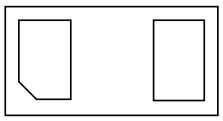
SC1003-01ETG

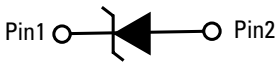
5 V, 7 A, SOD882, Unidirectional Discrete TVS Diode, General Purpose ESD Protection

HF RoHS Pb

Pinout



Functional Block Diagram



Description

The SC1003-01ETG diodes are fabricated in a proprietary silicon avalanche technology. These diodes provide a high ESD (electrostatic discharge) protection level for electronic equipment.

The SC1003-01ETG TVS can safely absorb repetitive ESD strikes at ±30 kV (contact discharge, IEC 61000-4-2) without performance degradation. Additionally, each diode can safely dissipate 7 A of 8/20 µs surge current (IEC 61000-4-5) with very low clamping voltages.

Features

- ESD, IEC 61000-4-2, ±30 kV contact/air
- EFT, IEC 61000-4-4, 40 A (5/50 ns)
- Maximum surge tolerance, IEC 61000- 4-5 2nd edition, 7 A (8/20 µs)
- Low leakage current of 0.1 µA (Max) at 5 V
- Low clamping voltage
- Tiny SOD882 (JEDEC MO-236) package saves board space
- Halogen free, lead free and RoHS compliant

Applications

- Digital cameras
- Mobile phones
- PDAs
- Portable navigation components
- Portable medical components

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Absolute Maximum Ratings

Symbol	Parameter	Value	Units
I_{PP}	Peak Current (t_p = 8/20 µs)	7	A
T_{OP}	Operating Temperature	-40 to 125	°C
T_{STOR}	Storage Temperature	-55 to 150	°C

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

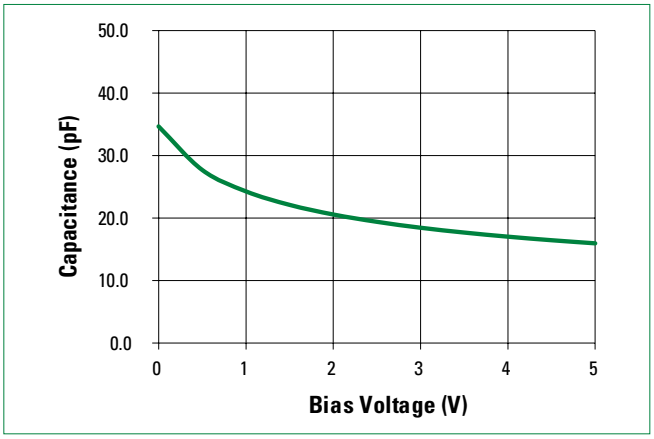
Electrical Characteristics (T_{OP}=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	V_{RWM}				5	V
Breakdown Voltage	V_{BR}	I_R = 1 mA	6.0	7.8	8.5	V
Forward Voltage Drop	V_F	I_F = 10 mA		0.8	1.2	V
Reverse Leakage Current	I_{LEAK}	V_R = 5 V			100	nA
Clamp Voltage[1]	V_C	I_{PP} = 16 A, t_P = 0.2/100 ns (TLP), I/O to GND		11		V
		I_{PP} = 1 A, t_P = 8/20 µs, I/O to GND		8.5		V
		I_{PP} = 7 A, t_P = 8/20 µs, I/O to GND		12		V
Dynamic Resistance[2]	R_{DYN}	TLP, t_P = 100 ns, I/O to GND		0.25		Ω
ESD Withstand Voltage[1,3]	V_{ESD}	IEC 61000-4-2 (Contact Discharge)	±30			kV
		IEC 61000-4-2 (Air Discharge)	±30			kV
Diode Capacitance[1]	C_{IO-GND}	Reverse Bias = 0 V , f = 1 MHz, I/O to GND		30		pF

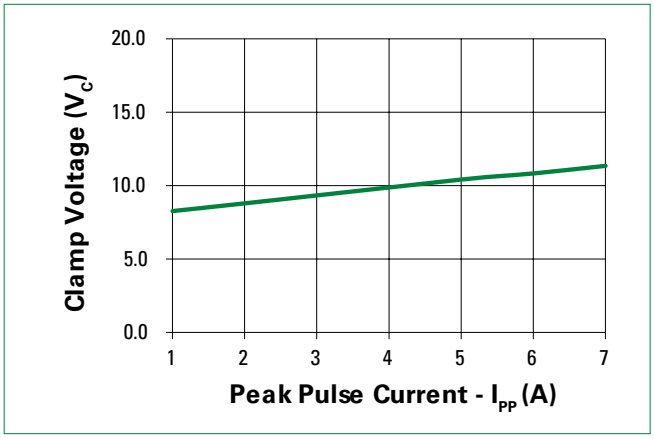
Note:

1. Parameter is guaranteed by design and/or component characterization
2. Transmission Line Pulse (TLP) with 100ns width, 0.2 ns rise time, and average window t1 = 70 ns to t2 = 90 ns
3. Device stressed with ten non-repetitive ESD pulses according to IEC61000-4-2 (R = 330 Ω, C = 150 pF).

