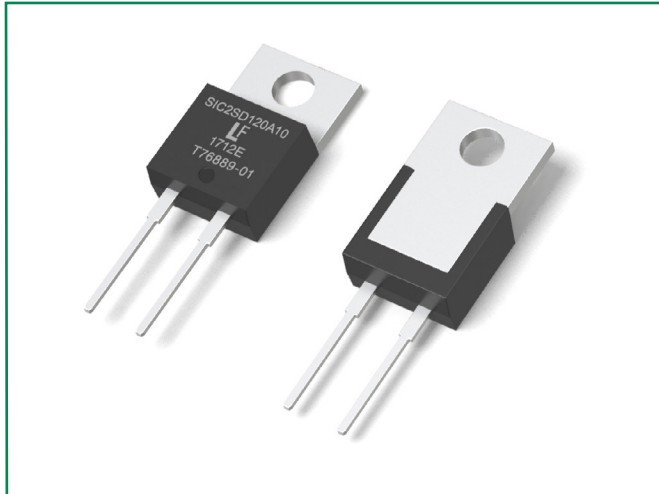


### LSIC2SD120A10



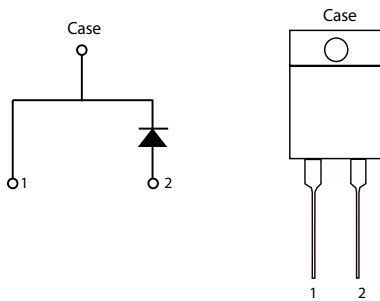
#### Description

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 | $I_{FSM}$ | $T_C = 25\text{ °C}$ , $T_P = 10\text{ ms}$ , 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                | $T_{sld}$ | -                                                             | 260        | °C   |

### Electrical Characteristics

| Characteristics         | Symbol | Conditions                                        | Value |      |      | Unit          |
|-------------------------|--------|---------------------------------------------------|-------|------|------|---------------|
|                         |        |                                                   | Min.  | Typ. | Max. |               |
| Forward Voltage         | $V_F$  | $I_F = 10 \text{ A}, T_J = 25^\circ\text{C}$      | -     | 1.5  | 1.8  | V             |
|                         |        | $I_F = 10 \text{ A}, T_J = 175^\circ\text{C}$     | -     | 2.2  |      |               |
| Reverse Current         | $I_R$  | $V_R = 1200 \text{ V}, T_J = 25^\circ\text{C}$    | -     | <1   | 100  | $\mu\text{A}$ |
|                         |        | $V_R = 1200 \text{ V}, T_J = 175^\circ\text{C}$   | -     | 10   |      |               |
| Total Capacitance       | C      | $V_R = 1 \text{ V}, f = 1 \text{ MHz}$            | -     | 582  |      | $\text{pF}$   |
|                         |        | $V_R = 400 \text{ V}, f = 1 \text{ MHz}$          | -     | 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:  $T_J = +25^\circ\text{C}$  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

