

## 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

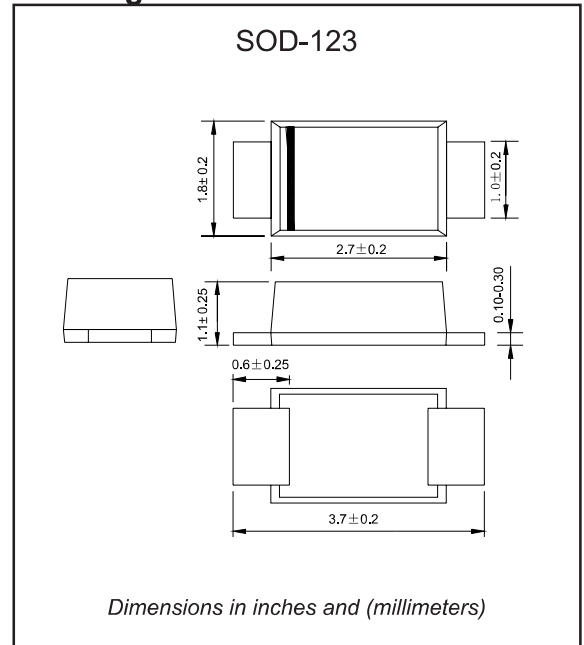
## Applications

- 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)	$P_{PPM}$	400	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 (TA=25°C unless otherwise noted)

Part Number		Marking		Breakdown Voltage $V_{BR}@I_T$			Maximum Reverse Leakage $I_R @ V_{RWM}$ ( $\mu A$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}^{(2)}$ (A)	Maximum Clamping Voltage $V_C @ I_{PP}$ (V)
(Uni)	(Bi)	(Uni)	(Bi)	Min(V)	Max (V)	$I_T^{(1)}$ (mA)				
PTVS5V0S1UR	PTVS5V0S1BR	A2	F5.0CA	6.40	7.00	10	500	5.0	43.6	9.2
PTVS6V0S1UR	PTVS6V0S1BR	A3	F6.0CA	6.67	7.37	10	400	6.0	38.8	10.3
PTVS6V5S1UR	PTVS6V5S1BR	A4	F6.5CA	7.22	7.79	10	350	6.5	35.8	11.2
PTVS7V0S1UR	PTVS7V0S1BR	A5	F7.0CA	7.78	8.60	10	200	7.0	33.4	12.0
PTVS7V5S1UR	PTVS7V5S1BR	A6	F7.5CA	8.33	9.21	1	100	7.5	31.0	12.9
PTVS8V0S1UR	PTVS8V0S1BR	A7	F8.0CA	8.89	9.83	1	50	8.0	29.4	13.6
PTVS8V5S1UR	PTVS8V5S1BR	A8	F8.5CA	9.44	10.4	1	20	8.5	27.8	14.4
PTVS9V0S1UR	PTVS9V0S1BR	A9	F9.0CA	10.00	11.10	1	10	9.0	26.0	15.4
PTVS10VS1UR	PTVS10VS1BR	AA	F10CA	11.10	12.30	1	2.5	10.0	23.52	17.0
PTVS11VS1UR	PTVS11VS1BR	AB	F11CA	12.20	13.50	1	2.5	11.0	21.98	18.2
PTVS12VS1UR	PTVS12VS1BR	AC	F12CA	13.30	14.70	1	2.5	12.0	20.1	19.9
PTVS13VS1UR	PTVS13VS1BR	AD	F13CA	14.40	15.90	1	1.0	13.0	18.6	20.0
PTVS14VS1UR	PTVS14VS1BR	AE	F14CA	15.60	17.20	1	1.0	14.0	17.24	23.2
PTVS15VS1UR	PTVS15VS1BR	AF	F15CA	16.70	18.50	1	1.0	15.0	16.4	24.4
PTVS16VS1UR	PTVS16VS1BR	AG	F16CA	17.80	19.70	1	1.0	16.0	15.38	26.0
PTVS17VS1UR	PTVS17VS1BR	AH	F17CA	18.90	20.90	1	1.0	17.0	14.5	27.6
PTVS18VS1UR	PTVS18VS1BR	AK	F18CA	20.00	22.10	1	1.0	18.0	13.7	29.2
PTVS19VS1UR	PTVS19VS1BR	F19A	F19CA	21.10	23.30	1	1.0	19.0	13.08	30.6
PTVS20VS1UR	PTVS20VS1BR	AL	F20CA	22.20	24.50	1	1.0	20.0	12.34	32.4
PTVS22VS1UR	PTVS22VS1BR	AM	F22CA	24.40	26.90	1	1.0	22.0	11.26	35.5
PTVS24VS1UR	PTVS24VS1BR	AN	F24CA	26.70	29.50	1	1.0	24.0	10.28	38.9
PTVS26VS1UR	PTVS26VS1BR	AP	F26CA	28.90	31.90	1	1.0	26.0	9.5	42.1
PTVS28VS1UR	PTVS28VS1BR	AR	F28CA	31.10	34.40	1	1.0	28.0	8.82	45.4
PTVS30VS1UR	PTVS30VS1BR	AS	F30CA	33.30	36.80	1	1.0	30.0	8.26	48.4
PTVS33VS1UR	PTVS33VS1BR	AT	F33CA	36.70	40.60	1	1.0	33.0	7.5	53.3
PTVS36VS1UR	PTVS36VS1BR	AU	F36CA	40.00	44.20	1	1.0	36.0	6.88	58.1
PTVS40VS1UR	PTVS40VS1BR	AV	F40CA	44.40	49.10	1	1.0	40.0	6.2	64.5

