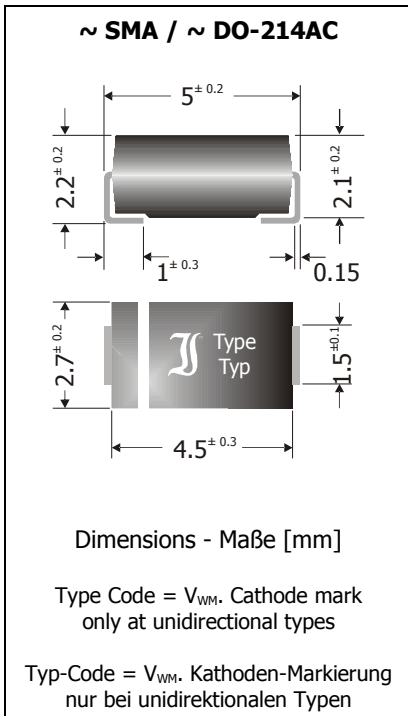


<b>P4SMAJ5.0 ... P4SMAJ170CA</b> <b>SMD Transient Voltage Suppressor Diodes</b> <b>SMD Spannungs-Begrenzer-Dioden</b>	<b>P<sub>PPM</sub> = 400W</b> <b>P<sub>M(AV)</sub> = 1.0 W</b> <b>T<sub>jmax</sub> = 150°C</b>	<b>V<sub>WM</sub> = 5.0 ... 170 V</b> <b>V<sub>BR</sub> = 6.8 ... 200 V</b>
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Version 2016-05-30



**Typical Applications**

Over-voltage protection  
 ESD protection  
 Free-wheeling diodes  
 Commercial grade <sup>1)</sup>

**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<sub>BR</sub> = 220 ... 550 V  
 Compliant to RoHS, REACH, Conflict Minerals <sup>1)</sup>



**Mechanical Data <sup>1)</sup>**

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 <sup>1)</sup>

**Besonderheiten**

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

**Mechanische Daten <sup>1)</sup>**

Gegurtet auf Rolle  
 Gewicht ca.  
 Gehäusematerial  
 Löt- und Einbaubedingungen

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 <sup>2)</sup>**

**Grenzwerte <sup>2)</sup>**

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

**Characteristics**

**Kennwerte**

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

- 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
- T<sub>j</sub> = 25°C unless otherwise specified – T<sub>j</sub> = 25°C wenn nicht anders angegeben
- Non-repetitive pulse see curve I<sub>pp</sub> = f(t) / P<sub>pp</sub> = f(t)  
Höchstzulässiger Spitzenwert eines einmaligen Impulses, siehe Kurve I<sub>pp</sub> = f(t) / P<sub>pp</sub> = f(t)
- Unidirectional diodes only – Nur für unidirektionale Dioden
- Mounted on P.C. board with 25 mm<sup>2</sup> copper pads at each terminal  
Montage auf Leiterplatte mit 25 mm<sup>2</sup> Kupferbelag (Lötpad) an jedem Anschluss

