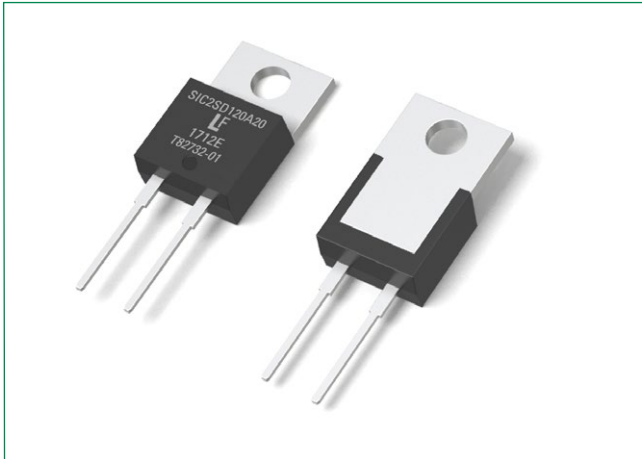


LSIC2SD120A20



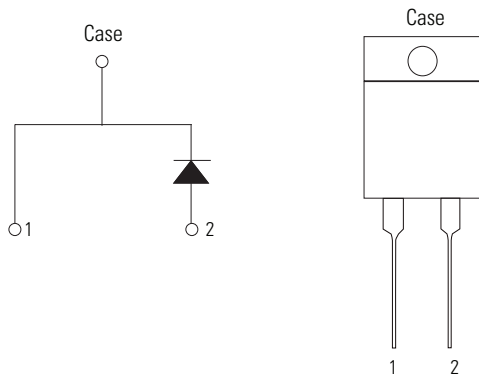
Description

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 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	$T_C = 25\text{ °C}$	54.5	A
		$T_C = 135\text{ °C}$	26.0	
		$T_C = 150\text{ °C}$	20.0	
Non-Repetitive Forward Surge Current	I_{FSM}	$T_C = 25\text{ °C}, T_p = 10\text{ ms}, \text{Half sine pulse}$	140	A
Power Dissipation	P_{Tot}	$T_C = 25\text{ °C}$	250	W
		$T_C = 110\text{ °C}$	108	
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	$I_F = 20 \text{ A}, T_J = 25 \text{ }^\circ\text{C}$	-	1.5	1.8	V
		$I_F = 20 \text{ A}, T_J = 175 \text{ }^\circ\text{C}$	-	2.2	-	
Reverse Current	I_R	$V_R = 1200 \text{ V}, T_J = 25 \text{ }^\circ\text{C}$	-	<1	100	μA
		$V_R = 1200 \text{ V}, T_J = 175 \text{ }^\circ\text{C}$	-	15	-	
Total Capacitance	C	$V_R = 1 \text{ V}, f = 1 \text{ MHz}$	-	1142	-	pF
		$V_R = 400 \text{ V}, f = 1 \text{ MHz}$	-	108	-	
		$V_R = 800 \text{ V}, f = 1 \text{ MHz}$	-	82	-	
Total Capacitive Charge	Q_C	$V_R = 800 \text{ V}, Q_C = \int_0^{V_R} C(V) dV$	-	115	-	nC

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

Thermal Characteristics

Characteristics	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Thermal Resistance	$R_{\theta JC}$	-	-	0.6	-	$^\circ\text{C/W}$

