

LSIC2SD120E20CC



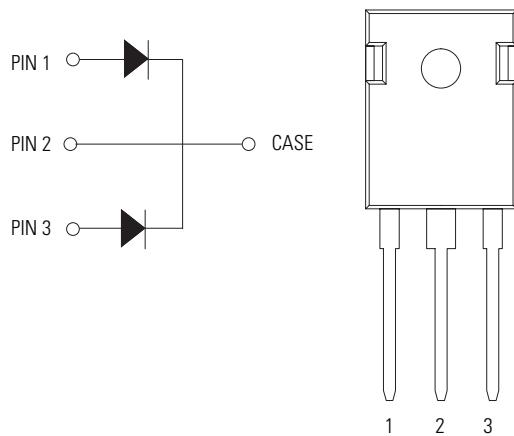
Description

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 TO247-3L



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 = 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 (Per Leg/Device)	I_F	$T_C = 25\text{ °C}$	28/56	A
		$T_C = 135\text{ °C}$	13.5/27	
		$T_C = 151\text{ °C}$	10/20	
Non-Repetitive Forward Surge Current (Per Leg)	I_{FSM}	$T_C = 25\text{ °C}, T_p = 10\text{ ms}, \text{Half sine pulse}$	80	A
Power Dissipation (Per Leg/Device)	P_{Tot}	$T_C = 25\text{ °C}$	136/272	W
		$T_C = 110\text{ °C}$	59/118	
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 (Per Leg)

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 (Per Device/Leg)	$R_{\theta JC}$	-	-	1.10/0.55	-	$^\circ\text{C/W}$

Figure 1: Typical Forward Characteristics (Per Leg)

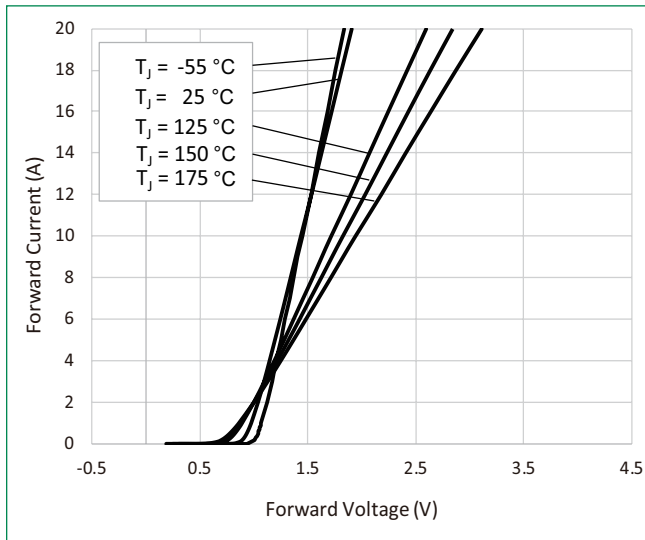


Figure 2: Typical Reverse Characteristics (Per Leg)

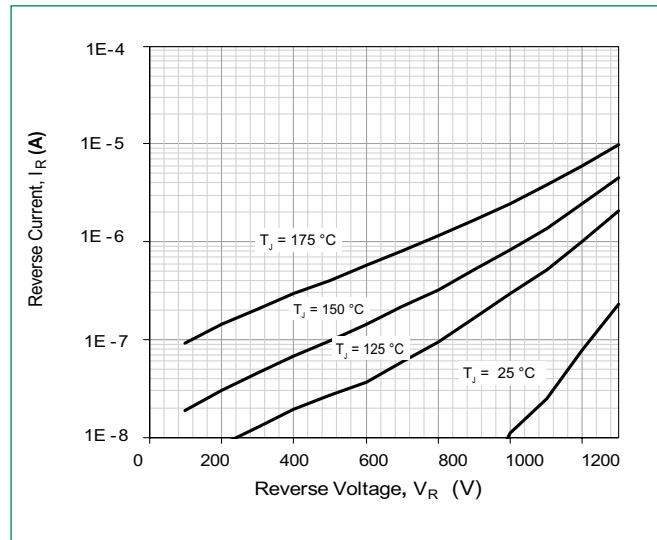


Figure 3: Power Derating (Per Leg)

