

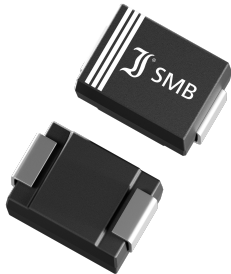
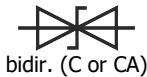
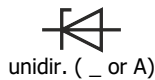
P6SMBJ5.0 ... P6SMBJ170CA
SMD Transient Voltage Suppressor Diodes
SMD Spannungs-Begrenzer-Dioden

$P_{PPM} = 600 \text{ W}$
 $P_{M(AV)} = 5.0 \text{ W}$
 $T_{jmax} = 150^\circ\text{C}$

$V_{WM} = 5.0 \dots 170 \text{ V}$
 $V_{BR} = 6.8 \dots 200 \text{ V}$

Version 2021-09-01

SMB
~ DO-214AA

SPICE Model & STEP File ¹⁾**Marking**

V_{BR} only. Cathode mark only at unidirectional types

Nur V_{BR} . Kathoden-Markierung nur bei unidirektionalen Typen

HS Code 85411000**Typical Applications**

Over-voltage protection
 ESD protection
 Free-wheeling diodes
 Commercial grade
 Suffix -Q: AEC-Q101 compliant ¹⁾
 Suffix -AQ: AEC-Q101 qualified ¹⁾

Features

Part numbering according to stand-off voltage V_{WM}
 Uni- and Bidirectional versions
 Peak pulse power of 600 W (10/1000 μs waveform)
 Very fast response time
 Further available: P6SMB210A...550CA having $V_{BR} = 210 \dots 550 \text{ V}$
 Compliant to RoHS (exemp. 7a) REACH, Conflict Minerals ¹⁾

Mechanical Data ¹⁾

Taped and reeled
 Weight approx.
 Case material
 Solder & assembly conditions

3000 / 13"

0.1 g

UL 94V-0

260°C/10s

MSL = 1

Typische Anwendungen

Schutz gegen Überspannung
 ESD-Schutz
 Freilauf-Dioden
 Standardausführung
 Suffix -Q: AEC-Q101 konform ¹⁾
 Suffix -AQ: AEC-Q101 qualifiziert ¹⁾

Besonderheiten

Artikelnummer enthält die Sperrspannung V_{WM}
 Uni- und Bidirektionale Versionen
 600 W Impuls-Verlustleistung (10/1000 μs Strom-Impuls)
 Sehr schnelle Ansprechzeit
 Auch erhältlich: P6SMB210A...550CA mit $V_{BR} = 210 \dots 550 \text{ V}$
 Konform zu RoHS (Ausn. 7a) REACH, Konfliktmineralien ¹⁾

Mechanische Daten ¹⁾

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 ²⁾**Grenzwerte ²⁾**

Peak pulse power dissipation – Impuls-Verlustleistung	10/1000 μs	P_{PPM}	600 W ³⁾
Steady state power dissipation – Verlustleistung im Dauerbetrieb	$T_T = 75^\circ\text{C}$	$P_{M(AV)}$	5 W
Peak forward surge current Stoßstrom in Fluss-Richtung	Half sine-wave Sinus-Halbwellen	I_{FSM}	100 A ⁴⁾
Junction temperature – Sperrschichttemperatur		T_j	$-50 \dots +150^\circ\text{C}$
Storage temperature – Lagerungstemperatur		T_S	$-50 \dots +150^\circ\text{C}$

Characteristics**Kennwerte**

Max. instantaneous forward voltage Augenblickswert der Durchlass-Spannung	$I_F = 25 \text{ A}$ $V_{BR} \leq 200 \text{ V}$	V_F	$< 3.0 \text{ V} 4)$
Typ. thermal resistance junction to ambient – Typ. Wärmewiderstand Sperrschicht-Umgebung		R_{thA}	45 K/W ⁵⁾
Typ. thermal resistance junction to terminal – Typ. Wärmewiderstand Sperrschicht-Anschluss		R_{thT}	15 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 $T_A = 25^\circ\text{C}$ unless otherwise specified – $T_A = 25^\circ\text{C}$ 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 per terminal – Montage auf Leiterplatte mit 25 mm² Lötpad je Anschluss

