Diotec Semiconductor

SMF5.0 ... SMF220CA

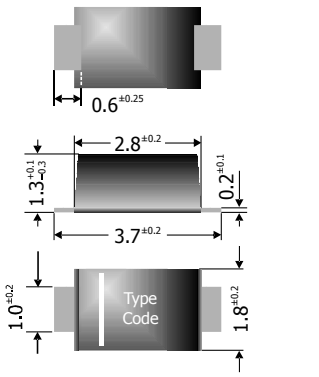
SMD Transient Voltage Suppressor Diodes
SMD Spannungs-Begrenzer-Dioden

P_{PPM} = 200 W
$P_{M(AV)}$ = 0.5 W
T_{jmax} = 150°C

V_{WM} = 5.0 ... 220 V
V_{BR} = 6.8 ... 260 V

Version 2016-05-27

SOD-123FL (~ SMF)



Dimensions - Maße [mm]

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

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

Typical Applications
Over-voltage protection
ESD protection
Free-wheeling diodes
Commercial grade [1])

Typische Anwendungen
Schutz gegen Überspannung
ESD-Schutz
Freilauf-Dioden
Standardausführung [1])

Features
Uni- and Bidirectional versions
Peak pulse power of 200 W (10/1000 µs waveform)
Very fast response time
Low profile package
Compliant to RoHS, REACH, Conflict Minerals [1])

Besonderheiten
Uni- und Bidirektionale Versionen
200 W Impuls-Verlustleistung (10/1000 µs Strom-Impuls)
Sehr schnelle Ansprechzeit
Flache Bauform
Konform zu RoHS, REACH, Konfliktmineralien [1])

Mechanical Data [1])		**Mechanische Daten [1])**
Taped and reeled	3000 / 7"	Gegurtet auf Rolle
Weight approx.	0.02 g	Gewicht ca.
Case material	UL 94V-0	Gehäusematerial
Solder & assembly conditions	260°C/10s MSL = 1	Löt- und Einbaubedingungen

For bidirectional types (suffix "CA"), electrical characteristics apply in both directions.
Für bidirektionale Dioden (mit Suffix "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}	200 W [3])
Peak pulse power dissipation (8/20 µs waveform) Impuls-Verlustleistung (Strom-Impuls 8/20 µs)	T_A = 25°C	P_{PPM}	1000 W [3])
Steady state power dissipation Verlustleistung im Dauerbetrieb	T_A = 50°C	$P_{M(AV)}$	0.5 W [4])
Peak forward surge current, 60 Hz half sinewave Stoßstrom für eine 60 Hz Sinushalbwelle)	T_A = 25°C	I_{FSM}	20 A [5])

Characteristics			**Kennwerte**
Max. instantaneous forward voltage Augenblickswert der Durchlass-Spannung	I_F = 20 A	V_F	< 3.5 V [5])
Junction temperature – Sperrschichttemperatur Storage temperature – Lagerungstemperatur		T_j T_S	-50...+150°C -50...+150°C
Thermal resistance junction-ambient – Wärmewiderstand Sperrschicht-Umgebung		R_{thA}	< 180 K/W [4])

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 Mounted on P. C. board with 25 mm² copper pads at each terminal
Montage auf Leiterplatte mit 25 mm² Kupferbelag (Lötpad) an jedem Anschluss
5 Unidirectional diodes only – Nur für unidirektionale Dioden

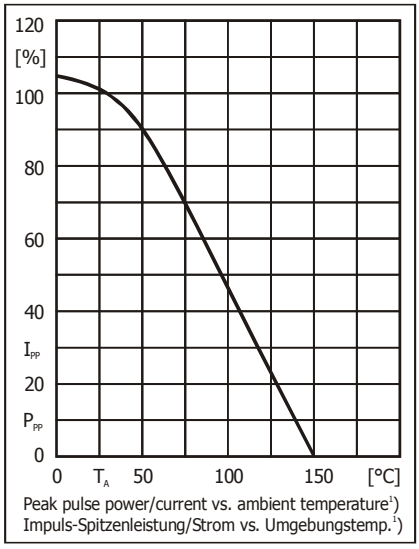
Characteristics (T_j = 25°C) **Kennwerte (T_j = 25°C)**

