

Features

- For surface mounted applications in order to optimize board space
- Low profile space
- Glass passivated chip
- Low inductance
- Excellent clamping capability
- Very fast response time
- Typical ID less than 1µA at VWM
- 200 W peak pulse power capability with a 10/1000 µs waveform
- Component in accordance to
- RoHS 2002/95/1 and WEEE 2002/96/EC



Mechanical Date

- **Case:** JEDEC SOD-123FL molded plastic body over glass passivated chip
- **Terminals:** Solder plated, solderable per MIL-STD-750 Method 2026
- **Polarity:** For uni-directional types the band by laser denotes the cathode, which is positive with respect to the anode under normal TVS operation

Major Ratings and Characteristics

P_{RRM}	200W
V_{RRM}	5 V to 170 V
I_{FSM}	20A
V_F	1.25V
T_j max.	150 °C

Devices for Bidirectional Applications

- For bi-directional devices, use suffix C or CA (e.g.SMF10C, SMF0CA). Electrical characteristics apply in both directions.

Maximum Ratings & Thermal Characteristics

(T_A = 25 °C unless otherwise noted)

Items	Symbol	VALUE	UNIT
Peak pulse power dissipation with a 10/1000µs waveform (see fig. 1)	P _{PPM}	200	W
Peak pulse current with a waveform (see fig. 3 , single pulse)	I _{PPM}	See Next Table	A
Peak forward surge current 8.3ms single half sine-wave uni-directional only	I _{FSM}	20	A
Typical thermal resistance, junction to ambient ⁽¹⁾	R _{θJA}	120	°C /
Typical thermal resistance, junction to lead ⁽¹⁾	R _{θJL}	30	°C /
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150	°C