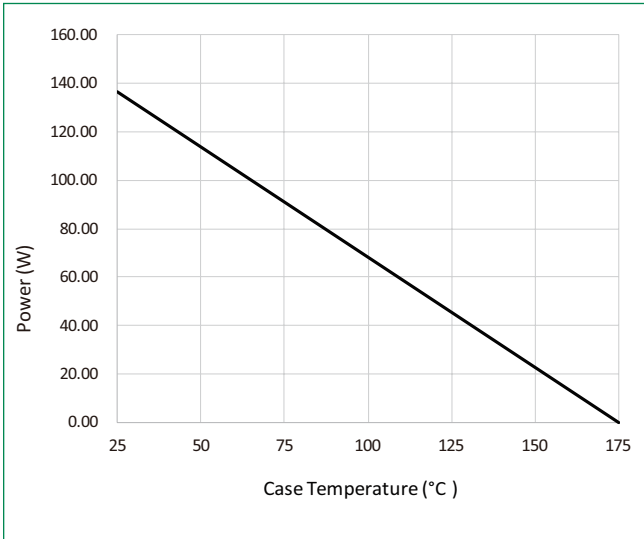


Figure 4: Current Derating (Per Leg)

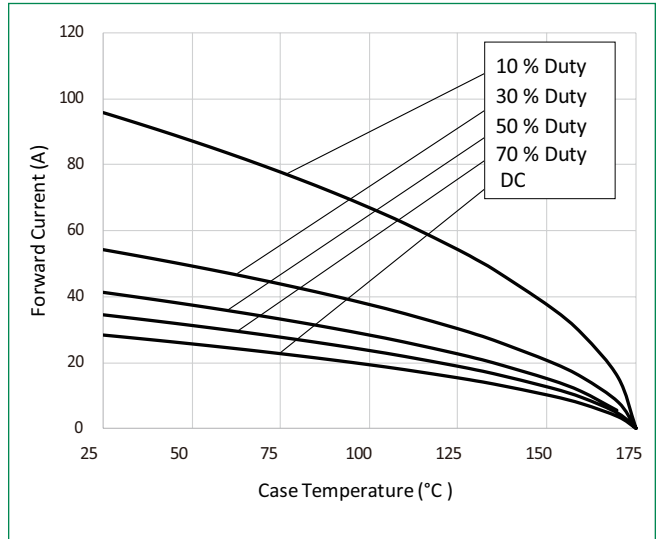


Figure 5: Capacitance vs. Reverse Voltage (Per Leg)

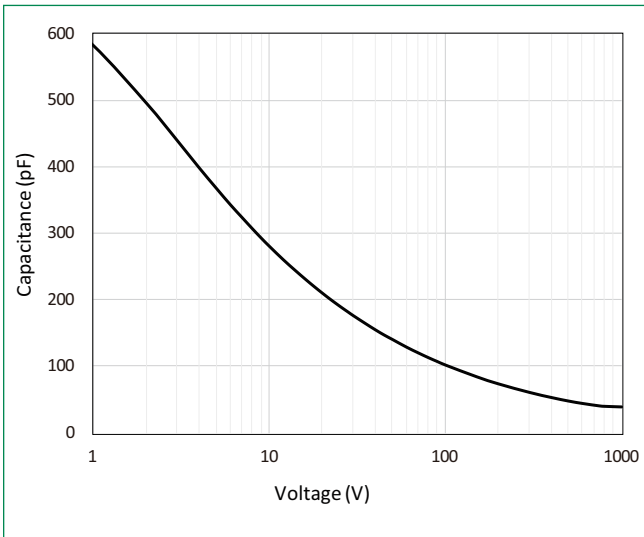


Figure 6: Capacitive Charge vs. Reverse Voltage (Per Leg)

