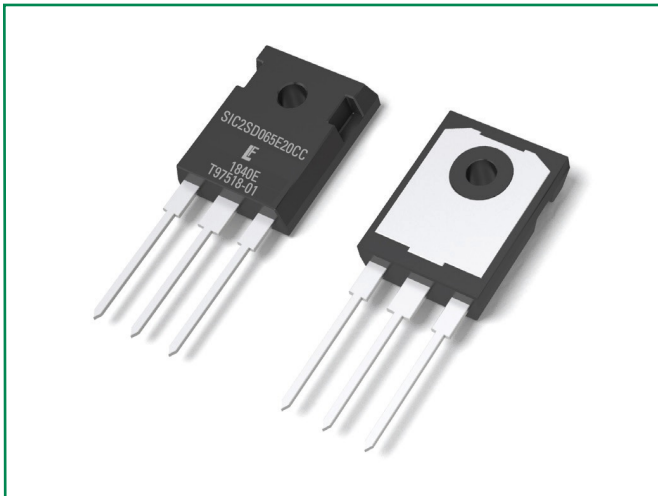


LSIC2SD065E20CCA 650 V, 20 A SiC Schottky Barrier Diode



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.

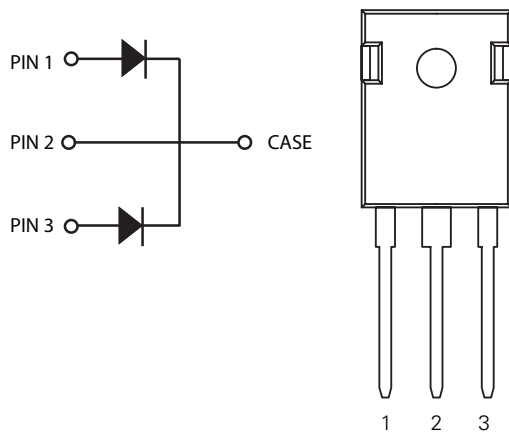
Features

- AEC-Q101 qualified
- 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

Circuit Diagram TO-247-3L



Environmental

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

Maximum Ratings

| Characteristics | Symbol | Conditions | Value | Unit |
|--|------------|--|------------|------|
| Repetitive Peak Reverse Voltage | V_{RRM} | - | 650 | V |
| DC Blocking Voltage | V_R | $T_J = 25\text{ °C}$ | 650 | V |
| Continuous Forward Current (Per Leg/Component) | I_F | $T_C = 25\text{ °C}$ | 27 / 54 | A |
| | | $T_C = 147\text{ °C}$ | 10 / 20 | |
| Non-Repetitive Forward Surge Current (Per Leg) | I_{FSM} | $T_C = 25\text{ °C}, t_p = 10\text{ ms}, \text{Half sine pulse}$ | 50 | A |
| Power Dissipation (Per Leg/Component) | P_{Tot} | $T_C = 25\text{ °C}$ | 100 / 200 | W |
| | | $T_C = 110\text{ °C}$ | 43 / 86 | |
| 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 ($T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified)

| Characteristics | Symbol | Conditions | Value | | | Unit |
|-------------------------|--------|---|-------|------|------|---------------|
| | | | Min. | Typ. | Max. | |
| Forward Voltage | V_F | $I_F = 10\text{ A}, T_J = 25\text{ }^\circ\text{C}$ | - | 1.5 | 1.8 | V |
| | | $I_F = 10\text{ A}, T_J = 175\text{ }^\circ\text{C}$ | - | 1.85 | - | |
| Reverse Current | I_R | $V_R = 650\text{ V}, T_J = 25\text{ }^\circ\text{C}$ | - | <1 | 50 | μA |
| | | $V_R = 650\text{ V}, T_J = 175\text{ }^\circ\text{C}$ | - | 25 | - | |
| Total Capacitance | C | $V_R = 1\text{ V}, f = 1\text{ MHz}$ | - | 470 | - | pF |
| | | $V_R = 200\text{ V}, f = 1\text{ MHz}$ | - | 60 | - | |
| | | $V_R = 400\text{ V}, f = 1\text{ MHz}$ | - | 43 | - | |
| Total Capacitive Charge | Q_C | $V_R = 400\text{ V}, Q_C = \int_0^{V_R} C(V)dV$ | - | 30 | - | nC |

