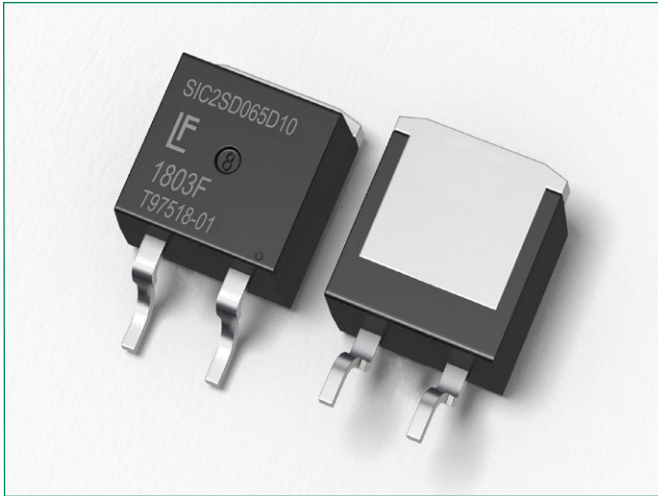


# GEN2 SiC Schottky Diode

## LSIC2SD065D10A, 650 V, 10 A, TO-263-2L (D2PAK)

### LSIC2SD065D10A 650 V, 10 A SiC Schottky Barrier Diode



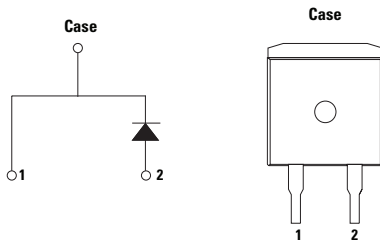
#### Description

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. These diodes series are 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

#### Circuit Diagram TO-263-2L



#### 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      | $V_{RRM}$  | -                                                                | 650        | V    |
| DC Blocking Voltage                  | $V_R$      | $T_J = 25\text{ °C}$                                             | 650        | V    |
| Continuous Forward Current           | $I_F$      | $T_C = 25\text{ °C}$                                             | 27         | A    |
|                                      |            | $T_C = 135\text{ °C}$                                            | 12.5       |      |
|                                      |            | $T_C = 147\text{ °C}$                                            | 10         |      |
| Non-Repetitive Forward Surge Current | $I_{FSM}$  | $T_C = 25\text{ °C}, T_P = 10\text{ ms}, \text{Half sine pulse}$ | 48         | A    |
| Power Dissipation                    | $P_{Tot}$  | $T_C = 25\text{ °C}$                                             | 100        | W    |
|                                      |            | $T_C = 110\text{ °C}$                                            | 43         |      |
| 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   | $\mu\text{A}$ |
|                         |        | $V_R = 650\text{ V}, T_J = 175\text{ }^{\circ}\text{C}$ | -     | 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 | $R_{\theta JC}$ | 1.5   | $^{\circ}\text{C/W}$ |

