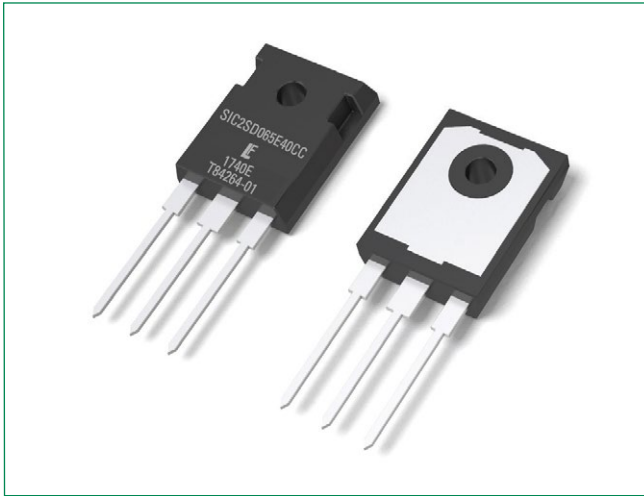


LSIC2SD120E40CC Series



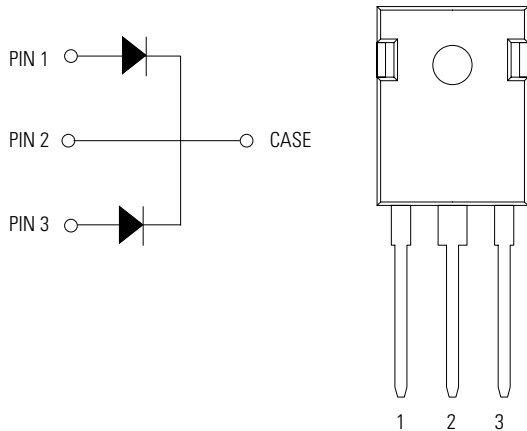
Description

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. This diode series is 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-247-3L



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 (Per Leg/Component) | I_F | $T_C = 25\text{ °C}$ | 54.5/109 | A |
| | | $T_C = 135\text{ °C}$ | 26/52 | |
| | | $T_C = 150\text{ °C}$ | 20/40 | |
| Non-Repetitive Forward Surge Current (Per Leg) | I_{FSM} | $T_C = 25\text{ °C}, T_p = 10\text{ ms}, \text{Half sine pulse}$ | 140 | A |
| Power Dissipation (Per Leg/Component) | P_{Tot} | $T_C = 25\text{ °C}$ | 250/500 | W |
| | | $T_C = 110\text{ °C}$ | 108/216 | |
| 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 (Per Leg)

| 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 (Per Leg/Component) | $R_{\theta JC}$ | - | - | 0.6/0.3 | - | $^\circ\text{C/W}$ |

Figure 1: Typical Forward Characteristics (Per Leg)

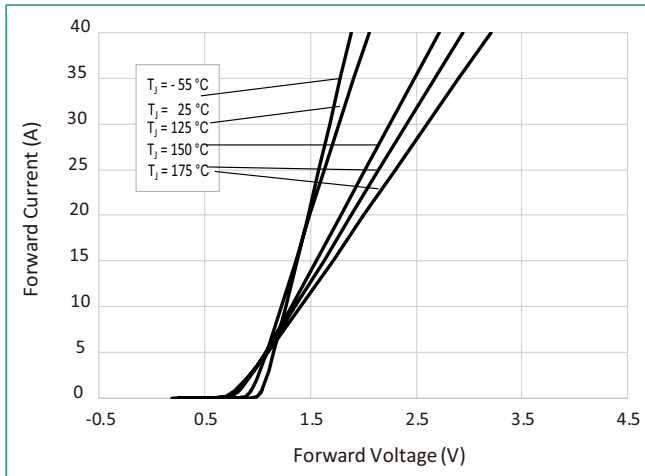


Figure 2: Typical Reverse Characteristics (Per Leg)

