

# SC24COM-01ETG

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

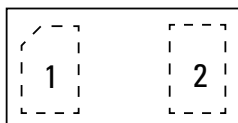
**HF** **RoHS** **Pb**

### 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  $\pm 30$  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  $\mu$ s surge event as defined in IEC 61000-4-5, 2<sup>nd</sup> edition.

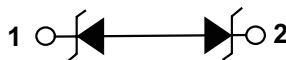
### Pinout



### Features

- ESD, IEC 61000-4-2,  $\pm 30$  kV contact/air
- EFT, IEC 61000-4-4, 40 A (5/50 ns)
- Maximum surge tolerance, IEC 61000-4-5 2<sup>nd</sup> edition, 5 A (8/20  $\mu$ 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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## 24 V Bidirectional 250 W Discrete TVS Diode, General Purpose ESD Protection

### 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.

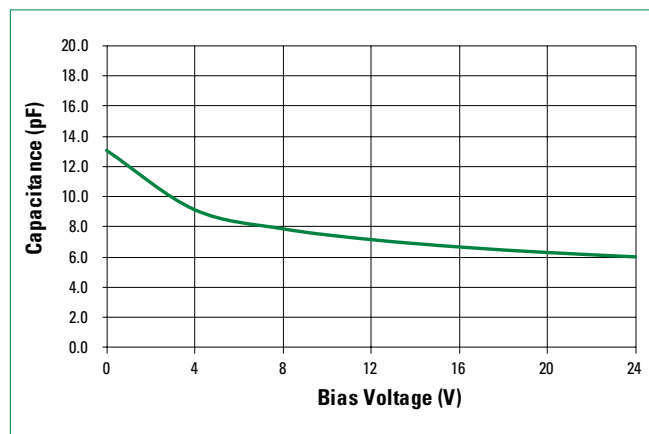
### Electrical Characteristics ( $T_{OP} = 25 \text{ }^\circ\text{C}$ )

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 <sup>1</sup>	$V_C$	$I_{PP} = 1 \text{ A}$ , $t_p = 8/20 \mu s$ , 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 <sup>2</sup>	$R_{DYN}$	TLP, $t_p = 100 \text{ ns}$ , I/O to GND		0.5		$\Omega$
ESD Withstand Voltage <sup>1,3</sup>	$V_{ESD}$	IEC 61000-4-2 (Contact Discharge)	$\pm 30$			kV
		IEC 61000-4-2 (Air Discharge)	$\pm 30$			kV
Diode Capacitance <sup>1</sup>	$C_{I/O-GND}$	Reverse Bias = 0 V, $f = 1 \text{ MHz}$ ; I/O to GND		13		pF

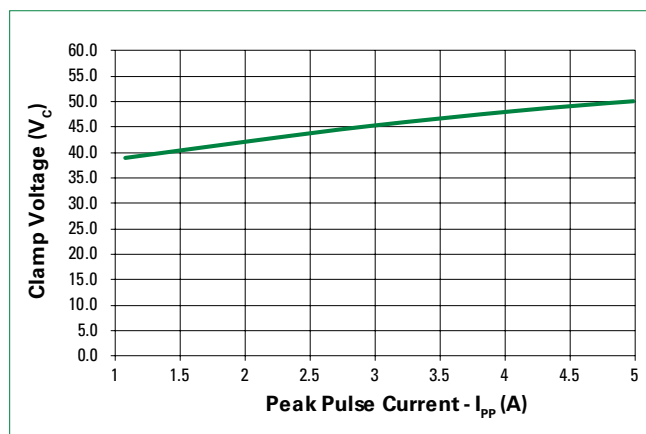
Notes:

