

SC24COM-01ETG

24 V Bidirectional 250 W Discrete TVS Diode, General Purpose ESD Protection

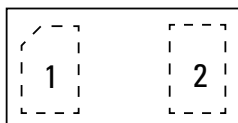
HF **RoHS** **Pb**

Description

The SC24COM-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 SC24COM-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 5 A 8/20 μ s surge event as defined in IEC 61000-4-5, 2nd edition.

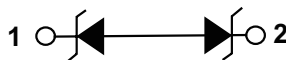
Pinout



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, 5 A (8/20 μ s)
- Halogen free, lead free and RoHS compliant
- Moisture sensitivity level (MSL-1)

Functional Block Diagram



Applications

- LED Lighting Modules
- Portable Instrumentation
- General Purpose I/O
- Mobile & Handhelds
- RS232 / RS485
- V_{Bus} protection

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
P_{PK}	Peak Pulse Power ($t_p = 8/20 \mu s$)	250	W
I_{PP}	Peak Current ($t_p = 8/20 \mu s$)	5.0	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.

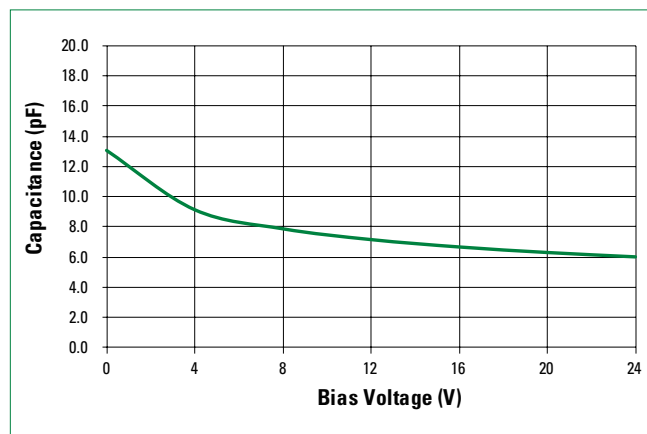
Electrical Characteristics ($T_{OP} = 25 \text{ }^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	V_{RWM}				24	V
Breakdown Voltage	V_{BR}	$I_R = 1 \text{ mA}$, I/O to GND	26		33	V
Reverse Leakage Current	I_{LEAK}	$V_R = 24 \text{ V}$, I/O to GND		1	50	nA
Clamp Voltage ¹	V_C	$I_{PP} = 1 \text{ A}$, $t_p = 8/20 \mu s$, I/O to GND		38.8		V
		$I_{PP} = 5 \text{ A}$, $t_p = 8/20 \mu s$, I/O to GND		50		
Dynamic Resistance ²	R_{DYN}	TLP, $t_p = 100 \text{ ns}$, I/O to GND		0.5		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	$C_{I/O-GND}$	Reverse Bias = 0 V, $f = 1 \text{ MHz}$; I/O to GND		13		pF

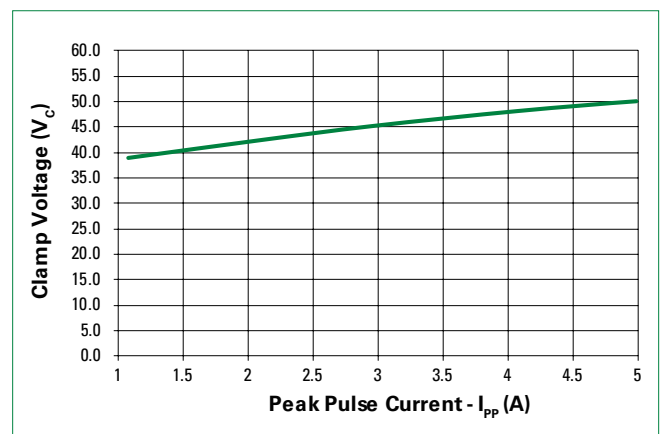
Notes:

- Parameter is guaranteed by design and/or component characterization.
- Transmission Line Pulse (TLP) with 100 ns width, 0.2 ns rise time, and average window $t_1 = 70 \text{ ns}$ to $t_2 = 90 \text{ ns}$.
- Device stressed with ten non-repetitive ESD pulses.