Capacitance vs. Reverse Bias



Clamping Voltage vs I_{PP}



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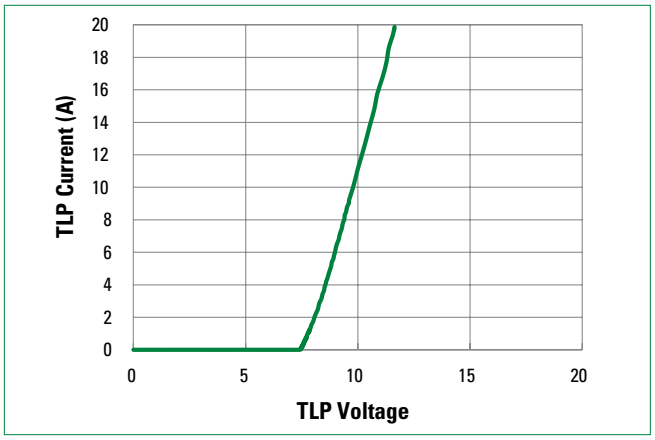
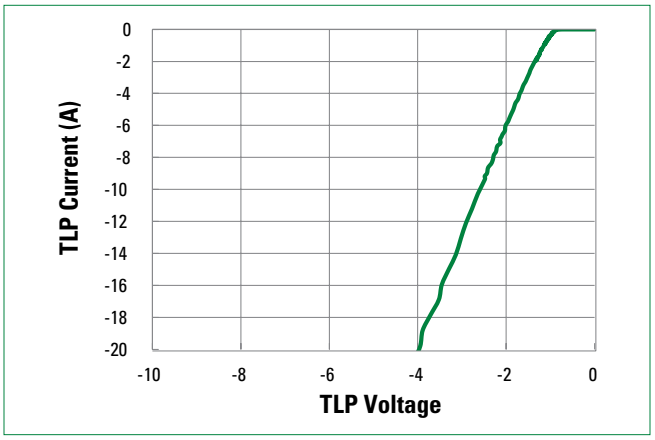
Positive Transmission Line Pulsing (TLP) Plot

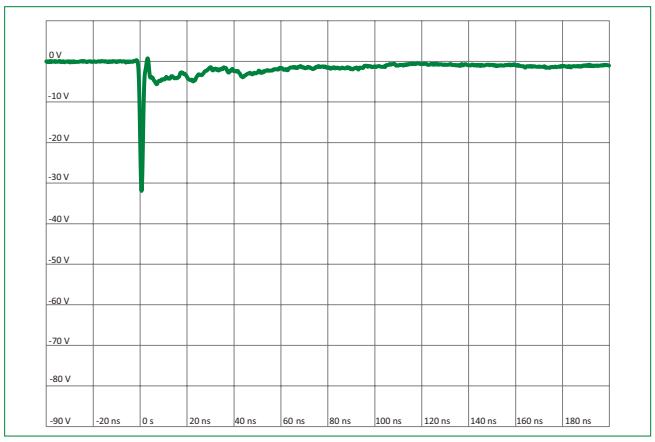


Negative Transmission Line Pulsing (TLP) Plot



IEC 61000-4-2 +8 kV Contact ESD Clamping Voltage

IEC 61000-4-2 -8 kV Contact ESD Clamping Voltage



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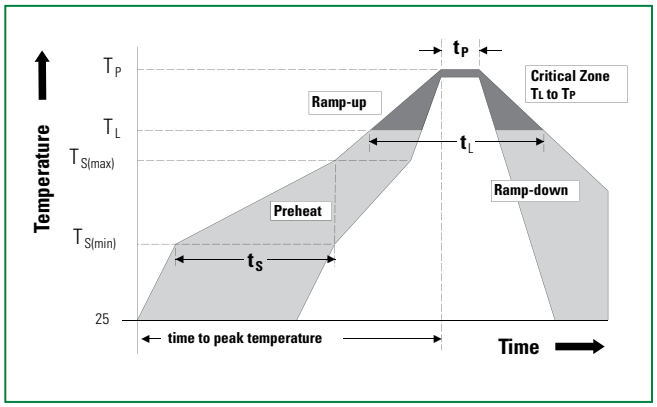
Soldering Parameters

Reflow Condition		Pb-free assembly
Pre Heat	**- Temperature Min ($T_{s(min)}$)**	150 °C
	- Temperature Max ($T_{s(max)}$)	200 °C
	- Time (min to max) (t_s)	60 – 120 seconds
Average Ramp Up Rate (Liquidus) Temp (T_L) to Peak		3 °C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3 °C/second max
Reflow	**- Temperature (T_L) (Liquidus)**	217 °C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °C
Time Within 5 °C of Actual Peak Temperature (t_p)		30 seconds
Ramp-down Rate		6 °C/second max
Time 25 °C to Peak Temperature (T_P)		8 minutes max
Do Not Exceed		260 °C