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]
SMF5.0A	SMF5.0CA	5.0	400	6.4 *)	7.0 *)	9.2	21.74
SMF6.0A	SMF6.0CA	6.0	400	6.6 *)	7.4 *)	10.3	19.42
SMF6.5A	SMF6.5CA	6.5	250	7.2 *)	8.0 *)	11.2	17.86
SMF7.0A	SMF7.0CA	7.0	100	7.7 *)	8.6 *)	12.0	16.67
SMF7.5A	SMF7.5CA	7.5	50	8.3	9.2	12.9	15.50
SMF8.0A	SMF8.0CA	8.0	25	8.8	9.8	13.6	14.71
SMF8.5A	SMF8.5CA	8.5	10	9.4	10.4	14.4	13.89
SMF9.0A	SMF9.0CA	9.0	5	10.0	11.1	15.4	12.99
SMF10A	SMF10CA	10	2.5	11.1	12.3	17.0	11.76
SMF11A	SMF11CA	11	2.5	12.2	13.5	18.2	10.99
SMF12A	SMF12CA	12	2.5	13.3	14.7	19.9	10.05
SMF13A	SMF13CA	13	1	14.4	15.9	21.5	9.30
SMF14A	SMF14CA	14	1	15.6	17.2	23.2	8.62
SMF15A	SMF15CA	15	1	16.7	18.5	24.4	8.20
SMF16A	SMF16CA	16	1	17.8	19.7	26.0	7.69
SMF17A	SMF17CA	17	1	18.9	20.9	27.6	7.25
SMF18A	SMF18CA	18	1	20.0	22.1	29.2	6.85
SMF19A	SMF19CA	19	1	21.1	23.3	30.6	6.54
SMF20A	SMF20CA	20	1	22.2	24.5	32.4	6.17
SMF22A	SMF22CA	22	1	24.4	26.9	35.5	5.63
SMF24A	SMF24CA	24	1	26.7	29.5	38.9	5.14
SMF26A	SMF26CA	26	1	28.9	31.9	42.1	4.75
SMF28A	SMF28CA	28	1	31.1	34.4	45.4	4.41
SMF30A	SMF30CA	30	1	33.3	36.8	48.4	4.13
SMF33A	SMF33CA	33	1	36.7	40.6	53.3	3.75
SMF36A	SMF36CA	36	1	40.0	44.2	58.1	3.44
SMF40A	SMF40CA	40	1	44.4	49.1	64.5	3.10
SMF43A	SMF43CA	43	1	47.8	52.8	69.4	2.88
SMF45A	SMF45CA	45	1	50.0	55.3	72.7	2.75
SMF48A	SMF48CA	48	1	53.3	58.9	77.4	2.58
SMF51A	SMF51CA	51	1	56.7	62.7	82.4	2.43
SMF54A	SMF54CA	54	1	60.0	66.3	87.1	2.30
SMF58A	SMF58CA	58	1	64.4	71.2	93.6	2.14
SMF60A	SMF60CA	60	1	66.7	73.7	96.8	2.07
SMF64A	SMF64CA	64	1	71.1	78.6	103.0	1.94
SMF70A	SMF70CA	70	1	77.8	86.0	113.0	1.77
SMF75A	SMF75CA	75	1	83.3	92.1	121.0	1.65
SMF78A	SMF78CA	78	1	86.7	95.8	126.0	1.59
SMF80A	SMF80CA	80	1	88.8	97.6	129.0	1.55
SMF85A	SMF85CA	85	1	94.4	104.0	137.0	1.46
SMF90A	SMF90CA	90	1	100.0	111.0	146.0	1.37
SMF100A	SMF100CA	100	1	111.0	123.0	162.0	1.23
SMF110A	SMF110CA	110	1	122.0	135.0	177.0	1.13
SMF120A	SMF120CA	120	1	133.0	147.0	193.0	1.04
SMF130A	SMF130CA	130	1	144.0	159.0	209.0	0.96
SMF140A	SMF140CA	140	1	155.0	171.0	224.0	0.89
SMF150A	SMF150CA	150	1	167.0	185.0	243.0	0.82
SMF160A	SMF160CA	160	1	178.0	197.0	259.0	0.77

