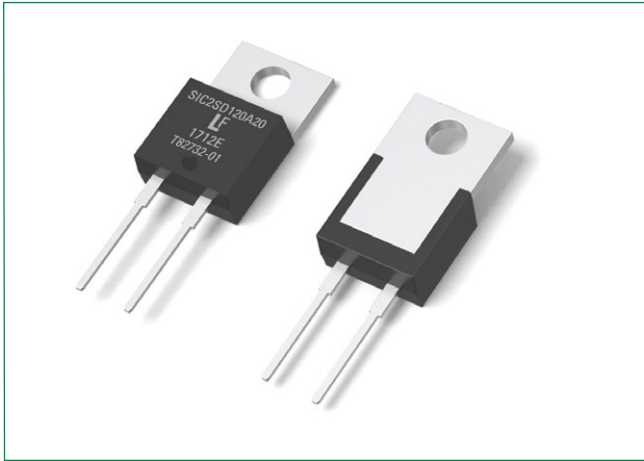


LSIC2SD120A20



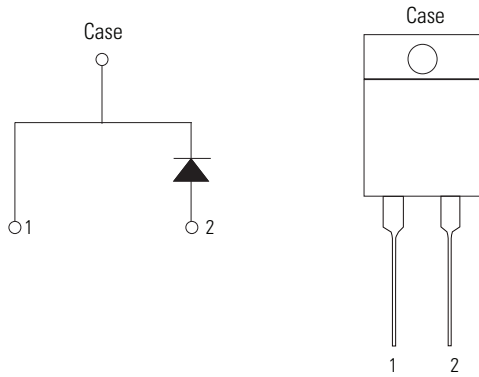
Description

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

Circuit Diagram TO-220-2L



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 = **HF** Halogen Free
- Littelfuse "PB-free" logo = Pb-free lead plating

Maximum Ratings

| Characteristics | Symbol | Conditions | Value | Unit |
|--------------------------------------|------------|--|------------|------|
| Repetitive Peak Reverse Voltage | V_{RRM} | - | 1200 | V |
| DC Blocking Voltage | V_R | $T_J = 25\text{ °C}$ | 1200 | V |
| Continuous Forward Current | I_F | $T_C = 25\text{ °C}$ | 54.5 | A |
| | | $T_C = 135\text{ °C}$ | 26.0 | |
| | | $T_C = 150\text{ °C}$ | 20.0 | |
| Non-Repetitive Forward Surge Current | I_{FSM} | $T_C = 25\text{ °C}, T_p = 10\text{ ms}, \text{Half sine pulse}$ | 140 | A |
| Power Dissipation | P_{Tot} | $T_C = 25\text{ °C}$ | 250 | W |
| | | $T_C = 110\text{ °C}$ | 108 | |
| Operating Junction Temperature | T_J | - | -55 to 175 | °C |
| Storage Temperature | T_{STG} | - | -55 to 150 | °C |
| Soldering Temperature | T_{sold} | - | 260 | °C |

Electrical Characteristics

| Characteristics | Symbol | Conditions | Value | | | Unit |
|-------------------------|--------|--|-------|------|------|---------------|
| | | | Min. | Typ. | Max. | |
| Forward Voltage | V_F | $I_F = 20\text{ A}, T_J = 25\text{ }^\circ\text{C}$ | - | 1.5 | 1.8 | V |
| | | $I_F = 20\text{ A}, T_J = 175\text{ }^\circ\text{C}$ | - | 2.2 | - | |
| Reverse Current | I_R | $V_R = 1200\text{ V}, T_J = 25\text{ }^\circ\text{C}$ | - | <1 | 100 | μA |
| | | $V_R = 1200\text{ V}, T_J = 175\text{ }^\circ\text{C}$ | - | 15 | - | |
| Total Capacitance | C | $V_R = 1\text{ V}, f = 1\text{ MHz}$ | - | 1142 | - | pF |
| | | $V_R = 400\text{ V}, f = 1\text{ MHz}$ | - | 108 | - | |
| | | $V_R = 800\text{ V}, f = 1\text{ MHz}$ | - | 82 | - | |
| Total Capacitive Charge | Q_C | $V_R = 800\text{ V}, Q_C = \int_0^{V_R} C(V)dV$ | - | 115 | - | nC |