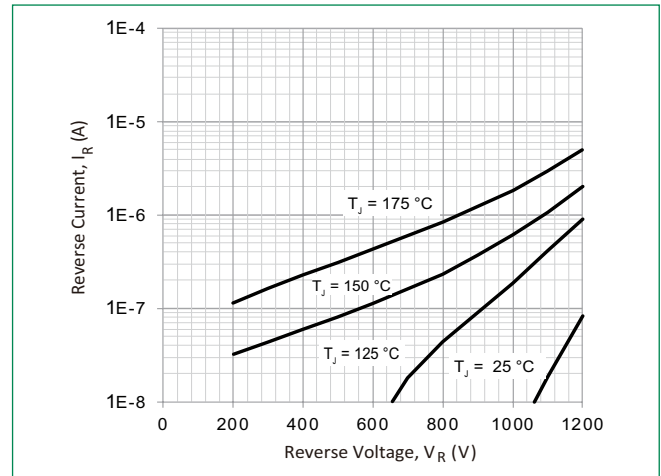


Figure 3: Power Derating (Per Leg)

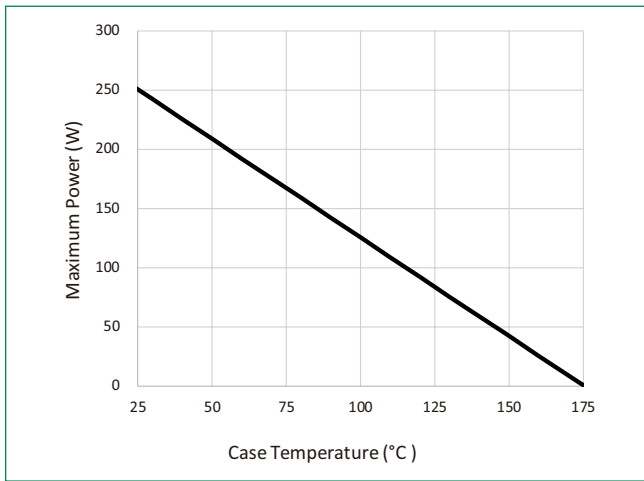


Figure 4: Current Derating (Per Leg)

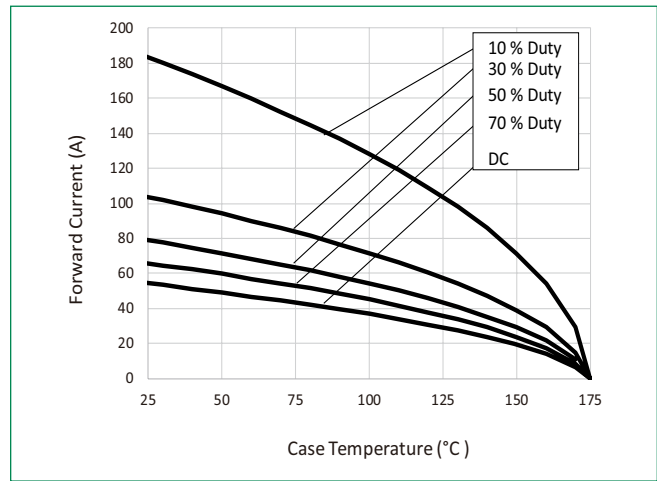


Figure 5: Capacitance vs. Reverse Voltage (Per Leg)

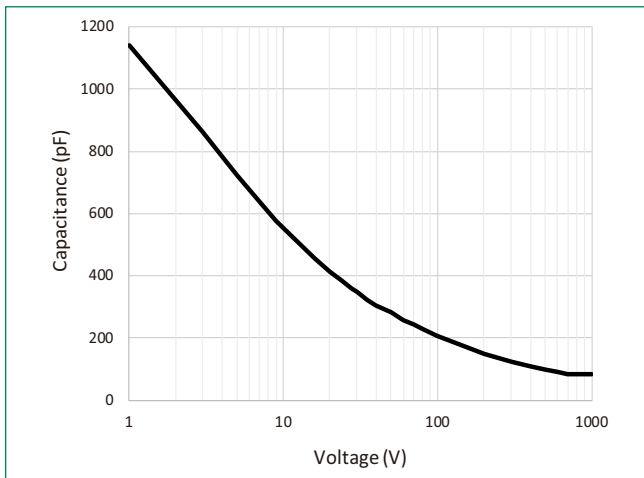


Figure 6: Capacitive Charge vs. Reverse Voltage (Per Leg)

