

Features

- ◆ 150 Watts peak pulse power ($t_p = 8/20\mu s$)
- ◆ Transient protection for high speed data lines to IEC 61000-4-2 (ESD) $\pm 30kV$ (air), $\pm 30kV$ (contact) IEC 61000-4-4 (EFT) 40A (5/50ns)
- ◆ Working voltages : 5V
- ◆ Protects one bidirectional line or two unidirectional lines
- ◆ Low operating and clamping voltages
- ◆ Solid-state silicon avalanche technology

Mechanical Characteristics

- ◆ Package: SOT23
- ◆ Lead Finish: Matte Tin
- ◆ UL Flammability Classification Rating 94V-0
- ◆ Pb-Free, Halogen Free, RoHS/WEEE Compliant

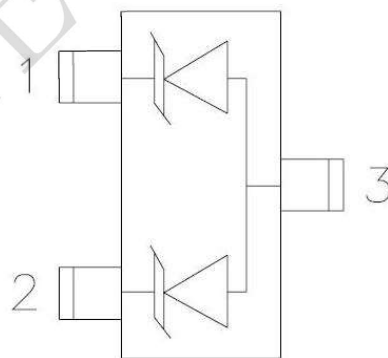
Ordering Information

Part Number	Qty per Reel	Reel Size
TPSP0502BAHTG	3000	7"

Applications

- ◆ USB Power & Data Line Protection
- ◆ Monitors and Flat Panel Displays
- ◆ I²C Bus Protection
- ◆ Portable Instrumentation
- ◆ Set Top Box

Dimensions and Pin Configuration



Circuit and Pin Schematic

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20 μs)	Ppk	150	W
ESD per IEC 61000-4-2 (Air)	VESD	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	TJ	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5.5	V	
Breakdown Voltage	VBR	6			V	$I_T = 1\text{mA}$
Reverse Leakage Current	IR		0.01	0.1	μA	$V_{RWM} = 5\text{V}$
Clamping Voltage	VC			10	V	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	VC			18	V	$I_{PP} = 10\text{A}$ (8 x 20 μs pulse)
Peak Pulse Current	I _{PP}			10	A	$t_P=8/20\mu\text{s}$
Junction Capacitance	CJ		60	70	pF	$V_R=0$, $f=1\text{MHz}$, Pin 1 to Pin 3 or Pin 2 to Pin 3
Junction Capacitance	CJ		30	40	pF	$V_R=0$, $f=1\text{MHz}$, Pin 1 to Pin 2 or Pin 2 to Pin 1

