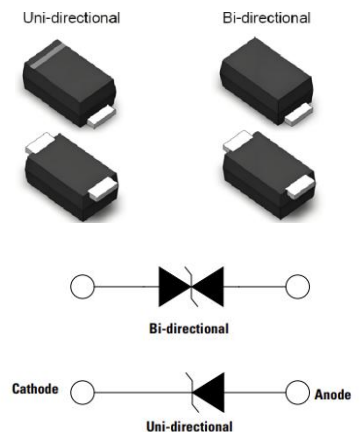
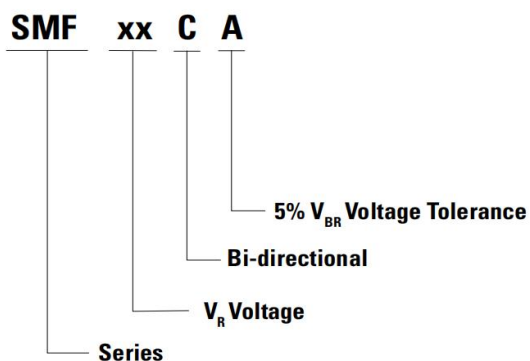


Features

- ◆ 200W peak pulse power capability at 10/1000μs Waveform, repetition rate (duty cycle): 0.01%
- ◆ For surface mounted applications to optimize board space
- ◆ Low incremental surge impedance
- ◆ Excellent clamping capability
- ◆ Typical I_R less than 1μA when V_{BR} min>12V
- ◆ High Temperature soldering guaranteed: 260°C/30 seconds at terminals
- ◆ Plastic package has underwriters laboratory flammability 94V-0
- ◆ Meets MSL level 1, per J-STD-020
- ◆ Meet RoHS compliant



Part Number Coding System



Applications

- ◆ Personal digital assistants (PDA)
- ◆ Cellular handsets & Accessories
- ◆ Portable devices
- ◆ Portable instrumentation
- ◆ Handhelds and notebooks
- ◆ Digital cameras

Mechanical Data

- ◆ Case: SOD-123FL package.
- ◆ Polarity: Color band denotes positive end(cathode) except bi-directional models

Dimensions (SOD-123FL)

Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.60	1.20	0.024	0.047
B	2.50	3.10	0.098	0.122
C	1.50	2.00	0.059	0.079
D	0.80	1.30	0.031	0.051
E	0.35	1.10	0.014	0.043
F	0.05	0.26	0.002	0.010
G	3.40	3.95	0.134	0.156

Maximum Rating and Characteristics($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse power Dissipation at 10/1000 μs Waveform (Note1, Note2,)	P_{PPM}	Minimum 200	W
Peak pulse current of at 10/1000 μs waveform(Note 1, Fig.2)	I_{PPM}	See Table	A
Steady state power dissipation @ $T_A=50^{\circ}\text{C}$	$P_{\text{M(AV)}}$	1.0	W
Maximum Instantaneous Forward Voltage at 0.2A for Unidirectional only	V_F	1.2	V
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load(Note 4)	I_{FSM}	25	A
Operating Temperature Range	T_J	-55 to +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

Notes:

- 1.Non-repetitive current pulse, per Fig.2 and derated above $T_A=25^{\circ}\text{C}$ per Fig.1.
2. Mounted on 5.0mm $\times$ 5.0mm (0.03mm thick) copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

