PTVSxS1xR-FS series

400W Surface Mount Unidirectional and Bidirectional Transient Voltage Suppressors Diodes- 5.0V- 100V

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 requirments.
- Compliant to Halogen-free

Applications

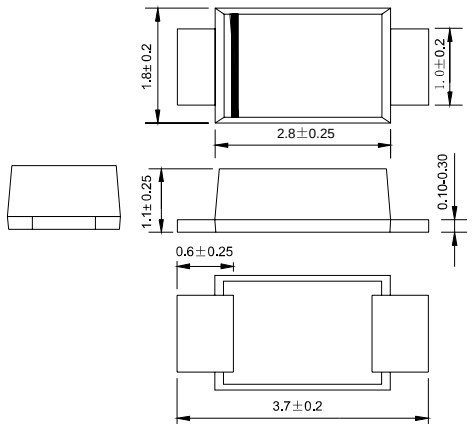
- Personal digital assistants (PDA)
- Cellular handsets & Accessories
- Portable devices
- Portable instrumentation
- Handhelds and notebooks
- Digital cameras

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

SOD-123



Dimensions in inches and (millimeters)

Maximum ratings and Electrical Characteristics (AT T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	Value	UNIT
Peak Power Dissipation	Peak Pulse Power Dissipation at TA=25°C by 10x1000us (Note 1)	P_{PPM}	400	W
Operating junction temperature range		T_J	-55 to +150	°C
Storage temperature range		T_{STG}	-55 to +150	°C

Note: 1. Non-repetitive current pulse, per Fig. 2 and derated above TA=25°C per Fig. 1

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■ Electrical Characteristics (TA=25℃ unless otherwise noted)

Part Number		Marking		Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
（Uni）	（Bi）	（Uni）	（Bi）	Min(V)	Max (V)	I_T(1)(mA)				
PTVS5V0S1UR-FS	PTVS5V0S1BR-FS	A2	F5.0CA	6.40	7.00	10	500	5.0	43.6	9.2
PTVS6V0SIUR-FS	PTVS6V0S1BR-FS	A3	F6.0CA	6.67	7.37	10	400	6.0	38.8	10.3
PTVS6V5S1UR-FS	PTVS6V5S1BR-FS	A4	F6.5CA	7.22	7.79	10	350	6.5	35.8	11.2
PTVS7V0S1UR-FS	PTVS7V0S1BR-FS	A5	F7.0CA	7.78	8.60	10	200	7.0	33.4	12.0
PTVS7V5S1UR-FS	PTVS7V5S1BR-FS	A6	F7.5CA	8.33	9.21	1	100	7.5	31.0	12.9
PTVS8V0S1UR-FS	PTVS8V0S1BR-FS	A7	F8.0CA	8.89	9.83	1	50	8.0	29.4	13.6
PTVS8V5S1UR-FS	PTVS8V5S1BR-FS	A8	F8.5CA	9.44	10.4	1	20	8.5	27.8	14.4
PTVS9V0S1UR-FS	PTVS9V0S1BR-FS	A9	F9.0CA	10.00	11.10	1	10	9.0	26.0	15.4
PTVS10VS1UR-FS	PTVS10VS1BR-FS	AA	F10CA	11.10	12.30	1	2.5	10.0	23.52	17.0
PTVS11VS1UR-FS	PTVS11VS1BR-FS	AB	F11CA	12.20	13.50	1	2.5	11.0	21.98	18.2
PTVS12VS1UR-FS	PTVS12VS1BR-FS	AC	F12CA	13.30	14.70	1	2.5	12.0	20.1	19.9
PTVS13VS1UR-FS	PTVS13VS1BR-FS	AD	F13CA	14.40	15.90	1	1.0	13.0	18.6	20.0
PTVS14VS1UR-FS	PTVS14VS1BR-FS	AE	F14CA	15.60	17.20	1	1.0	14.0	17.24	23.2
PTVS15VS1UR-FS	PTVS15VS1BR-FS	AF	F15CA	16.70	18.50	1	1.0	15.0	16.4	24.4
PTVS16VS1UR-FS	PTVS16VS1UR-FS	AG	F16CA	17.80	19.70	1	1.0	16.0	15.38	26.0
PTVS17VS1UR-FS	PTVS17VS1BR-FS	AH	F17CA	18.90	20.90	1	1.0	17.0	14.5	27.6
PTVS18VS1UR-FS	PTVS18VS1BR-FS	AK	F18CA	20.00	22.10	1	1.0	18.0	13.7	29.2
PTVS19VS1UR-FS	PTVS19VS1BR-FS	F19A	F19CA	21.10	23.30	1	1.0	19.0	13.08	30.6
PTVS20VS1UR-FS	PTVS20VS1BR-FS	AL	F20CA	22.20	24.50	1	1.0	20.0	12.34	32.4
PTVS22VS1UR-FS	PTVS22VS1BR-FS	AM	F22CA	24.40	26.90	1	1.0	22.0	11.26	35.5
PTVS24VS1UR-FS	PTVS24VS1BR-FS	AN	F24CA	26.70	29.50	1	1.0	24.0	10.28	38.9
PTVS26VS1UR-FS	PTVS26VS1BR-FS	AP	F26CA	28.90	31.90	1	1.0	26.0	9.5	42.1
PTVS28VS1UR-FS	PTVS28VS1BR-FS	AR	F28CA	31.10	34.40	1	1.0	28.0	8.82	45.4
PTVS30VS1UR-FS	PTVS30VS1BR-FS	AS	F30CA	33.30	36.80	1	1.0	30.0	8.26	48.4
PTVS33VS1UR-FS	PTVS33VS1BR-FS	AT	F33CA	36.70	40.60	1	1.0	33.0	7.5	53.3
PTVS36VS1UR-FS	PTVS36VS1BR-FS	AU	F36CA	40.00	44.20	1	1.0	36.0	6.88	58.1
PTVS40VS1UR-FS	PTVS40VS1BR-FS	AV	F40CA	44.40	49.10	1	1.0	40.0	6.2	64.5