■ **Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		Marking		Breakdown Voltage $V_{BR}@I_T$			Maximum Reverse Leakage $I_R @ V_{RWM}$ ( $\mu A$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}^{(2)}$ (A)	Maximum Clamping Voltage $V_C @ I_{PP}$ (V)
(Uni)	(Bi)	(Uni)	(Bi)	Min(V)	Max (V)	$I_T^{(1)}$ (mA)				
PTVS43VS1UR	PTVS43VS1BR	AW	F43CA	47.80	52.80	1	1.0	43.0	5.76	69.4
PTVS45VS1UR	PTVS45VS1BR	AX	F45CA	50.00	55.30	1	1.0	45.0	5.5	72.7
PTVS48VS1UR	PTVS48VS1BR	AY	4VX	53.30	58.90	1	1.0	48.0	5.16	77.4
PTVS51VS1UR	PTVS51VS1BR	AZ	4VZ	56.70	62.70	1	1.0	51.0	4.86	82.4
PTVS54VS1UR	PTVS54VS1BR	B1	4WE	60.00	66.30	1	1.0	54.0	4.6	87.1
PTVS58VS1UR	PTVS58VS1BR	B2	4WG	64.40	71.20	1	1.0	58.0	4.28	93.6
PTVS60VS1UR	PTVS60VS1BR	B3	4WK	66.70	73.70	1	1.0	60.0	4.14	96.8
PTVS64VS1UR	PTVS64VS1BR	B4	4WM	71.10	78.60	1	1.0	64.0	3.88	103.0
PTVS70VS1UR	PTVS70VS1BR	B5	4WP	77.80	86.00	1	1.0	70.0	3.54	113.0
PTVS75VS1UR	PTVS75VS1BR	B6	4WR	83.30	92.10	1	1.0	75.0	3.3	121.0
PTVS78VS1UR	PTVS78VS1BR	B7	4WT	86.70	95.80	1	1.0	78.0	3.18	126.0
PTVS80VS1UR	PTVS80VS1BR	B8	4WU	88.80	97.60	1	1.0	80.0	3.1	129.0
PTVS85VS1UR	PTVS85VS1BR	B9	4WV	94.40	104.00	1	1.0	85.0	2.92	137.0
PTVS90VS1UR	PTVS90VS1BR	B10	4WX	100.00	111.00	1	1.0	90.0	2.74	146.0
PTVS100VS1UR	PTVS100VS1BR	B11	4WZ	111.00	123.00	1	1.0	100.0	2.46	162.0

