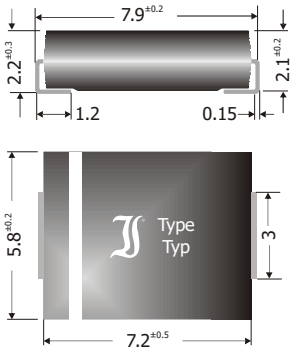
1.5SMCJ5.0 ... 1.5SMCJ170CA

SMD Transient Voltage Suppresssor Diodes
SMD Spannungs-Begrenzer-Dioden

P_{PPM} = 1500 W V_{WM} = 5.0 ... 170 V
$P_{M(AV)}$ = 5.0 W V_{BR} = 6.8 ... 200 V
T_{jmax} = 150°C

Version 2018-12-12

SMC
~ DO-214AB



Dimensions - Maße [mm]

Type Code = V_{WM}. Cathode mark only at unidirectional types

Typ-Code = V_{WM}. Kathoden-Markierung nur bei unidirektionalen Typen

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

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

Features
Uni- and Bidirectional versions
Peak pulse power of 1500 W (10/1000 µs waveform)
Very fast response time
Further available:
1.5SMC220...550CA
having V_{BR} = 220 ... 550 V
Compliant to RoHS, REACH, Conflict Minerals [1])

Besonderheiten
Uni- und Bidirektionale Versionen
1500 W Impuls-Verlustleistung (10/1000 µs Strom-Impuls)
Sehr schnelle Ansprechzeit
Auch erhältlich:
1.5MC220...550CA
mit V_{BR} = 220 ... 550V
Konform zu RoHS, REACH, Konfliktmineralien [1])

Mechanical Data [1])

Taped and reeled	3000 / 13	Gegurtet auf Rolle
Weight approx.	0.21 g	Gewicht ca.
Case material	UL 94V-0	Gehäusematerial
Solder & assembly conditions	260°C/10s	Löt- und Einbaubedingungen
	MSL = 1	

Mechanische Daten [1])

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)			P_{PPM}	1500 W [3])
Steady state power dissipation – Verlustleistung im Dauerbetrieb		T_T = 75°C	$P_{M(AV)}$	5 W
Peak forward surge current Stoßstrom in Fluss-Richtung	Half sine-wave Sinus-Halbwelle	60 Hz (8.3 ms)	I_{FSM}	100 A [4])
Junction temperature – Sperrschichttemperatur Storage temperature – Lagerungstemperatur			T_j T_S	-50...+150°C -50...+150°C

Characteristics — **Kennwerte**

Max. instantaneous forward voltage Augenblickswert der Durchlass-Spannung	I_F = 25 A	$V_{BR} \le$ 200 V	V_F	< 3.0 V [4])
Typ. thermal resistance junction to ambient – Typ. Wärmewiderstand Sperrschicht–Umgebung			R_{thA}	33 K/W [5])
Typ. Thermal resistance junction to terminal – Typ. Wärmewiderstand Sperrschicht–Anschluss			R_{thT}	10 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°C unless otherwise specified – T_A = 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 50 mm² copper pads at each terminal
Montage auf Leiterplatte mit 50 mm² Kupferbelag (Lötpad) an jedem Anschluss

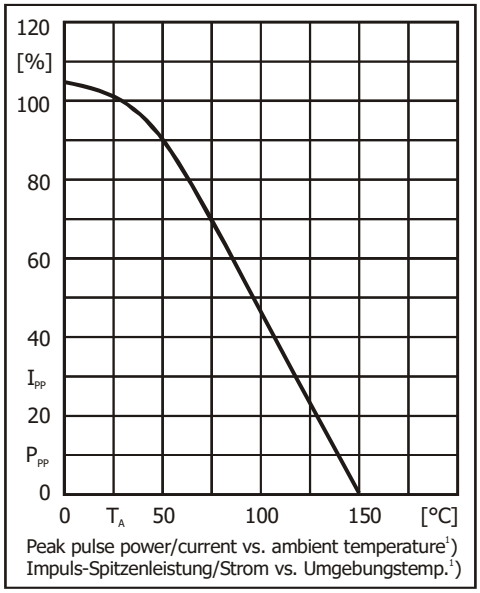
Characteristics (T_j = 25°C) **Kennwerte (T_j = 25°C)**