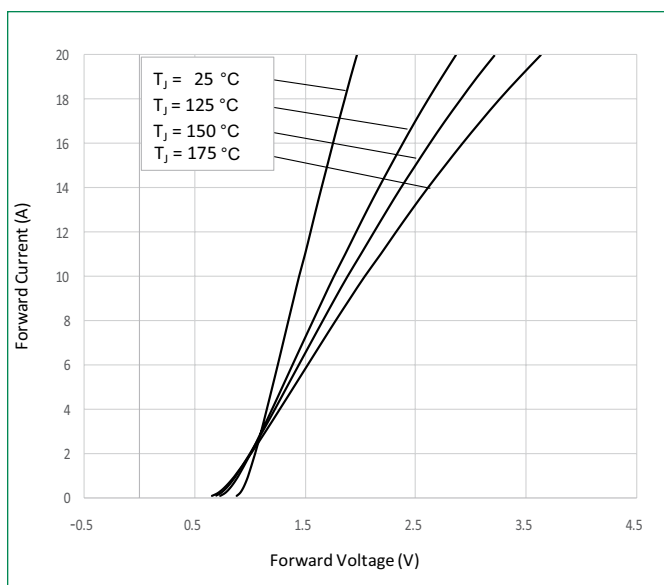
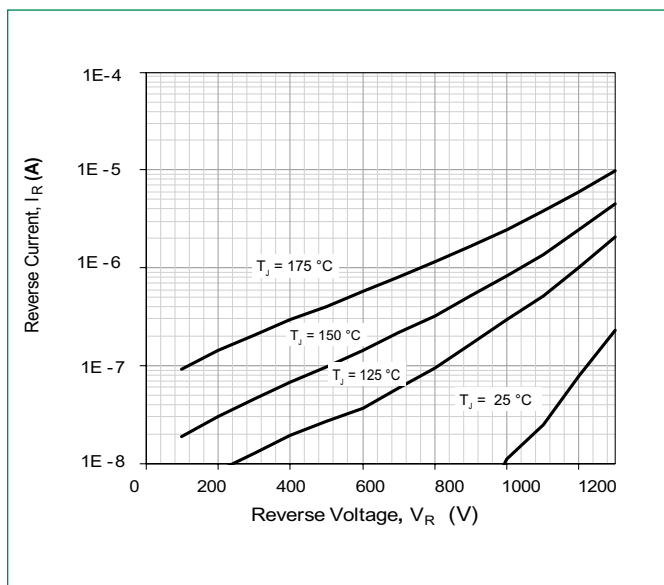
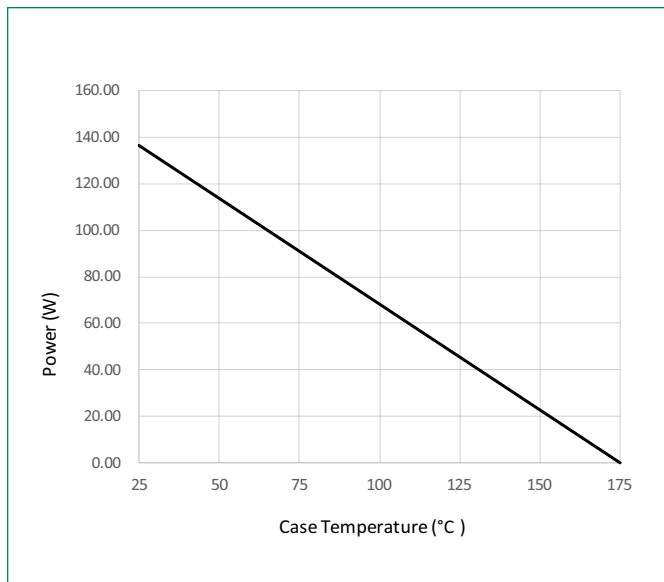


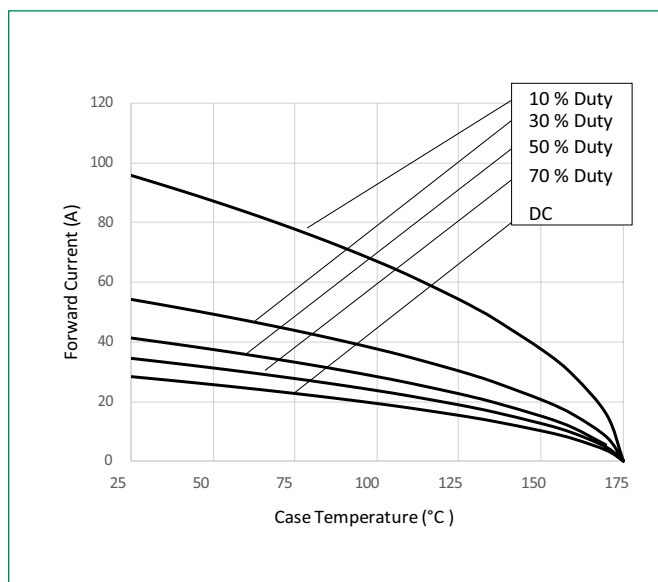
Figure 2: Typical Reverse Characteristics



