

## Features

- For surface mounted applications in order to optimize board space.
- Low profile package.
- Excellent clamping capability.
- IEC61000-4-2 ESD 30kV Air, 30kV contact compliance
- Protects one I/O line
- Lead-free parts meet RoHS requirements.
- Compliant to Halogen-free

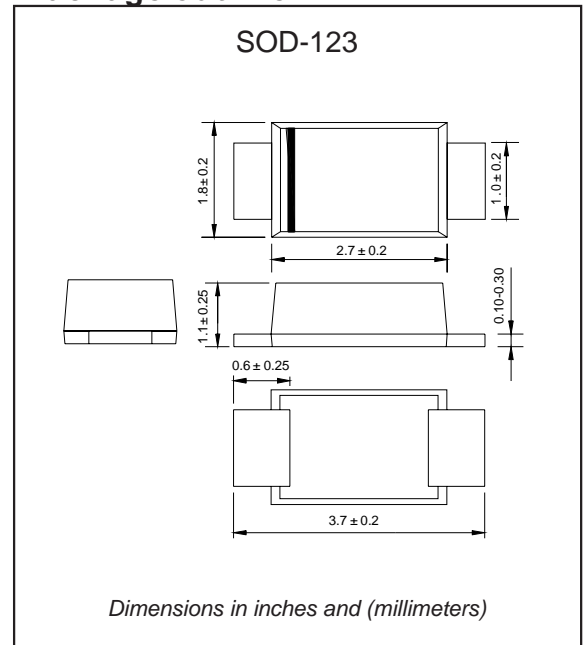
## Applications

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

## Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-123
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any

## Package outline



## Maximum ratings and Electrical Characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	Value	UNIT
Peak Power Dissipation	Peak Pulse Power Dissipation at $T_A=25^{\circ}\text{C}$ by 10x1000us (Note 1)	$P_{PPM}$	200	W
Operating junction temperature range		$T_J$	-55 to +150	$^{\circ}\text{C}$
Storage temperature range		$T_{STG}$	-55 to +150	$^{\circ}\text{C}$

Note: 1. Non-repetitive current pulse, per Fig. 2 and derated above  $T_A=25^{\circ}\text{C}$  per Fig. 1