Type Typ **1.5SMCJ...**		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 *) 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]
5.0	5.0C	5.0	800	6.4 *)	7.8 *)	10.3	146
5.0A	5.0CA	5.0	800	6.4 *)	7.2 *)	9.2	163
6.5	6.5C	6.5	500	7.2 *)	8.8 *)	12.3	122
6.5A	6.5CA	6.5	500	7.2 *)	8.0 *)	11.2	134
7.0	7.0C	7.0	200	7.8 *)	9.5 *)	13.3	113
7.0A	7.0CA	7.0	200	7.8 *)	8.7 *)	12.0	125
7.5	7.5C	7.5	100	8.3	10.1	14.3	105
7.5A	7.5CA	7.5	100	8.3	9.2	12.9	116
8.0	8.0C	8.0	50	8.9	10.9	15.0	100
8.0A	8.0CA	8.0	50	8.9	9.9	13.6	110
8.5	8.5C	8.5	10	9.4	11.5	15.9	94.3
8.5A	8.5CA	8.5	10	9.4	10.4	14.4	104.2
9.0	9.0C	9.0	5	10.0	12.2	16.9	88.8
9.0A	9.0CA	9.0	5	10.0	11.1	15.4	97.4
10	10C	10	5	11.1	13.5	18.8	79.8
10A/-AQ	10CA/-AQ	10	5	11.1	12.3	17.0	88.2
11	11C	11	5	12.2	14.9	20.1	74.6
11A/-AQ	11CA/-AQ	11	5	12.2	13.5	18.2	82.4
12	12C	12	5	13.3	16.2	22.0	68.2
12A/-AQ	12CA/-AQ	12	5	13.3	14.8	19.9	75.4
13	13C	13	5	14.4	17.6	23.8	63.0
13A/-AQ	13CA/-AQ	13	5	14.4	16.0	21.5	69.8
14	14C	14	5	15.6	19.0	25.8	58.1
14A/-AQ	14CA/-AQ	14	5	15.6	17.3	23.2	64.7
15	15C	15	5	16.7	20.4	26.9	55.8
15A/-AQ	15CA/-AQ	15	5	16.7	18.6	24.4	61.5
16	16C	16	5	17.8	21.7	28.8	52.1
16A/-AQ	16CA/-AQ	16	5	17.8	19.8	26.0	57.7
17	17C	17	5	18.9	23.1	30.5	49.2
17A/-AQ	17CA/-AQ	17	5	18.9	21.0	27.6	54.3
18	18C	18	5	20.0	24.4	32.2	46.6
18A/-AQ	18CA/-Q/-AQ	18	5	20.0	22.2	29.2	51.4
20	20C	20	5	22.2	27.1	35.8	41.9
20A/-AQ	20CA/-Q/-AQ	20	5	22.2	24.6	32.4	46.3
22	22C	22	5	24.4	29.8	39.4	38.1
22A/-AQ	22CA/-Q/-AQ	22	5	24.4	27.1	35.5	42.3
24	24C	24	5	26.7	32.6	43.0	34.9
24A/-Q/-AQ	24CA/-Q/-AQ	24	5	26.7	29.6	38.9	38.6
26	26C	26	5	28.9	35.3	46.6	32.2
26A/-Q/-AQ	26CA/-Q/-AQ	26	5	28.9	32.1	42.1	35.6
28	28C	28	5	31.1	37.9	50.0	30.0
28A/-Q/-AQ	28CA/-Q/-AQ	28	5	31.1	34.5	45.4	33.0
30	30C	30	5	33.3	40.1	53.5	28.0
30A/-Q/-AQ	30CA/-Q/-AQ	30	5	33.3	36.9	48.4	31.0
33	33C	33	5	36.7	44.8	59.0	25.4
33A/-Q/-AQ	33CA/-Q/-AQ	33	5	36.7	40.7	53.3	28.1
36	36C	36	5	40.0	48.4	64.3	23.3
36A/-Q/-AQ	36CA/-Q/-AQ	36	5	40.0	44.4	58.1	25.8
40	40C	40	5	44.4	54.2	71.4	21.0
40A/-Q/-AQ	40CA/-Q/-AQ	40	5	44.4	49.3	64.5	23.3