Figure 1: Typical Forward Characteristics

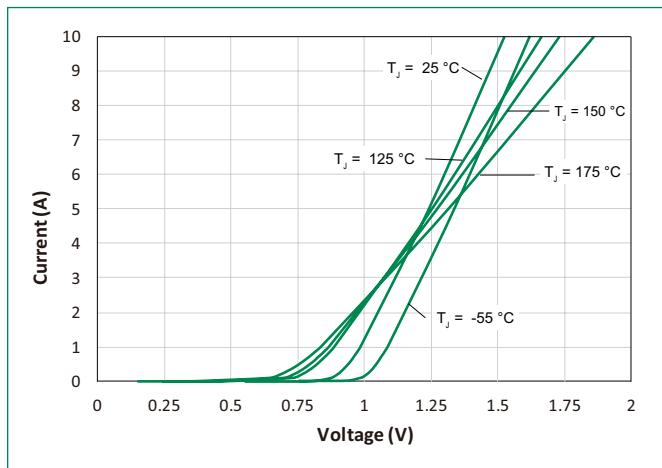
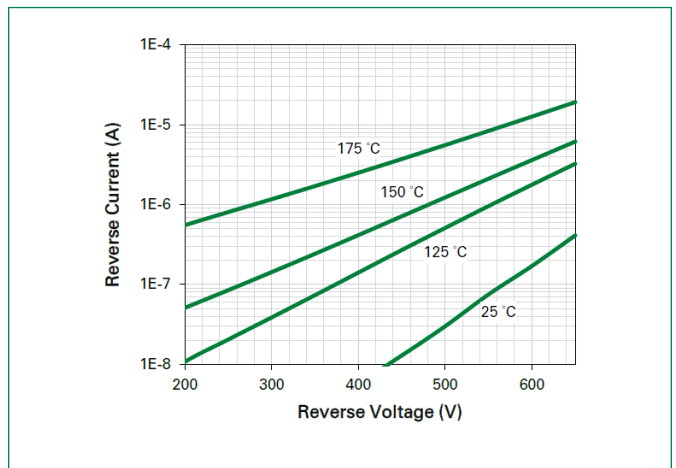
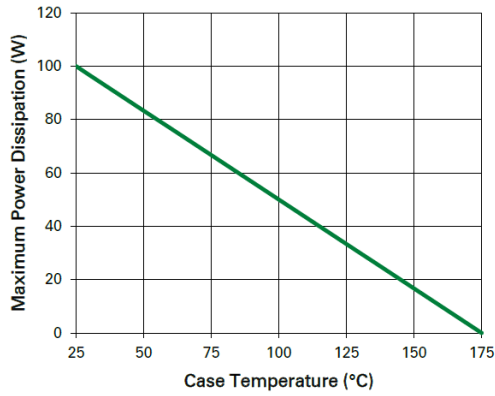


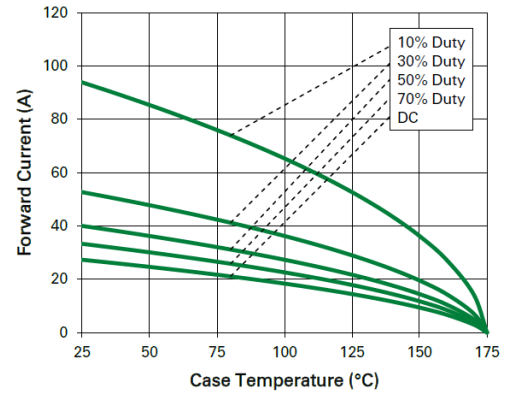
Figure 2: Typical Reverse Characteristics



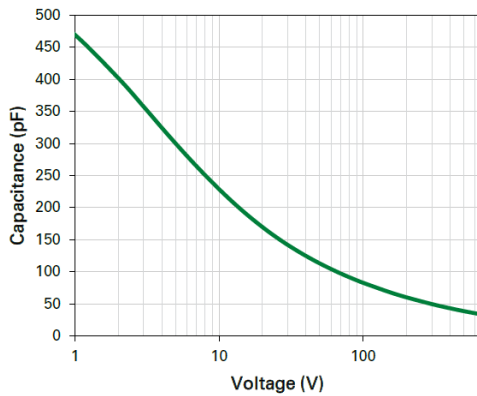
**Figure 3: Power Derating**



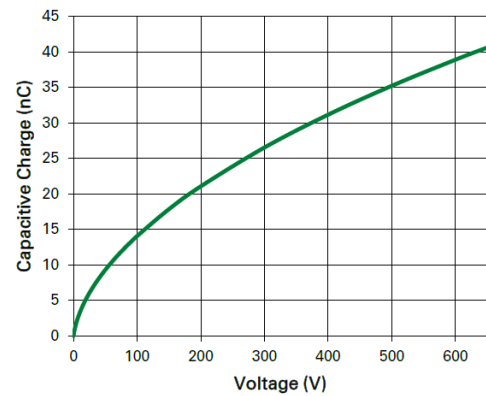
**Figure 4: Current Derating**



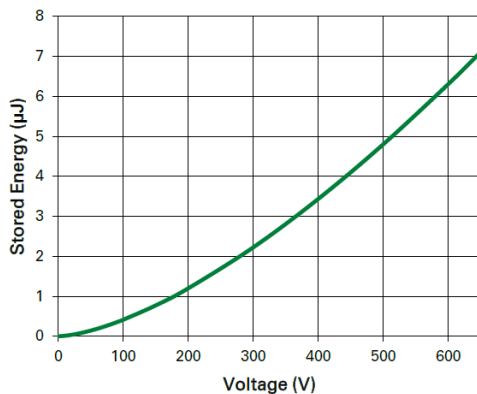
**Figure 5: Capacitance vs. Reverse Voltage**



