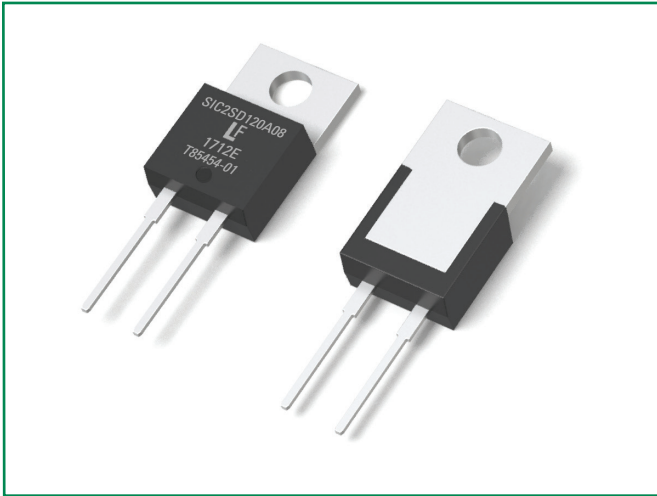


**LSIC2SD120A08**



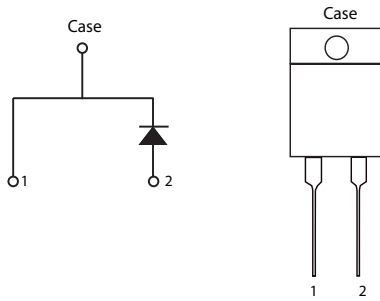
**Description**

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

**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           | $I_F$      | $T_C = 25\text{ °C}$   | 24.5       | A    |
|                                      |            | $T_C = 135\text{ °C}$  | 12         |      |
|                                      |            | $T_C = 154\text{ °C}$  | 8          |      |
| Non-Repetitive Forward Surge Current | $I_{FSM}$  | $T_C = 25\text{ °C}, T_P = 10\text{ ms}, \text{Half sine pulse}$ | 65         | A    |
| Power Dissipation                    | $P_{Tot}$  | $T_C = 25\text{ °C}$   | 125        | W    |
|                                      |            | $T_C = 110\text{ °C}$  | 54         |      |
| 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**

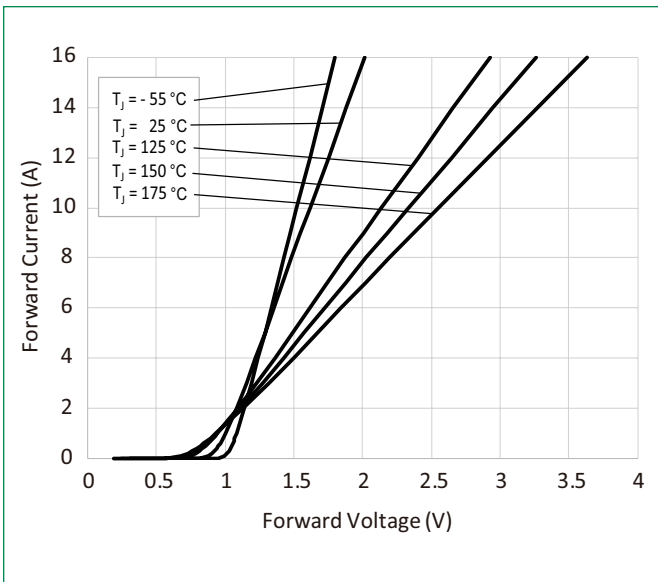
| Characteristics         | Symbol | Conditions   | Value |      |      | Unit          |
|-------------------------|--------|--|-------|------|------|---------------|
|                         |        |  | Min.  | Typ. | Max. |               |
| Forward Voltage         | $V_F$  | $I_F = 8 \text{ A}, T_J = 25 \text{ }^\circ\text{C}$     | -     | 1.5  | 1.8  | V             |
|                         |        | $I_F = 8 \text{ A}, T_J = 175 \text{ }^\circ\text{C}$    | -     | 2.2  | -    |               |
| Reverse Current         | $I_R$  | $V_R = 1200 \text{ V}, T_J = 25 \text{ }^\circ\text{C}$  | -     | <1   | 100  | $\mu\text{A}$ |
|                         |        | $V_R = 1200 \text{ V}, T_J = 175 \text{ }^\circ\text{C}$ | -     | 10   | -    |               |
| Total Capacitance       | C      | $V_R = 1 \text{ V}, f = 1 \text{ MHz}$                   | -     | 454  | -    | pF            |
|                         |        | $V_R = 400 \text{ V}, f = 1 \text{ MHz}$                 | -     | 45   | -    |               |
|                         |        | $V_R = 800 \text{ V}, f = 1 \text{ MHz}$                 | -     | 33   | -    |               |
| Total Capacitive Charge | $Q_C$  | $V_R = 800 \text{ V}, Q_C = \int_0^{V_R} C(V) dV$        | -     | 47   | -    | nC            |

