SMAJ75 | P4SMAJ75C | 75 | 5 | 83.3 | 102 | 134 | 3.0 |
| P4SMAJ75A | P4SMAJ75CA | 75 | 5 | 83.3 | 92.5 | 121 | 3.3 |
| P4SMAJ78 | P4SMAJ78C | 78 | 5 | 86.7 | 106 | 139 | 2.9 |
| P4SMAJ78A | P4SMAJ78CA | 78 | 5 | 86.7 | 96.2 | 126 | 3.2 |
| P4SMAJ85 | P4SMAJ85C | 85 | 5 | 94.4 | 115 | 151 | 2.6 |
| P4SMAJ85A | P4SMAJ85CA | 85 | 5 | 94.4 | 105 | 137 | 2.9 |
| P4SMAJ90 | P4SMAJ90C | 90 | 5 | 100 | 122 | 160 | 2.5 |
| P4SMAJ90A | P4SMAJ90CA | 90 | 5 | 100 | 111 | 146 | 2.7 |
| P4SMAJ100 | P4SMAJ100C | 100 | 5 | 111 | 135 | 179 | 2.2 |
| P4SMAJ100A | P4SMAJ100CA | 100 | 5 | 111 | 123 | 162 | 2.5 |
| P4SMAJ110 | P4SMAJ110C | 110 | 5 | 122 | 149 | 196 | 2.0 |
| P4SMAJ110A | P4SMAJ110CA | 110 | 5 | 122 | 135 | 177 | 2.3 |
| P4SMAJ120 | P4SMAJ120C | 120 | 5 | 133 | 162 | 214 | 1.9 |
| P4SMAJ120A | P4SMAJ120CA | 120 | 5 | 133 | 148 | 193 | 2.1 |
| P4SMAJ130 | P4SMAJ130C | 130 | 5 | 144 | 176 | 231 | 1.7 |
| P4SMAJ130A | P4SMAJ130CA | 130 | 5 | 144 | 160 | 209 | 1.9 |
| P4SMAJ150 | P4SMAJ150C | 150 | 5 | 167 | 204 | 268 | 1.5 |
| P4SMAJ150A | P4SMAJ150CA | 150 | 5 | 167 | 185 | 243 | 1.6 |
| P4SMAJ160 | P4SMAJ160C | 160 | 5 | 178 | 217 | 287 | 1.4 |
| P4SMAJ160A | P4SMAJ160CA | 160 | 5 | 178 | 198 | 259 | 1.5 |
| P4SMAJ170 | P4SMAJ170C | 170 | 5 | 189 | 231 | 304 | 1.3 |
| P4SMAJ170A | P4SMAJ170CA | 170 | 5 | 189 | 210 | 275 | 1.5 |
| P4SMA220 ... P4SMA550CA | | V_{WM} = 175 ... 495V | | | | | |



**TVS diodes having breakdown voltage $V_{BR} = 220 \dots 550 \text{ V}$:
please refer to datasheet P4SMA220 ... 550CA
TVS-Dioden mit Abbruchspannung $V_{BR} = 220 \dots 550 \text{ V}$:
siehe Datenblatt P4SMA220 ... 550CA**

Disclaimer: See data book page 2 or [website](#)
Haftungsausschluss: Siehe Datenbuch Seite 2 oder [Internet](#)

¹ Mounted on P.C. board with 25 mm² copper pads at each terminal
Montage auf Leiterplatte mit 25 mm² Kupferbelag (Lötpad) an jedem Anschluss