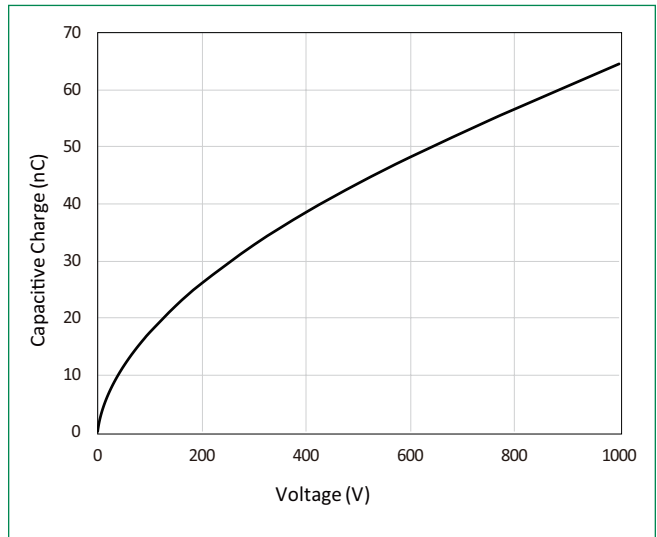


Figure 7: Stored Energy vs. Reverse Voltage (Per Leg)

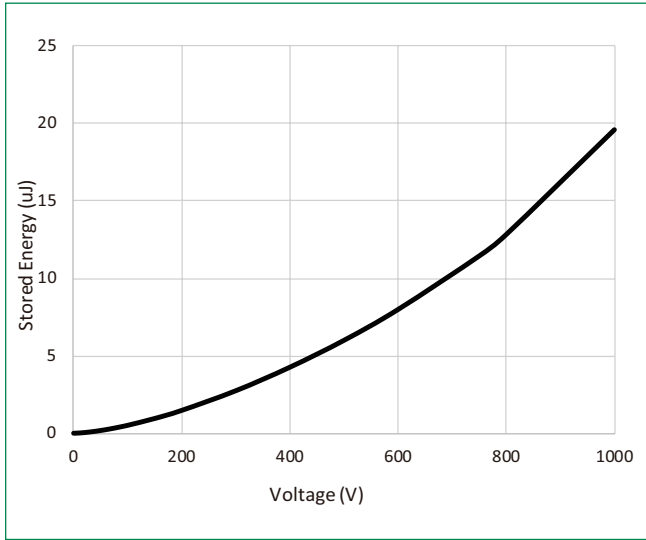
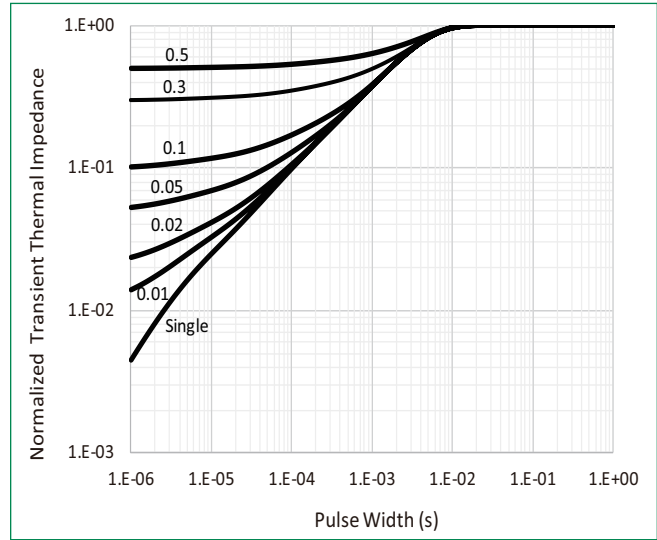
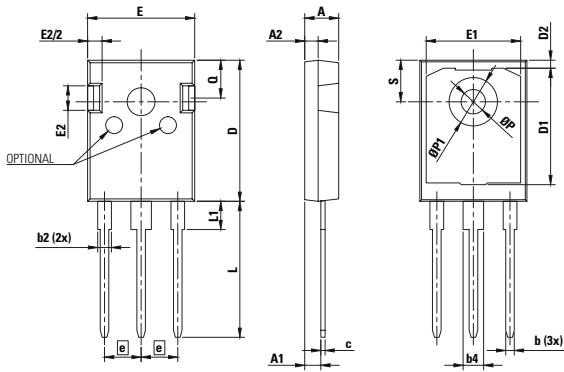


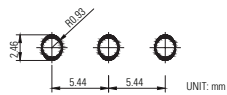
Figure 8: Transient Thermal Impedance (Per Device)