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

Part Number Add C For Bi-Directional (Note 4)	Reverse Standoff Voltage $V_{RWM}$ (V)	Breakdown Voltage $V_{BR}$ @ $I_T$ (Note 5)		Test Current $I_T$ (mA)	Max. Reverse Leakage @ $V_{RWM}$ (Note 6) $I_R$ ( $\mu\text{A}$ )	Max. Clamping Voltage @ $I_{PP}$ $V_C$ (V)	Max. Peak Pulse Current $I_{PP}$ (A)	Marking Code	
		Min (V)	Max (V)					BI-	UNI-
SMF5.0(C)A	5.0	6.40	7.25	10	800	9.2	21.7	CAE	AE
SMF6.0(C)A	6.0	6.67	7.37	10	800	10.3	19.4	CAG	AG
SMF6.5(C)A	6.5	7.22	7.98	10	500	11.2	17.9	CAK	AK
SMF7.0(C)A	7.0	7.78	8.60	10	200	12.0	16.7	CAM	AM
SMF7.5(C)A	7.5	8.33	9.21	1.0	100	12.9	15.5	CAP	AP
SMF8.0(C)A	8.0	8.89	9.83	1.0	50	13.6	14.7	CAR	AR
SMF8.5(C)A	8.5	9.44	10.4	1.0	10	14.4	13.9	CAT	AT
SMF9.0(C)A	9.0	10.0	11.1	1.0	5.0	15.4	13.0	CAV	AV
SMF10(C)A	10	11.1	12.3	1.0	5.0	17.0	11.8	CAX	AX
SMF11(C)A	11	12.2	13.5	1.0	5.0	18.2	11.0	CAZ	AZ
SMF12(C)A	12	13.3	14.7	1.0	5.0	19.9	10.1	CBE	BE
SMF13(C)A	13	14.4	15.9	1.0	5.0	21.5	9.3	CBG	BG
SMF14(C)A	14	15.6	17.2	1.0	5.0	23.2	8.6	CBK	BK
SMF15(C)A	15	16.7	18.5	1.0	5.0	24.4	8.2	CBM	BM
SMF16(C)A	16	17.8	19.7	1.0	5.0	26.0	7.7	CBP	BP
SMF17(C)A	17	18.9	20.9	1.0	5.0	27.6	7.2	CBR	BR
SMF18(C)A	18	20.0	22.1	1.0	5.0	29.2	6.8	CBT	BT
SMF20(C)A	20	22.2	24.5	1.0	5.0	32.4	6.2	CBV	BV
SMF22(C)A	22	24.4	26.9	1.0	5.0	35.5	5.6	CBX	BX
SMF24(C)A	24	26.7	29.5	1.0	5.0	38.9	5.1	CBZ	BZ
SMF26(C)A	26	28.9	31.9	1.0	5.0	42.1	4.8	CCE	CE
SMF28(C)A	28	31.1	34.4	1.0	5.0	45.4	4.4	CCG	CG
SMF30(C)A	30	33.3	36.8	1.0	5.0	48.4	4.2	CCK	CK
SMF33(C)A	33	36.7	40.6	1.0	5.0	53.3	3.8	CCM	CM
SMF36(C)A	36	40.0	44.2	1.0	5.0	58.1	3.5	CCP	CP
SMF40(C)A	40	44.4	49.1	1.0	5.0	64.5	3.1	CCR	CR
SMF43(C)A	43	47.8	52.8	1.0	5.0	69.4	2.9	CCT	CT
SMF45(C)A	45	50.0	55.3	1.0	5.0	72.7	2.8	CCV	CV
SMF48(C)A	48	53.3	58.9	1.0	5.0	77.4	2.6	CCX	CX
SMF51(C)A	51	56.7	62.7	1.0	5.0	82.4	2.5	CCZ	CZ
SMF54(C)A	54	60.0	66.3	1.0	5.0	87.1	2.3	CDE	DE
SMF58(C)A	58	64.4	71.2	1.0	5.0	93.6	2.3	CDG	DG
SMF60(C)A	60	66.7	73.7	1.0	5.0	96.8	2.1	CDK	DK
SMF64(C)A	64	71.1	78.6	1.0	5.0	103	2.0	CDM	DM
SMF70(C)A	70	77.8	86.0	1.0	5.0	113	1.8	CDP	DP
SMF75(C)A	75	83.3	92.1	1.0	5.0	121	1.7	CDR	DR
SMF78(C)A	78	86.7	95.8	1.0	5.0	126	1.6	CDT	DT
SMF85(C)A	85	94.4	104	1.0	5.0	137	1.5	CDV	DV
SMF90(C)A	90	100	111	1.0	5.0	146	1.4	CDX	DX
SMF100(C)A	100	111	123	1.0	5.0	162	1.3	CDZ	DZ
SMF110(C)A	110	122	135	1.0	5.0	177	1.2	CEE	EE
SMF120(C)A	120	133	147	1.0	5.0	193	1.1	CEG	EG
SMF130(C)A	130	144	159	1.0	5.0	209	1.0	CEK	EK
SMF150(C)A	150	167	185	1.0	5.0	243	0.8	CEM	EM
SMF160(C)A	160	178	197	1.0	5.0	259	0.8	CEP	EP
SMF170(C)A	170	189	209	1.0	5.0	275	0.8	CER	ER

- Notes: 4. Suffix C denotes Bi-directional device.  
5.  $V_{BR}$  measured with  $I_T$  current pulse = 300 $\mu\text{s}$   
6. For Bi-Directional devices having  $V_{RWM}$  of 10V and under, the  $I_R$  is doubled.