Thermal Characteristics

| Characteristics | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Thermal Resistance (Per Leg/Component) | $R_{\theta JC}$ | 1.50 / 0.75 | $^\circ\text{C/W}$ |

Figure 1: Typical Forward Characteristics

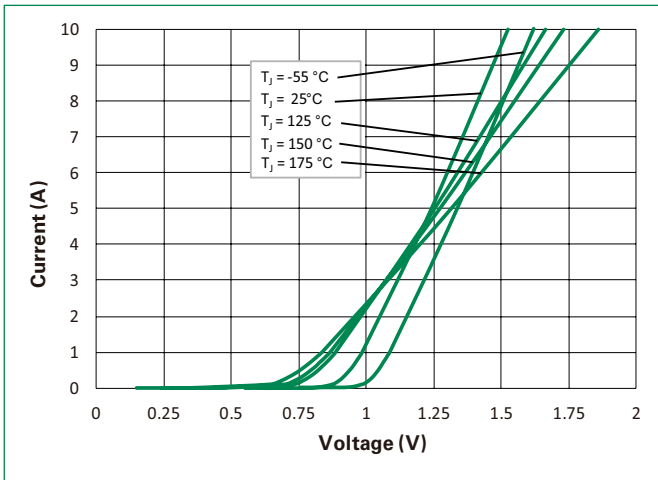


Figure 2: Typical Reverse Characteristics

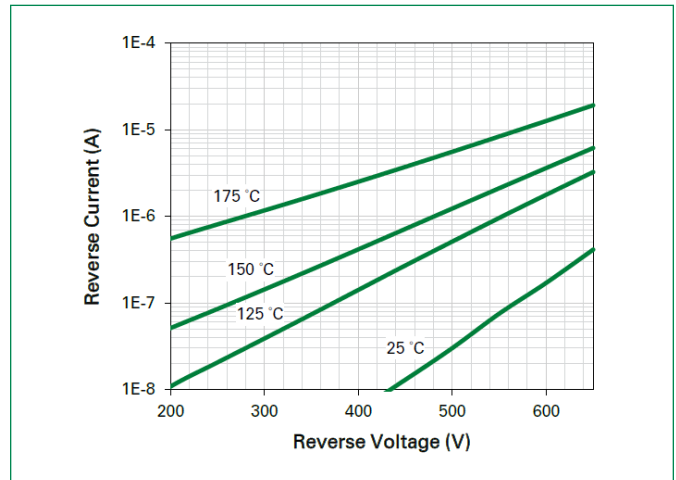


Figure 3: Power Derating

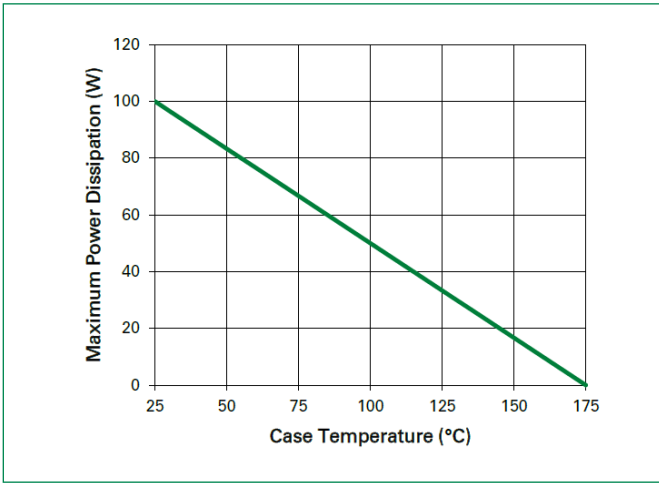


Figure 4: Current Derating

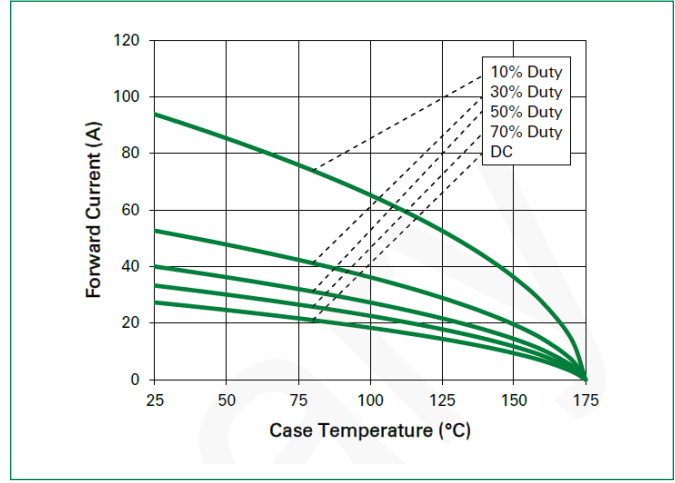


Figure 5: Capacitance vs. Reverse Voltage

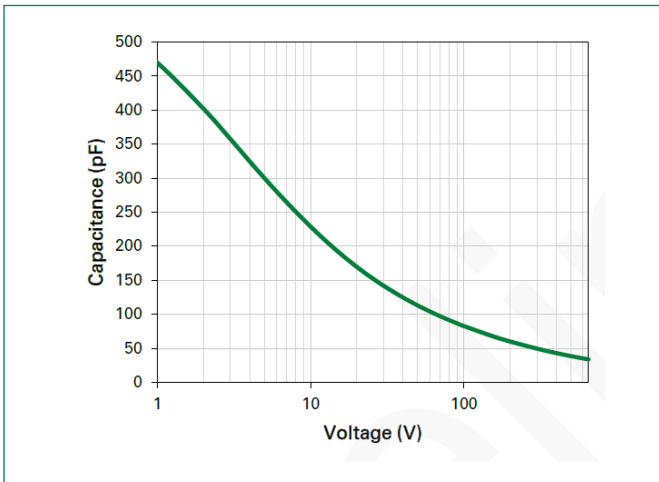


Figure 6: Capacitive Charge vs. Reverse Voltage