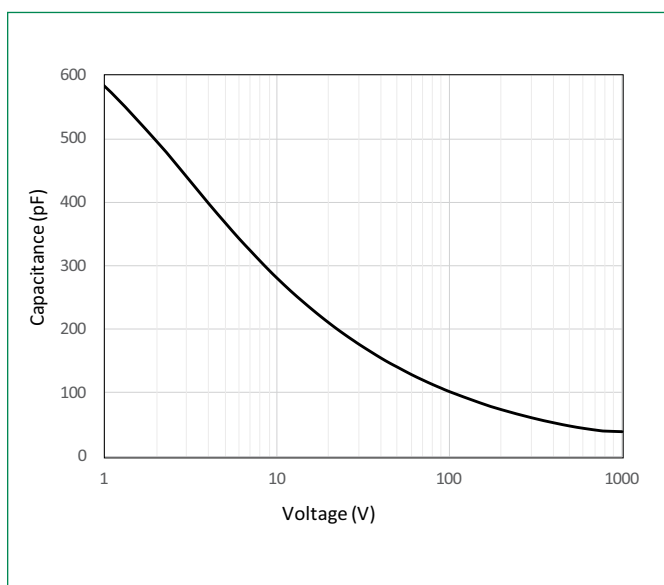
**Figure 3: Power Derating**



**Figure 4: Current Derating**



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



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

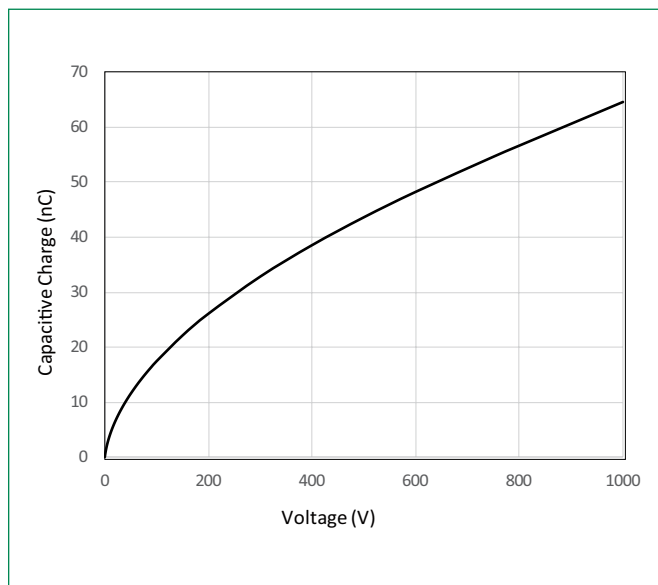


Figure 7: Stored Energy vs. Reverse Voltage

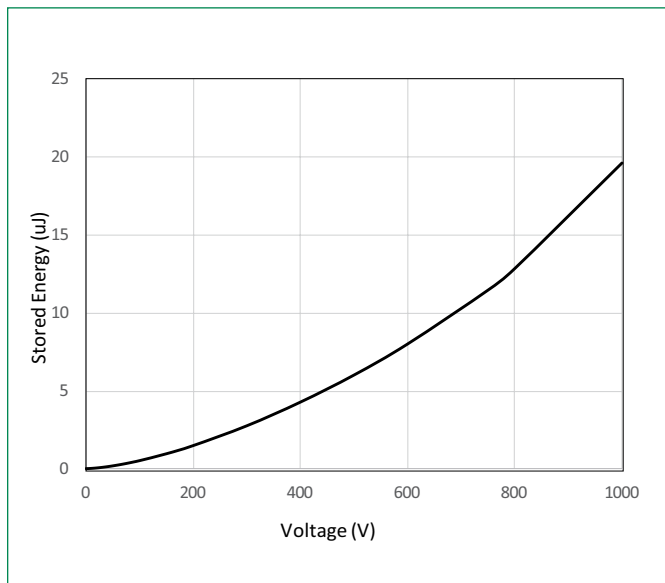
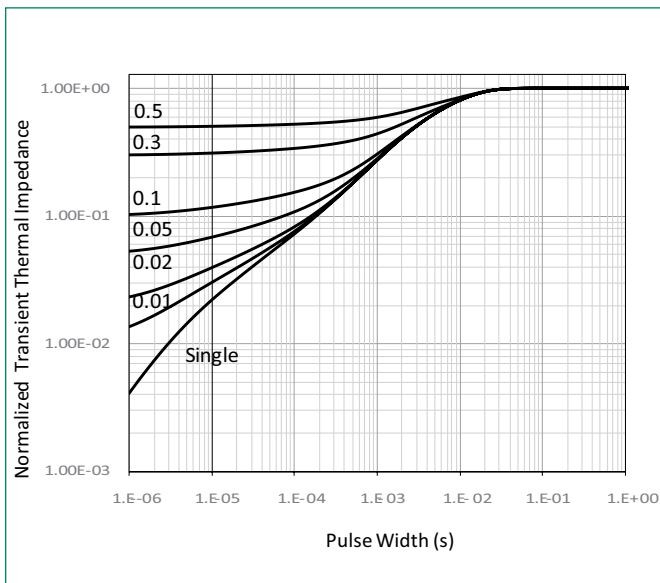
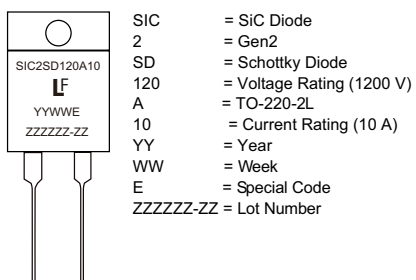