Capacitance vs. Reverse Bias



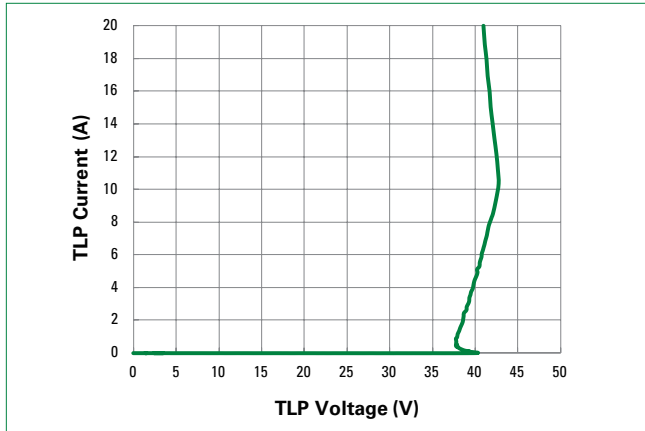
Clamping Voltage vs I_{PP}



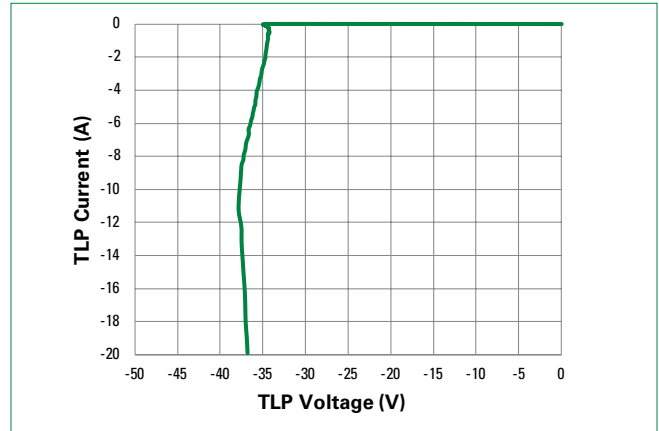
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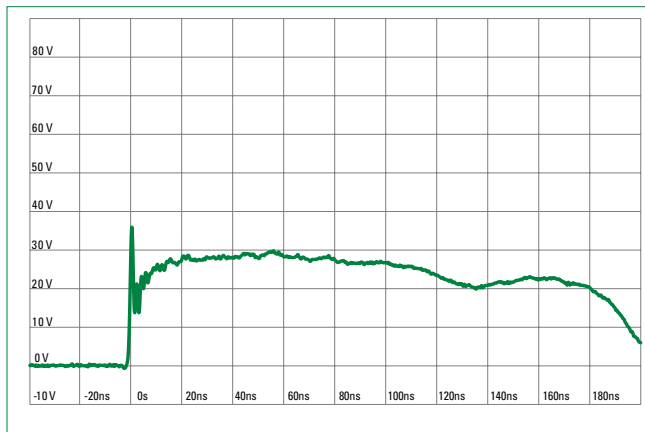
Positive Transmission Line Pulsing (TLP) Plot



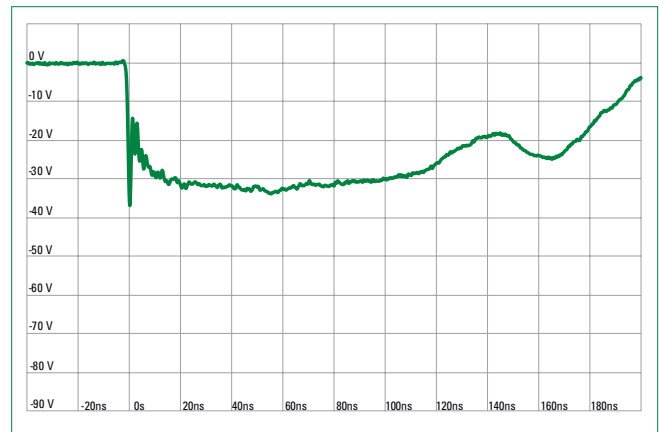
Negative Transmission Line Pulsing (TLP) Plot



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



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

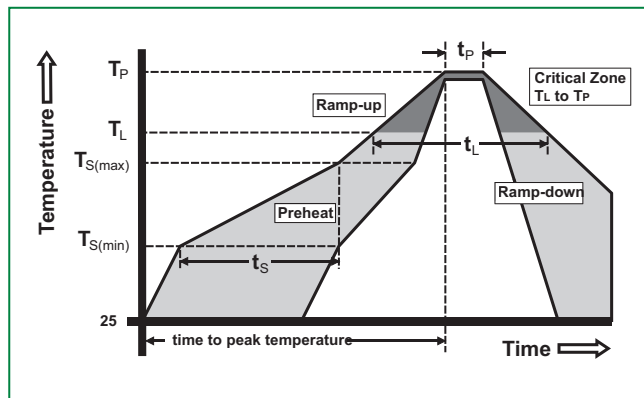


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Soldering Parameters

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 secs
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