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

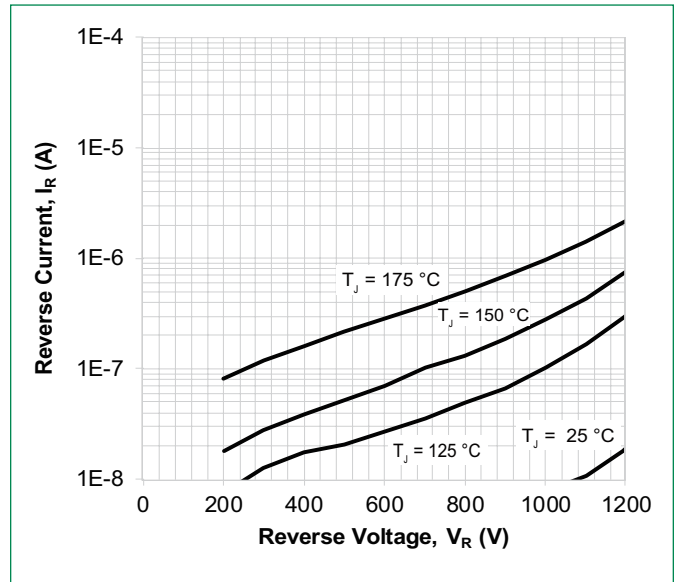
**Thermal Characteristics**

| Characteristics    | Symbol          | Conditions | Value |      |      | Unit               |
|--------------------|-----------------|------------|-------|------|------|--------------------|
|                    |                 |            | Min.  | Typ. | Max. |                    |
| Thermal Resistance | $R_{\theta JC}$ | -          | -     | 1.2  | -    | $^\circ\text{C/W}$ |

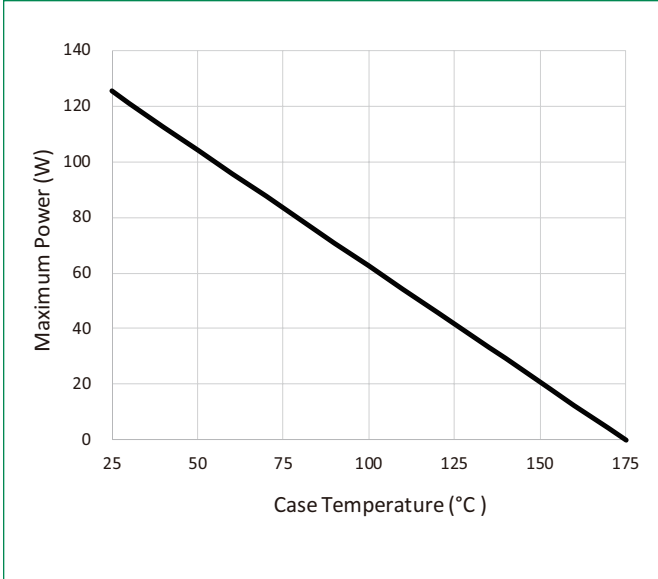
**Figure 1: Typical Forward Characteristics**



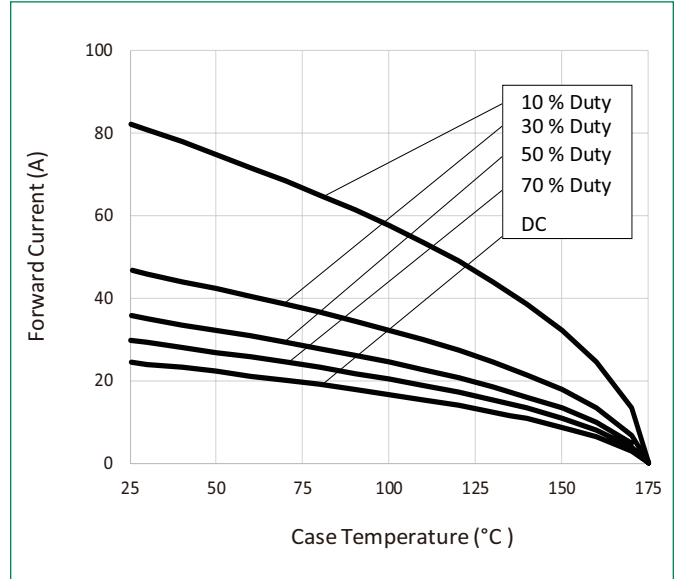
**Figure 2: Typical Reverse Characteristics**