## Rating and characteristic curves

FIG.1 - PULSE DERATING CURVE

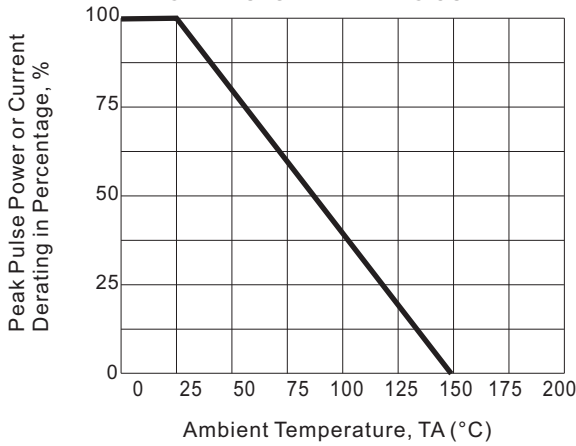


FIG.2 - 10X1000us PULSE WAVEFORM

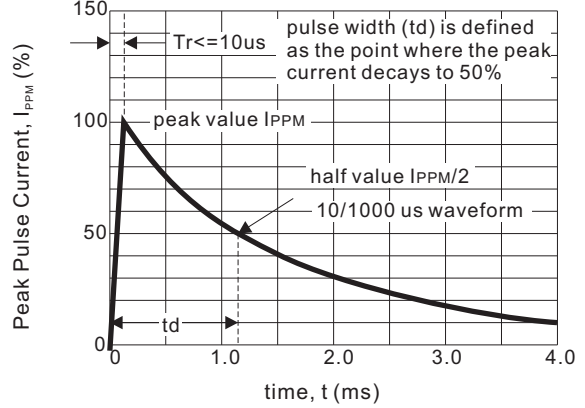


FIG.3 - 8X20us PULSE WAVEFORM

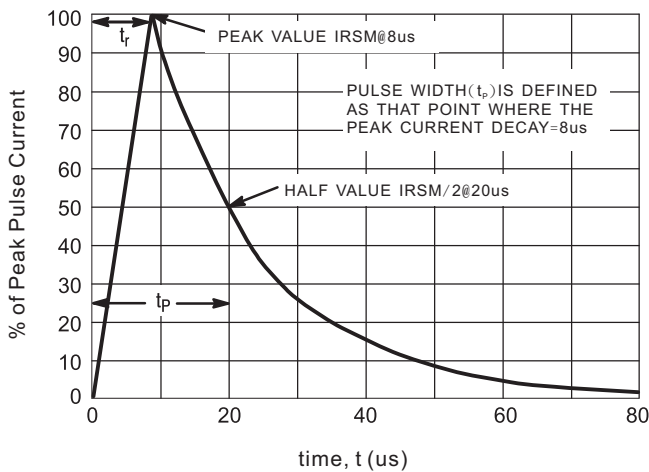


FIG.4 - PEALK PULSE POWER RATING CURVE

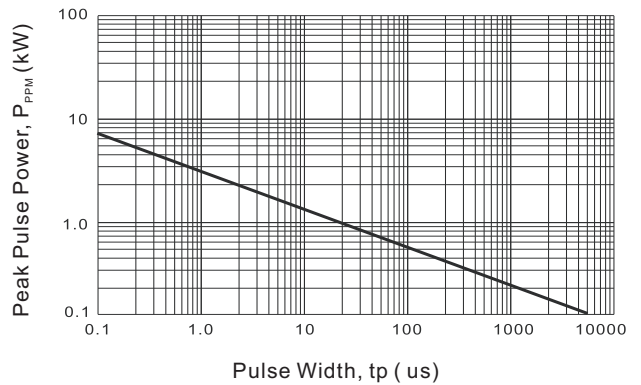
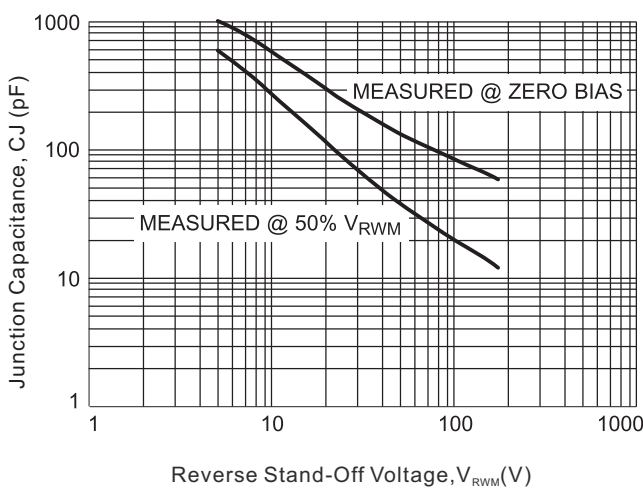