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

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @ I_T	Test Current	Maximum Clamping Voltage @ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
UNI	BI	UNI	BI	$V_{RWM}(V)$	$V_{BR}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
SMF5.0A	SMF5.0CA	AE	HE	5.0	6.4~7	10	9.2	21.7	800
SMF6.0A	SMF6.0CA	AG	HG	6.0	6.67~7.37	10	10.3	19.4	800
SMF6.5A	SMF6.5CA	AK	HK	6.5	7.22~7.98	10	11.2	17.9	500
SMF7.0A	SMF7.0CA	AM	HM	7.0	7.78~8.6	10	12.0	16.7	200
SMF7.5A	SMF7.5CA	AP	HP	7.5	8.33~9.21	1	12.9	15.5	100
SMF8.0A	SMF8.0CA	AR	HR	8.0	8.89~9.83	1	13.6	14.7	50
SMF8.5A	SMF8.5CA	AT	HT	8.5	9.44~10.4	1	14.4	13.9	20
SMF9.0A	SMF9.0CA	AV	HV	9.0	10~11.1	1	15.4	13.0	5
SMF10A	SMF10CA	AX	HX	10.0	11.1~12.3	1	17.0	11.8	5
SMF11A	SMF11CA	AZ	HZ	11.0	12.2~13.5	1	18.2	11.0	1
SMF12A	SMF12CA	BE	IE	12.0	13.3~14.7	1	19.9	10.1	1
SMF13A	SMF13CA	BG	IG	13.0	14.4~15.9	1	21.5	9.3	1
SMF14A	SMF14CA	BK	IK	14.0	15.6~17.2	1	23.2	8.6	1
SMF15A	SMF15CA	BM	IM	15.0	16.7~18.5	1	24.4	8.2	1
SMF16A	SMF16CA	BP	IP	16.0	17.8~19.7	1	26.0	7.7	1
SMF17A	SMF17CA	BR	IR	17.0	18.9~20.9	1	27.6	7.2	1
SMF18A	SMF18CA	BT	IT	18.0	20~22.1	1	29.2	6.8	1
SMF20A	SMF20CA	BV	IV	20.0	22.2~24.5	1	32.4	6.2	1
SMF22A	SMF22CA	BX	IX	22.0	24.4~26.9	1	35.5	5.7	1
SMF24A	SMF24CA	BZ	IZ	24.0	26.7~29.5	1	38.9	5.1	1
SMF26A	SMF26CA	CE	JE	26.0	28.9~31.9	1	42.1	4.8	1
SMF28A	SMF28CA	CG	JG	28.0	31.1~34.4	1	45.4	4.4	1
SMF30A	SMF30CA	CK	JK	30.0	33.3~36.8	1	48.4	4.1	1
SMF33A	SMF33CA	CM	JM	33.0	36.7~40.6	1	53.3	3.8	1
SMF36A	SMF36CA	CP	JP	36.0	40~44.2	1	58.1	3.4	1
SMF40A	SMF40CA	CR	JR	40.0	44.4~49.1	1	64.5	3.1	1
SMF43A	SMF43CA	CT	JT	43.0	47.8~52.8	1	69.4	2.9	1
SMF45A	SMF45CA	CV	JV	45.0	50~55.3	1	72.7	2.8	1
SMF48A	SMF48CA	CX	JX	48.0	53.3~58.9	1	77.4	2.6	1
SMF51A	SMF51CA	CZ	JZ	51.0	56.7~62.7	1	82.4	2.4	1
SMF54A	SMF54CA	DE	KE	54.0	60~66.3	1	87.1	2.3	1
SMF58A	SMF58CA	RG	KG	58.0	64.4~71.2	1	93.6	2.1	1
SMF60A	SMF60CA	RK	KK	60.0	66.7~73.7	1	96.8	2.1	1
SMF64A	SMF64CA	RM	KM	64.0	71.1~78.6	1	103.0	1.9	1
SMF70A	SMF70CA	RP	KP	70.0	77.8~86	1	113.0	1.7	1
SMF75A	SMF75CA	RR	KR	75.0	83.3~92.1	1	121.0	1.6	1
SMF78A	SMF78CA	RT	KT	78.0	86.7~95.8	1	126.0	1.6	1
SMF85A	SMF85CA	RV	KV	85.0	94.4~104	1	137.0	1.5	1

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @ I_T	Test Current	Maximum Clamping Voltage @ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
UNI	BI	UNI	BI	$V_{RWM}(V)$	$V_{BR}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
SMF90A	SMF90CA	RW	-	90.0	100~111	1	146.0	1.2	1
SMF100A	SMF100CA	RX	-	100.0	111~123	1	162.0	1.1	1
SMF110A	SMF110CA	SE	-	110.0	122~135	1	177.0	1.1	1
SMF120A	SMF120CA	SG	-	120.0	133~147	1	193.0	1.0	1
SMF130A	SMF130CA	SK	-	130.0	144~159	1	209.0	1.0	1
SMF150A	SMF150CA	SM	-	150.0	167~185	1	243.0	0.8	1
SMF160A	SMF160CA	SP	-	160.0	178~197	1	259.0	0.8	1
SMF170A	SMF170CA	SR	-	170.0	189~209	1	275.0	0.7	1
SMF180A	-	ST	-	180.0	201~222	1	292.0	0.7	1
SMF188A	-	SV	-	188.0	209~231	1	304.0	0.7	1
SMF200A	-	SX	-	200.0	224~247	1	324.0	0.7	1
SMF220A	-	SZ	-	220.0	246~272	1	356.0	0.6	1