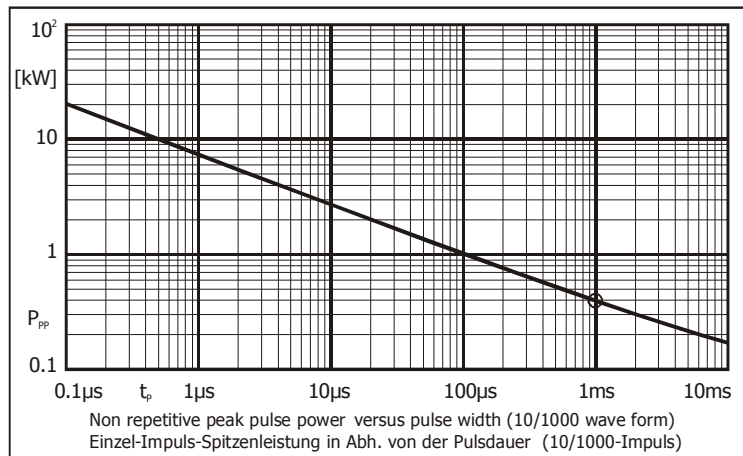
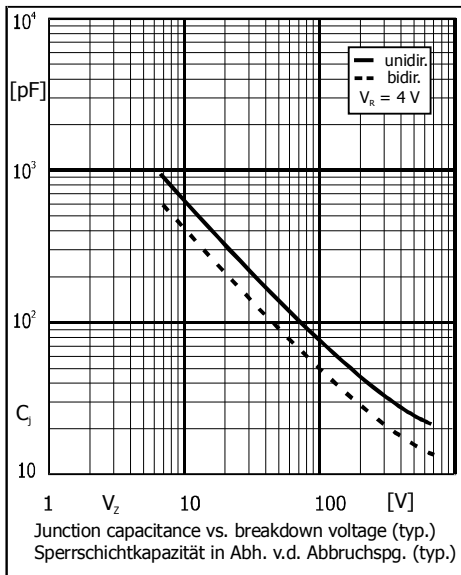
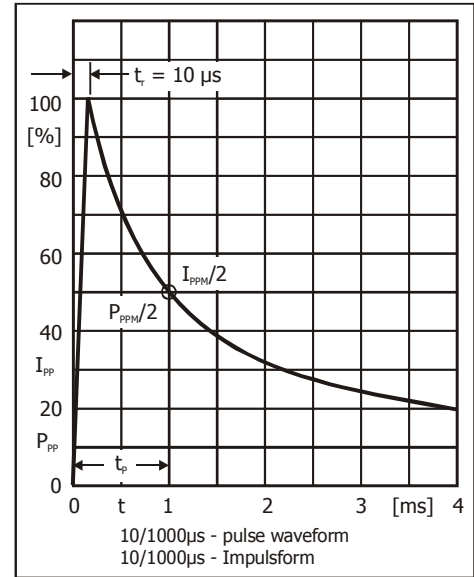
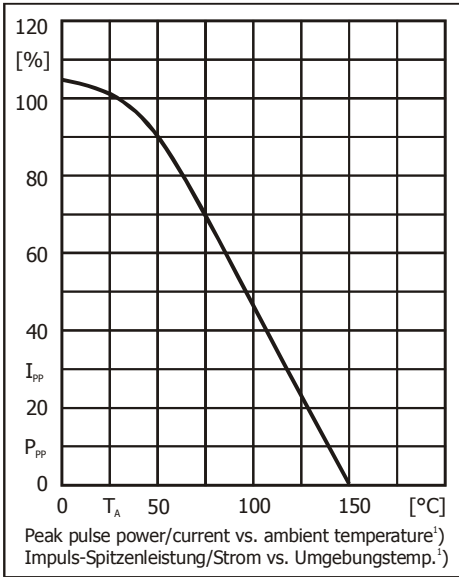
**Characteristics (T<sub>j</sub> = 25°C)**
**Kennwerte (T<sub>j</sub> = 25°C)**

Type Typ		Stand-off voltage Sperrspannung	Max. rev. current Max. Sperrstrom at / bei V <sub>WM</sub> <sup>1)</sup>	Breakdown voltage at I <sub>T</sub> = 1 mA Abbruch-Spannung bei I <sub>T</sub> = 1 mA *) at / bei I <sub>T</sub> = 10 mA		Max. clamping voltage Max. Begrenzer-Spannung at / bei I <sub>PPM</sub> (10/1000 μs)	
unidirectional	bidirectional	V <sub>WM</sub> [V]	I <sub>D</sub> [μA]	V <sub>BR</sub> min [V]	V <sub>BR</sub> max [V]	V <sub>C</sub> [V]	I <sub>PPM</sub> [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<sub>WM</sub> ≤ 10V, the reverse current limit is doubled  
 Bidirektionale Typen mit V<sub>WM</sub> ≤ 10V haben die doppelte Sperrstromgrenze

Characteristics (T<sub>j</sub> = 25°C)Kennwerte (T<sub>j</sub> = 25°C)

Type Typ		Stand-off voltage Sperrspannung	Max. rev. current Max. Sperrstrom at / bei V <sub>WM</sub> )	Breakdown voltage at I <sub>T</sub> = 1 mA Abbruch-Spannung bei I <sub>T</sub> = 1 mA (*) at / bei I <sub>T</sub> = 10 mA		Max. clamping voltage Max. Begrenzer-Spannung at / bei I <sub>PPM</sub> (10/1000 μs)	
unidirectional	bidirectional	V <sub>WM</sub> [V]	I <sub>D</sub> [μA]	V <sub>BR</sub> min [V]	V <sub>BR</sub> max [V]	V <sub>C</sub> [V]	I <sub>PPM</sub> [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
<b>P4SMA220 ... P4SMA550CA</b>		<b>V<sub>WM</sub> = 175 ... 495V</b>					



**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](#)

<sup>1</sup> Mounted on P.C. board with 25 mm<sup>2</sup> copper pads at each terminal  
Montage auf Leiterplatte mit 25 mm<sup>2</sup> Kupferbelag (Lötpad) an jedem Anschluss