Note 1: Mounted on P.C.B. with 0.036 x 0.06" (0.9 x 1.5mm) copper pad areas

Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

TRR House No.	Marking Code		Breakdown Voltage at $I_T^{(2)}$ $V_{(BR)}$ (V)		Test Current	Stand-off Voltage	Maximum Reverse Leakage at $V_{WM}^{(4)}$	Maximum Peak Pulse Surge Current $I_{PPM}^{(3)}$	Maximum Clamping Voltage at I_{PPM}
	UNI	BI	Min	Max	I_T (mA)	V_{WM} (V)	I_D (μA)	I_{PPM} (A)	V_C (V)
SMF5.0(C)	KD	AD	6.40	7.82	10	5.0	400	20.80	9.6
SMF5.0(C)A	KE	AE	6.40	7.00	10	5.0	400	21.70	9.2
SMF6.0(C)	KF	AF	6.67	8.15	10	6.0	400	17.55	11.4
SMF6.0(C)A	KG	AG	6.67	7.37	10	6.0	400	19.40	10.3
SMF6.5(C)	KH	AH	7.22	8.82	10	6.5	250	16.30	12.3
SMF6.5(C)A	KK	AK	7.22	7.98	10	6.5	250	17.90	11.2
SMF7.0(C)	KL	AL	7.78	9.51	10	7.0	100	15.10	13.3
SMF7.0(C)A	KM	AM	7.78	8.60	10	7.0	100	16.70	12.0
SMF7.5(C)	KN	AN	8.33	10.20	1	7.5	50	14.00	14.3
SMF7.5(C)A	KP	AP	8.33	9.21	1	7.5	50	15.50	12.9
SMF8.0(C)	KQ	AQ	8.89	10.90	1	8.0	25	13.35	15.0
SMF8.0(C)A	KR	AR	8.89	9.83	1	8.0	25	14.70	13.6
SMF8.5(C)	KS	AS	9.44	11.50	1	8.5	10	12.60	15.9
SMF8.5(C)A	KT	AT	9.44	10.40	1	8.5	10	13.90	14.4
SMF9.0(C)	KU	AU	10.0	12.2	1	9.0	5.0	11.85	16.9
SMF9.0(C)A	KV	AV	10.0	11.1	1	9.0	5.0	13.00	15.4
SMF10(C)	KW	AW	11.1	13.6	1	10	2.5	10.70	18.8
SMF10(C)A	KX	AX	11.1	12.3	1	10	2.5	11.80	17.0
SMF11(C)	KY	AY	12.2	14.9	1	11	2.5	9.95	20.1
SMF11(C)A	KZ	AZ	12.2	13.5	1	11	2.5	11.00	18.2
SMF12(C)	LD	BD	13.3	16.3	1	12	2.5	9.15	22.0
SMF12(C)A	LE	BE	13.3	14.7	1	12	2.5	10.10	19.9
SMF13(C)	LF	BF	14.4	17.6	1	13	1.0	8.40	23.8
SMF13(C)A	LG	BG	14.4	15.9	1	13	1.0	9.30	21.5
SMF14(C)	LH	BH	15.6	19.1	1	14	1.0	7.75	25.8
SMF14(C)A	LK	BK	15.6	17.2	1	14	1.0	8.60	23.2
SMF15(C)	LL	BL	16.7	20.4	1	15	1.0	7.45	26.9
SMF15(C)A	LM	BM	16.7	18.5	1	15	1.0	8.20	24.4
SMF16(C)	LN	BN	17.8	21.8	1	16	1.0	6.95	28.8
SMF16(C)A	LP	BP	17.8	19.7	1	16	1.0	7.70	17.0
SMF17(C)	LQ	BQ	18.9	23.1	1	17	1.0	6.50	30.5
SMF17(C)A	LR	BR	18.9	20.9	1	17	1.0	7.20	27.6
SMF18(C)	LS	BS	20.0	24.4				6.15	32.2
SMF18(C)A	LT	BT	20.0	22.1	1	18	1.0	6.80	29.2
SMF20(C)	LU	BU	22.2	27.1	1	20	1.0	5.65	35.8
SMF20(C)A	LV	BV	22.2	24.5	1	20	1.0	6.20	32.4
SMF22(C)	LW	BW	24.4	29.8	1	22	1.0	5.05	39.4
SMF22(C)A	LX	BX	24.4	26.9	1	22	1.0	5.60	35.5
SMF24(C)	LY	BY	26.7	32.6	1	24	1.0	4.60	43.0
SMF24(C)A	LZ	BZ	26.7	29.5	1	24	1.0	5.10	38.9
SMF26(C)	MD	CD	28.9	35.3	1	26	1.0	4.35	46.6
SMF26(C)A	ME	CE	28.9	31.9	1	26	1.0	4.80	42.1
SMF28(C)	MF	CF	31.1	38.0	1	28	1.0	4.00	50.0
SMF28(C)A	MG	CG	31.1	34.4	1	28	1.0	4.40	45.4
SMF30(C)	MH	CH	33.3	40.7	1	30	1.0	3.70	53.5
SMF30(C)A	MK	CK	33.3	36.8	1	30	1.0	4.10	48.4
SMF33(C)	ML	CL	36.7	44.9	1	33	1.0	3.45	59.0
SMF33(C)A	MM	CM	36.7	40.6	1	33	1.0	3.80	53.3

Electrical Characteristics (T_A = 25 °C unless otherwise noted)

