

DESCRIPTION:

The PTVS1BxxCA series are designed to protect sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events.

FEATURES

- ✧ 3600W to 6600W peak pulse power dissipation at 1.2/50 μ s-8/20 μ s@2 Ω waveform.
- ✧ For small surface mounted applications.
- ✧ Response time is typically <1ns.
- ✧ Low clamping voltage.
- ✧ Low leakage current.
- ✧ RoHS compliant.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C.
- ✧ Terminal: solder plated, solderable per J-STD-002.

MAIN APPLICATIONS

- ✧ Cellphone handsets and accessories
- ✧ Personal digital assistants (PDA's)
- ✧ Notebooks, desktops, and servers
- ✧ Portable instrumentation

PROTECTION SOLUTION TO MEET

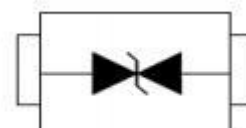
- ✧ IEC61000-4-2 (ESD) $\pm$ 30kV (air), $\pm$ 30kV (contact)
- ✧ IEC61000-4-5 (Lightning) 200A (1.2/50 μ s-8/20 μ s@2 Ω)

MECHANICAL CHARACTERISTICS

- ✧ SOD-123FL package
- ✧ Molding compound flammability rating: UL 94V-0
- ✧ Typical weight: 0.0144g/pcs
- ✧ Lead finish: lead free



SOD-123FL



Pin configuration

ABSOLUTE MAXIMUM RATINGS (T_A=25°C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation at 1.2/50μs-8/20μs@2Ω waveform	P _{PP}	3600 to 6600	W
Peak pulse current at 1.2/50μs-8/20μs@2Ω waveform	I _{PP}	200	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V _{ESD}	+/- 30 +/- 30	kV
Lead soldering temperature	T _L	260 (10 sec.)	°C
Operating junction temperature range	T _J	-55 to +150	°C
Storage temperature range	T _{STG}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Part Number	Marking	V _R	I _R @V _R	V _{BR} @I _T		I _T	P _{PP} ^①	V _H ^②	V _C @I _{PP}	I _{PP} ^②
Bi-Polar	Bi	V	max(μA)	min(V)	max(V)	mA	W	typ(V)	max(V)	A
FSTVS1B7VCA	J07B	7	1.0	8.0	10.0	1	3600	NA	18.0	200
FSTVS1B9VCA	J09B	9	1.0	9.5	11.5	1	4600	NA	23.0	200
FSTVS1B12CA	J12B	12	1.0	13.0	15.0	1	5600	NA	28.0	200
FSTVS1B15CA	J15B	15	1.0	16.5	19.5	1	6000	NA	30.0	200
FS [☆] TVS1B18CA	J18B	18	1.0	19.5	23.5	1	6600	18.0	33.0	200
FS [☆] TVS1B20CA	J20B	20	1.0	22.2	24.5	1	6600	19.0	33.0	200
FS [☆] TVS1B24CA	J24B	24	1.0	25.0	30.0	1	6400	22.0	32.0	200

①Peak pulse power dissipation (Surge waveform: 1.2/50μs-8/20μs@2Ω)

②Peak pulse current (Surge waveform: 1.2/50μs-8/20μs@2Ω)

V_R: Stand-off voltage -- Maximum voltage that can be applied

V_C: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

V_{BR}: Breakdown voltage

I_R: Reverse leakage current

☆: Products with negative resistance

RATINGS AND V-I CHARACTERISTICS CURVES ($T_A=25^\circ\text{C}$, unless otherwise noted)

FIG.1: V- I curve characteristics (Bi-directional)

