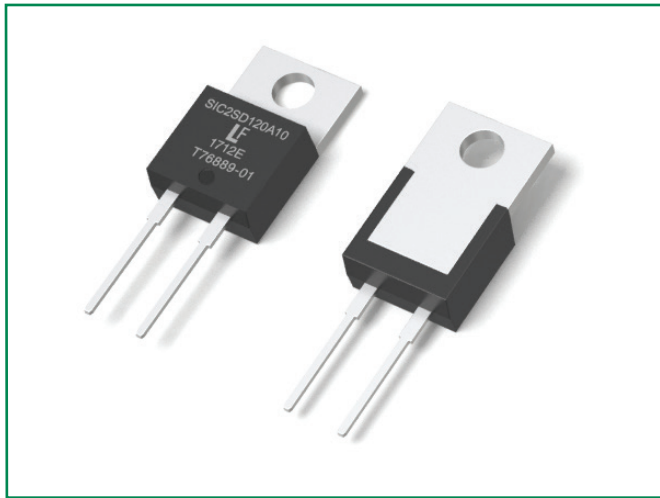


LSIC2SD120A10



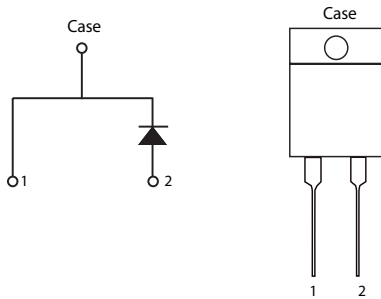
Description

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 | $T_C = 25\text{ °C}$ | 28 | A |
| | | $T_C = 125\text{ °C}$ | 15 | |
| | | $T_C = 151\text{ °C}$ | 10 | |
| Non-Repetitive Forward Surge Current | I_{FSM} | $T_C = 25\text{ °C}, T_P = 10\text{ ms}, \text{Half sine pulse}$ | 80 | A |
| Power Dissipation | P_{Tot} | $T_C = 25\text{ °C}$ | 136 | W |
| | | $T_C = 110\text{ °C}$ | 59 | |
| 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 | $I_F = 10 \text{ A}, T_J = 25 \text{ }^\circ\text{C}$ | - | 1.5 | 1.8 | V |
| | | $I_F = 10 \text{ A}, T_J = 175 \text{ }^\circ\text{C}$ | - | 2.2 | | |
| Reverse Current | I_R | $V_R = 1200 \text{ V}, T_J = 25 \text{ }^\circ\text{C}$ | - | <1 | 100 | μA |
| | | $V_R = 1200 \text{ V}, T_J = 175 \text{ }^\circ\text{C}$ | - | 10 | | |
| Total Capacitance | C | $V_R = 1 \text{ V}, f = 1 \text{ MHz}$ | - | 582 | | pF |
| | | $V_R = 400 \text{ V}, f = 1 \text{ MHz}$ | - | 53 | | |
| | | $V_R = 800 \text{ V}, f = 1 \text{ MHz}$ | - | 40 | | |
| Total Capacitive Charge | Q_C | $V_R = 800 \text{ V}, Q_C = \int_0^{V_R} C(V) dV$ | - | 57 | | nC |

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

Thermal Characteristics

| Characteristics | Symbol | Conditions | Value | | | Unit |
|--------------------|-----------------|------------|-------|------|------|---------------------------|
| | | | Min. | Typ. | Max. | |
| Thermal Resistance | $R_{\theta JC}$ | - | - | 1.1 | | $^\circ\text{C}/\text{W}$ |