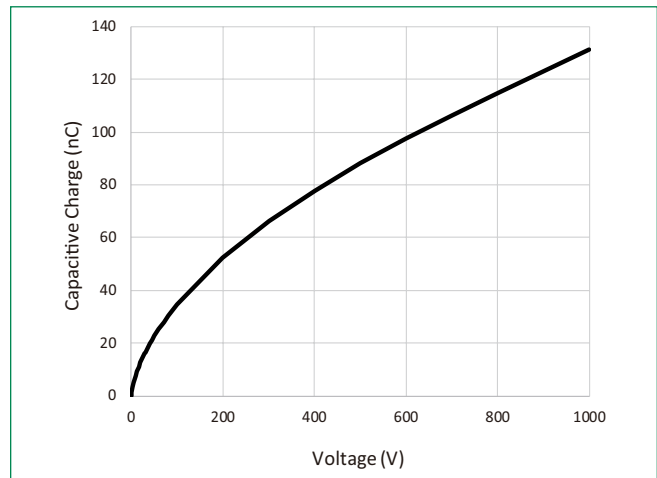


Figure 7: Stored Energy vs. Reverse Voltage (Per Leg)

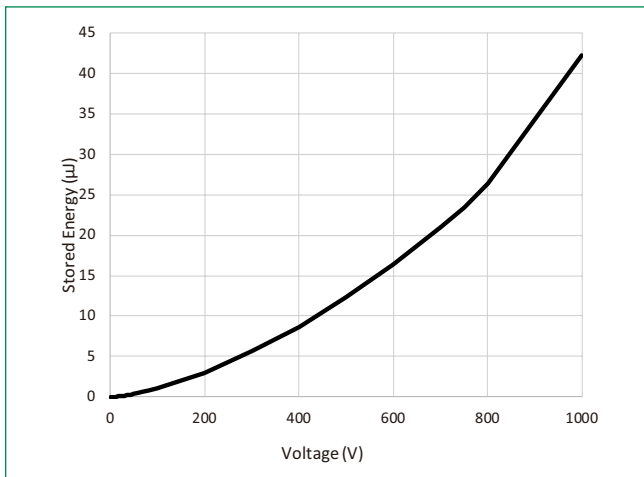
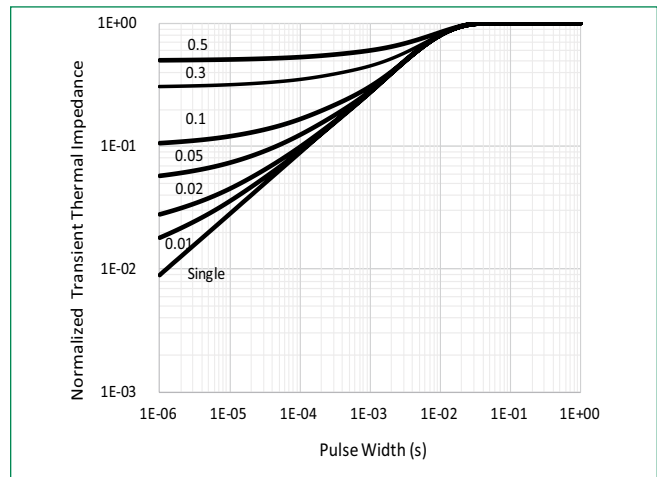
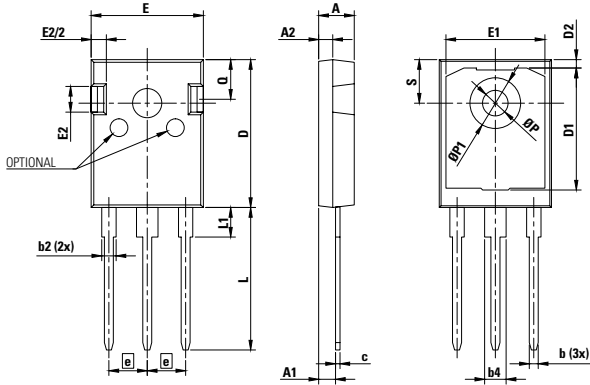


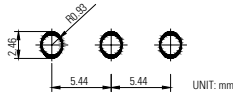
Figure 8: Transient Thermal Impedance (Per Component)