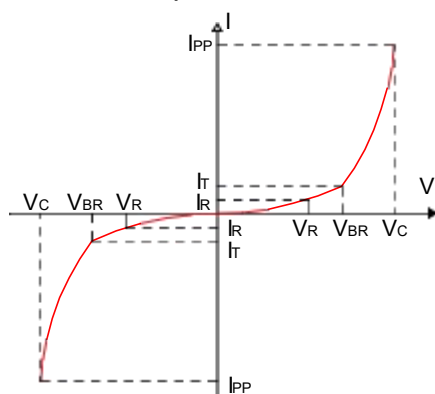


FIG.2: V- I curve characteristics (Bi-directional with negative resistance)

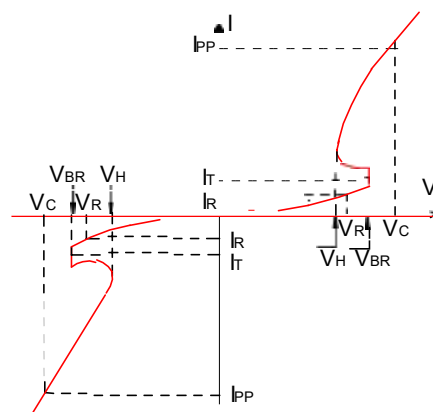


FIG.3: Pulse waveform (1.2/50 μs)

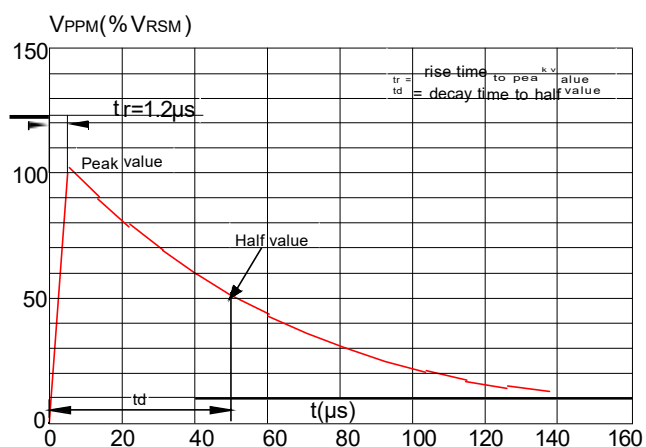


FIG.4: Pulse waveform

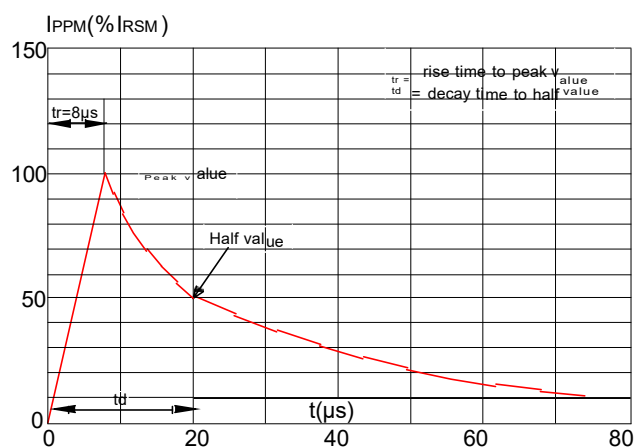


FIG.5: ESD clamping (30kV contact)