## Rating and characteristic curves

FIG.1 - PULSE DERATING CURVE

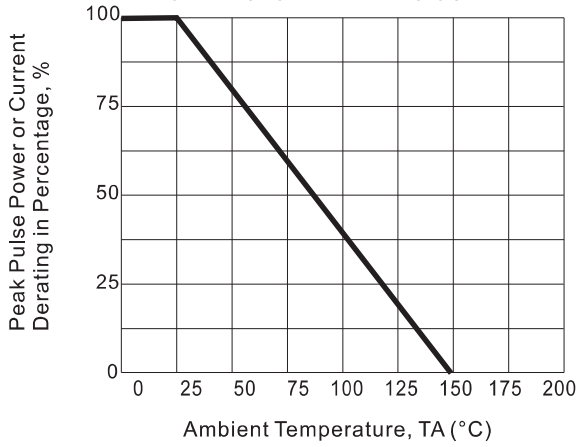


FIG.2 - 10X1000us PULSE WAVEFORM

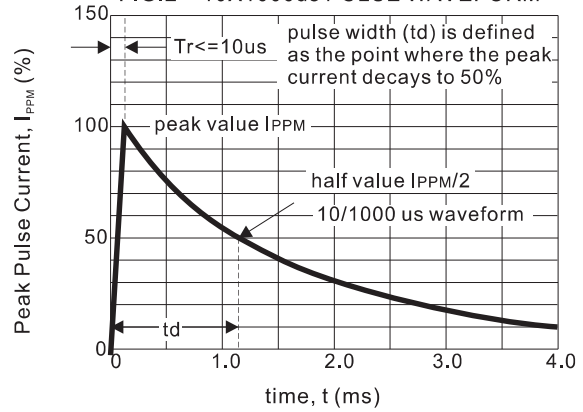


FIG.3 - 8X20us PULSE WAVEFORM

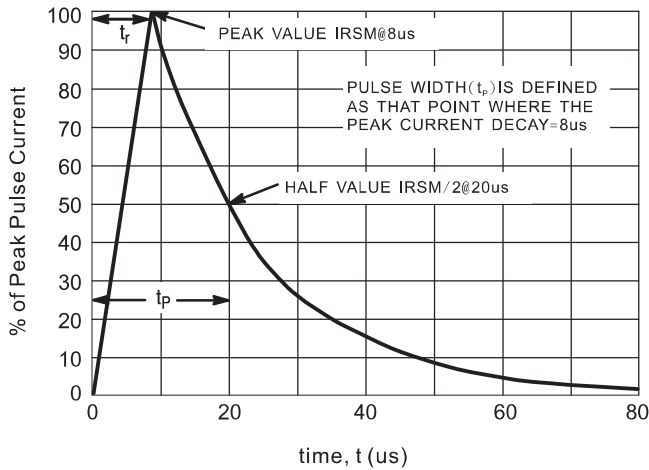


FIG.4 - PEAK PULSE POWER RATING CURVE

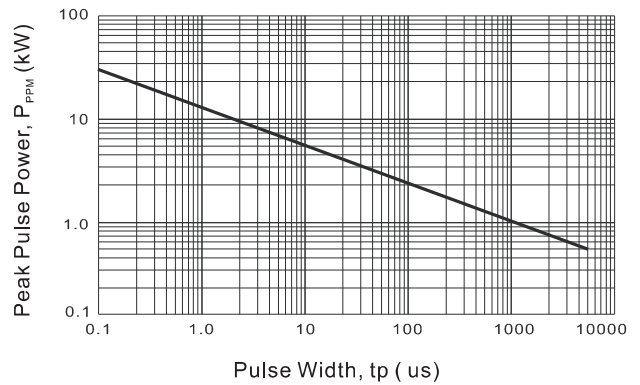
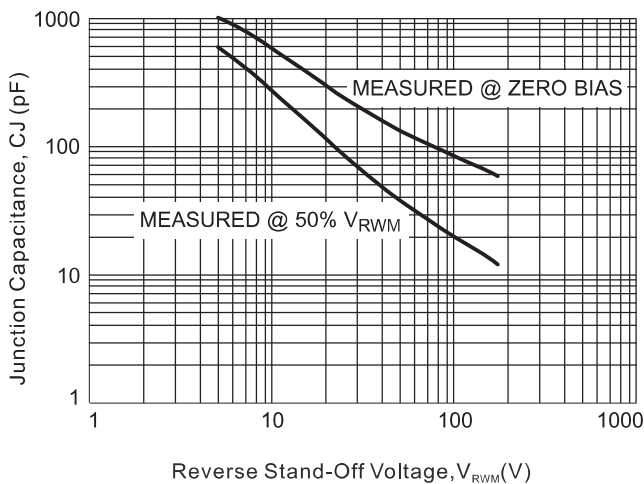