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

Type Typ	¹⁾ ²⁾ -Q ³⁾ -AQ ²⁾	Stand-off voltage Sperrspannung	Max. rev. current Max. Sperrstrom at / bei V _{WM} ³⁾	Breakdown voltage at Abbruch-Spannung bei I _T = 1 mA ⁴⁾ 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]
P6SMBJ5.0	P6SMBJ5.0C	5.0	800	6.4 ⁵⁾	7.8 ⁵⁾	10.3	58.3
P6SMBJ5.0A	P6SMBJ5.0CA	5.0	800	6.4 ⁵⁾	7.0 ⁵⁾	9.2	65.2
P6SMBJ6.0	P6SMBJ6.0C	6.0	800	6.7 ⁵⁾	8.2 ⁵⁾	11.4	52.6
P6SMBJ6.0A	P6SMBJ6.0CA	6.0	800	6.7 ⁵⁾	7.4 ⁵⁾	10.3	58.3
P6SMBJ6.5	P6SMBJ6.5C	6.5	500	7.2 ⁵⁾	8.8 ⁵⁾	12.3	48.8
P6SMBJ6.5A	P6SMBJ6.5CA	6.5	500	7.2 ⁵⁾	8.0 ⁵⁾	11.2	53.6
P6SMBJ7.0	P6SMBJ7.0C	7.0	200	7.8 ⁵⁾	9.5 ⁵⁾	13.3	45.1
P6SMBJ7.0A	P6SMBJ7.0CA	7.0	200	7.8 ⁵⁾	8.7 ⁵⁾	12.0	50.0
P6SMBJ7.5	P6SMBJ7.5C	7.5	100	8.3	10.1	14.3	42.0
P6SMBJ7.5A	P6SMBJ7.5CA	7.5	100	8.3	9.2	12.9	46.5
P6SMBJ8.0	P6SMBJ8.0C	8.0	50	8.9	10.9	15.0	40.0
P6SMBJ8.0A	P6SMBJ8.0CA	8.0	50	8.9	9.9	13.6	44.1
P6SMBJ8.5	P6SMBJ8.5C	8.5	10	9.4	11.5	15.9	37.7
P6SMBJ8.5A	P6SMBJ8.5CA	8.5	10	9.4	10.4	14.4	41.7
P6SMBJ9.0	P6SMBJ9.0C	9.0	5	10.0	12.2	16.9	35.5
P6SMBJ9.0A	P6SMBJ9.0CA	9.0	5	10.0	11.1	15.4	39.0
P6SMBJ10	P6SMBJ10C	10	5	11.1	13.5	18.8	31.9
P6SMBJ10A	P6SMBJ10CA	10	5	11.1	12.3	17.0	35.3
P6SMBJ11	P6SMBJ11C	11	5	12.2	14.9	20.1	29.9
P6SMBJ11A ⁶⁾	P6SMBJ11CA ⁷⁾	11	5	12.2	13.5	18.2	33.0
P6SMBJ12	P6SMBJ12C	12	5	13.3	16.2	22.0	27.3
P6SMBJ12A ⁸⁾	P6SMBJ12CA ⁹⁾	12	5	13.3	14.8	19.9	30.2
P6SMBJ13	P6SMBJ13C	13	5	14.4	17.6	23.8	25.2
P6SMBJ13A ¹⁰⁾	P6SMBJ13CA ¹¹⁾	13	5	14.4	16.0	21.5	27.9
P6SMBJ14	P6SMBJ14C	14	5	15.6	19.0	25.8	23.3
P6SMBJ14A ¹²⁾	P6SMBJ14CA ¹³⁾	14	5	15.6	17.3	23.2	25.9
P6SMBJ15	P6SMBJ15C	15	5	16.7	20.4	26.9	22.3
P6SMBJ15A ¹⁴⁾	P6SMBJ15CA ¹⁵⁾	15	5	16.7	18.6	24.4	24.6
P6SMBJ16	P6SMBJ16C	16	5	17.8	21.7	28.8	20.8
P6SMBJ16A ¹⁶⁾	P6SMBJ16CA ¹⁷⁾	16	5 / 1 ¹⁸⁾	17.8	19.8	26.0	23.1
P6SMBJ17	P6SMBJ17C	17	5	18.9	23.1	30.5	19.7
P6SMBJ17A ¹⁹⁾	P6SMBJ17CA ²⁰⁾	17	5	18.9	21.0	27.6	21.7
P6SMBJ18	P6SMBJ18C	18	5	20.0	24.4	32.2	18.6
P6SMBJ18A ²¹⁾	P6SMBJ18CA ²²⁾	18	5	20.0	22.2	29.2	20.5
P6SMBJ20	P6SMBJ20C	20	5	22.2	27.1	35.8	16.8
P6SMBJ20A ²³⁾	P6SMBJ20CA ²⁴⁾	20	5	22.2	24.6	32.4	18.5
P6SMBJ22	P6SMBJ22C	22	5	24.4	29.8	39.4	15.2
P6SMBJ22A ²⁵⁾	P6SMBJ22CA ²⁶⁾	22	5 / 1 ²⁷⁾	24.4	27.1	35.5	16.9
P6SMBJ24	P6SMBJ24C	24	5	26.7	32.6	43.0	14.0
P6SMBJ24A ²⁸⁾	P6SMBJ24CA ²⁹⁾	24	5 / 1 ²⁷⁾	26.7	29.6	38.9	15.4
P6SMBJ26	P6SMBJ26C	26	5	28.9	35.3	46.6	12.9
P6SMBJ26A ³⁰⁾	P6SMBJ26CA ³¹⁾	26	5 / 1 ²⁷⁾	28.9	32.1	42.1	14.3
P6SMBJ28	P6SMBJ28C	28	5	31.1	37.9	50.0	12.0
P6SMBJ28A ³²⁾	P6SMBJ28CA ³³⁾	28	5	31.1	34.5	45.4	13.2
P6SMBJ30	P6SMBJ30C	30	5	33.3	40.1	53.5	11.2
P6SMBJ30A ³⁴⁾	P6SMBJ30CA ³⁵⁾	30	5	33.3	36.9	48.4	12.4
P6SMBJ33	P6SMBJ33C	33	5	36.7	44.8	59.0	10.2

