**SC1205-01ETG**
Bidirectional Discrete TVS Diode, General Purpose Surge Protection

---

**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 8/20μs 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

---

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

---

**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.

---

© 2022 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: GD. 08/16/22
**SC1205-01ETG**
Bidirectional Discrete TVS Diode, General Purpose Surge Protection

### Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_{PP}$</td>
<td>Peak Current ($t_p=8/20\mu s$)</td>
<td>7</td>
<td>A</td>
</tr>
<tr>
<td>$T_{OP}$</td>
<td>Operating Temperature</td>
<td>-40 to 125</td>
<td>°C</td>
</tr>
<tr>
<td>$T_{STOR}$</td>
<td>Storage Temperature</td>
<td>-55 to 150</td>
<td>°C</td>
</tr>
</tbody>
</table>

**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 ($T_{OP}=25^\circ C$)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Test Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse Standoff Voltage</td>
<td>$V_{RWM}$</td>
<td>$I_R=1\mu A$</td>
<td>5</td>
<td>5.5</td>
<td>5.5</td>
<td>V</td>
</tr>
<tr>
<td>Breakdown Voltage</td>
<td>$V_{BR}$</td>
<td>$I_R=1mA$</td>
<td>5.3</td>
<td>5.5</td>
<td>5.5</td>
<td>V</td>
</tr>
<tr>
<td>Reverse Leakage Current</td>
<td>$I_{LEAK}$</td>
<td>$V_R=5V$</td>
<td>1</td>
<td>20</td>
<td>20</td>
<td>nA</td>
</tr>
<tr>
<td>Clamp Voltage</td>
<td>$V_C$</td>
<td>$I_{PP}=7A$, $t_p=8/20\mu s$</td>
<td>10</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Dynamic Resistance</td>
<td>$R_{DYN}$</td>
<td>TLP, $t_p=100\mu s$</td>
<td>0.17</td>
<td></td>
<td></td>
<td>Ω</td>
</tr>
<tr>
<td>ESD Withstand Voltage</td>
<td>$V_{ESD}$</td>
<td>IEC 61000-4-2 (Contact Discharge)</td>
<td>±30</td>
<td></td>
<td></td>
<td>kV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IEC 61000-4-2 (Air Discharge)</td>
<td>±30</td>
<td></td>
<td></td>
<td>kV</td>
</tr>
<tr>
<td>Diode Capacitance</td>
<td>$C_{IO\text{-GND}}$</td>
<td>Reverse Bias=5V, $f=1MHz$</td>
<td>7</td>
<td>9</td>
<td></td>
<td>pF</td>
</tr>
</tbody>
</table>

**Note:**
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 $t_1=70ns$ to $t_2=90ns$

**Capacitance vs Reverse Bias**

**Clamping Voltage vs $I_{PP}$**
SC1205-01ETG
Bidirectional Discrete TVS Diode, General Purpose Surge 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

8/20μs Pulse Waveform
SC1205-01ETG
Bidirectional Discrete TVS Diode, General Purpose Surge Protection

Soldering Parameters

<table>
<thead>
<tr>
<th>Reflow Condition</th>
<th>Pb – Free assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Heat</td>
<td></td>
</tr>
<tr>
<td>Pre Heat Temperature Min (T_L(min))</td>
<td>150°C</td>
</tr>
<tr>
<td>Pre Heat Temperature Max (T_L(max))</td>
<td>200°C</td>
</tr>
<tr>
<td>Time (min to max) (t_L)</td>
<td>60 – 120 secs</td>
</tr>
<tr>
<td>Average ramp up rate (Liquidus) Temp (T_L) to peak</td>
<td>3°C/second max</td>
</tr>
<tr>
<td>Average ramp up rate (Liquidus) Temp (T_L) to peak</td>
<td>3°C/second max</td>
</tr>
<tr>
<td>Reflow Temperature (T_L) (Liquidus)</td>
<td>217°C</td>
</tr>
<tr>
<td>Reflow Temperature (t_L)</td>
<td>60 – 150 seconds</td>
</tr>
<tr>
<td>Peak Temperature (T_P)</td>
<td>260°C</td>
</tr>
<tr>
<td>Time within 5°C of actual peak Temperature (t_P)</td>
<td>30 seconds</td>
</tr>
<tr>
<td>Ramp-down Rate</td>
<td>6°C/second max</td>
</tr>
<tr>
<td>Time 25°C to peak Temperature (T_P)</td>
<td>8 minutes Max.</td>
</tr>
<tr>
<td>Do not exceed</td>
<td>260°C</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
<th>Min. Order Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC1205-01ETG</td>
<td>SOD882</td>
<td>100,000</td>
</tr>
</tbody>
</table>

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

```
1.  L*  2.  
   Part code   Date code
```

Part Numbering System

```
SC 1205 01 E T G
```

TVS Diode Arrays (SPA® Diodes)

Series
Number of Channels

Package
E: SOD882

Specifications are subject to change without notice.
Revised: GD. 08/16/22

© 2022 Littelfuse, Inc.
SC1205-01ETG
Bidirectional Discrete TVS Diode, General Purpose Surge Protection

Package Dimensions — SOD882

Symbol | Millimeters | Inches
---|---|---
A | 0.40 | 0.16
A1 | 0.00 | 0.00
L1 | 0.20 | 0.08
L2 | 0.45 | 0.18
D | 0.95 | 0.37
E | 0.55 | 0.22
e | 0.65 | BSC
h | 0.07 | 0.03

Embossed Carrier Tape & Reel Specification — SOD882

Symbol | Millimeters
---|---
A0 | 0.70
B0 | 1.10
K0 | 0.65
F | 3.50
P1 | 2.00
W | 8.00

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.