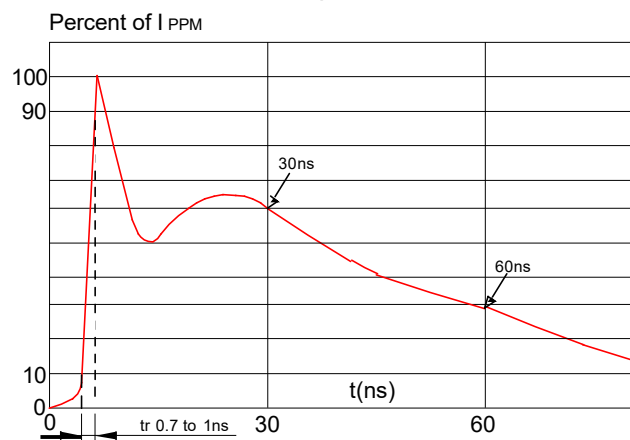
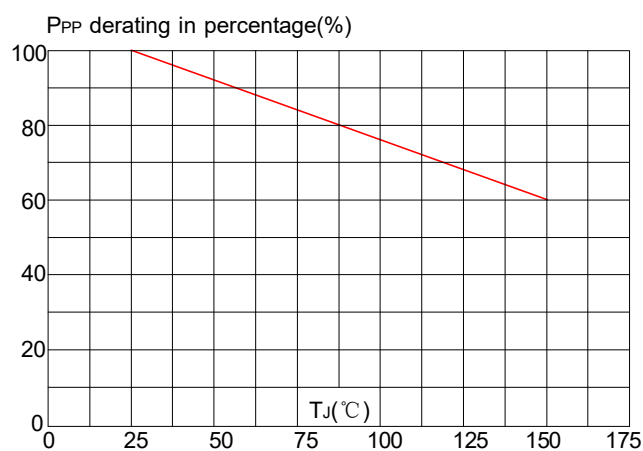
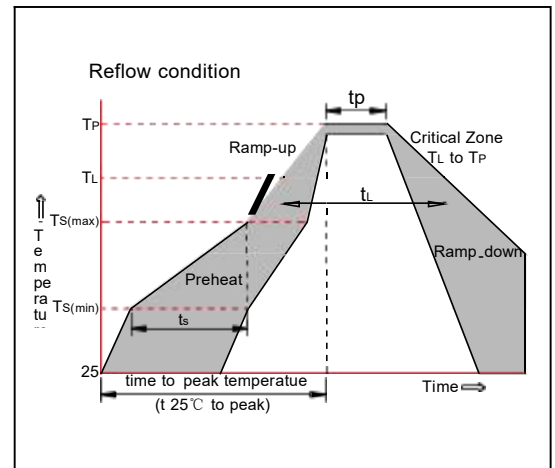


FIG.6: Pulse derating curve

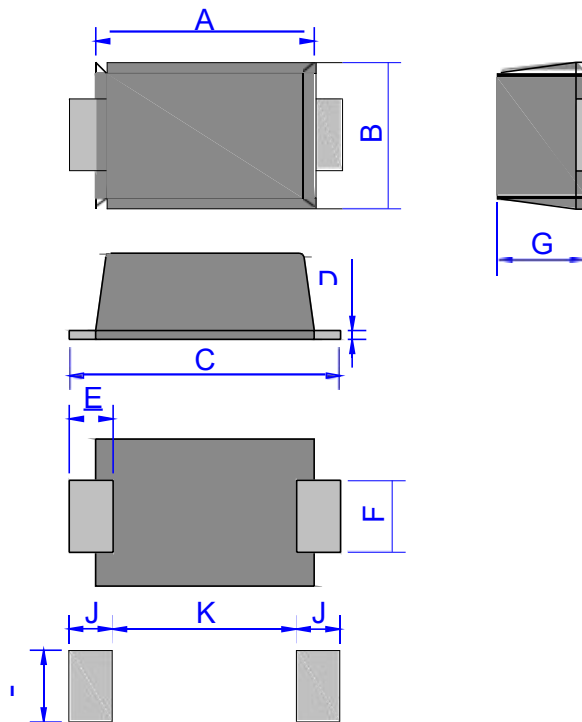


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_P)		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



PACKAGE MECHANICAL DATA



SOD-123FL

Ref	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.60	3.00	0.102	0.118
B	1.60	2.00	0.063	0.079
C	3.45	3.95	0.136	0.156
D	0.10	0.25	0.004	0.01
E	0.3	0.9	0.012	0.035
F	0.80	1.20	0.031	0.047
G	0.70	1.00	0.028	0.039
J	1.30		0.051	
K		1.70		0.067
L	1.30		0.051	