Figure 8: Transient Thermal Impedance



### Part Numbering and Marking System



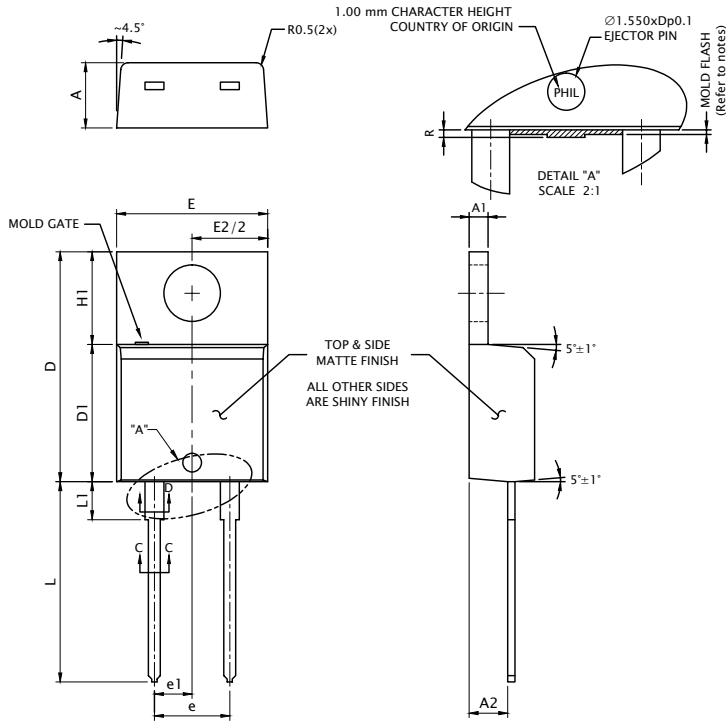
### Packing Options

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

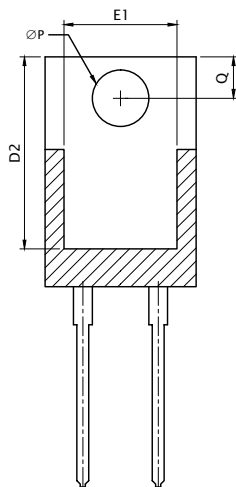
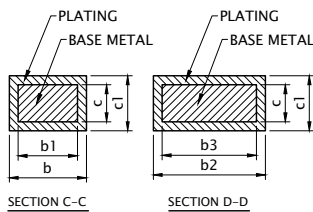
# GEN2 SiC Schottky Diode

## LSIC2SD120A10, 1200 V, 10 A, TO-220-2L

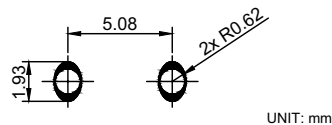
### Dimensions-Package TO-220-2L



| 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  |
| øP     | 3.710       | 3.840   | 3.960  |
| Q      | 2.650       | -       | 3.050  |
| R      | -           | -       | 0.254  |

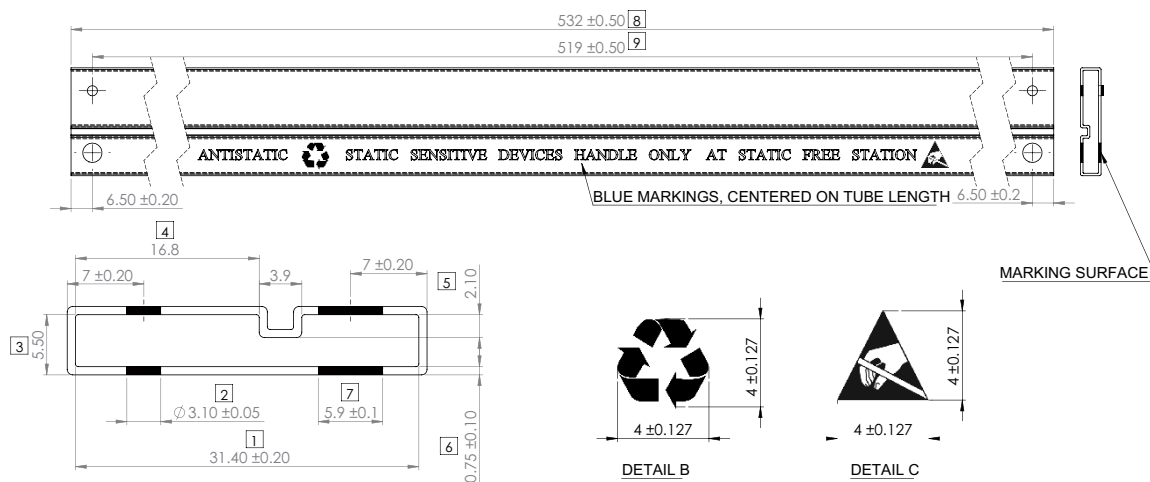


#### Recommended Solder Pad Layout



- NOTES:
1. 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.
  2. 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)

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