Package Dimensions TO-247-3L



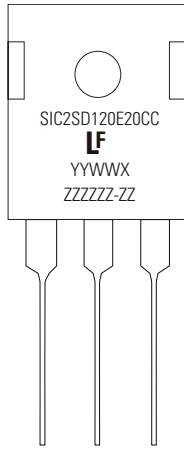
Recommended Hole Pattern Layout



- Notes:**
1. Dimensions are in millimeters
 2. Dimension D, E do not include mold flash. Mold flash shall not exceed 0.127 mm per side. These measured at the outermost extreme of plastic body.
 3. ϕP to have a maximum draft angle of 1.5° to the top of the part with a maximum hole diameter of 0.154"

Symbol	Millimeters		
	Min	Nom	Max
A	4.80	5.03	5.20
A1	2.25	2.38	2.54
A2	1.85	1.98	2.11
b	0.99	-	1.40
b2	1.65	-	2.39
b4	2.59	-	3.43
c	0.38	0.64	0.89
D	20.80	20.96	21.34
D1	13.50	-	-
D2	0.51	1.19	1.35
e	5.44 BSC		
E	15.75	15.90	16.13
E1	13.06	14.02	14.15
E2	4.19	4.32	4.83
L	19.81	20.19	20.57
L1	3.81	4.19	4.45
ϕP	3.55	3.61	3.66
$\phi P1$	7.06	7.19	7.32
Q	5.49	5.61	6.20
S	6.05	6.17	6.30

Part Numbering and Marking System

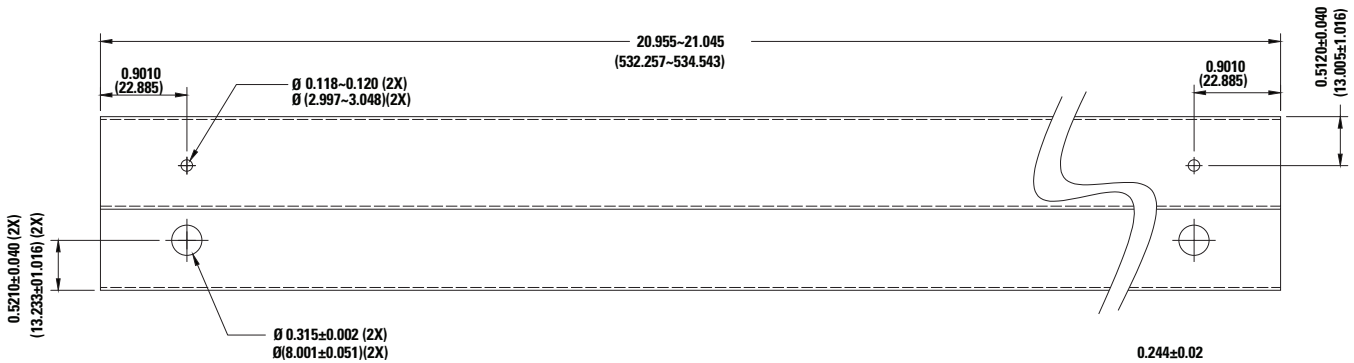


- SIC = SiC
- 2 = Gen2
- SD = Schottky Diode
- 120 = Voltage Rating (1200 V)
- E = TO-247-3L
- 20 = Current Rating (20 A)
- CC = Common Cathode
- YY = Year
- WW = Week
- X = Trace Code (Any Letter)
- ZZZZZZ-ZZ = Lot Number

Packing Options

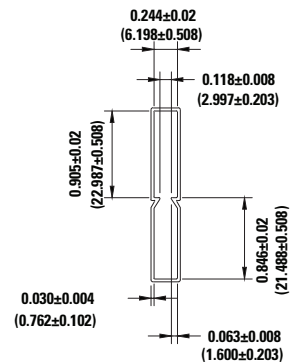
Part Number	Marking	Packing Mode	M.O.Q
LSIC2SD120E20CC	SIC2SD120E20CC	Tube	450

Packing Specification TO-247-3L



NOTE:

1. All pin plug holes are considered critical dimension
2. Tolerance is to be ±0.010 unless otherwise specified
3. Dimension are in inch (and millimeters).



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