Fig1. 8/20 μ s Pulse Waveform

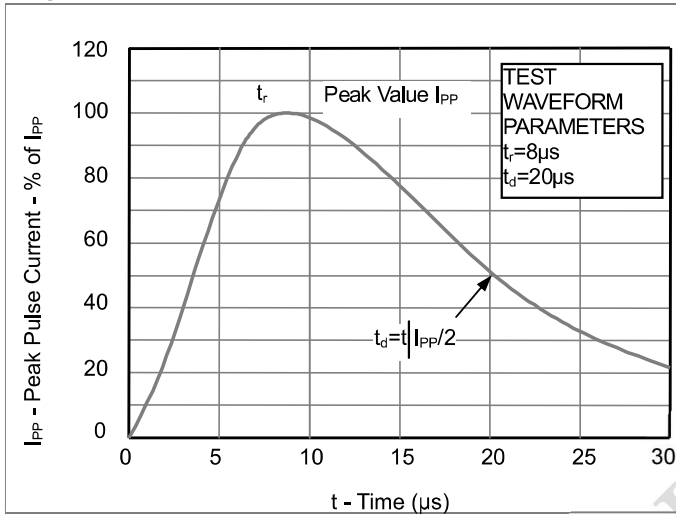


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

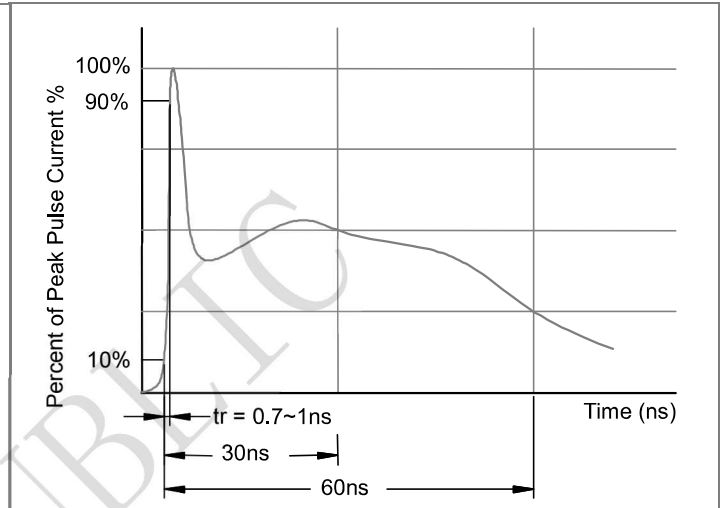
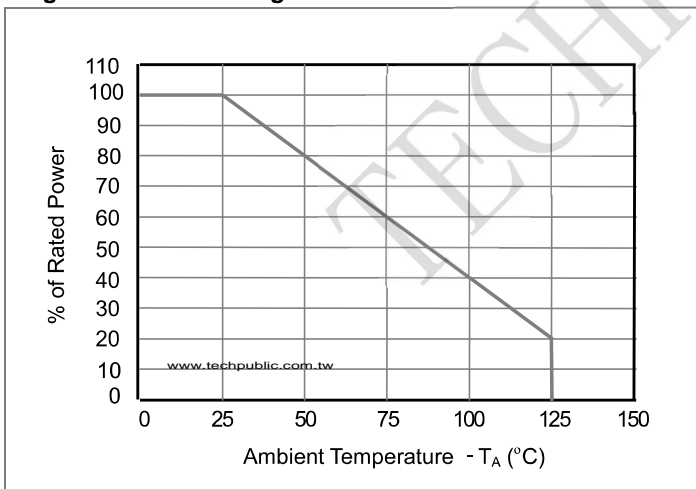
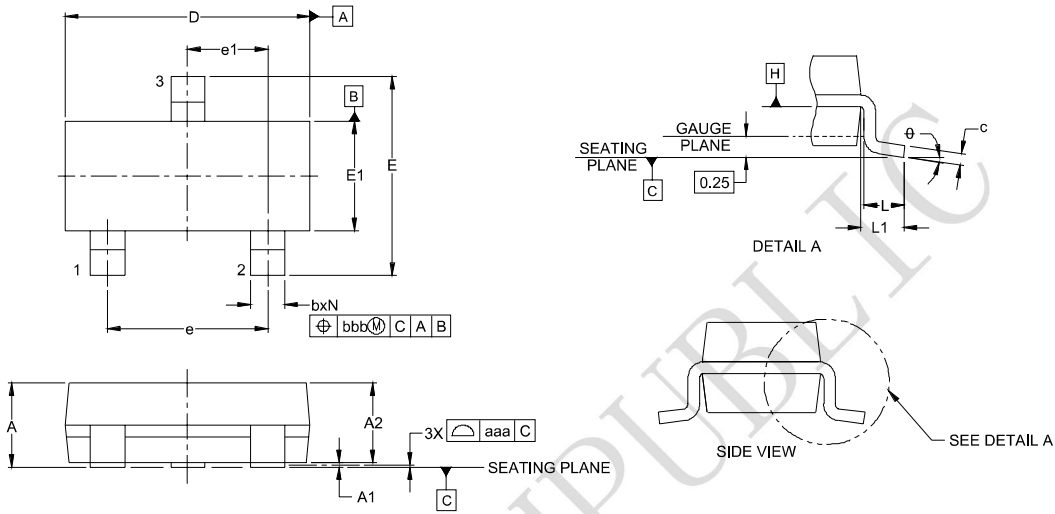


Fig3. Power Derating Curve

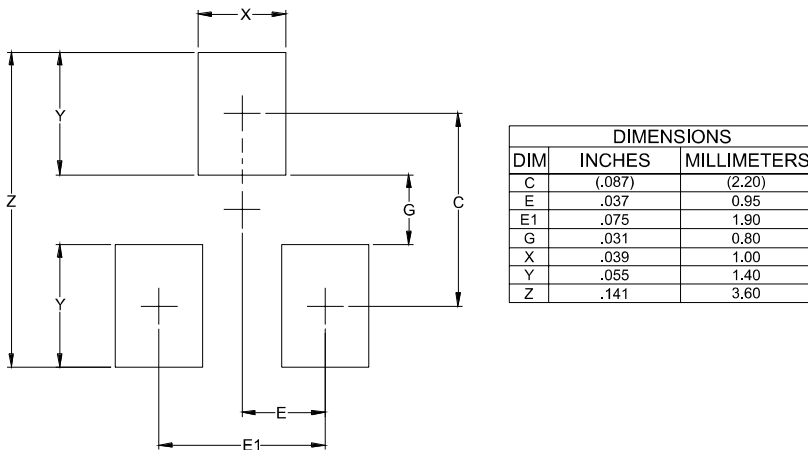


Outline Drawing - SOT23



DIM	INCHES		MILLIMETERS	
	MIN	NOM MAX	MIN	NOM MAX
A	.035	-.044	0.89	- 1.12
A1	.000	-.004	0.01	- 0.10
A2	.035	.037 .040	0.88	0.95 1.02
b	.012	-.020	0.30	- 0.51
c	.003	-.007	0.08	- 0.18
D	.110	.114 .120	2.80	2.90 3.04
E	.082	.093 .104	2.10	2.37 2.64
E1	.047	.051 .055	1.20	1.30 1.40
e	.075		1.90	BSC
e1	.037		0.95	BSC
L	.015	.020 .024	0.40	0.50 0.60
L1	.022		(0.55)	
N	3		3	
θ	0°	- 8°	0°	- 8°
aaa	.004		0.10	
bbb	.008		0.20	

Land Pattern - SOT23



DIM	DIMENSIONS	
	INCHES	MILLIMETERS
C	(.087)	(2.20)
E	.037	0.95
E1	.075	1.90
G	.031	0.80
X	.039	1.00
Y	.055	1.40
Z	.141	3.60

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