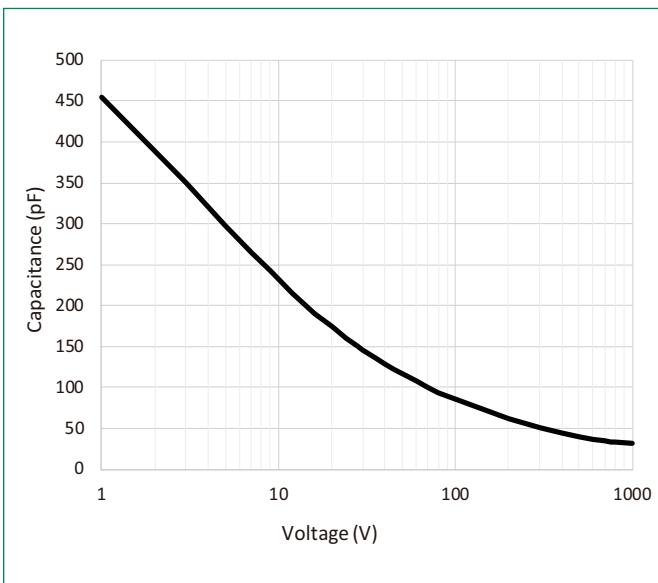
**Figure 3: Power Derating**



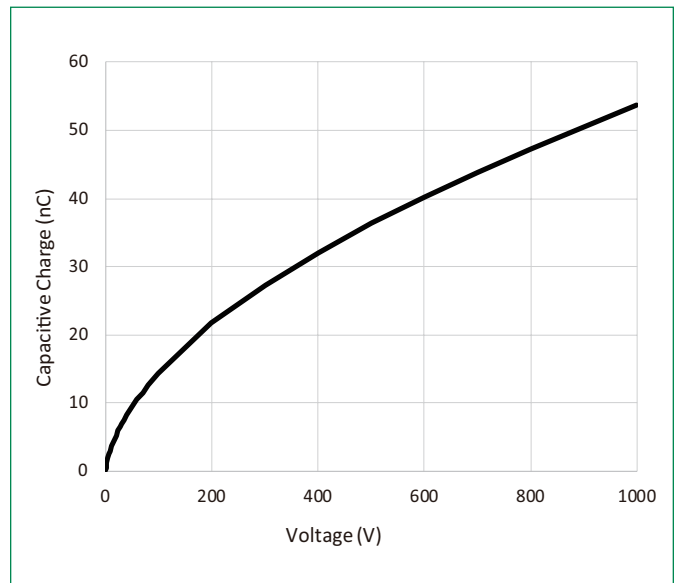
**Figure 4: Current Derating**



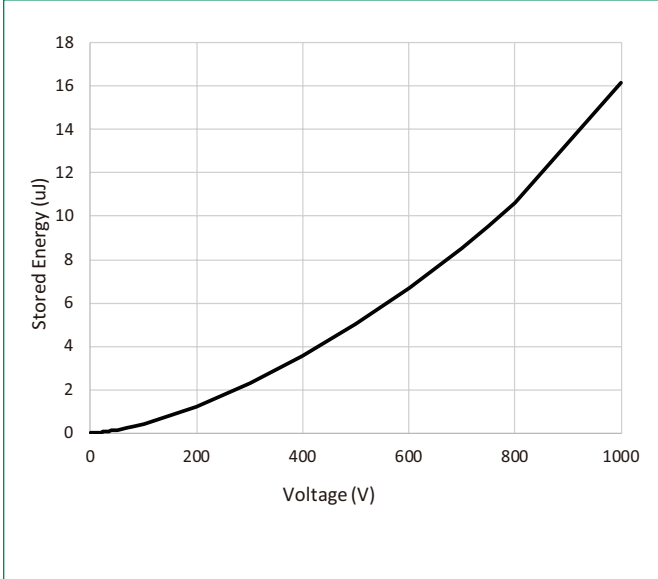
**Figure 5: Capacitance vs. Reverse Voltage**



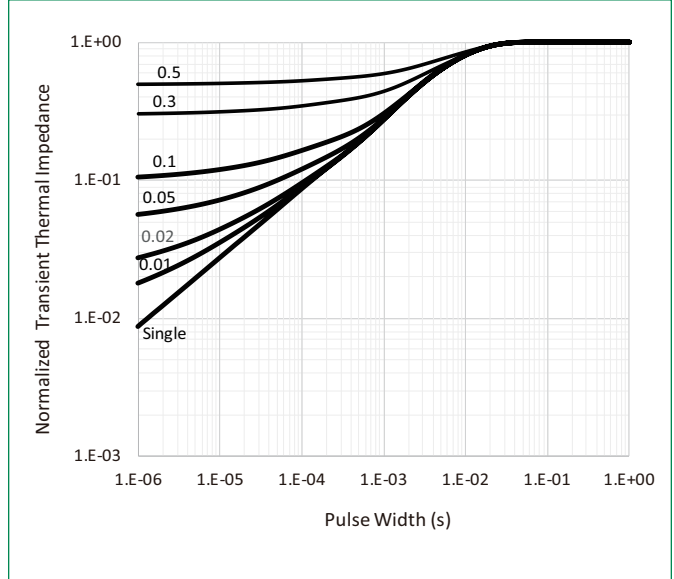
**Figure 6: Capacitive Charge vs. Reverse Voltage**