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

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

Rating and characteristic curves

FIG.1 - PULSE DERATING CURVE

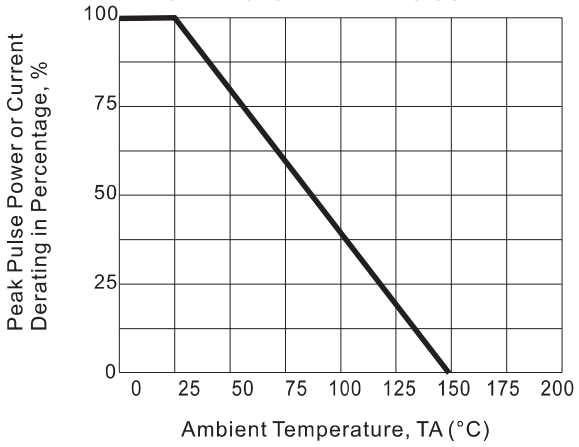


FIG.2 - 10X1000us PULSE WAVEFORM

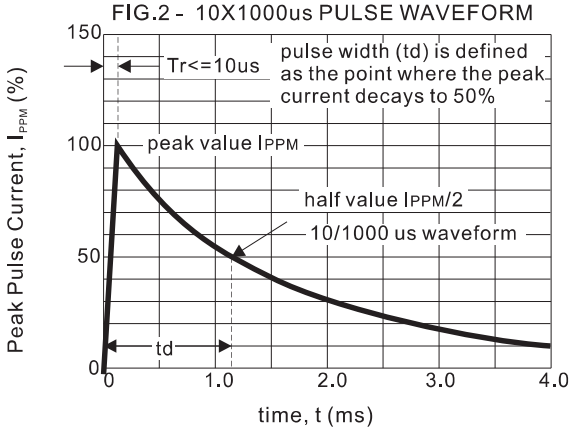


FIG.3 - 8X20us PULSE WAVEFORM

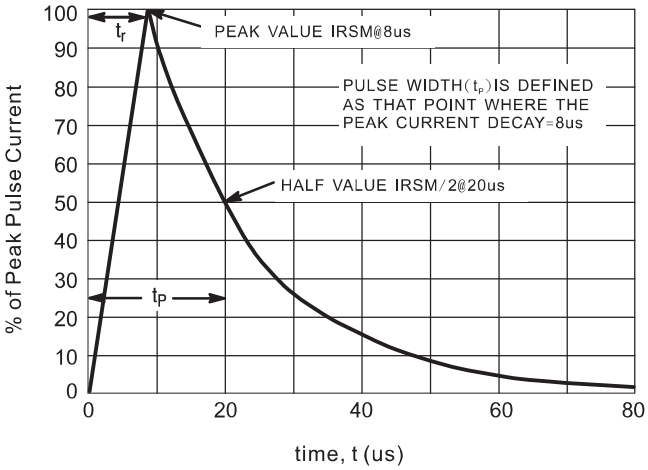


FIG.4 - PEALK PULSE POWER RATING CURVE

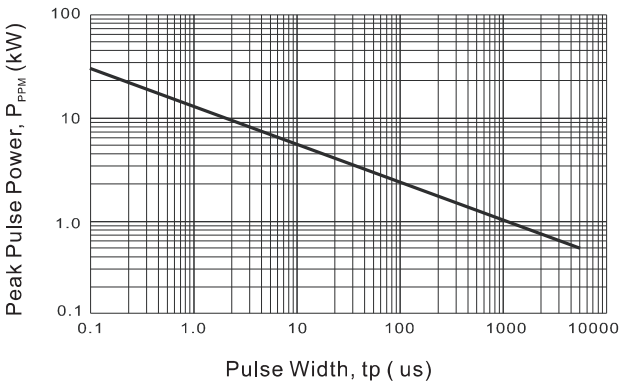