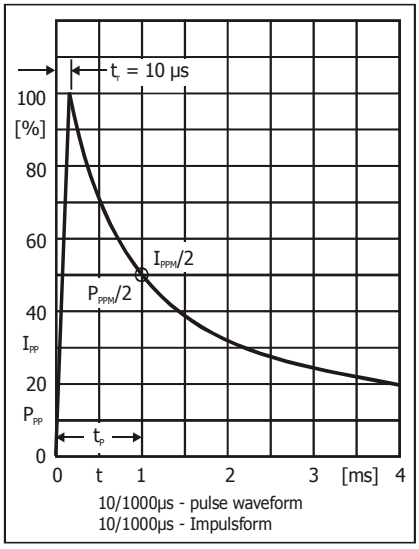
1 For bi-directional types having $V_{WM} \leq 10V$, the reverse current limit is doubled
Bidirektionale Typen mit $V_{WM} \leq 10V$ haben die doppelte Sperrstromgrenze

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

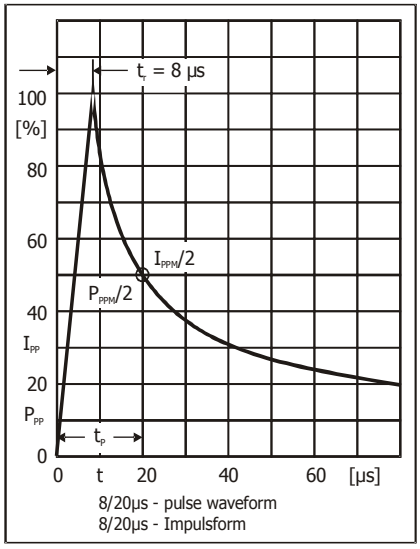
Type Typ		Stand-off voltage Sperrspannung	Max. rev. current Max. Sperrstrom at / bei V_{WM})	Breakdown voltage at I_T = 1 mA Abbruch-Spannung bei I_T = 1 mA *) at / bei I_T = 10 mA		Max. clamping voltage Max. Begrenzer-Spannung at / bei I_{PPM} (10/1000 µs)	
unidirectional	bidirectional	V_{WM} [V]	I_D [µA]	V_{BR} min [V]	V_{BR} max [V]	V_C [V]	I_{PPM} [A]
SMF170A	SMF170CA	170	1	189.0	209.0	275.0	0.73
SMF180A	SMF180CA	180	1	200.0	220.0	292.0	0.68
SMF190A	SMF190CA	190	1	211.0	232.0	308.0	0.65
SMF200A	SMF200CA	200	1	224.0	247.0	321.0	0.62
SMF220A	SMF220CA	220	1	246.0	272.0	356.0	0.56



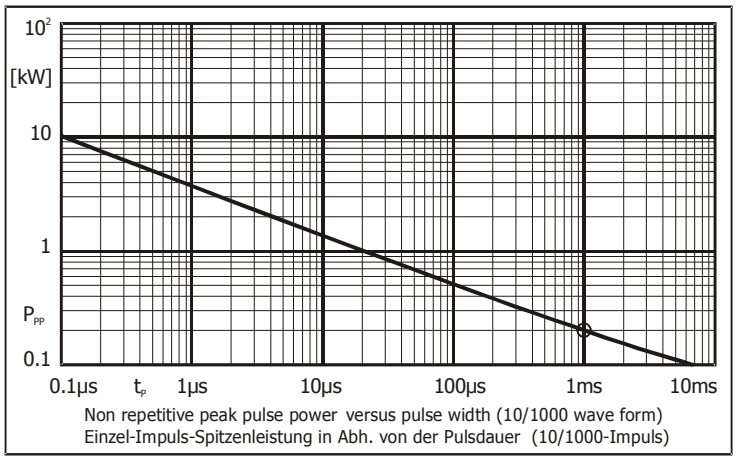
Peak pulse power/current vs. ambient temperature[1])
Impuls-Spitzenleistung/Strom vs. Umgebungstemp.[1])



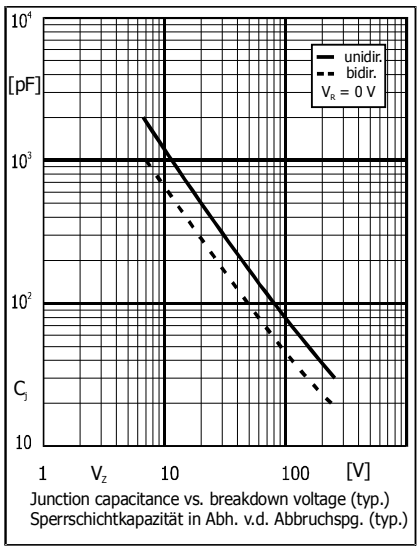
10/1000µs - pulse waveform
10/1000µs - Impulsform



8/20µs - pulse waveform
8/20µs - Impulsform



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



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

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