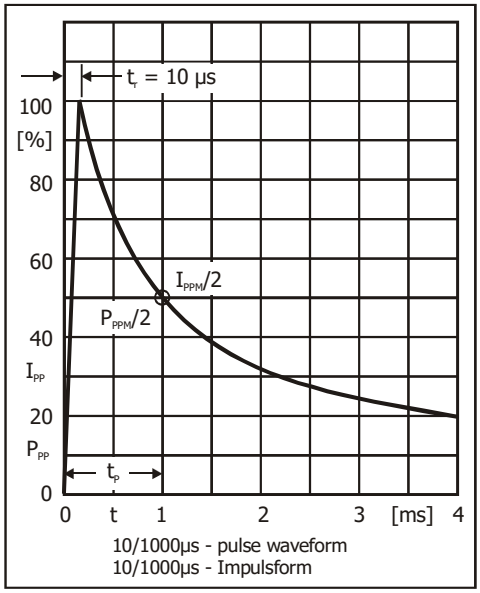
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Characteristics (T_j = 25°C) **Kennwerte (T_j = 25°C)**

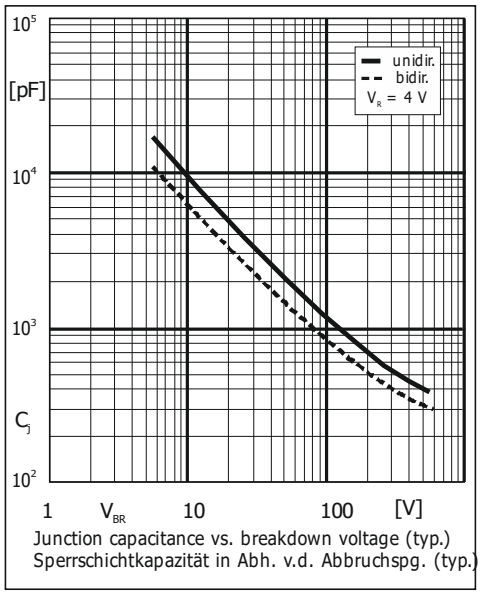
Type Typ **1.5SMCJ...**		Stand-off voltage Sperrspannung	Max. rev. current Max. Sperrstrom at / bei V_{WM}	Breakdown voltage at I_T = 1 mA Abbruch-Spannung bei I_T = 1 mA *) I_T = 10 mA		Max. clamping voltage Max. Begrenzer-Spannung at / bei I_{PPM} (10/1000 µs)	
unidirectional	bidirectional	V_{WM} [V]	I_D [µA]	V_{BR} min [V]	V_{BR} max [V]	V_C [V]	I_{PPM} [A]
43	43C	43	5	47.8	58.3	76.7	19.6
43A/-Q/-AQ	43CA/-Q/-AQ	43	5	47.8	53.1	69.4	21.6
45	45C	45	5	50.0	61.0	80.3	18.7
45A/-AQ	45CA/-AQ	45	5	50.0	55.5	72.7	20.6
48	48C	48	5	53.3	65.0	85.5	17.5
48A/-AQ	48CA/-AQ	48	5	53.3	59.2	77.4	19.4
51	51C	51	5	56.7	69.2	91.1	16.5
51A/-AQ	51CA/-AQ	51	5	56.7	62.9	82.4	18.2
54	54C	54	5	60.0	73.2	96.3	15.6
54A/-AQ	54CA/-AQ	54	5	60.0	66.6	87.1	17.2
58	58C	58	5	64.4	78.6	103	14.6
58A/-AQ	58CA/-AQ	58	5	64.4	71.5	93.6	16.0
60	60C	60	5	66.7	81.4	107	14.0
60A/-AQ	60CA/-AQ	60	5	66.7	74.0	96.8	15.5
64	64C	64	5	71.1	86.7	114	13.2
64A/-AQ	64CA/-AQ	64	5	71.1	78.9	103	14.6
70	70C	70	5	77.8	94.9	125	12.0
70A/-AQ	70CA/-AQ	70	5	77.8	86.4	113	13.3
75	75C	75	5	83.3	102	134	11.2
75A/-AQ	75CA/-AQ	75	5	83.3	92.5	121	12.4
78	78C	78	5	86.7	106	139	10.8
78A/-AQ	78CA/-AQ	78	5	86.7	96.2	126	11.9
85	85C	85	5	94.4	115	151	9.9
85A	85CA	85	5	94.4	105	137	10.9
90	90C	90	5	100	122	160	9.4
90A	90CA	90	5	100	111	146	10.3
100	100C	100	5	111	135	179	8.4
100A	100CA	100	5	111	123	162	9.3
110	110C	110	5	122	149	196	7.7
110A	110CA	110	5	122	135	177	8.5
120	120C	120	5	133	162	214	7.0
120A	120CA	120	5	133	148	193	7.8
130	130C	130	5	144	176	231	6.5
130A	130CA	130	5	144	160	209	7.2
150	150C	150	5	167	204	268	5.6
150A	150CA	150	5	167	185	243	6.2
160	160C	160	5	178	217	287	5.2
160A	160CA	160	5	178	198	259	5.8
170	170C	170	5	189	231	304	4.9
170A	170CA	170	5	189	210	275	5.5
1.5SMC220 ... 1.5MC550CA		**V_{WM} = 175 ... 495V**					



