Bidirectional Discrete TVS Diode, General Purpose Surge Protection





Note: This package image is for example and reference only, for detail package drawing, please refer to the package section in this datasheet

Pinout



Functional Block Diagram



Description

The SC1205-01ETG bidirectional TVS is fabricated in a proprietary silicon avalanche technology. These diodes provide a high ESD (electrostatic discharge) protection level for electronic equipment. The SC1205-01ETG TVS can safely absorb repetitive ESD strikes of ± 30 kV (contact and air discharge as defined in IEC 61000-4-2) without any performance degradation. In addition, it can safely dissipate a 7A 8/20 μ s surge event as defined in IEC 61000-4-5, 2nd Edition.

Features & Benefits

- ESD, IEC 61000-4-2, ±30kV contact, ±30kV air
- EFT, IEC 61000-4-4, 40A (5/50ns)
- Surge tolerance, IEC 61000-4-5, 2nd Edition, 7A (8/20µs)
- Low leakage current of 20nA
- (MAX) at 5V
- Halogen-free, lead-free and RoHS compliant
- Moisture Sensitivity Level (MSL -1)

Applications

- Switches / Buttons
- Test Equipment / Instrumentation
- Point-of-Sale Terminals
- Medical Equipment
- Notebooks / Desktops / Servers
- Computer Peripherals
- Battery

Life Support Note:

Not Intended for Use in Life Support or Life Saving Applications

The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.



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Absolute Maximum Ratings

Symbol	Parameter	Value	Units
l _{pp}	Peak Current (t _p =8/20µs)	7	А
T_{OP}	Operating Temperature	-40 to 125	°C
T_{stor}	Storage Temperature	-55 to 150	°C

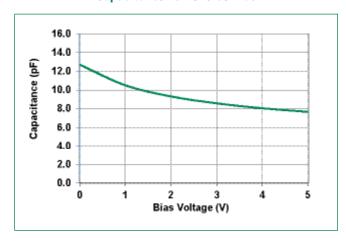
Caution: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the component. This is a stress only rating and operation of the component at these or any other conditions above those indicated in the operational sections of this specification is not implied.

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

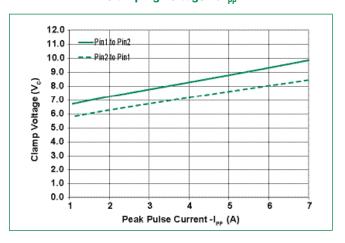
Parameter	Symbol	Test Conditions	Min	Тур	Max	Units
Reverse Standoff Voltage	V_{RWM}	I _R =1µA			5	V
Breakdown Voltage	$V_{\mathtt{BR}}$	I _R =1mA	5.3	5.5		V
Reverse Leakage Current	I _{LEAK}	V _R =5V		1	20	nA
Clamp Voltage ¹	V _c	$I_{pp} = 7A$, $t_{p} = 8/20 \mu s$		10		V
Dynamic Resistance ²	R _{DYN}	TLP, t _p =100ns		0.17		Ω
ESD Withstand Voltage ¹	\/	IEC 61000-4-2 (Contact Discharge)	±30			kV
	V _{ESD}	IEC 61000-4-2 (Air Discharge)	±30			kV
Diode Capacitance ¹	C _{IO-GND}	Reverse Bias=5V, f=1MHz		7	9	pF

Note:

Capacitance vs Reverse Bias



Clamping Voltage vs I_{PP}



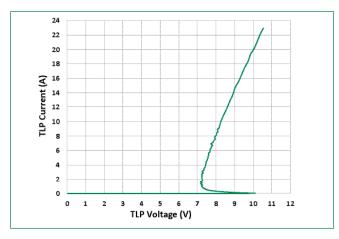


^{1.} Parameter is guaranteed by design and/or component characterization.

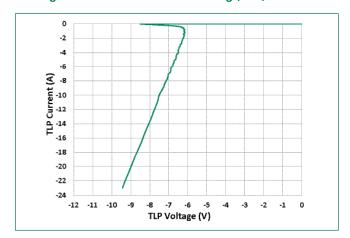
^{2.}Transmission Line Pulse (TLP) with 100ns width, 0.2ns rise time, and average window t1=70ns to t2=90ns

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Positive Transmission Line Pulsing (TLP) Plot



Negative Transmission Line Pulsing (TLP) Plot



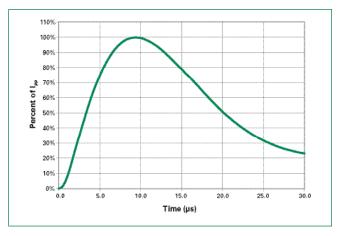
IEC 61000-4-2 +8 kV Contact ESD Clamping Voltage



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



8/20µs Pulse Waveform

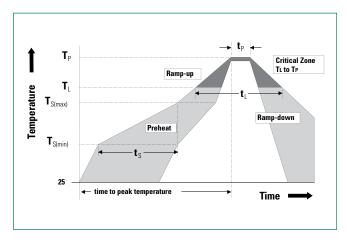




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Soldering Parameters

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 secs		
Average ra	mp up rate (Liquidus) Temp k	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 exc	eed	260°C		



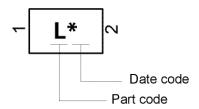
Ordering Information

Part Number	Package	Min. Order Qty.
SC1205-01ETG	SOD882	100,000

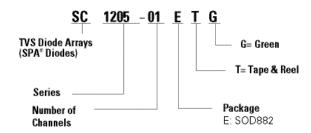
Product Characteristics

Lead Plating	Pre-Plated Frame or Matte Tin
Lead material	Copper Alloy
Substrate Material	Silicon
Body Material	Molded Compound
Flammability	UL Recognized compound meeting flammability rating V-0

Part Marking System



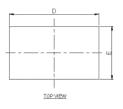
Part Numbering System

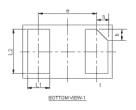




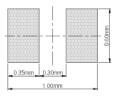
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Package Dimensions — SOD882







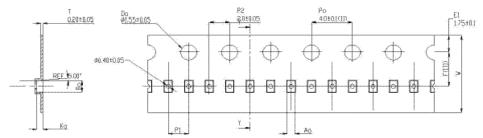


Recommended Soldering Pattern

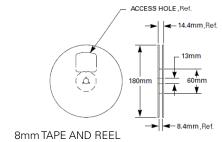
Drawing#: E03-B

	SOD882					
Symbol	Millimeters			Inches		
	Min	Тур	Max	Min	Тур	Max
Α	0.40	0.50	0.55	0.016	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
L1	0.20	0.25	0.30	0.008	0.010	0.012
L2	0.45	0.50	0.55	0.018	0.020	0.022
D	0.95	1.00	1.05	0.037	0.039	0.041
E	0.55	0.60	0.65	0.022	0.024	0.026
е		0.65 BSC			0.026 BSC	
h	0.07	0.12	0.17	0.003	0.005	0.007

Embossed Carrier Tape & Reel Specification — SOD882



Symbol	Millimeters
A0	0.70+/-0.045
В0	1.10+/-0.045
K0	0.65+/-0.045
F	3.50+/-0.05
P1	2.00+/-0.10
w	8.00 + 0.30 -0.10



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