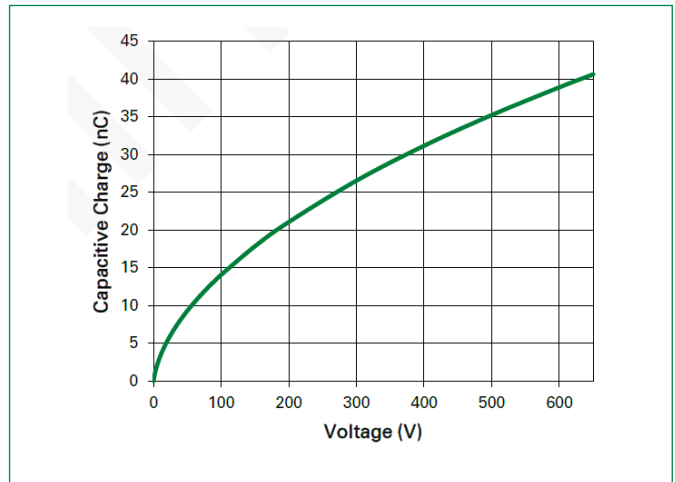


Figure 7: Stored Energy vs. Reverse Voltage

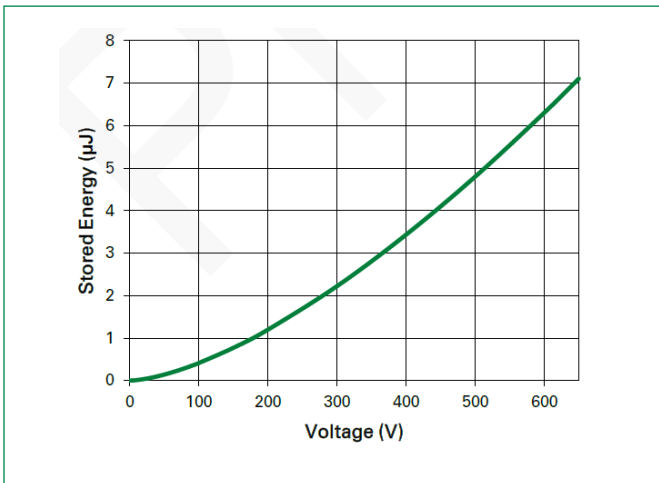
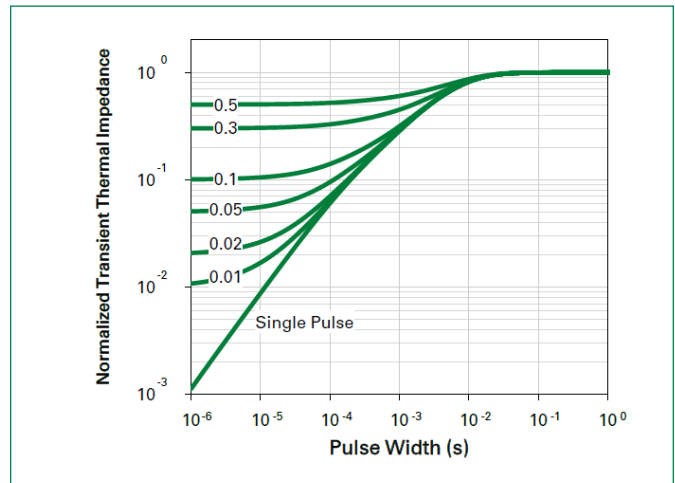
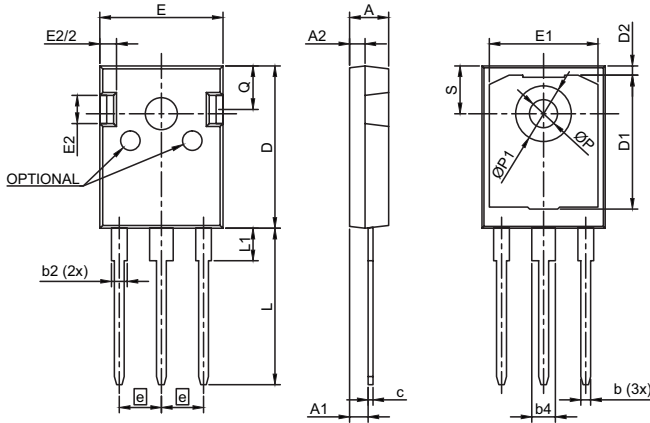


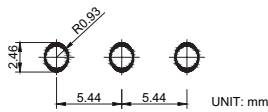
Figure 8: Transient Thermal Impedance



Package Dimensions TO-247-3L



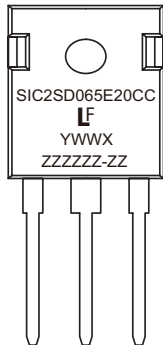
Recommended Hole Pattern Layout



- 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. ØP 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 | Nom | 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 |
| ØP | 3.55 | 3.61 | 3.66 |
