

SMP3022-01ETG TVS Arrays

Description

The SMP3022 includes back-to-back TVS diodes fabricated in a proprietary silicon avalanche technology to provide protection for electronic equipment that may experience destructive electrostatic discharges (ESD). These robust diodes can safely absorb repetitive ESD strikes up to the maximum level specified in the IEC61000-4-2 international standard ($\pm 20\text{kV}$ contact discharge) without performance degradation. The back-to-back configuration provides symmetrical ESD protection for data lines when AC signals are present and the low loading capacitance makes it ideal for protecting high speed data lines such as HDMI, USB2.0, USB3.0 and eSATA.

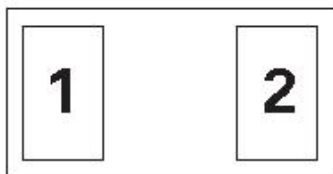
Features

- ESD protection in accordance with:
IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 20\text{kV}$ (contact)
IEC 61000-4-5 (lightning) 3A (8/20 μs)
IEC 61000-4-4 (EFT) 40A (5/50ns)
- Low capacitance of 0.35pF @ VR=0V (TYP)
- Low leakage current of 100nA at 5.3V(MAX)
- Extremely low dynamic resistance (0.7 Ω TYP)

Applications

- USB 3.0/USB 2.0/MHL
- MIPI Camera and Display
- HDMI 2.0, DisplayPort 1.3, eSATA
- Set Top Boxes, Game Consoles
- Smart Phones
- External Storage
- Ultrabooks, Notebooks
- Tablets, eReaders
- High Speed Serial Interfaces

Pinout



Functional Block Diagram



Ordering Information

Device	Package	Packaging Options	P0/P1	Packaging Specifications	Min. Order Qty.
SMP3022-01ETG	SOD882	Tape & Reel - 8mm tape/7" reel	4mm/2mm	EIA RS-481	10000

Absolute Maximum Ratings @T_A=25°C unless otherwise specified

Parameter	Symbol	Value	Units
Peak Pulse Current (tp=8/20μs)	I _{PP}	3.0	A
Operating Temperature	T _{OP}	-40 to + 125	°C
Peak Pulse Power (tP=8/20μs)	P _{PK}	20	W

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Thermal Information

Parameter	Value	Units
Storage Temperature Range	-55 to + 150	°C
Maximum Junction Temperature	150	°C
Maximum Lead Temperature (Soldering 20-40s)	260	°C