- 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



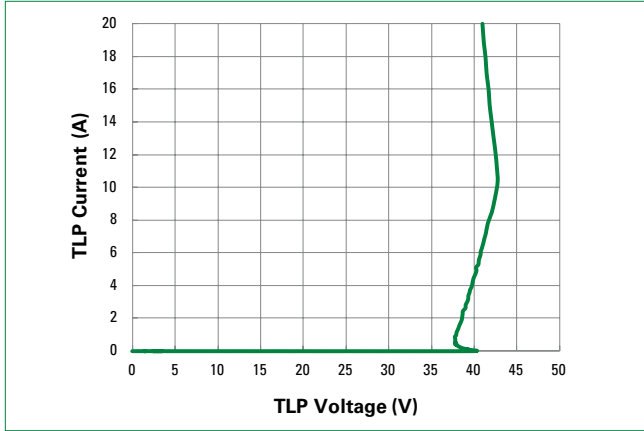
#### Clamping Voltage vs $I_{PP}$



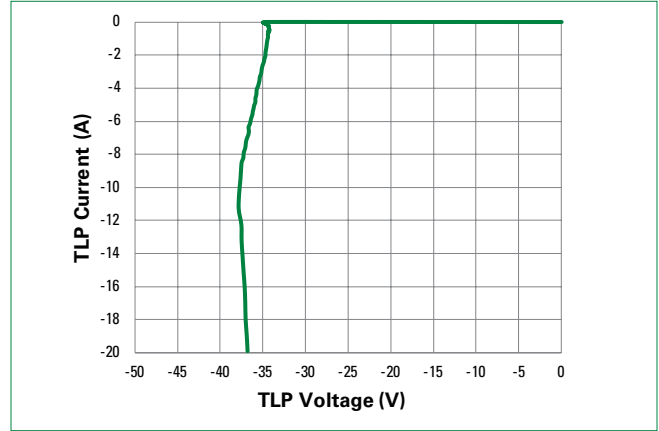
# SC24COM-01ETG

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

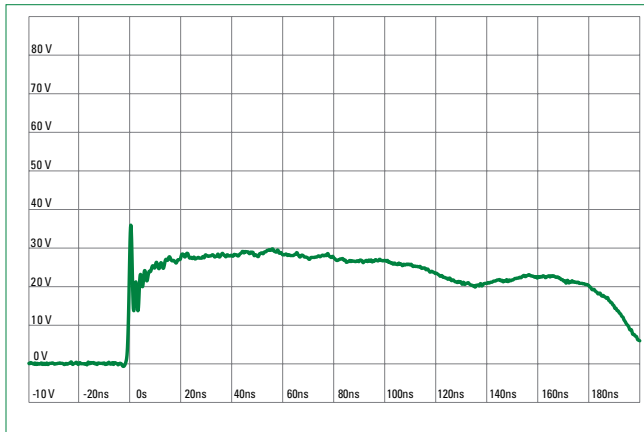
Positive Transmission Line Pulsing (TLP) Plot



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

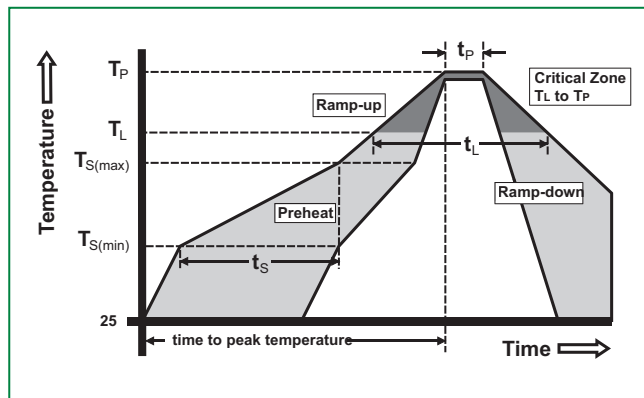


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## 24 V Bidirectional 250 W Discrete TVS Diode, General Purpose ESD Protection

### Soldering Parameters

<b>Reflow Condition</b>		Pb – Free assembly
<b>Pre Heat</b>	- Temperature Min ( $T_{s(min)}$ )	150 °C
	- Temperature Max ( $T_{s(max)}$ )	200 °C
	- Time (min to max) ( $t_s$ )	60 – 120 secs
<b>Average Ramp Up Rate (Liquidus) Temp (<math>T_L</math>) to Peak</b>		3 °C/second max
<b><math>T_{S(max)}</math> to <math>T_L</math> - Ramp-up Rate</b>		3 °C/second max
<b>Reflow</b>	- Temperature ( $T_L$ ) (Liquidus)	217 °C
	- Temperature ( $t_L$ )	60 – 150 seconds
<b>Peak Temperature (<math>T_p</math>)</b>		260 <sup>+0/-5</sup> °C
<b>Time within 5°C of Actual Peak Temperature (<math>t_p</math>)</b>		30 seconds
<b>Ramp-down Rate</b>		6 °C/second max
<b>Time 25°C to Peak Temperature (<math>T_p</math>)</b>		8 minutes max
<b>Do not exceed</b>		260 °C