Figure 1: Typical Forward Characteristics

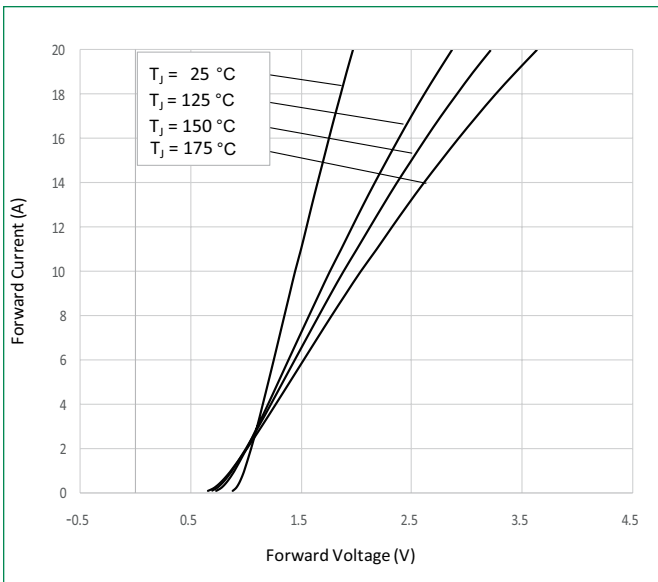


Figure 2: Typical Reverse Characteristics

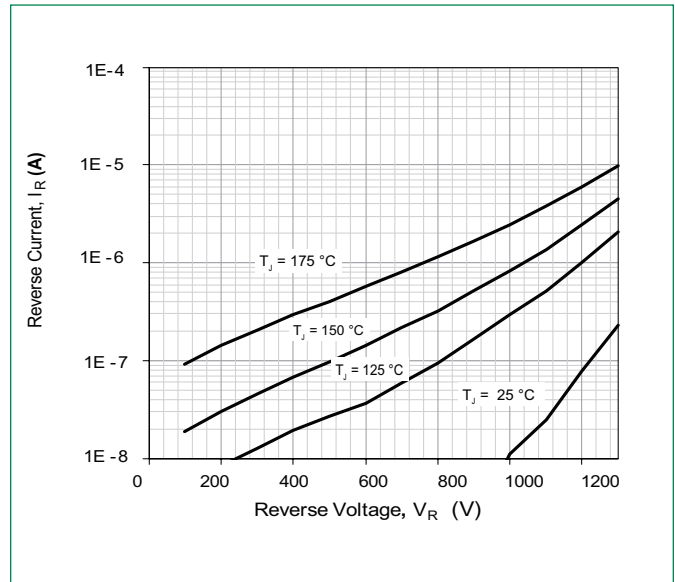


Figure 3: Power Derating

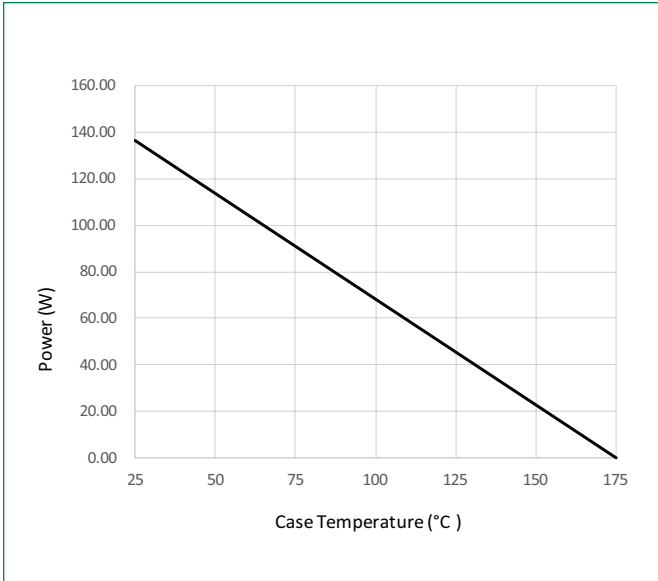


Figure 4: Current Derating

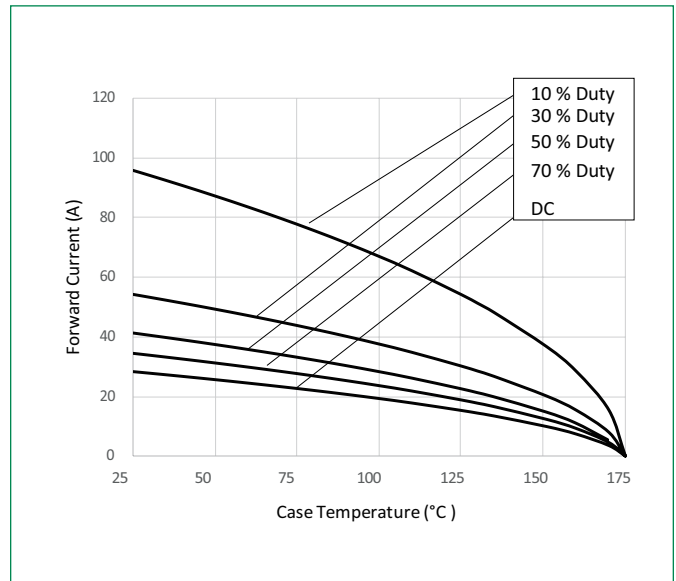