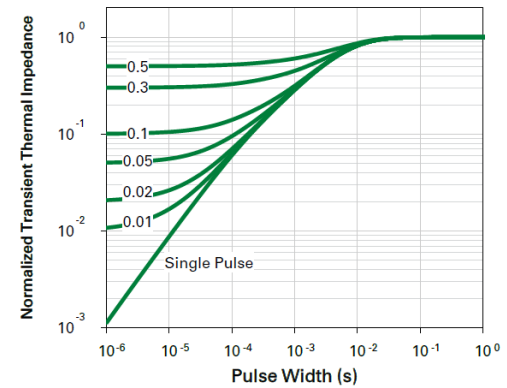
**Figure 6: Capacitive Charge vs. Reverse Voltage**



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



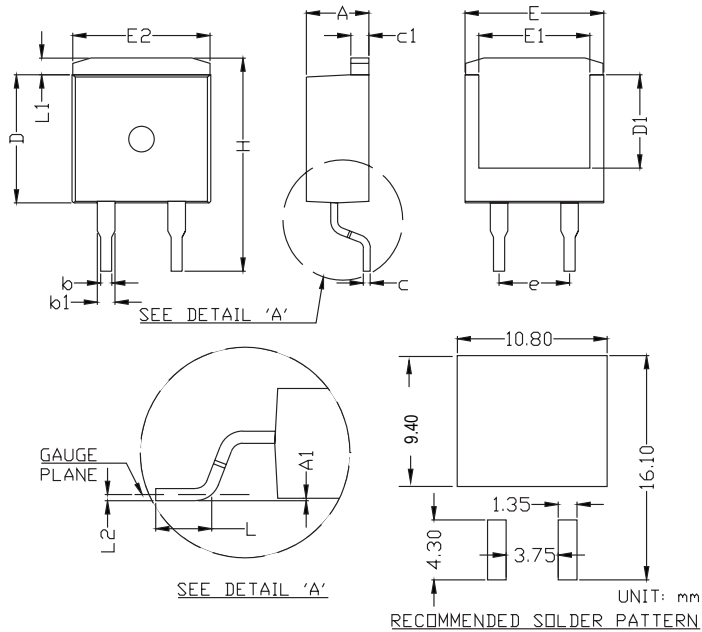
**Figure 8: Transient Thermal Impedance**



# GEN2 SiC Schottky Diode

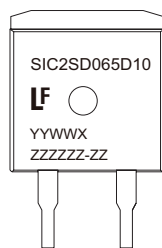
## LSIC2SD065D10A, 650 V, 10 A, TO-263-2L (D2PAK)

### Dimensions-Package TO-263-2L



| Symbol | Millimeters |       |       |
|--------|-------------|-------|-------|
|        | Min         | Nom   | Max   |
| A      | 4.30        | 4.50  | 4.70  |
| A1     | 0.00        | -     | 0.25  |
| b      | 0.70        | 0.80  | 0.90  |
| b1     | 1.17        | 1.27  | 1.37  |
| c      | 0.46        | 0.50  | 0.60  |
| c1     | 1.25        | 1.30  | 1.40  |
| D      | 9.00        | 9.20  | 9.40  |
| D1     | 6.50        | 6.70  | 6.90  |
| E      | 9.80        | 10.00 | 10.20 |
| E1     | 7.80        | 8.00  | 8.20  |
| E2     | 9.70        | 9.90  | 10.10 |
| e      | 5.08 BSC    |       |       |
| H      | 15.00       | 15.30 | 15.60 |
| L      | 2.00        | 2.30  | 2.60  |
| L1     | 1.00        | 1.20  | 1.40  |
| L2     | 0.254 BSC   |       |       |

### Part Numbering and Marking System



SIC = SiC Diode  
 2 = Gen2  
 SD = Schottky Diode  
 065 = Voltage Rating (650 V)  
 D = TO-263-2L (D2PAK)  
 10 = Current Rating (10 A)  
 YY = Year  
 WW = Week  
 X = Special Code  
 ZZZZZZ-ZZ = Lot Number

### Packing Option

| Part Number    | Marking      | Packing Mode  | M.O.Q |
|----------------|--------------|---------------|-------|
| LSIC2SD065D10A | SIC2SD065D10 | Tape and Reel | 800   |