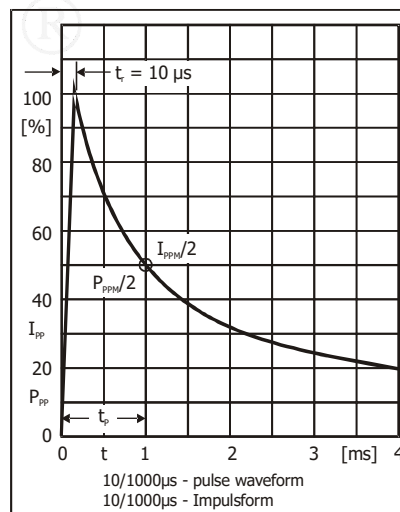
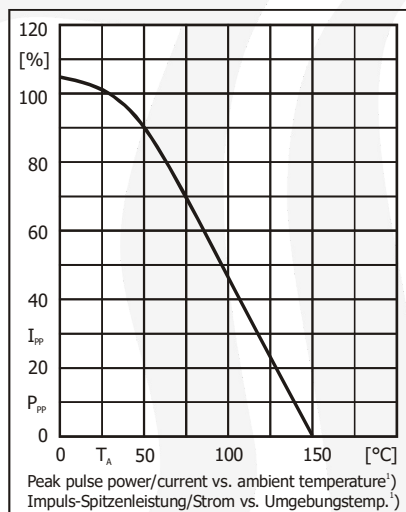
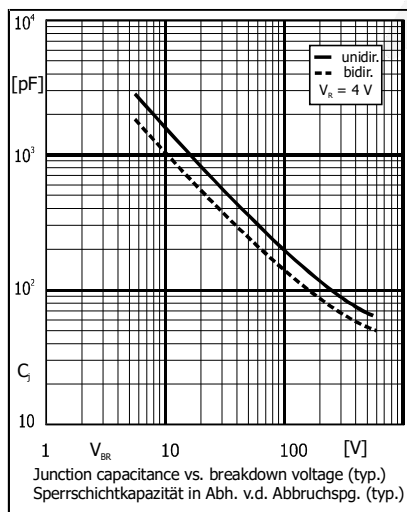
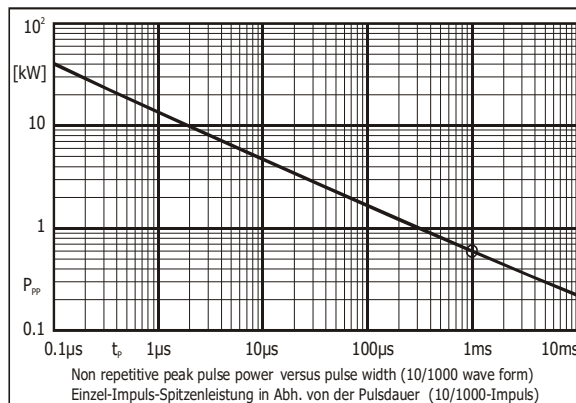
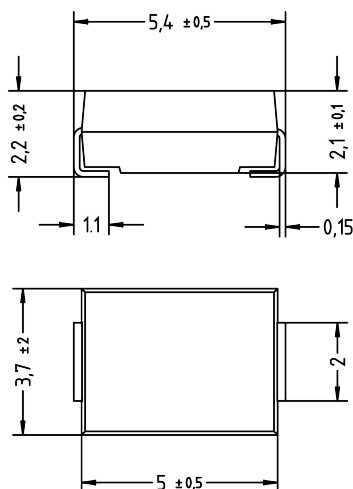
1 Footnotes see last page – Fußnoten siehe letzte Seite