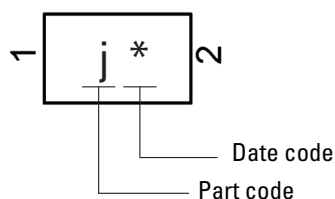
Ordering Information

Part Number	Package	Min. Order Qty.
SC24COM-01ETG	SOD882	10,000

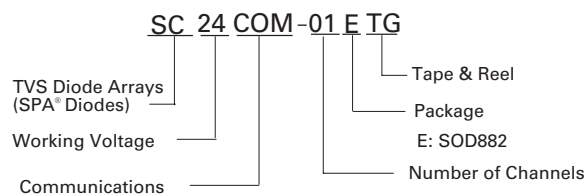
Product Characteristics

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

Part Marking System

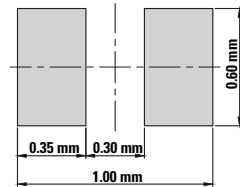
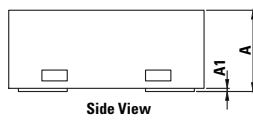
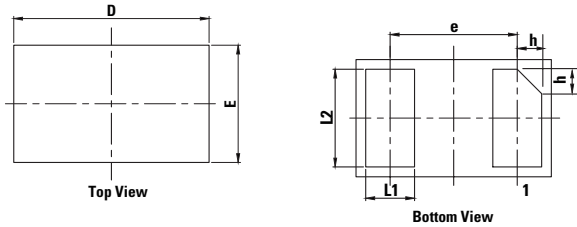


Part Numbering System



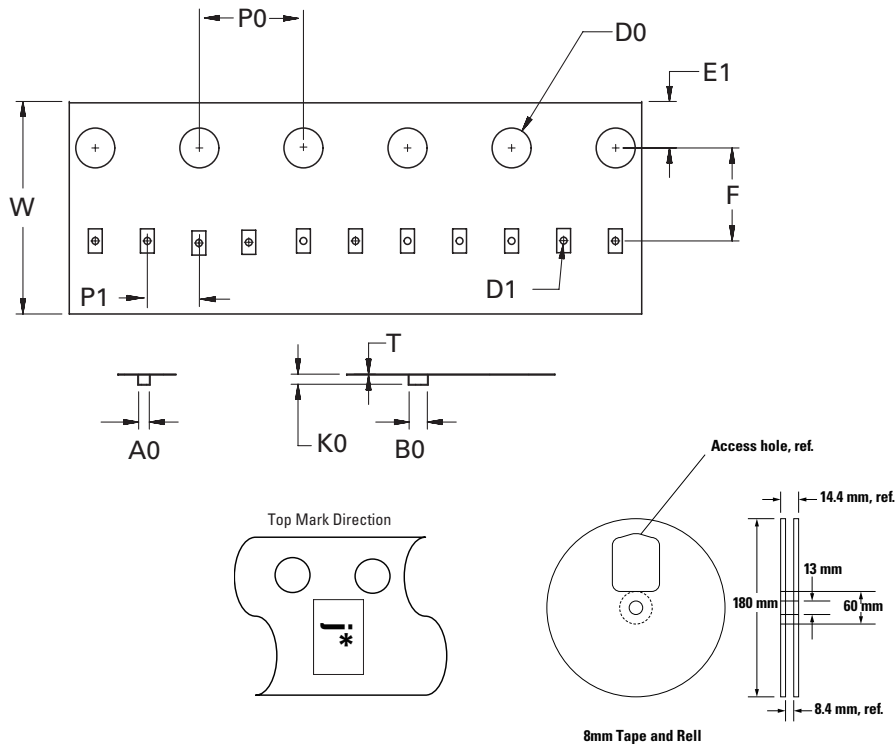
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Package Dimensions — SOD882

Recommended Soldering Pad Layout

Symbol	SOD882					
	Millimeters			Inches		
	Min	Typ	Max	Min	Typ	Max
A	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
e	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	0.69+/-0.03
B0	1.12+/-0.05
D0	1.55+0.05
D1	0.50+/-0.05
E1	1.75+/-0.10
F	3.50+/-0.05
K0	0.57+/-0.02
P0	4.00+/-0.05
P1	2.00+/-0.05
T	0.20+/-0.02
W	8.00+/-0.20

8mm Tape and Reel

Product Disclaimer: Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable Littelfuse product documentation. Warranties granted by Littelfuse shall be deemed void for products used for any purpose not expressly set forth in applicable Littelfuse documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation. The sale and use of Littelfuse products is subject to Littelfuse Terms and Conditions of Sale, unless otherwise agreed by Littelfuse. "Littelfuse" includes Littelfuse, Inc., and all of its affiliate entities. <http://www.littelfuse.com/disclaimer-electronics>.