Package Dimensions TO-247-3L



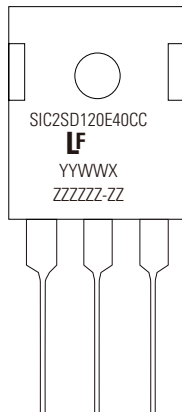
Recommended Hole Pattern Layout



- Notes:**
1. Dimensions are in millimeters
 2. Dimension D, E do not include mold flash. Mold flash shall not exceed 0.127 mm per side. These measured at the outermost extreme of plastic body.
 3. ϕP to have a maximum draft angle of 1.5° to the top of the part with a maximum hole diameter of 0.154"

| Symbol | Millimeters | | |
|-----------|-------------|-------|-------|
| | Min | Norm | Max |
| A | 4.80 | 5.03 | 5.20 |
| A1 | 2.25 | 2.38 | 2.54 |
| A2 | 1.85 | 1.98 | 2.11 |
| b | 0.99 | - | 1.40 |
| b2 | 1.65 | - | 2.39 |
| b4 | 2.59 | - | 3.43 |
| c | 0.38 | 0.64 | 0.89 |
| D | 20.80 | 20.96 | 21.34 |
| D1 | 13.50 | - | - |
| D2 | 0.51 | 1.19 | 1.35 |
| e | 5.44 BSC | | |
| E | 15.75 | 15.90 | 16.13 |
| E1 | 13.06 | 14.02 | 14.15 |
| E2 | 4.19 | 4.32 | 4.83 |
| L | 19.81 | 20.19 | 20.57 |
| L1 | 3.81 | 4.19 | 4.45 |
| ϕP | 3.55 | 3.61 | 3.66 |
| $\phi P1$ | 7.06 | 7.19 | 7.32 |
| Q | 5.49 | 5.61 | 6.20 |
| S | 6.05 | 6.17 | 6.30 |

Part Numbering and Marking System

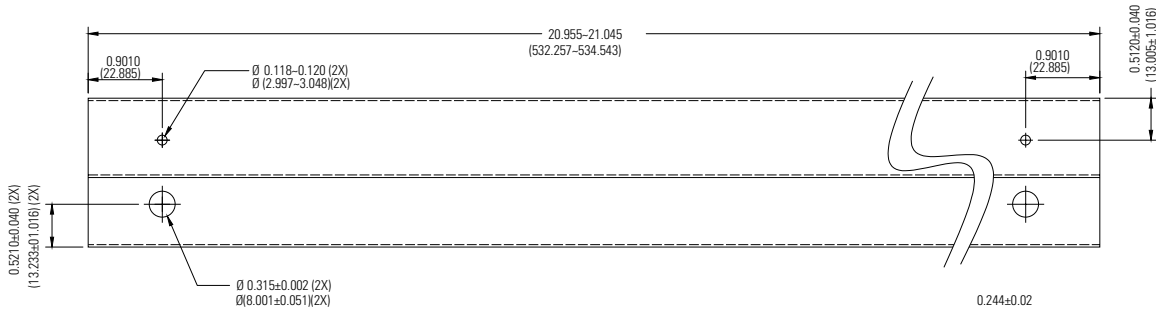


- SIC = SiC
- 2 = Gen2
- SD = Schottky Diode
- 120 = Voltage Rating (1200 V)
- E = TO-247-3L
- 40 = Current Rating (40 A)
- CC = Common Cathode
- YY = Year
- WW = Week
- X = Trace Code (Any Letter)
- ZZZZZZ-ZZ = Lot Number

Packing Options

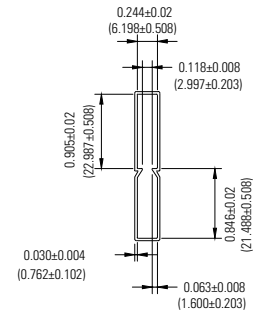
| Part Number | Marking | Packing Mode | M.O.Q |
|-----------------|----------------|--------------|-------|
| LSIC2SD120E40CC | SIC2SD120E40CC | (30pcs) | 450 |

Packing Specification TO-247-3L



NOTE:

1. All pin plug holes are considered critical dimension
2. Tolerance is to be ±0.010 unless otherwise specified
3. Dimension are in inches (and millimeters).



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