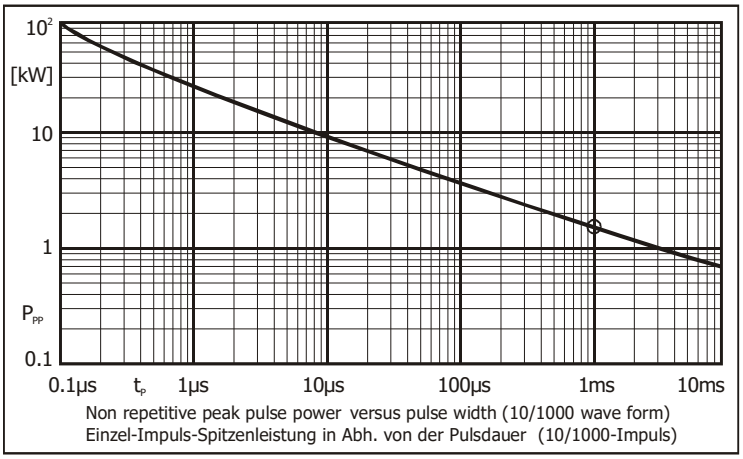
Peak pulse power/current vs. ambient temperature[1])
Impuls-Spitzenleistung/Strom vs. Umgebungstemp.[1])



10/1000µs - pulse waveform
10/1000µs - Impulsform



Junction capacitance vs. breakdown voltage (typ.)
Sperrschichtkapazität in Abh. v.d. Abbruchspg. (typ.)



Non repetitive peak pulse power versus pulse width (10/1000 wave form)
Einzel-Impuls-Spitzenleistung in Abh. von der Pulsdauer (10/1000-Impuls)

TVS diodes having breakdown voltage V_{BR} = 220 ... 550 V:
please refer to datasheet 1.5SMC220 ... 550CA
TVS-Dioden mit Abbruchspannung V_{BR} = 220 ... 550 V:
siehe Datenblatt 1.5SMC220 ... 550CA

Disclaimer: See data book page 2 or website
Haftungssauschluss: 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

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