**GEN2 SiC Schottky Diode**

**LSIC2SD120A20, 1200 V, 20 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 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_{RRM}</td>
<td>-</td>
<td>1200</td>
<td>V</td>
</tr>
<tr>
<td>DC Blocking Voltage</td>
<td>V_{B}</td>
<td>T_{J} = 25 °C</td>
<td>1200</td>
<td>V</td>
</tr>
<tr>
<td>Continuous Forward Current</td>
<td>I_{F}</td>
<td>T_{J} = 25 °C</td>
<td>54.5</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T_{C} = 135 °C</td>
<td>26.0</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T_{C} = 150 °C</td>
<td>20.0</td>
<td>A</td>
</tr>
<tr>
<td>Non-Repetitive Forward Surge Current</td>
<td>I_{FSM}</td>
<td>T_{C} = 25 °C, T_{J} = 10 ms, Half sine pulse</td>
<td>140</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>P_{TLM}</td>
<td>T_{C} = 25 °C</td>
<td>250</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T_{C} = 110 °C</td>
<td>108</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_{SOLD}</td>
<td>-</td>
<td>260</td>
<td>°C</td>
</tr>
</tbody>
</table>

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## 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>$I_f = 20\ A, \ T_f = 25\ ^\circ C$</td>
<td>-</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_f = 20\ A, \ T_f = 175\ ^\circ C$</td>
<td>-</td>
<td>2.2</td>
</tr>
<tr>
<td>Reverse Current</td>
<td>$I_R$</td>
<td>$V_R = 1200\ V, \ T_f = 25\ ^\circ C$</td>
<td>&lt;1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 1200\ V, \ T_f = 175\ ^\circ C$</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>Total Capacitance</td>
<td>$C$</td>
<td>$V_R = 1\ V, \ f = 1\ MHz$</td>
<td>1142</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 400\ V, \ f = 1\ MHz$</td>
<td>108</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_R = 800\ V, \ f = 1\ MHz$</td>
<td>82</td>
<td>-</td>
</tr>
<tr>
<td>Total Capacitive Charge</td>
<td>$Q_c$</td>
<td>$V_R = 800\ V, \ Q_c = \int C(V) dV$</td>
<td>115</td>
<td>-</td>
</tr>
</tbody>
</table>

Footnote: $T_f = +25\ ^\circ C$ 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>$R_{\text{thJC}}$</td>
<td>-</td>
<td>0.6</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

## Figure 1: Typical Forward Characteristics

![Figure 1: Typical Forward Characteristics](image1)

## Figure 2: Typical Reverse Characteristics

![Figure 2: Typical Reverse Characteristics](image2)
**GEN2 SiC Schottky Diode**  
**LSIC2SD120A20, 1200 V, 20 A, TO-220-2L**

### Dimensions-Package TO-220-2L

![diagram]

- **A** 4.32  4.45  4.70
- **A1** 1.14  1.27  1.40
- **A2** 2.20  -  2.74
- **b** 0.69  -  0.90
- **b2** 1.17  -  1.62
- **c** 0.36  -  0.60
- **D** 14.90  -  15.90
- **D1** 8.62  -  9.40
- **D2** 12.50  -  12.95
- **E** 9.70  10.18  10.36
- **E1** 7.57  7.61  8.30
- **e1** -  2.54  -
- **e** 5.03  5.08  5.13
- **H1** 6.30  6.55  6.80
- **L** 12.88  13.50  14.00
- **L1** 2.39  -  3.25
- **øP** 3.50  3.84  3.96
- **Q** 2.65  -  3.05
- **R**  -  -  0.25

### 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>LSIC2SD120A20</td>
<td>SIC2SD120A20</td>
<td>Tube (50pcs)</td>
<td>1000</td>
</tr>
</tbody>
</table>

### Packing Specification (Tube for TO-220-2L)

![diagram]

**NOTES:**
1. Material transparent extruded PVC with antistatic dipping
2. Radius 0.3 maximum unless otherwise specified
3. Critical areas: Labelled in Box
4. All pin plug holes are considered critical dimension
5. Marking Font Type: Times new roman, 3.12 ±0.127 in height
6. Material Thickness: 0.75 ±0.10
7. Tolerance unless otherwise specified: Decimal: ±0.05 Angle: ±1°
8. Unit: Millimeter (mm)

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