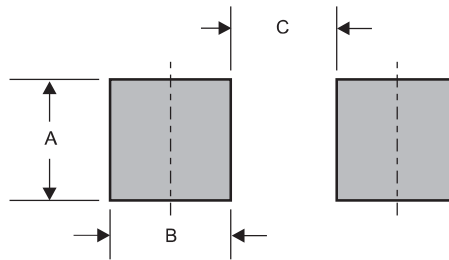
FIG.5 - TYPICAL JUNCTION CAPACITANCE



## Pinning information

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

## Suggested solder pad layout

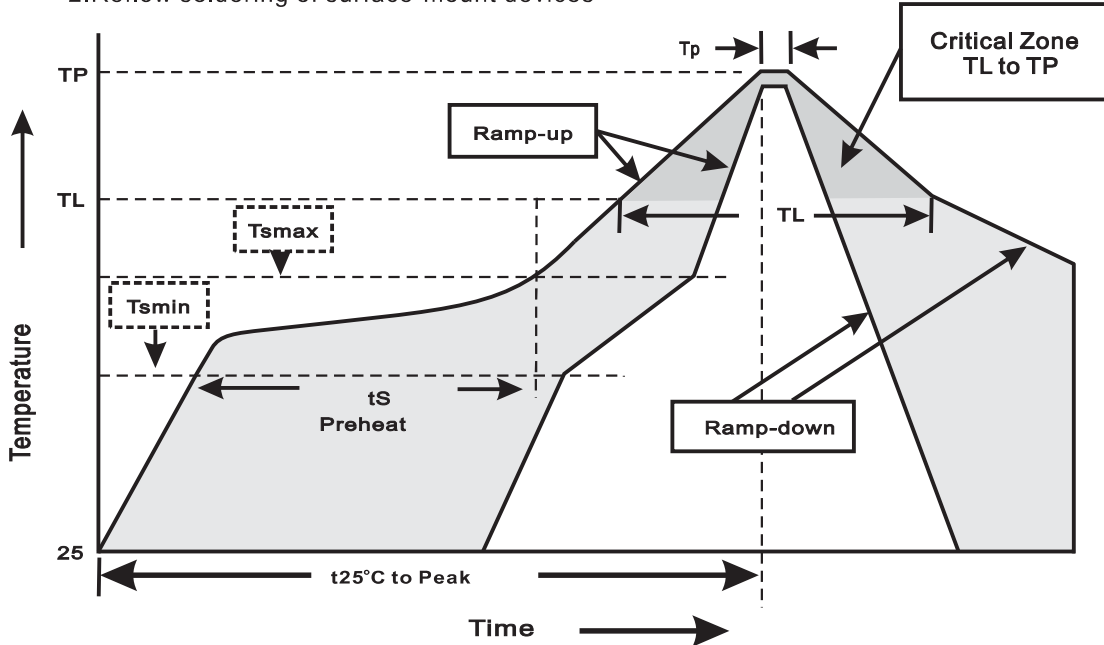


Dimensions in inches and (millimeters)

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(T <sub>L</sub> to T <sub>P</sub> )	<3°C/sec
Preheat -Temperature Min(T <sub>smin</sub> ) -Temperature Max(T <sub>smax</sub> ) -Time(min to max)(t <sub>s</sub> )	150°C 200°C 60~120sec
T <sub>smax</sub> to T <sub>L</sub> -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T <sub>L</sub> ) -Time(t <sub>L</sub> )	217°C 60~260sec
Peak Temperature(T <sub>P</sub> )	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t <sub>P</sub> )	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

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