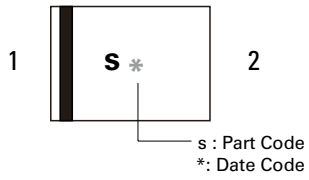
Ordering Information

Part Number	Package	Min. Order Qty.
SC1003-01ETG	SOD882	10000

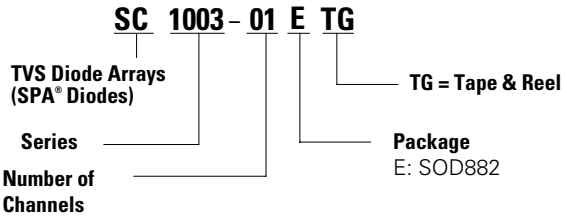
Product Characteristics

Lead Plating	Matte Tin
Lead Material	Copper alloy
Body Material	Molded compound
Flammability	UL recognized compound meeting flammability rating V-0

Part Marking System



Part Numbering System



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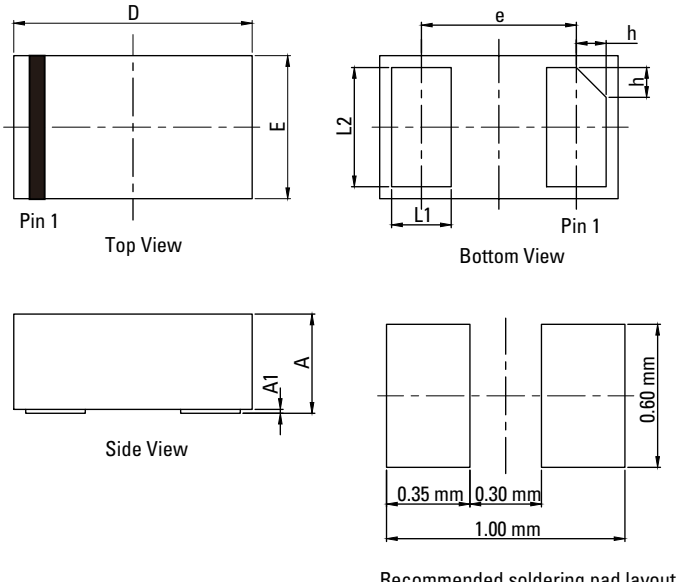
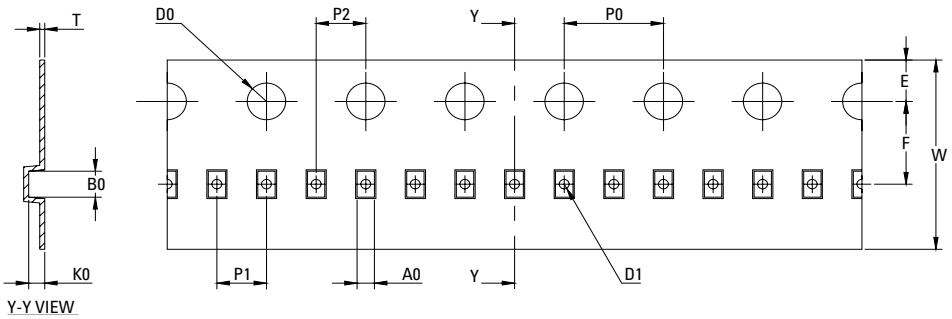
Package Dimensions — SOD882

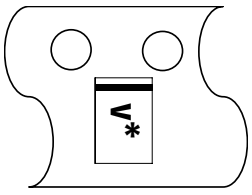


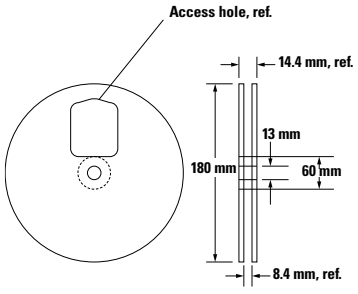
Symbol	Millimeters		
	Min	Nom	Max
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
L1	0.20	0.25	0.30
L2	0.45	0.50	0.55
D	0.95	1.00	1.05
E	0.55	0.60	0.65
e		0.65 BSC	
h	0.07	0.12	0.17

Embossed Carrier Tape & Reel Specification — SOD882



Component Orientation in Tape





Symbol	Millimeters		
	Min	Nom	Max
A0	0.63	0.70	0.77
B0	1.06	1.12	1.20
D0	1.50	1.55	1.60
D1	0.30	0.45	0.60
E	1.65	1.75	1.85
F	3.40	3.50	3.60
K0	0.54	0.60	0.66
P0	3.90	4.00	4.10
P1	1.90	2.00	2.10
P2	1.95	2.00	2.05
T	0.15	0.20	0.25
W	7.80	8.00	8.30