

LSIC2SD120C08

HF RoHS Pb



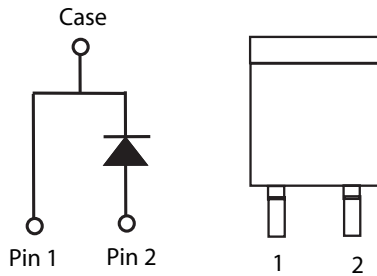
Description

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-252-2L (DPAK)



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** 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} | - | 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 | μA |
| | | $V_R = 1200 \text{ V}, T_J = 175 \text{ }^\circ\text{C}$ | - | 10 | - | |
| Total Capacitance | C | $V_R = 1 \text{ V}, f = 1 \text{ MHz}$ | - | 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

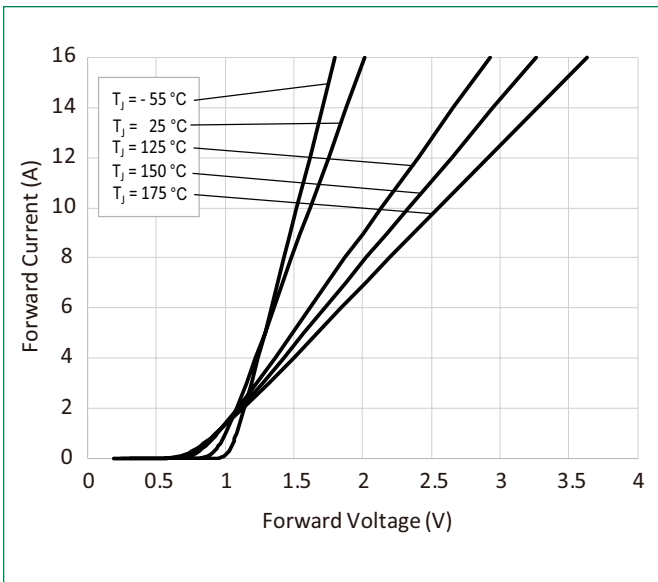


Figure 2: Typical Reverse Characteristics

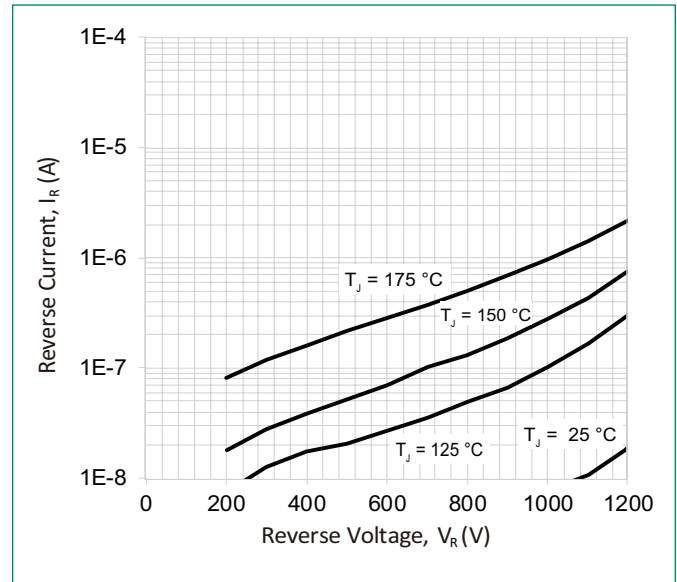


Figure 3: Power Derating

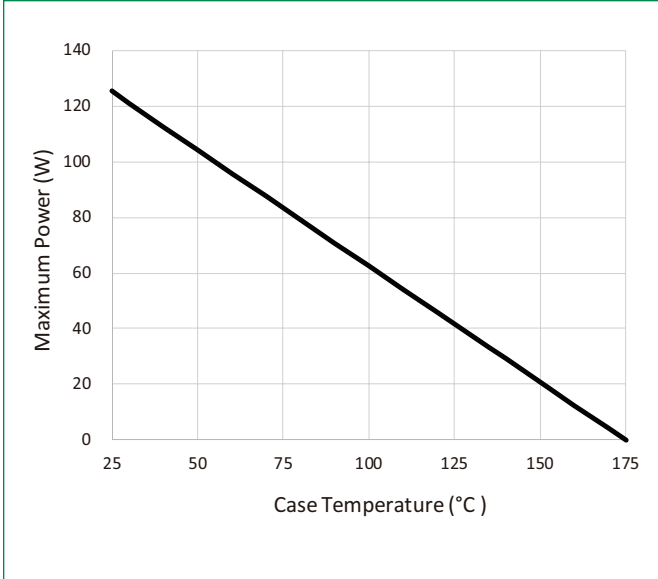


Figure 4: Current Derating

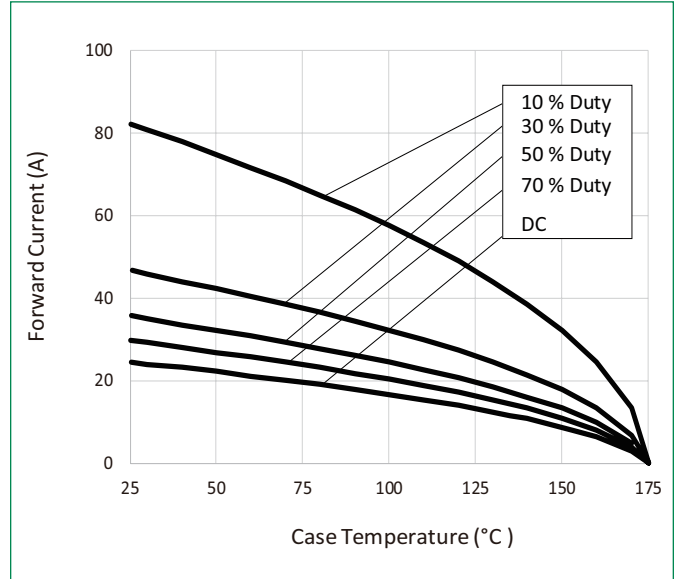


Figure 5: Capacitance vs. Reverse Voltage

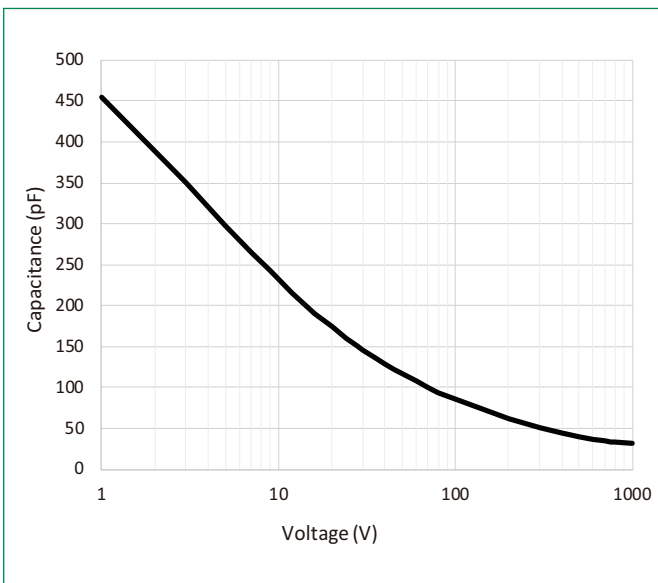


Figure 6: Capacitive Charge vs. Reverse Voltage

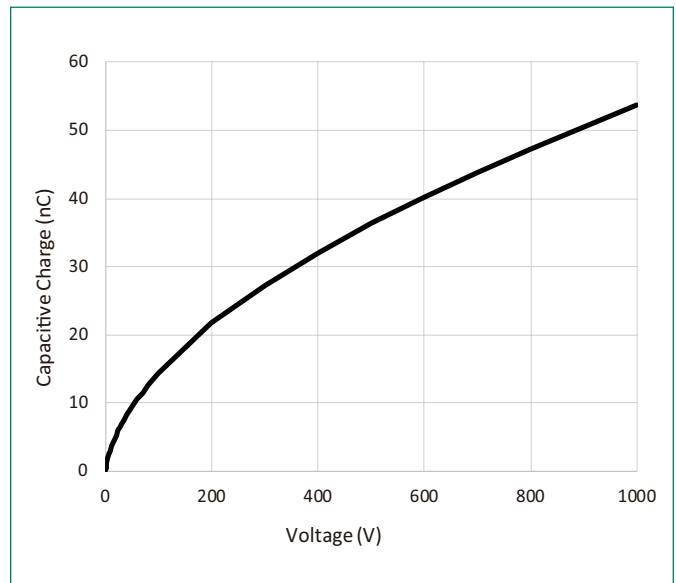


Figure 7: Stored Energy vs. Reverse Voltage

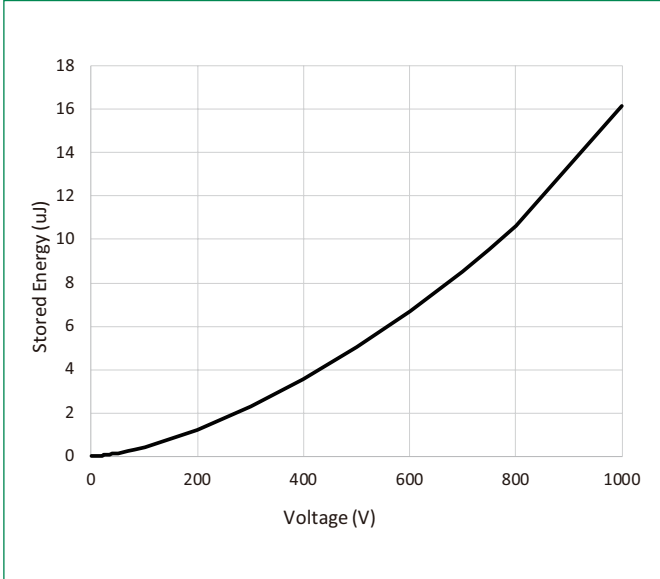
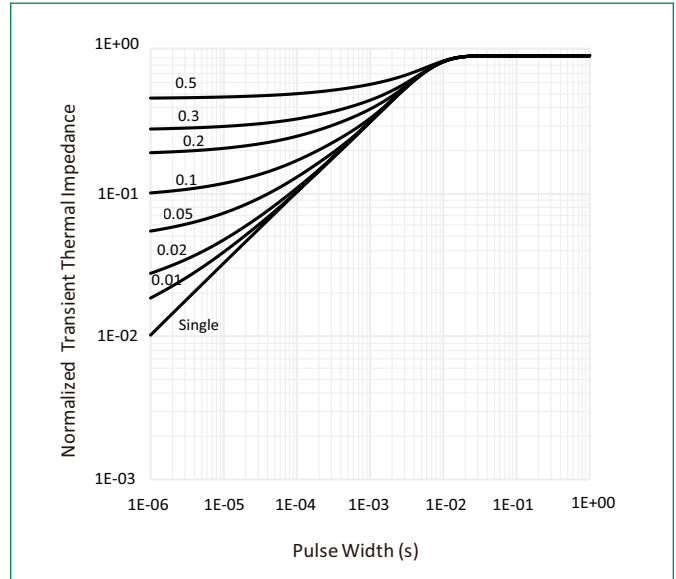
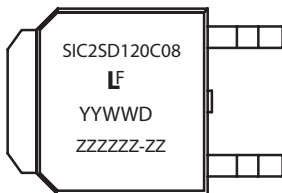


Figure 8: Transient Thermal Impedance



Part Numbering and Marking System

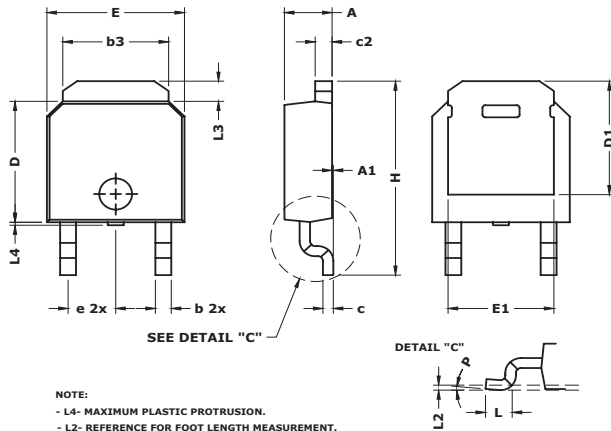


- SIC = SiC Diode
- 2 = Gen2
- SD = Schottky Diode
- 120 = Voltage Rating (1200 V)
- C = TO-252 2-Lead Package
- 08 = Current Rating (8 A)
- YY = Year
- WW = Week
- D = Special code (fixed)
- ZZZZZ-ZZ = Lot Number

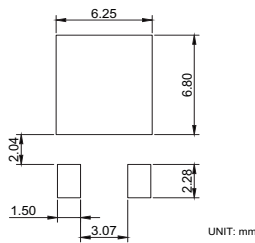
Packing Options

| Part Number | Marking | Packing Mode | M.O.Q |
|---------------|--------------|---------------|-------|
| LSIC2SD120C08 | SIC2SD120C08 | Tape and Reel | 2500 |

Dimensions TO-252-2L (DPAK)

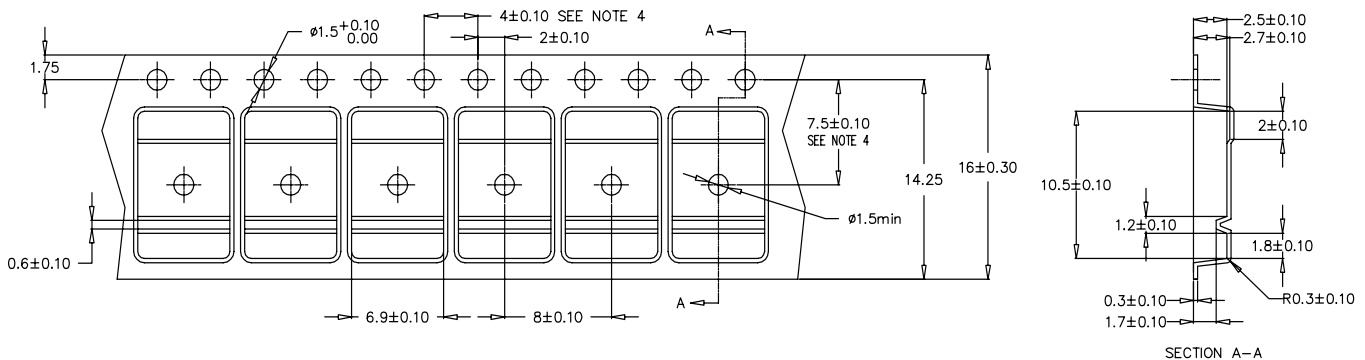


Recommended Solder Pattern Layout



| Symbol | Inches | | | Millimeters | | |
|--------|-----------|-------|-------|-------------|------|-------|
| | Min | Nom | Max | Min | Nom | Max |
| A | 0.085 | 0.090 | 0.095 | 2.16 | 2.29 | 2.41 |
| A1 | 0 | 0.003 | 0.005 | 0 | 0.08 | 0.13 |
| b | 0.025 | 0.030 | 0.035 | 0.64 | 0.76 | 0.89 |
| b3 | 0.195 | 0.200 | 0.215 | 4.95 | 5.08 | 5.46 |
| c | 0.018 | 0.020 | 0.024 | 0.46 | 0.51 | 0.61 |
| C2 | 0.018 | 0.032 | 0.035 | 0.46 | 0.81 | 0.89 |
| D | 0.235 | 0.240 | 0.245 | 5.97 | 6.10 | 6.22 |
| D1 | 0.205 | - | - | 5.21 | - | - |
| E | 0.250 | 0.260 | 0.265 | 6.35 | 6.60 | 6.73 |
| E1 | 0.170 | - | - | 4.32 | - | - |
| e | 0.090 BSC | | | 2.29 BSC | | |
| H | 0.370 | 0.387 | 0.410 | 9.40 | 9.83 | 10.41 |
| L | 0.040 | 0.045 | 0.050 | 1.02 | 1.14 | 1.27 |
| L2 | 0.010 BSC | | | 0.25 BSC | | |
| L3 | 0.035 | - | 0.050 | 0.89 | - | 1.27 |
| L4 | 0 | - | 0.006 | 0 | - | 0.15 |
| P | 0° | - | 8° | 0° | - | 8° |

Carrier Tape & Reel Specification TO-252-2L (DPAK)

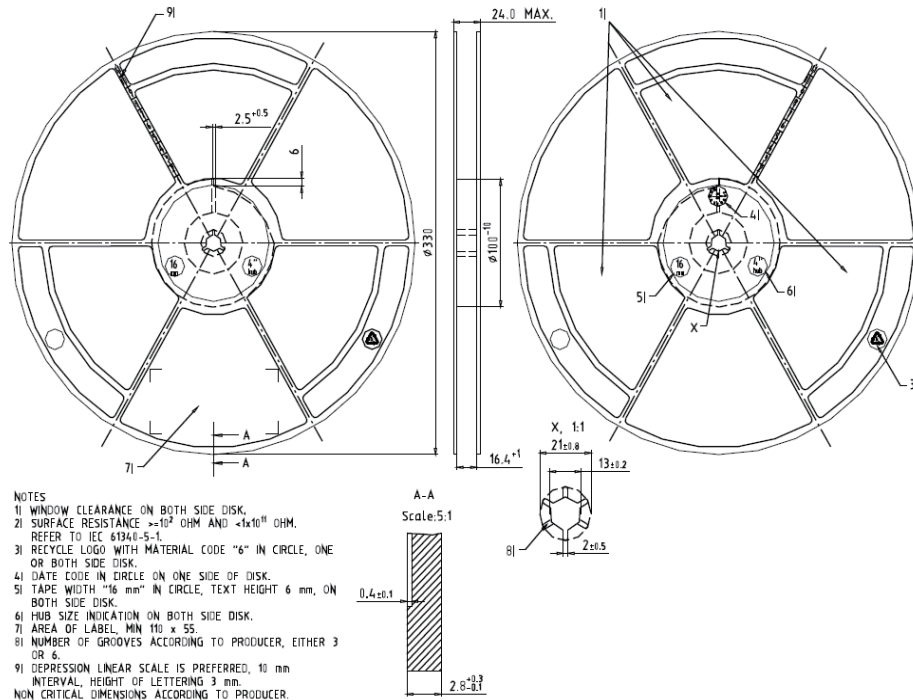


1. Material: Black Conductive Polyester
2. 10 sprocket hole pitch cumulative tolerance ± 0.20
3. Camber not to exceed 1 mm in 100 mm.
4. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.
5. Device orientation: TRL (leads perpendicular to the sprocket)
6. General tolerance is ± 0.10 mm unless otherwise specified.

COVER TAPE SPECS:

- Width : 13.5 mm
- Base Material : less than 1.2×10^{12} ohms/square
Transparent polyester, static dissipative
- Adhesive Layer : Polyethylene
- Total Thickness : 60 Micron
- Tensile Strength : 4-6 kg/mm²
- Elongation : 91%
- Tearing Strength : 11 kg/mm²
- Shelf life : 2 years

Carrier Tape & Reel Specification TO-252-2L (DPAK)



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