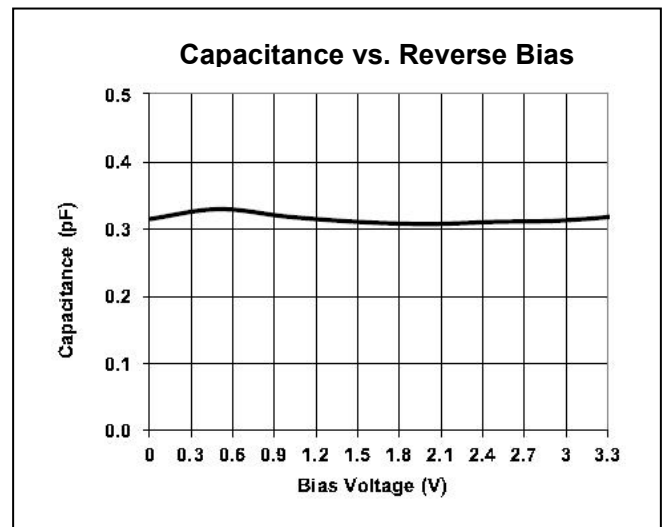
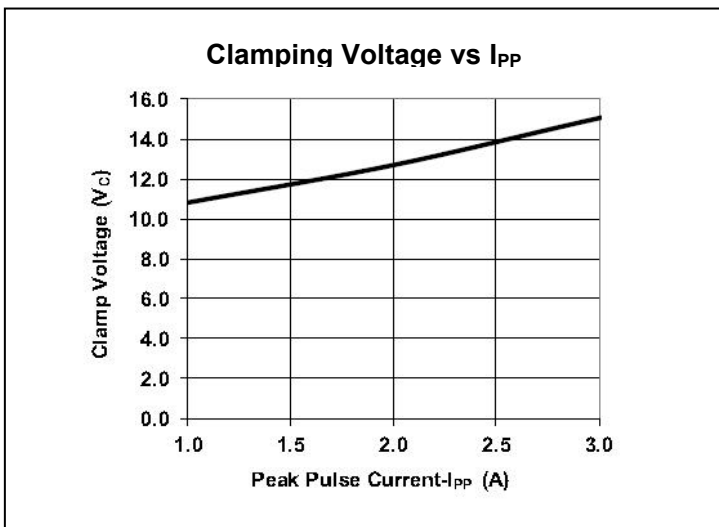
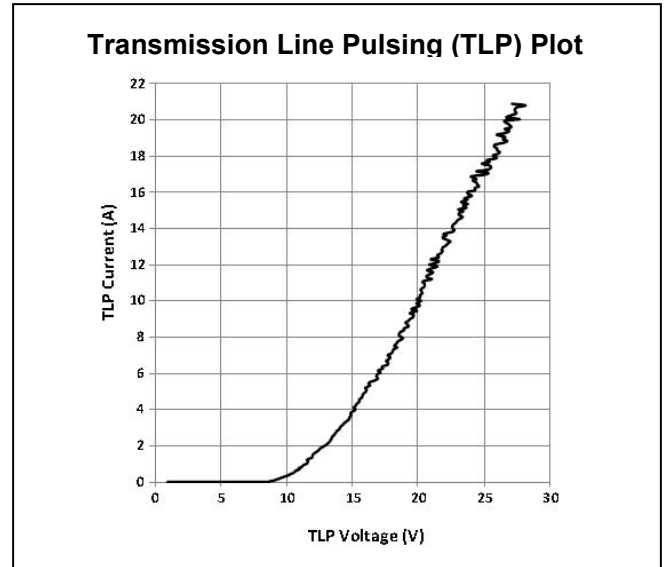
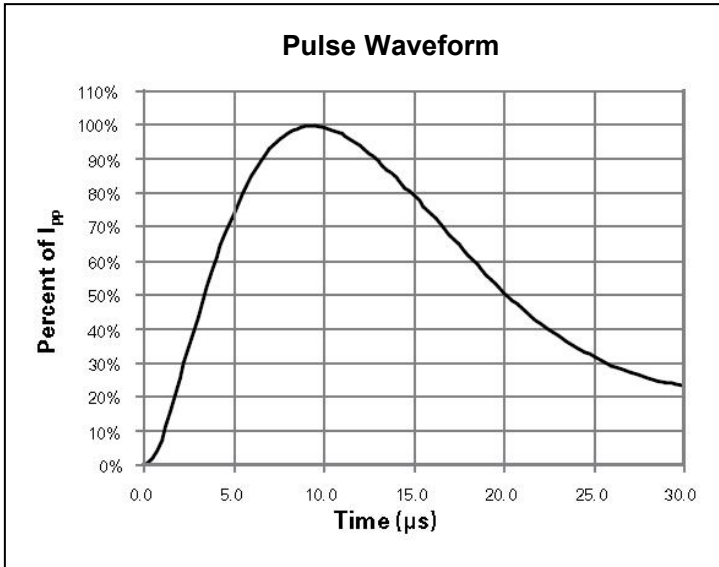
Electrical Characteristics (T_{OP}=25°C)

Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V _{RWM}	-	-	-	5.3	V
Reverse Breakdown Voltage	V _{BR}	I _R =1mA	6.8	7.8	9.0	V
Reverse Leakage Current	I _{LEAK}	V _R =5.3V	-	<10	100	nA
Clamping Voltage ¹	V _C	I _{PP} = 1A, tp=8/20μs, Fwd	-	-	12.0	V
Dynamic Resistance ²	R _{DYN}	TLP, tp=100ns, I/O to GND	-	0.7	-	Ω
ESD With stand Voltage ¹	V _{ESD}	IEC61000-4-2 (Contact)	±20	-	-	kV
		IEC61000-4-2 (Air)	±30	-	-	kV
Junction Capacitance ¹	C _D	Reverse Bias=0V, f=1 MHz	-	0.35	0.5	pF

Note: 1 Parameter is guaranteed by design and/or device characterization.