Figure 5: Capacitance vs. Reverse Voltage

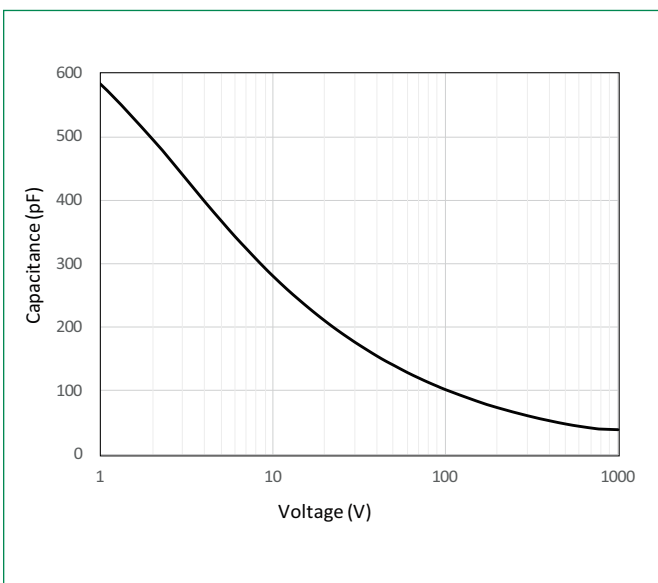


Figure 6: Capacitive Charge vs. Reverse Voltage

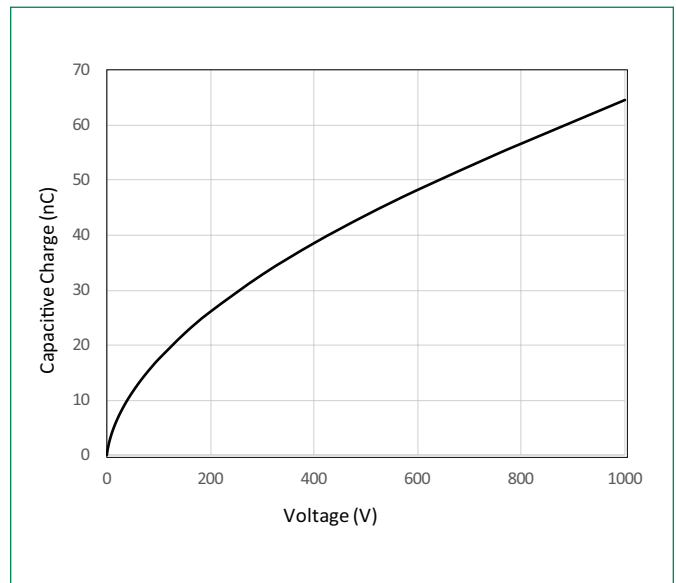


Figure 7: Stored Energy vs. Reverse Voltage

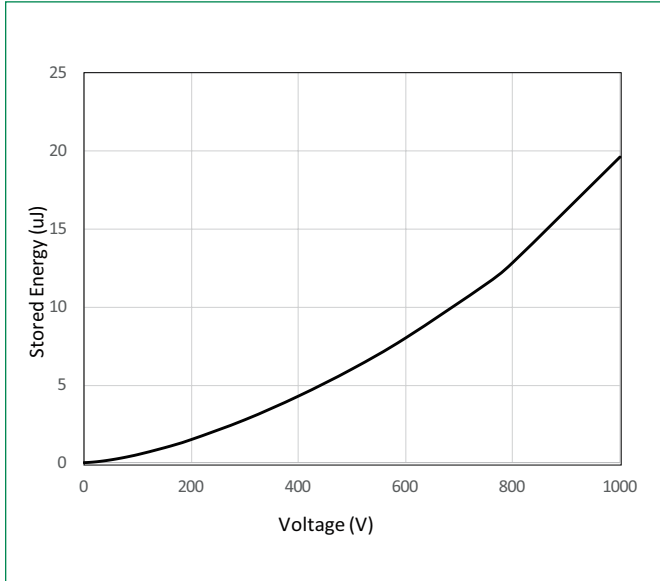
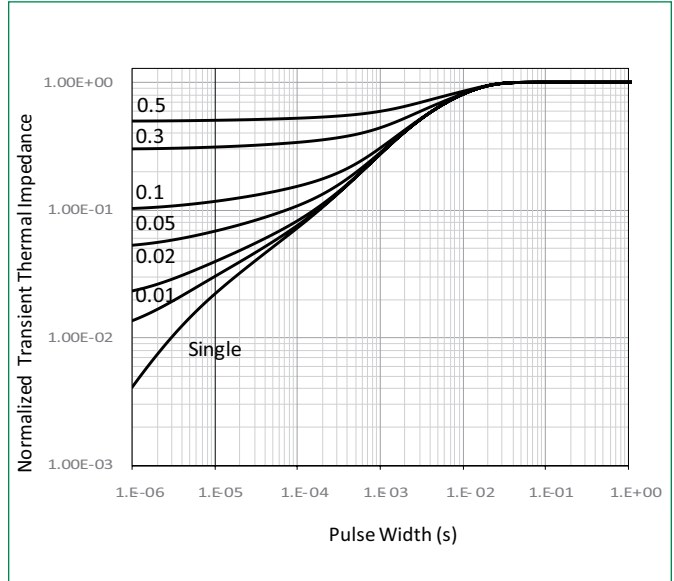
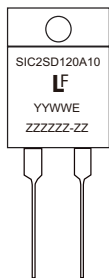


Figure 8: Transient Thermal Impedance



Part Numbering and Marking System

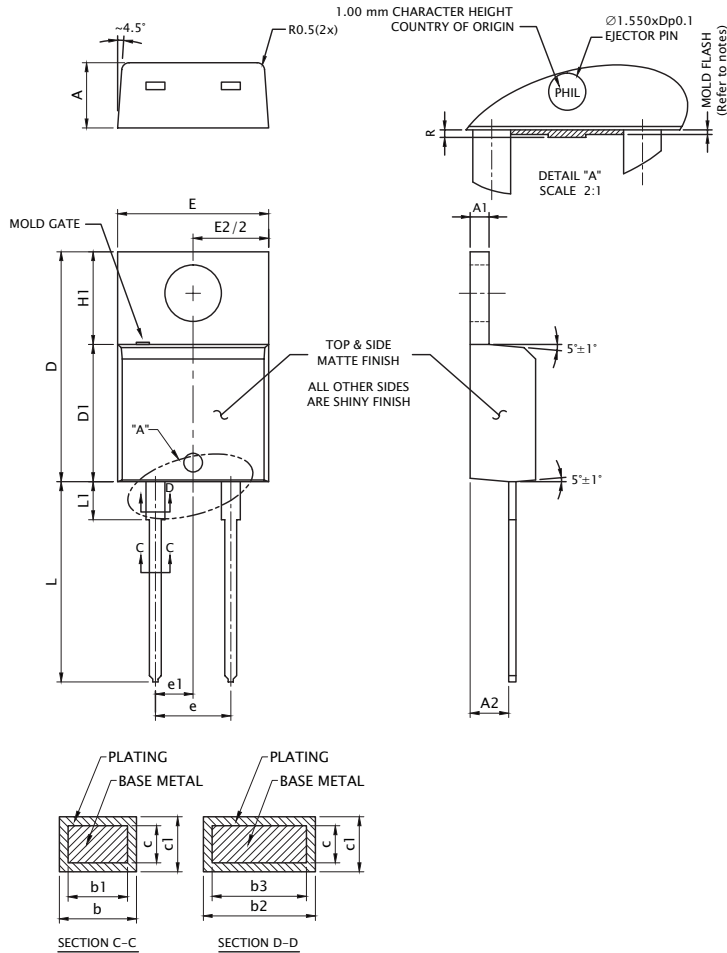


SIC = SiC Diode
 2 = Gen2
 SD = Schottky Diode
 120 = Voltage Rating (1200 V)
 A = TO-220-2L
 10 = Current Rating (10 A)
 YY = Year
 WW = Week
 E = Special Code
 ZZZZZZ-ZZ = Lot Number

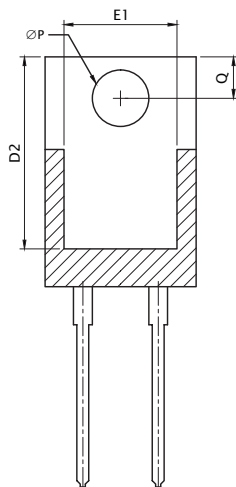
Packing Options

| Part Number | Marking | Packing Mode | M.O.Q |
|---------------|--------------|--------------|-------|
| LSIC2SD120A10 | SIC2SD120A10 | Tube | 1000 |

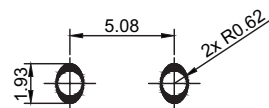
Dimensions-Package TO-220-2L



| Symbol | Millimeters | | |
|--------|-------------|---------|--------|
| | Min | Nominal | Max |
| A | 4.320 | 4.450 | 4.570 |
| A1 | 1.140 | 1.270 | 1.400 |
| A2 | 2.500 | - | 2.740 |
| b | 0.690 | - | 0.880 |
| b1 | 0.680 | - | 0.870 |
| b2 | 1.230 | - | 1.390 |
| b3 | 1.220 | 1.270 | 1.380 |
| c | 0.360 | - | 0.503 |
| c1 | 0.630 | - | 0.527 |
| D | 14.900 | - | 15.600 |
| D1 | 8.615 | - | 9.017 |
| D2 | 12.840 | - | 12.950 |
| E | 10.000 | 10.180 | 10.360 |
| E1 | 7.570 | 7.610 | 7.680 |
| e1 | 2.490 | 2.540 | 2.590 |
| e | 5.030 | 5.080 | 5.130 |
| H1 | 6.295 | 6.545 | 6.795 |
| L | 13.000 | 13.500 | 14.00 |
| L1 | 2.390 | - | 3.250 |
| ∅P | 3.710 | 3.840 | 3.960 |
| Q | 2.650 | - | 3.050 |
| R | - | - | 0.254 |



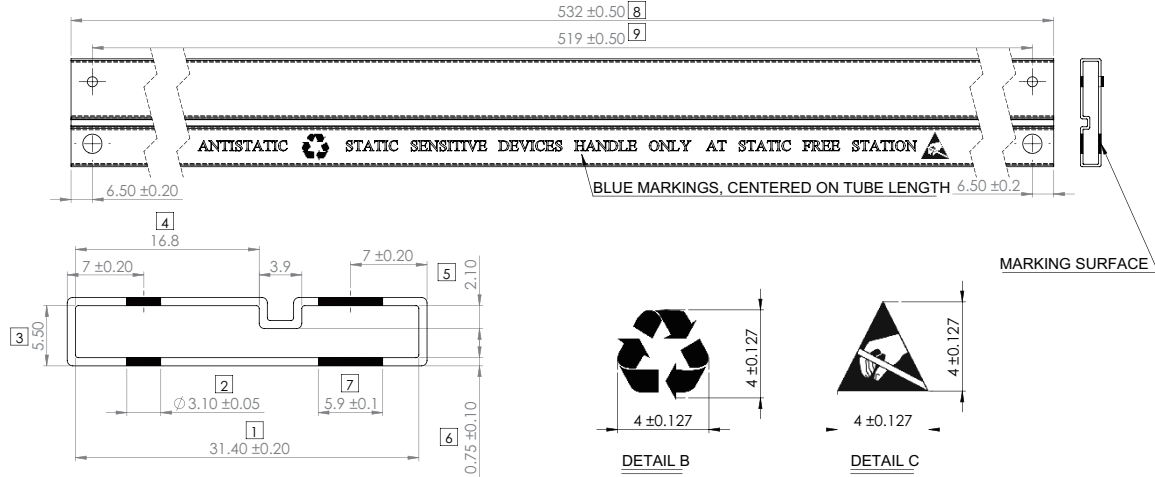
Recommended Solder Pad Layout



UNIT: mm

- NOTES:
- DIMENSIONS D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.127 MM PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREME OF PLASTIC BODY.
 - DIMENSIONS E2 & H1 DEFINE A ZONE WHERE STAMPING AND SINGULATION IRREGULARITIES RE ALLOWED.

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)