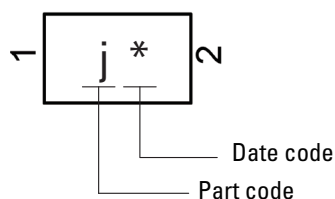
### Ordering Information

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

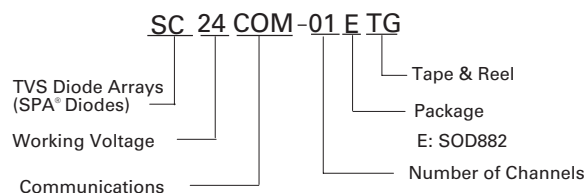
### Product Characteristics

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

### Part Marking System

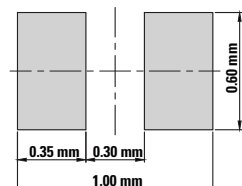
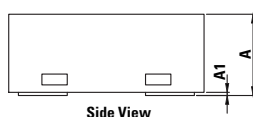
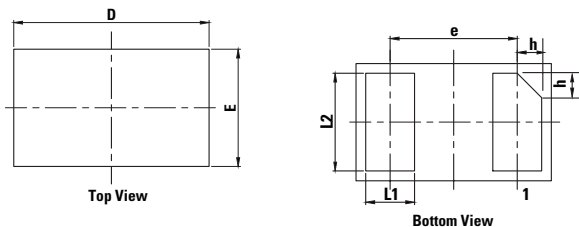


### Part Numbering System



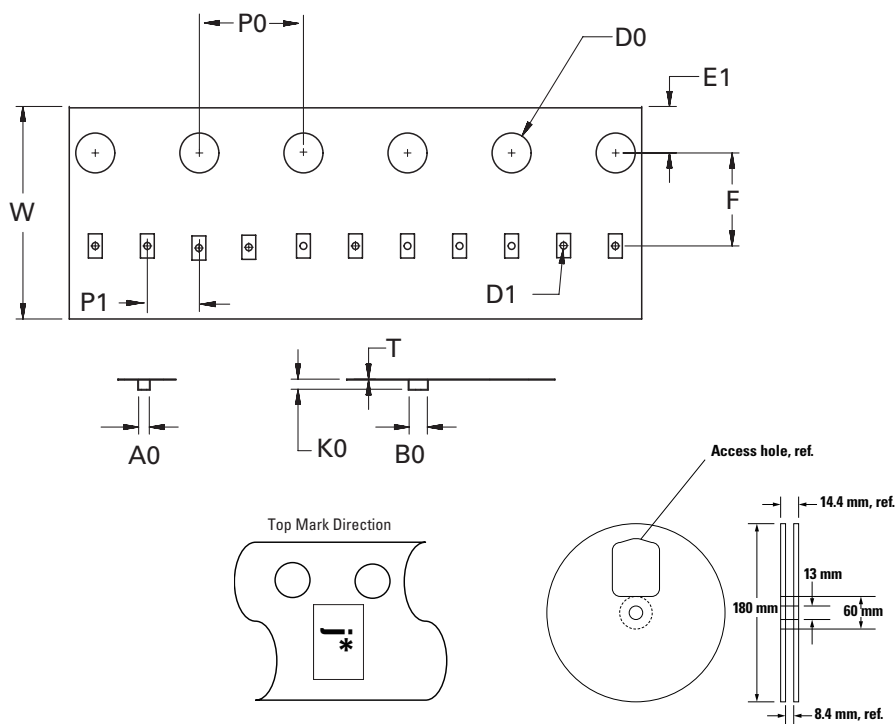
**SC24COM-01ETG**

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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

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