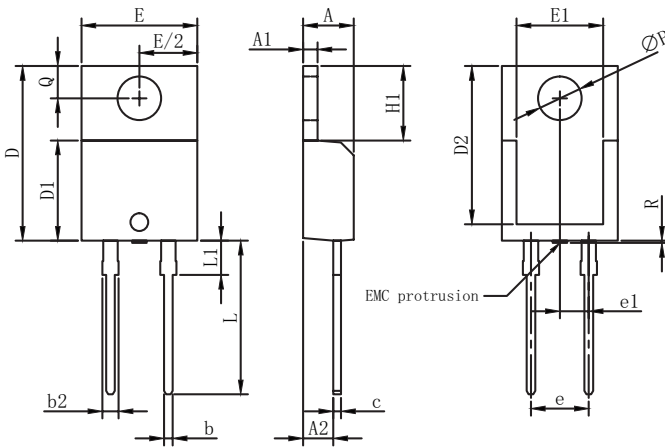
**Figure 7: Stored Energy vs. Reverse Voltage**



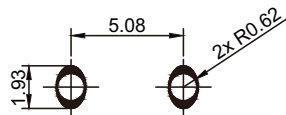
**Figure 8: Transient Thermal Impedance**



**Dimensions-Package TO-220-2L**



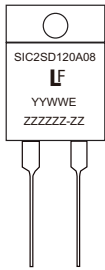
**Recommended Solder Pad Layout**



UNIT: mm

| Symbol | Millimeters |       |       |
|--------|-------------|-------|-------|
|        | Min         | Nom   | 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**

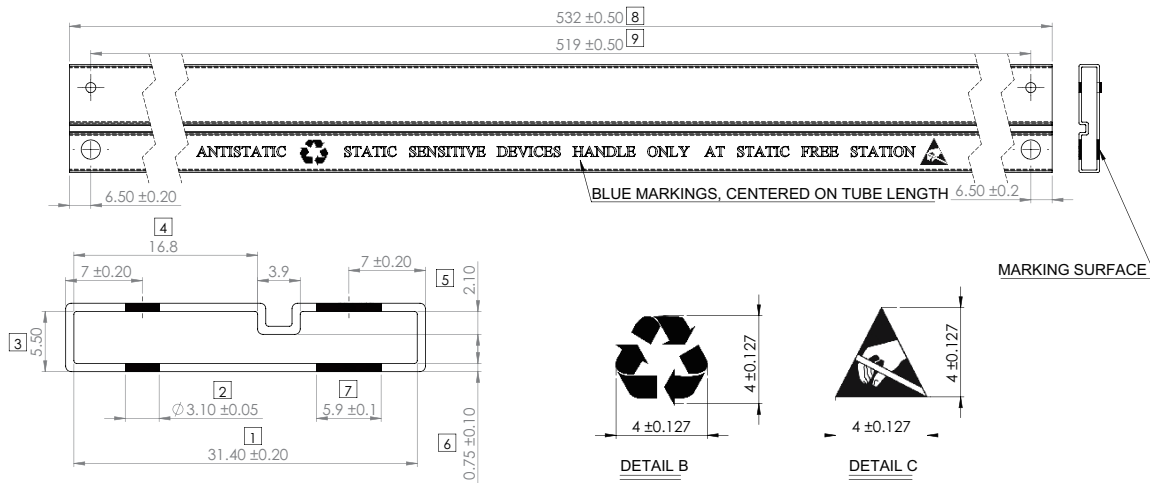


- SIC = SiC Diode
- 2 = Gen2
- SD = Schottky Diode
- 120 = Voltage Rating (1200 V)
- A = TO-220 Package (2 Lead)
- 08 = Current Rating (8 A)
- YY = Year
- WW = Week
- E = Special Code
- ZZZZZZ-ZZ = Lot Number

**Packing Options**

| Part Number   | Marking      | Packing Mode | M.O.Q |
|---------------|--------------|--------------|-------|
| LSIC2SD120A08 | SIC2SD120A08 | Tube         | 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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