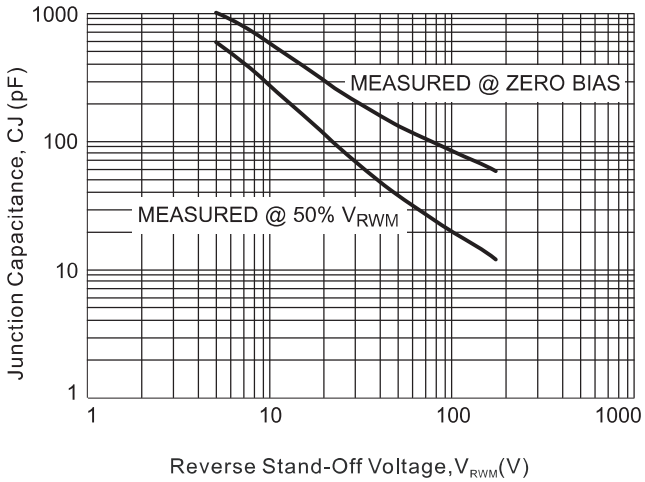


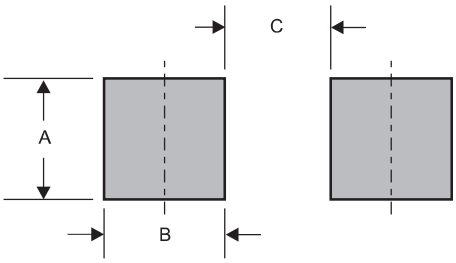
FIG.5 - TYPICAL JUNCTION CAPACITANCE



Pinning information

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

Suggested solder pad layout

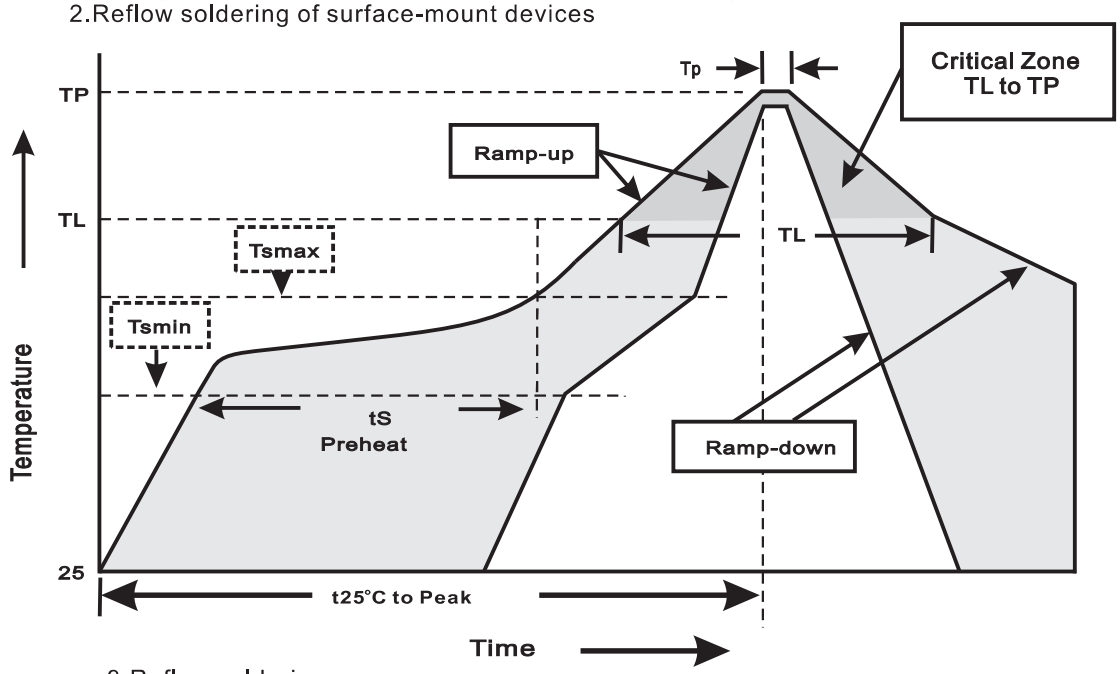


Dimensions in inches and (millimeters)

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_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	 <3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes