**GEN2 SiC Schottky Diode**
**LSIC2SD120A10, 1200 V, 10 A, TO-220-2L**

### Description
This series of silicon carbide (SiC) Schottky diodes has negligible reverse recovery current, high surge capability, and a maximum operating junction temperature of 175 °C. These diodes series are ideal for applications where improvements in efficiency, reliability, and thermal management are desired.

### Features
- Positive temperature coefficient for safe operation and ease of paralleling
- 175 °C maximum operating junction temperature
- Excellent surge capability
- Extremely fast, temperature-independent switching behavior
- Dramatically reduced switching losses compared to Si bipolar diodes

### Applications
- Boost diodes in PFC or DC/DC stages
- Switch-mode power supplies
- Uninterruptible power supplies
- Solar inverters
- Industrial motor drives
- EV charging stations

### Environmental
- Littelfuse “RoHS” logo = RoHS conform
- Littelfuse “HF” logo = Halogen Free
- Littelfuse “PB-free” logo = PB–free lead plating

### Maximum Ratings

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive Peak Reverse Voltage</td>
<td>$V_{PRM}$</td>
<td>-</td>
<td>1200</td>
<td>V</td>
</tr>
<tr>
<td>DC Blocking Voltage</td>
<td>$V_B$</td>
<td>$T_J = 25 ^\circ C$</td>
<td>1200</td>
<td>V</td>
</tr>
<tr>
<td>Continuous Forward Current</td>
<td>$I_F$</td>
<td>$T_C = 25 ^\circ C$</td>
<td>28</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_C = 125 ^\circ C$</td>
<td>15</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_C = 151 ^\circ C$</td>
<td>10</td>
<td>A</td>
</tr>
<tr>
<td>Non-Repetitive Forward Surge Current</td>
<td>$I_{FSM}$</td>
<td>$T_C = 25 ^\circ C, T_J = 10$ ms, Half sine pulse</td>
<td>80</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>$P_{tot}$</td>
<td>$T_C = 25 ^\circ C$</td>
<td>136</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_C = 110 ^\circ C$</td>
<td>59</td>
<td>W</td>
</tr>
<tr>
<td>Operating Junction Temperature</td>
<td>$T_J$</td>
<td>-</td>
<td>-55 to 175</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$T_{STG}$</td>
<td>-</td>
<td>-55 to 150</td>
<td>°C</td>
</tr>
<tr>
<td>Soldering Temperature</td>
<td>$T_{solder}$</td>
<td>-</td>
<td>260</td>
<td>°C</td>
</tr>
</tbody>
</table>

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Revised: 10/02/17
## Electrical Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Voltage</td>
<td>$V_F$</td>
<td>$I_F = 10 \ A, T_J = 25 ^\circ C$</td>
<td>-</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_F = 10 \ A, T_J = 175 ^\circ C$</td>
<td>-</td>
<td>2.2</td>
</tr>
<tr>
<td>Reverse Current</td>
<td>$I_R$</td>
<td>$V_R = 1200 \ V, T_J = 25 ^\circ C$</td>
<td>-</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 1200 \ V, T_J = 175 ^\circ C$</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Total Capacitance</td>
<td>$C$</td>
<td>$V_R = 1 \ V, f = 1 \ MHz$</td>
<td>-</td>
<td>582</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 400 \ V, f = 1 \ MHz$</td>
<td>-</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 800 \ V, f = 1 \ MHz$</td>
<td>-</td>
<td>40</td>
</tr>
<tr>
<td>Total Capacitive Charge</td>
<td>$Q_C$</td>
<td>$V_R = 800 \ V, \int_0^{V_R} V dV$</td>
<td>-</td>
<td>57</td>
</tr>
</tbody>
</table>

Footnote: $T_J = +25 ^\circ C$ unless otherwise specified

## Thermal Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Resistance</td>
<td>$R_{th}$</td>
<td>-</td>
<td>-</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Figure 1: Typical Forward Characteristics

Figure 2: Typical Reverse Characteristics
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Figure 7: Stored Energy vs. Reverse Voltage

![Graph showing stored energy vs. reverse voltage](image)

Figure 8: Transient Thermal Impedance

![Graph showing transient thermal impedance](image)

Part Numbering and Marking System

- **SIC** = SiC Diode
- **2** = Gen2
- **SD** = Schottky Diode
- **120** = Voltage Rating (1200 V)
- **A** = TO-220-2L
- **10** = Current Rating (10 A)
- **YY** = Year
- **WW** = Week
- **E** = Special Code
- **ZZZZZ-ZZ** = Lot Number

Packing Options

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Marking</th>
<th>Packing Mode</th>
<th>M.O.Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSIC2SD120A10</td>
<td>SIC2SD120A10</td>
<td>Tube</td>
<td>1000</td>
</tr>
</tbody>
</table>
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Dimensions-Package TO-220-2L

Symbol | Millimeters
--- | ---
| Min | Nominal | Max |
A | 4.320 | 4.450 | 4.570 |
A1 | 1.140 | 1.270 | 1.400 |
A2 | 2.500 | - | 2.740 |
b | 0.690 | - | 0.880 |
b1 | 0.680 | - | 0.870 |
b2 | 1.230 | - | 1.390 |
b3 | 1.220 | 1.270 | 1.380 |
c | 0.360 | - | 0.503 |
c1 | 0.630 | - | 0.527 |
D | 14.900 | - | 15.600 |
D1 | 8.615 | - | 9.017 |
D2 | 12.840 | - | 12.950 |
E | 10.000 | 10.180 | 10.360 |
E1 | 7.570 | 7.610 | 7.680 |
e1 | 2.490 | 2.540 | 2.590 |
e | 5.030 | 5.080 | 5.130 |
H1 | 6.295 | 6.545 | 6.795 |
L | 13.000 | 13.500 | 14.00 |
L1 | 2.390 | - | 3.250 |
ØP | 3.710 | 3.840 | 3.960 |
Q | 2.650 | - | 3.050 |
R | - | - | 0.254 |

Recommended Solder Pad Layout

Notes:
1. DIMENSIONS D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.127 MM PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREME OF PLASTIC BODY.
2. DIMENSIONS E2 & H1 DEFINE A ZONE WHERE STAMPING AND SINGULATION IRREGULARITIES BE ALLOWED.
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