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

Type Typ	¹⁾ ^{Q)} -Q ^{A)} -AQ ²⁾	Stand-off voltage Sperrspannung	Max. rev. current Max. Sperrstrom at / bei V _{WM} ³⁾	Breakdown voltage at Abbruch-Spannung bei I _T = 1 mA *) 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]
P6SMBJ33A ^{Q A)}	P6SMBJ33CA ^{Q A)}	33	5 / 1 ^{A)}	36.7	40.7	53.3	11.3
P6SMBJ36	P6SMBJ36C	36	5	40.0	48.4	64.3	9.3
P6SMBJ36A ^{Q A)}	P6SMBJ36CA ^{Q A)}	36	5 / 1 ^{A)}	40.0	44.4	58.1	10.3
P6SMBJ40	P6SMBJ40C	40	5	44.4	54.2	71.4	8.4
P6SMBJ40A ^{Q A)}	P6SMBJ40CA ^{Q A)}	40	5	44.4	49.3	64.5	9.3
P6SMBJ43	P6SMBJ43C	43	5	47.8	58.3	76.7	7.8
P6SMBJ43A ^{Q A)}	P6SMBJ43CA ^{Q A)}	43	5	47.8	53.1	69.4	8.6
P6SMBJ45	P6SMBJ45C	45	5	50.0	61.0	80.3	7.5
P6SMBJ45A ^{A)}	P6SMBJ45CA ^{A)}	45	5	50.0	55.5	72.7	8.3
P6SMBJ48	P6SMBJ48C	48	5	53.3	65.0	85.5	7.0
P6SMBJ48A ^{A)}	P6SMBJ48CA ^{A)}	48	5	53.3	59.2	77.4	7.8
P6SMBJ51	P6SMBJ51C	51	5	56.7	69.2	91.1	6.6
P6SMBJ51A ^{A)}	P6SMBJ51CA ^{A)}	51	5	56.7	62.9	82.4	7.3
P6SMBJ54	P6SMBJ54C	54	5	60.0	73.2	96.3	6.2
P6SMBJ54A ^{A)}	P6SMBJ54CA ^{A)}	54	5	60.0	66.6	87.1	6.9
P6SMBJ58	P6SMBJ58C	58	5	64.4	78.6	103	5.8
P6SMBJ58A ^{A)}	P6SMBJ58CA ^{A)}	58	5	64.4	71.5	93.6	6.4
P6SMBJ60	P6SMBJ60C	60	5	66.7	81.4	107	5.6
P6SMBJ60A ^{Q A)}	P6SMBJ60CA ^{A)}	60	5 / 1 ^{A)}	66.7	74.0	96.8	6.2
P6SMBJ64	P6SMBJ64C	64	5	71.1	86.7	114	5.3
P6SMBJ64A ^{A)}	64CA ^{A)}	64	5 / 1 ^{A)}	71.1	78.9	103	5.8
P6SMBJ70	P6SMBJ70C	70	5	77.8	94.9	125	4.8
P6SMBJ70A ^{A)}	P6SMBJ70CA ^{Q A)}	70	5	77.8	86.4	113	5.3
P6SMBJ75	P6SMBJ75C	75	5	83.3	102	134	4.5
P6SMBJ75A ^{A)}	P6SMBJ75CA ^{A)}	75	5	83.3	92.5	121	5.0
P6SMBJ78	P6SMBJ78C	78	5	86.7	106	139	4.3
P6SMBJ78A ^{A)}	P6SMBJ78CA ^{A)}	78	5	86.7	96.2	126	4.8
P6SMBJ85	P6SMBJ85C	85	5	94.4	115	151	4.0
P6SMBJ85A ^{A)}	P6SMBJ85CA ^{A)}	85	5	94.4	105	137	4.4