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

Figure 1. Peak Pulse Power Derating Curve

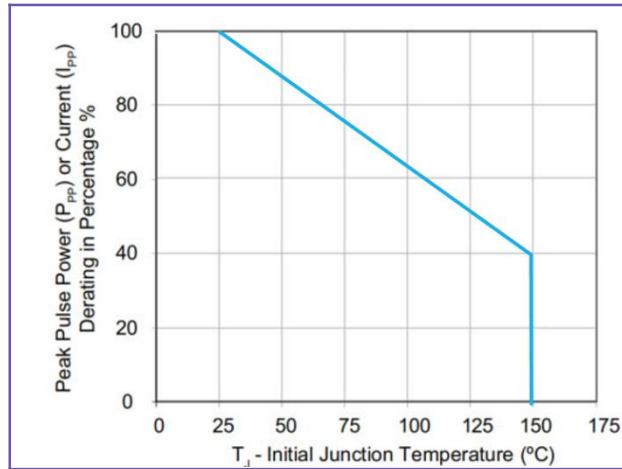


Figure 2. Pulse Waveform

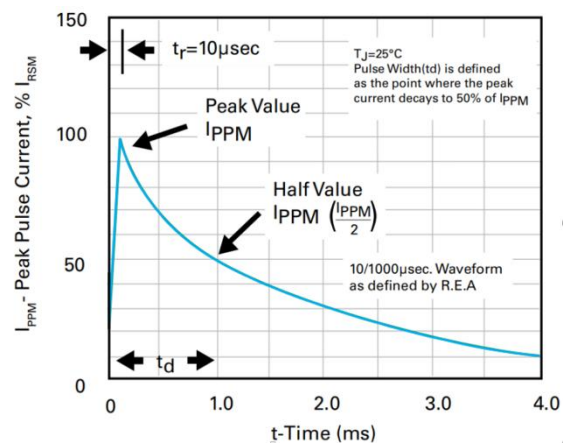


Figure 3. Typical Junction Capacitance

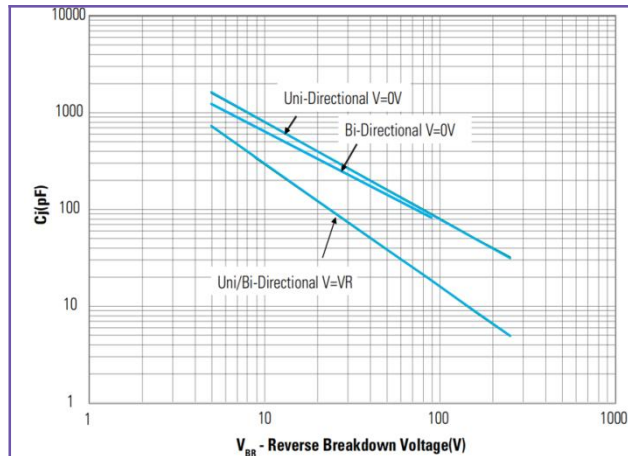


Figure 4. Forward Voltage

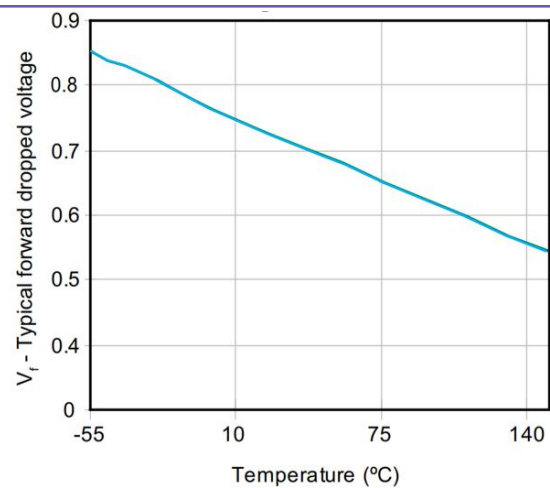


Figure 5. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

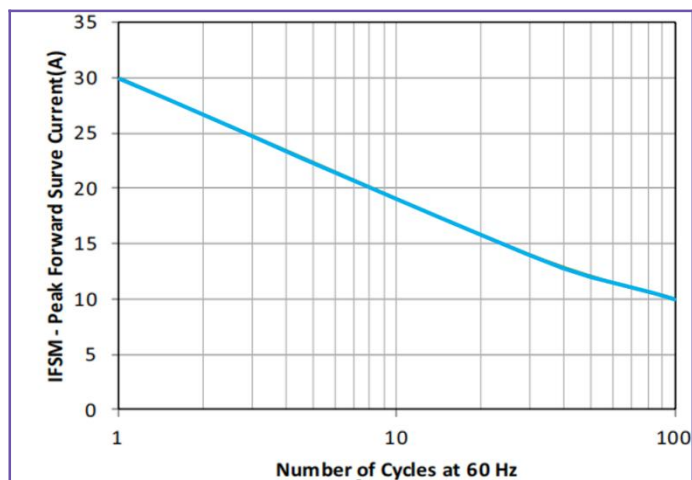
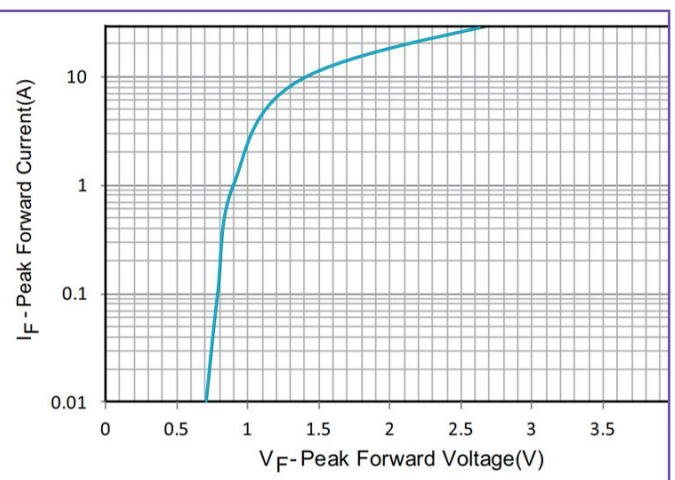
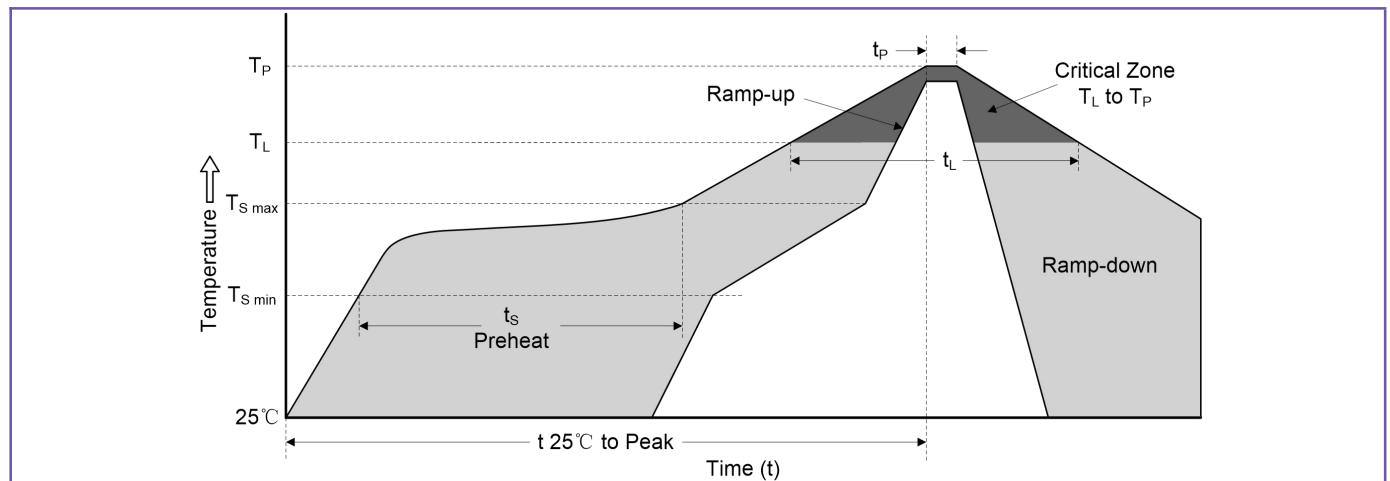


Figure 6. Peak Forward Voltage Drop vs Peak Forward Current (Typical Values)



Reflow Soldering Parameters



Reflow Condition		Lead-free Assembly
Preheat	-Temperature Min ($T_{S\ min}$)	150°C
	-Temperature Max ($T_{S\ max}$)	200°C
	-Time (min to max) (t_s)	60-120 seconds
Average ramp-up rate (T_L to T_P)		3°C/second max.
$T_{S\ max}$ to T_L -Ramp-up Rate		3°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Time (min to max) (t_s)	60-150 seconds
Peak Temperature (T_P)		260(+0/-5)°C
Time within 5°C of actual Peak Temperature (t_p)		30 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to Peak Temperature(T_P)		8 minutes max.
Do not exceed		260°C

Reliability

Items	Standards
Terminal strength	MIL-STD-750 Method 2036
Mechanical shock	JESD22-B104
Vibration	JESD22-B103
High Temp Storage	JESD22-A103
High Temp Reverse Bias	JESD22-A108
Temperature Cycling	JESD22-A104
High Temp High Humidity Reverse Bias	JESD22-A101
Resistance to solder heat	JESD22-A111

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