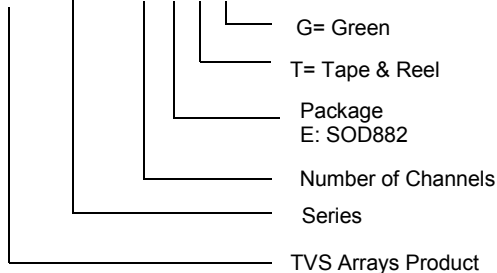
2 Transmission Line Pulse (TLP) with 100ns width and 200ps rise time.

Ratings and Characteristics Curves



Part Name Information

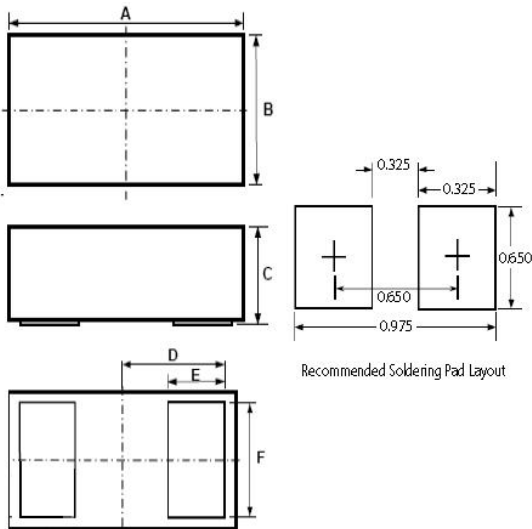
SMP 3022 - 01 E T G



Marking Diagram

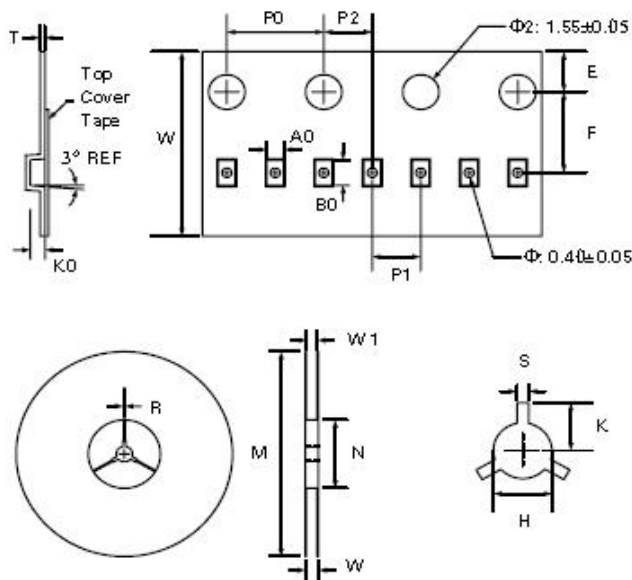


Mechanical Dimensions SOD882



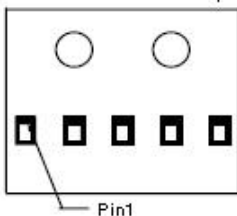
Symbol	Package			SOD882		
	JEDEC			MO-236		
	Millimeters			Inches		
	Min	Typ	Max	Min	Typ	Max
A	0.90	1.00	1.10	0.037	0.039	0.041
B	0.50	0.60	0.70	0.022	0.024	0.026
C	0.40	0.50	0.60	0.016	0.020	0.024
D	0.45			0.018		
E	0.20	0.25	0.35	0.008	0.010	0.012
F	0.45	0.50	0.55	0.018	0.020	0.022

Embossed Carrier Tape & Reel Specification — SOD882



Symbol	Tape Dimensions	
	Millimeters	
	Min	Max
A0	0.65	0.75
B0	1.10	1.20
K0	0.50	0.60
E	1.65	1.85
F	3.45	3.55
P0	3.90	4.10
P1	1.90	2.10
P2	1.95	2.05
T	1.95	2.05
W	7.90	8.10

Device Orientation in Tape



Symbol	Reel Dimensions (Size ϕ 178)	
	Millimeters	
	Min	Max
M	177.0	179.0
N	59.0	61.0
W	11.0	12.0
W1	8.5	9.5
H	12.5	13.5
S	1.9	2.1
K	10.8	11.2
R	0.95	1.05



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