P6SMBJ90	P6SMBJ90C	90	5	100	122	160	3.8
P6SMBJ90A ^{A)}	P6SMBJ90CA ^{A)}	90	5	100	111	146	4.1
P6SMBJ100	P6SMBJ100C	100	5	111	135	179	3.4
P6SMBJ100A ^{A)}	P6SMBJ100CA ^{A)}	100	5	111	123	162	3.7
P6SMBJ110	P6SMBJ110C	110	5	122	149	196	3.1
P6SMBJ110A ^{A)}	P6SMBJ110CA ^{A)}	110	5	122	135	177	3.4
P6SMBJ120	P6SMBJ120C	120	5	133	162	214	2.8
P6SMBJ120A ^{A)}	P6SMBJ120CA ^{A)}	120	5	133	148	193	3.1
P6SMBJ130	P6SMBJ130C	130	5	144	176	231	2.6
P6SMBJ130A ^{Q A)}	P6SMBJ130CA ^{A)}	130	5	144	160	209	2.9
P6SMBJ150	P6SMBJ150C	150	5	167	204	268	2.2
P6SMBJ150A ^{Q A)}	P6SMBJ150CA ^{A)}	150	5	167	185	243	2.5
P6SMBJ160	P6SMBJ160C	160	5	178	217	287	2.1
P6SMBJ160A ^{A)}	P6SMBJ160CA ^{A)}	160	5	178	198	259	2.3
P6SMBJ170	P6SMBJ170C	170	5	189	231	304	2.0
P6SMBJ170A ^{A)}	P6SMBJ170CA ^{A)}	170	5	189	210	275	2.2
P6SMB210A ... P6SMB550CA		V_{WM} = 175 ... 495 V					

1 Footnotes see last page – Fußnoten siehe letzte Seite

Dimensions – Maße [mm]



TVS diodes having **breakdown voltage $V_{BR} = 210 \dots 550 \text{ V}$**
Please refer to datasheet **P6SMB210A ... 550CA**

TVS-Dioden mit **Abbruchspannung $V_{BR} = 210 \dots 550 \text{ V}$**
siehe Datenblatt **P6SMB210A ... 550CA**

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

- 1 Mounted on PCB with 25 mm² copper pad per terminal – Montage auf Leiterplatte mit 25 mm² Lötpad je Anschluss
- 2 ⁹⁾ Available in -Q. Ordering code e. g. P6SMBJ43A-Q – ⁸⁾ **Available in -AQ. Ordering code e. g. P6SMBJ51CA-AQ**
⁹⁾ Erhältlich in -Q. Bestellnummer z. B. P6SMBJ43A-Q – ⁸⁾ **Erhältlich in -AQ. Bestellnummer z. B. P6SMBJ51CA-AQ**
- 3 Bidirectional types of $V_{WM} \leq 10 \text{ V}$ have double reverse current limit – Bidir. Typen mit $V_{WM} \leq 10 \text{ V}$ haben doppelte Sperrstromgrenze