TRR House No.	Marking Code		Breakdown Voltage at I _T ⁽²⁾ V _(BR) (V)		Test Current	Stand-off Voltage	Maximum Reverse Leakage at V _{WM} ⁽⁴⁾	Maximum Peak Pulse Surge Current ⁽³⁾	Maximum Clamping Voltage at I _{PPM}
	UNI	BI	Min	Max	I _T (mA)	V _{WM} (V)	I _D (μA)	I _{PPM} (A)	V _C (V)
SMF36(C)	MN	CN	40.0	48.9	1	36	1.0	3.06	64.3
SMF36(C)A	MP	CP	40.0	44.2	1	36	1.0	3.40	58.1
SMF40(C)	MQ	CQ	44.4	54.3	1	40	1.0	2.80	71.4
SMF40(C)A	MR	CR	44.4	49.1	1	40	1.0	3.10	64.5
SMF43(C)	MS	CS	47.8	58.4	1	43	1.0	2.60	76.7
SMF43(C)A	MT	CT	47.8	52.8	1	43	1.0	2.90	69.4
SMF45(C)	MU	CU	50.0	61.1	1	45	1.0	2.55	80.3
SMF45(C)A	MV	CV	50.0	55.3	1	45	1.0	2.80	72.7
SMF48(C)	MW	CW	53.3	65.1	1	48	1.0	2.35	85.5
SMF48(C)A	MX	CX	53.3	58.9	1	48	1.0	2.60	77.4
SMF51(C)	MY	CY	56.7	69.3	1	51	1.0	2.16	91.1
SMF51(C)A	MZ	CZ	56.7	62.7	1	51	1.0	2.40	82.4
SMF54(C)	ND	DD	60.0	73.3	1	54	1.0	2.10	96.3
SMF54(C)A	NE	DE	60.0	66.3	1	54	1.0	2.30	87.1
SMF58(C)	NF	DF	64.4	78.7	1	58	1.0	2.00	103
SMF58(C)A	NG	DG	64.4	71.2	1	58	1.0	2.20	93.6
SMF60(C)	NH	DH	66.7	81.5	1	60	1.0	1.90	107
SMF60(C)A	NK	DK	66.7	73.7	1	60	1.0	2.10	96.8
SMF64(C)	NL	DL	71.1	86.9	1	64	1.0	1.79	114
SMF64(C)A	NM	DM	71.1	78.6	1	64	1.0	2.00	103
SMF70(C)	NN	DN	77.8	95.1	1	70	1.0	1.65	125
SMF70(C)A	NP	DP	77.8	86.0	1	70	1.0	1.80	113
SMF75(C)	NQ	DQ	83.3	102.0	1	75	1.0	1.55	134
SMF75(C)A	NR	DR	83.3	92.1	1	75	1.0	1.70	121
SMF78(C)	NS	DS	86.7	106.0	1	78	1.0	1.45	139
SMF78(C)A	NT	DT	86.7	95.8	1	78	1.0	1.60	126
SMF85(C)	NU	DU	94.4	115.0	1	85	1.0	1.34	151
SMF85(C)A	NV	DV	94.4	104.0	1	85	1.0	1.50	137
SMF90(C)	NW	DW	100	122	1	90	1.0	1.30	160
SMF90(C)A	NX	DX	100	111	1	90	1.0	1.40	146
SMF100(C)	NY	DY	111	136	1	100	1.0	1.14	179
SMF100(C)A	NZ	DZ	111	123	1	100	1.0	1.30	162
SMF110(C)	PD	ED	122	149	1	110	1.0	1.04	196
SMF110(C)A	PE	EE	122	135	1	110	1.0	1.20	177
SMF120(C)	PF	EF	133	163	1	120	1.0	0.95	214
SMF120(C)A	PG	EG	133	147	1	120	1.0	1.00	193
SMF130(C)	PH	EH	144	176	1	130	1.0	0.89	231
SMF130(C)A	PK	EK	144	159	1	130	1.0	1.00	209
SMF150(C)	PL	EL	167	204	1	150	1.0	0.75	268
SMF150(C)A	PM	EM	167	185	1	150	1.0	0.80	243
SMF160(C)	PN	EN	178	218	1	160	1.0	0.75	287
SMF160(C)A	PP	EP	178	197	1	160	1.0	0.80	259
SMF170(C)	PQ	EQ	189	231	1	170	1.0	0.65	304
SMF170(C)A	PR	ER	189	209	1	170	1.0	0.70	275

Note 2: Pulse test : T_p ≅ 50ms.

Note 3: Surge current waveform 10 / 1000 μS.

Note 4: For bi-directional types with V_{WM} of 10 V and less, the I_D limit is doubled

Note 5: V_F = 3.5 V at I_F = 25 A (uni-directional only)

Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

Fig.1 Peak Pulse Power Rating Curve

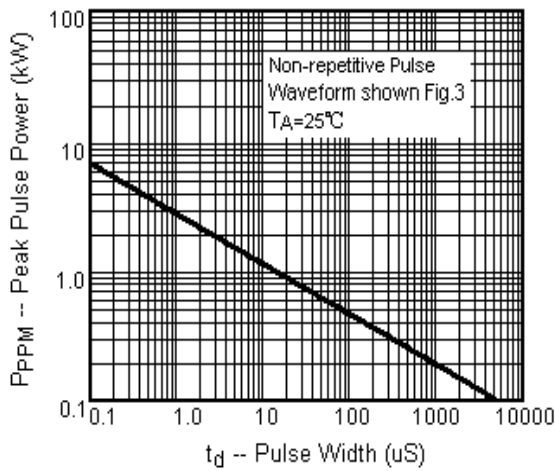


Fig.2 Pulse Derating Curve

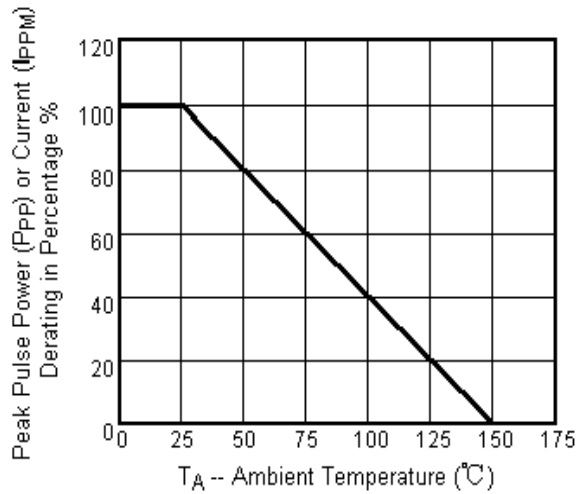


Fig.3 Pulse Waverform

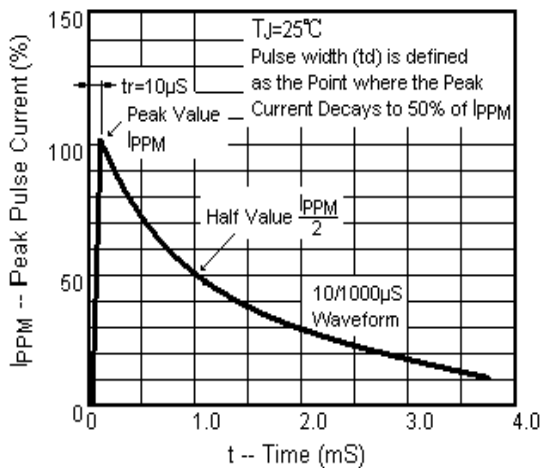


Fig.4 Typical Junction Capacitance

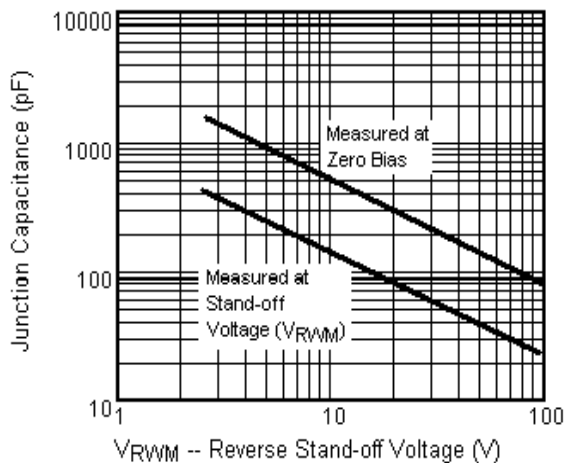
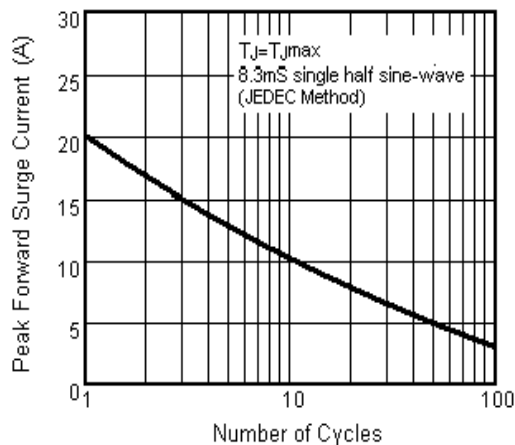
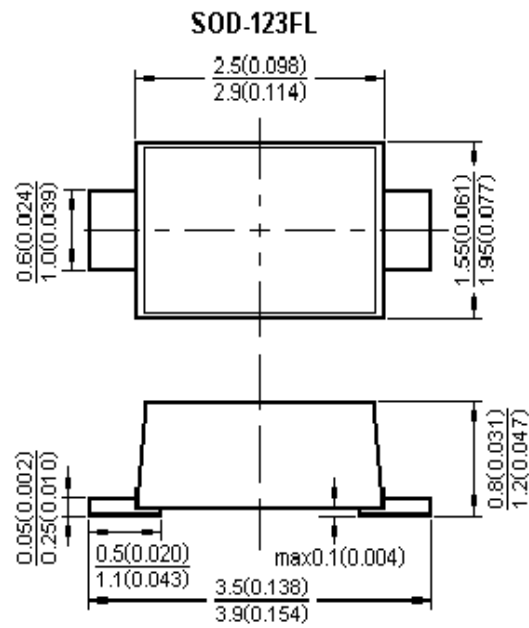


Fig.2 Maximum Non-Repetitive Peak Forward Surge Current



Package Outline



Dimensions in millimeters and (inches)