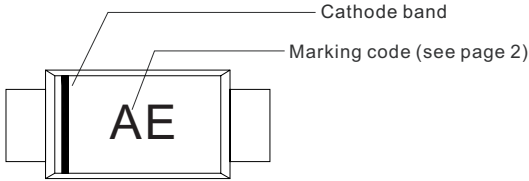
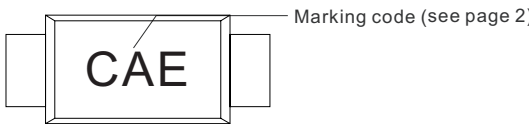
FIG.5 - TYPICAL JUNCTION CAPACITANCE



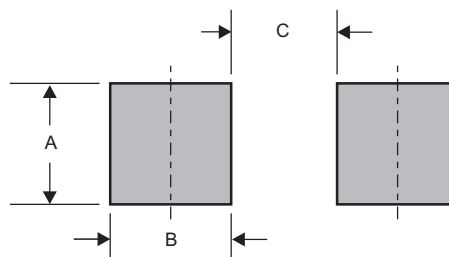
## Pinning information

Pin	Simplified outline	Symbol
Uni-Directional Pin1 cathode Pin2 anode		
Bi-Directional		

## Marking

Type number	Example
Uni-Directional	 Cathode band Marking code (see page 2)
Bi-Directional	 Marking code (see page 2)

## Suggested solder pad layout

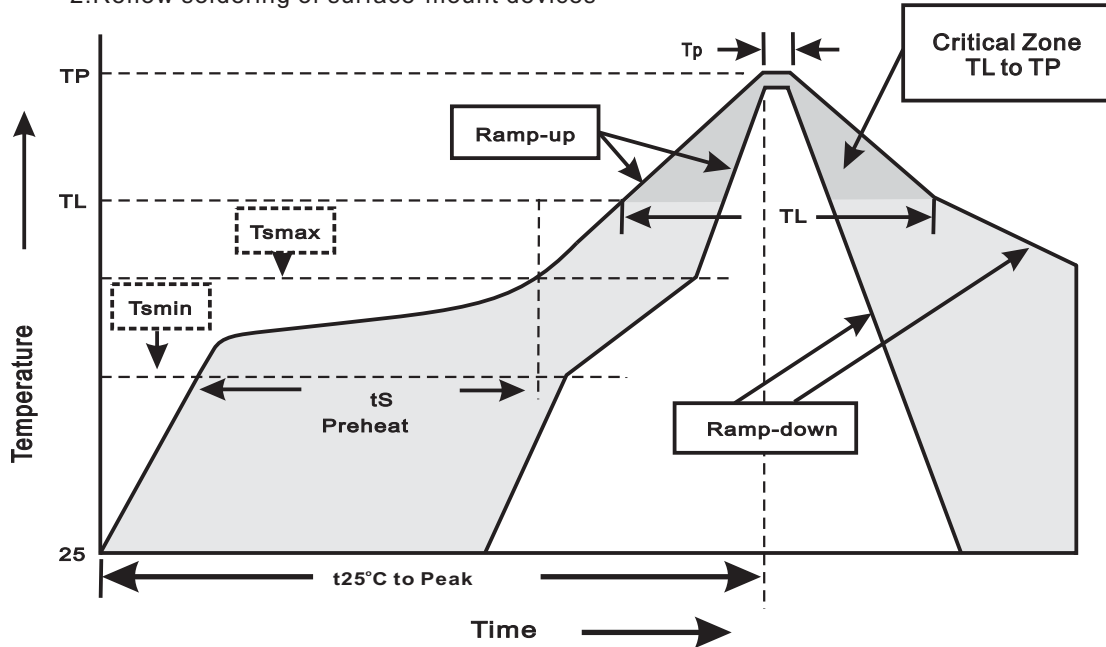


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-123	0.044 (1.10)	0.040 (1.00)	0.079 (2.00)

## Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



### 3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(TL to TP)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts)	150°C 200°C 60~120sec
Tsmax to TL -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(TL) -Time(tL)	217°C 60~260sec
Peak Temperature(TP)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(tp)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

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