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

Thermal Characteristics

| Characteristics | Symbol | Conditions | Value | | | Unit |
|--------------------|-----------------|------------|-------|------|------|--------------------|
| | | | Min. | Typ. | Max. | |
| Thermal Resistance | $R_{\theta JC}$ | - | - | 0.6 | - | $^\circ\text{C/W}$ |

Figure 1: Typical Forward Characteristics

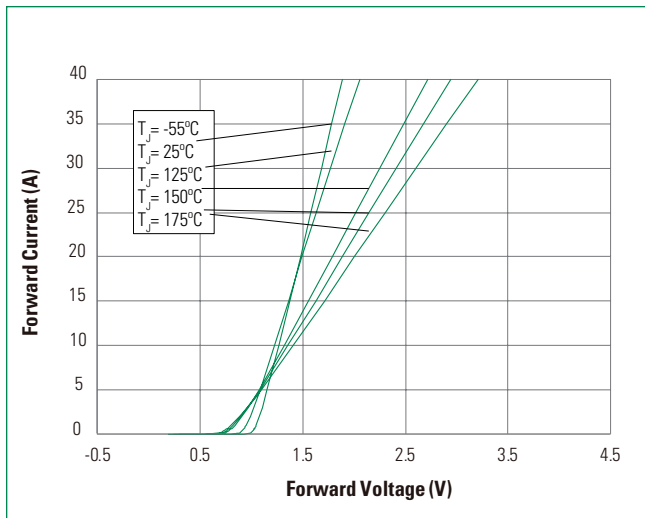


Figure 2: Typical Reverse Characteristics

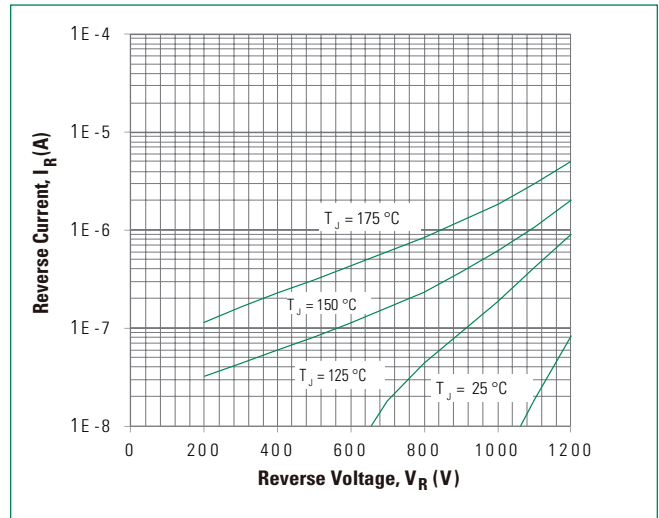


Figure 3: Power Derating

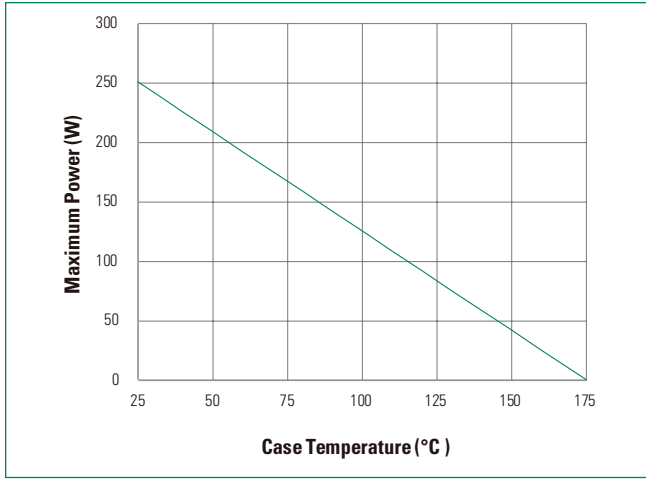


Figure 4: Current Derating

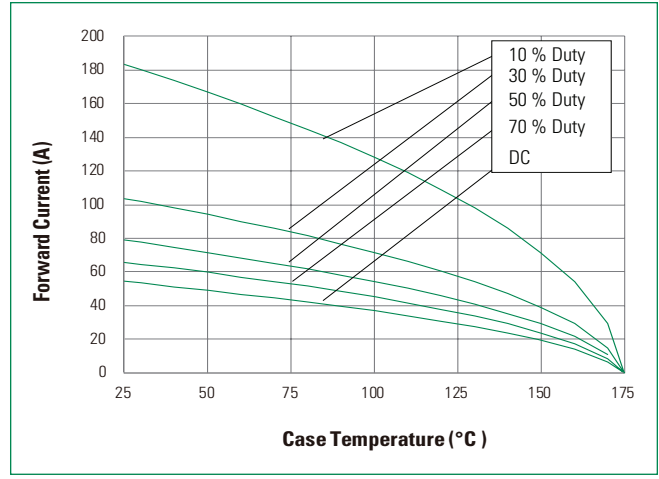


Figure 5: Capacitance vs. Reverse Voltage

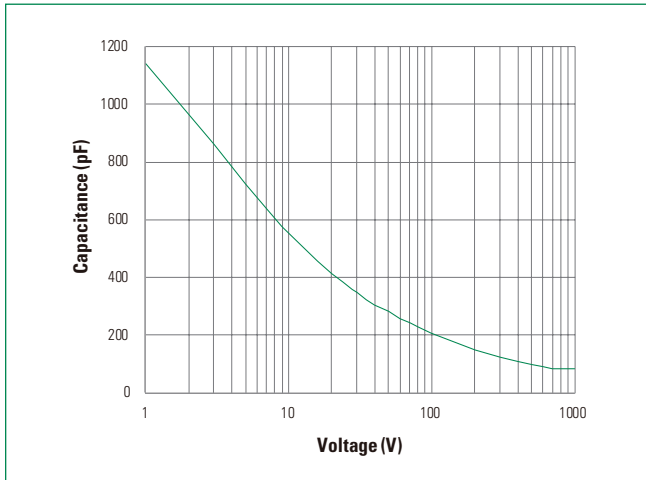


Figure 6: Capacitive Charge vs. Reverse Voltage

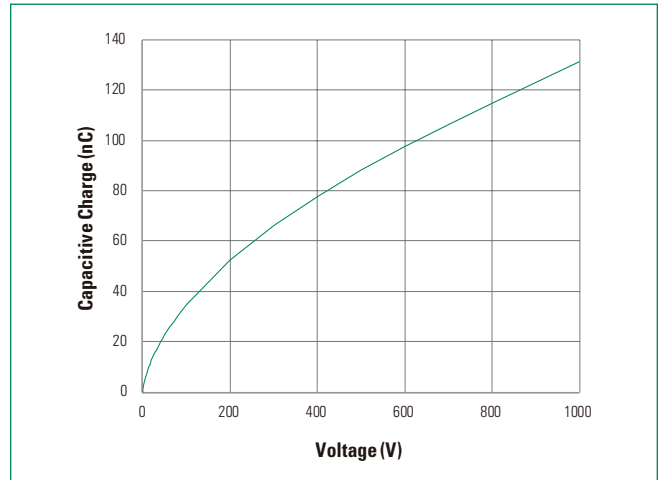


Figure 7: Stored Energy vs. Reverse Voltage

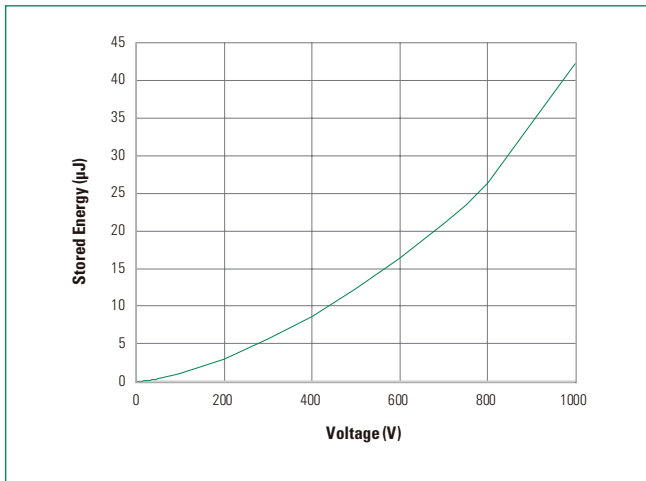
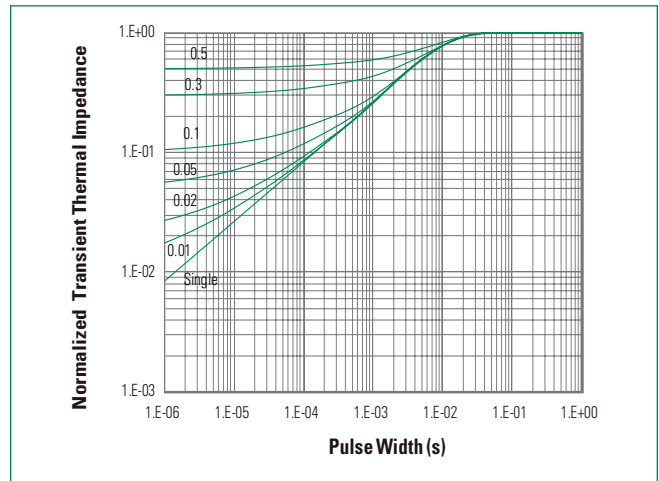
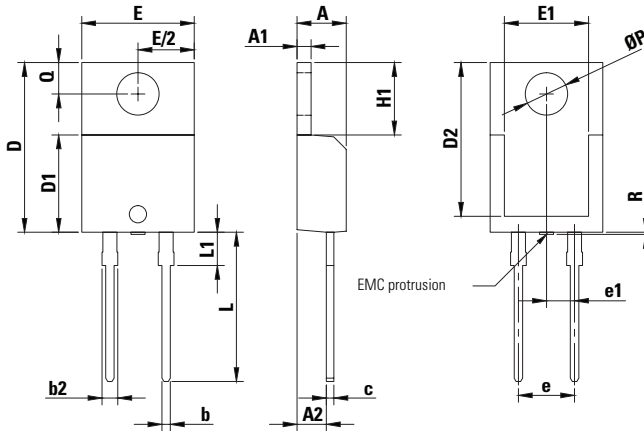


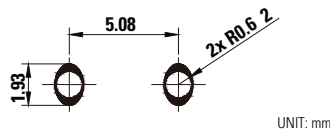
Figure 8: Transient Thermal Impedance



Dimensions-Package TO-220-2L

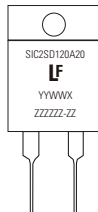


Recommended Solder Pad Layout



| Symbol | Millimeters | | |
|--------|-------------|-------|-------|
| | Min | Norm | Max |
| 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 |

Part Numbering and Marking System