| ØP1 | 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

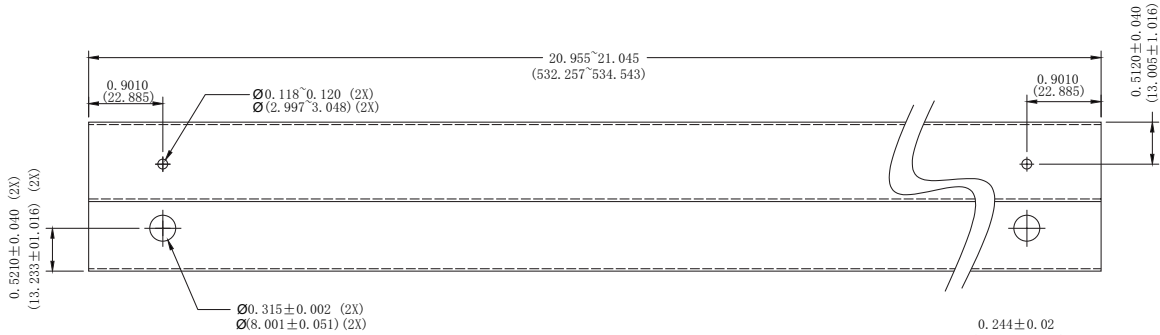


- SIC = SiC
- 2 = Gen2
- SD = Schottky Diode
- 065 = Voltage Rating (650 V)
- E = TO-247-3L
- 20 = Current Rating (20 A)
- CC = Common Cathode
- Y = Year
- WW = Week
- X = Special Code
- ZZZZZZ-ZZ = Lot Number

Packing Options

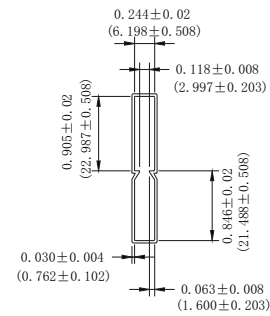
| Part Number | Marking | Packing Mode | M.O.Q. |
|------------------|----------------|--------------|--------|
| LSIC2SD065E20CCA | SIC2SD065E20CC | Tube (30pcs) | 450 |

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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