- SIC = SiC Diode
- 2 = Gen2
- SD = Schottky Diode
- 120 = Voltage Rating (1200 V)
- A = TO-220 Package (2 Lead)
- 20 = Current Rating (20 A)
- YY = Year
- WW = Week
- X = Trace Code (any letter)
- ZZZZZ-ZZ = Lot Number

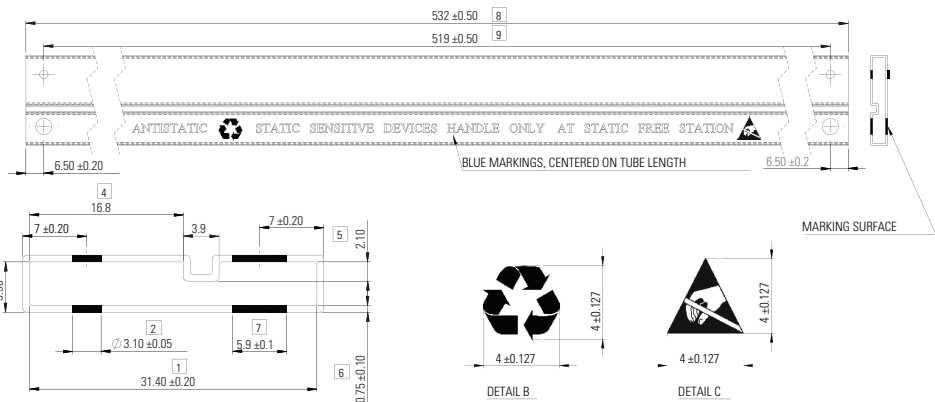
Packing Options

| Part Number | Marking | Packing Mode | M.O.Q |
|---------------|--------------|--------------|-------|
| LSIC2SD120A20 | SIC2SD120A20 | Tube (50pcs) | 1000 |

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

NOTES:

1. Material transparent extruded PVC with antistatic dipping
2. Radius : 0.5 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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