Figure 1: Typical Forward Characteristics

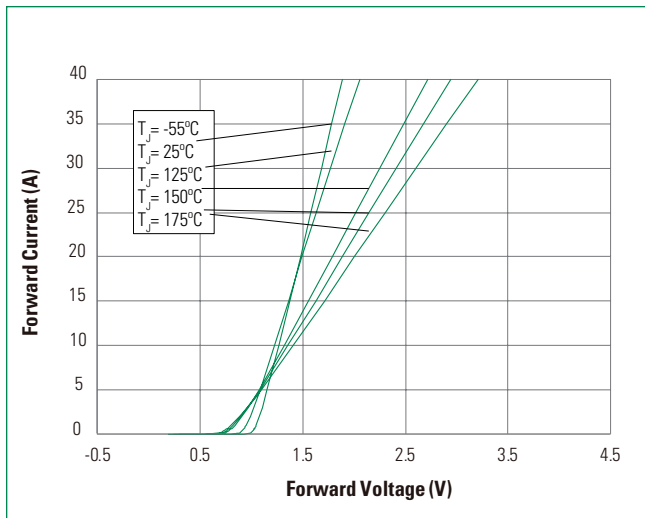


Figure 2: Typical Reverse Characteristics

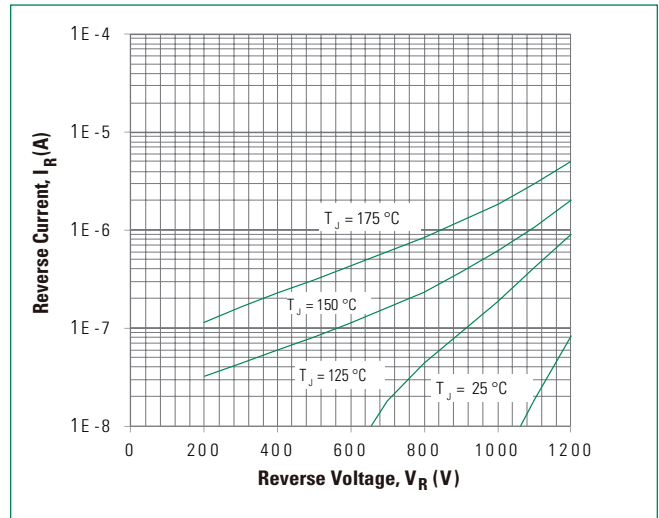


Figure 3: Power Derating

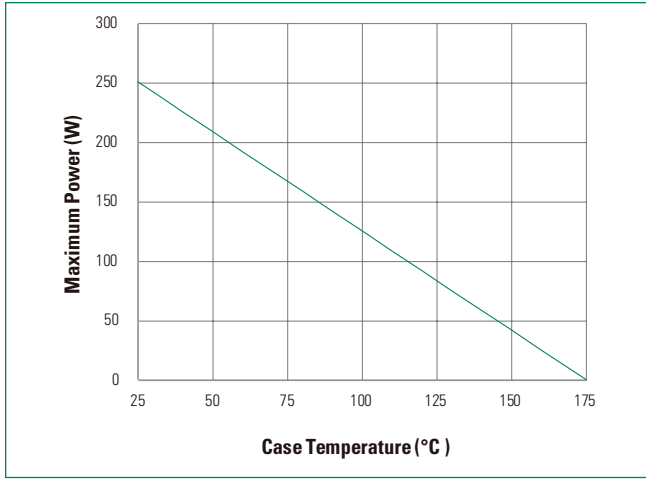


Figure 4: Current Derating

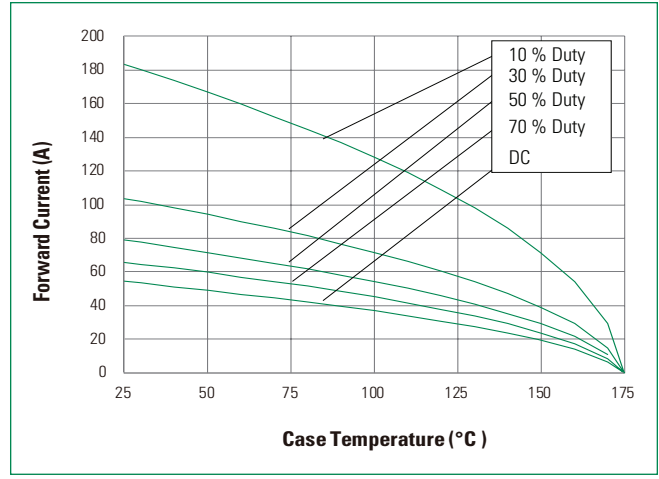


Figure 5: Capacitance vs. Reverse Voltage

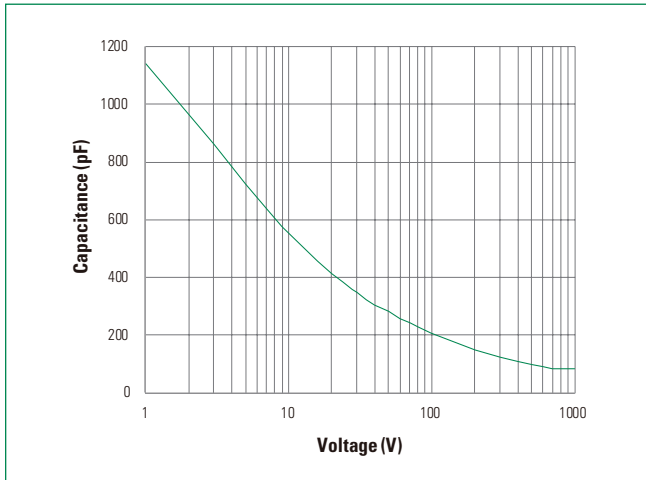


Figure 6: Capacitive Charge vs. Reverse Voltage

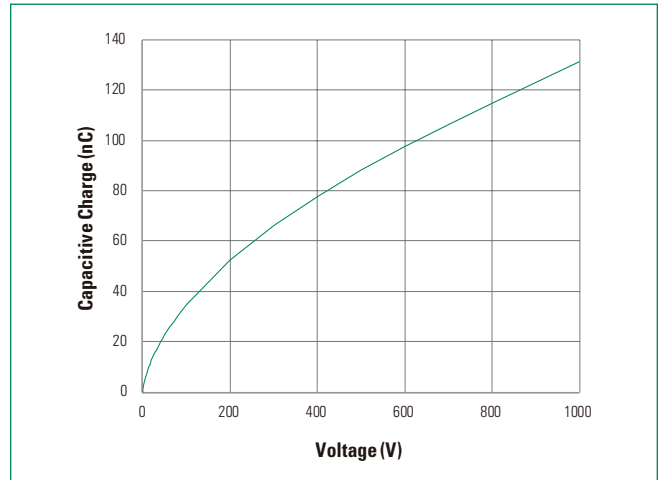


Figure 7: Stored Energy vs. Reverse Voltage

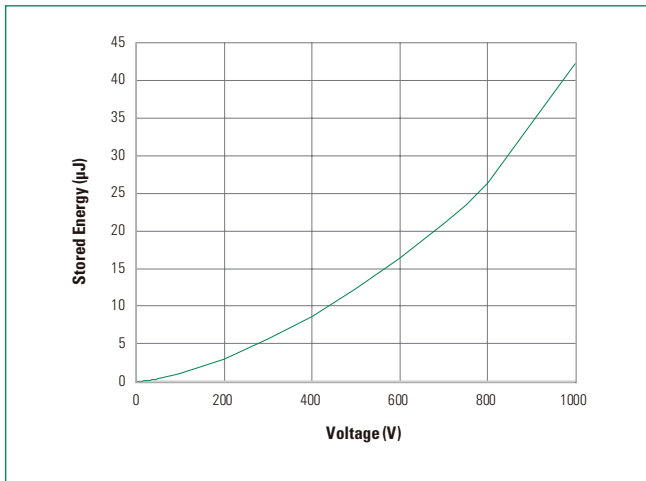
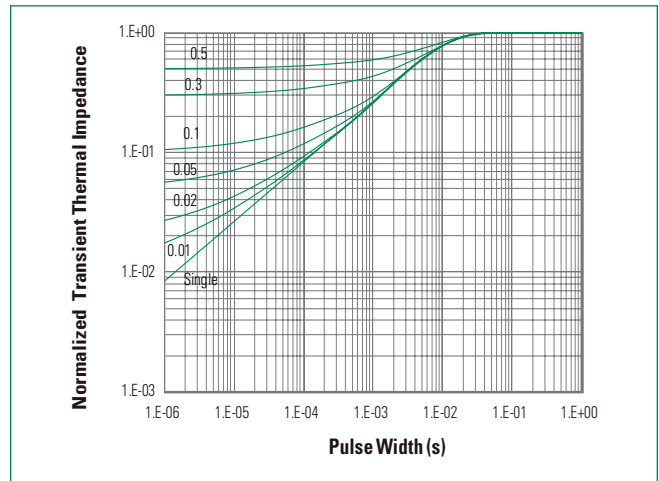
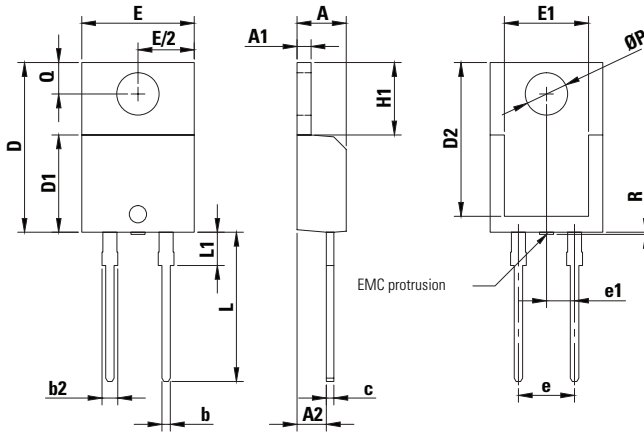


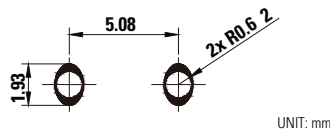
Figure 8: Transient Thermal Impedance



Dimensions-Package TO-220-2L

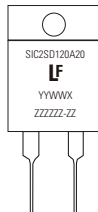


Recommended Solder Pad Layout



Symbol	Millimeters		
	Min	Norm	Max
A	4.32	4.45	4.70
A1	1.14	1.27	1.40
A2	2.20	-	2.74
b	0.69	-	0.90
b2	1.17	-	1.62
c	0.36	-	0.60
D	14.90	-	15.90
D1	8.62	-	9.40
D2	12.50	-	12.95
E	9.70	10.18	10.36
E1	7.57	7.61	8.30
e1	-	2.54	-
e	5.03	5.08	5.13
H1	6.30	6.55	6.80
L	12.88	13.50	14.00
L1	2.39	-	3.25
ØP	3.50	3.84	3.96
Q	2.65	-	3.05
R	-	-	0.25

Part Numbering and Marking System



- SIC = SiC Diode
- 2 = Gen2
- SD = Schottky Diode
- 120 = Voltage Rating (1200 V)
- A = TO-220 Package (2 Lead)
- 20 = Current Rating (20 A)
- YY = Year
- WW = Week
- X = Trace Code (any letter)
- ZZZZZ-ZZ = Lot Number

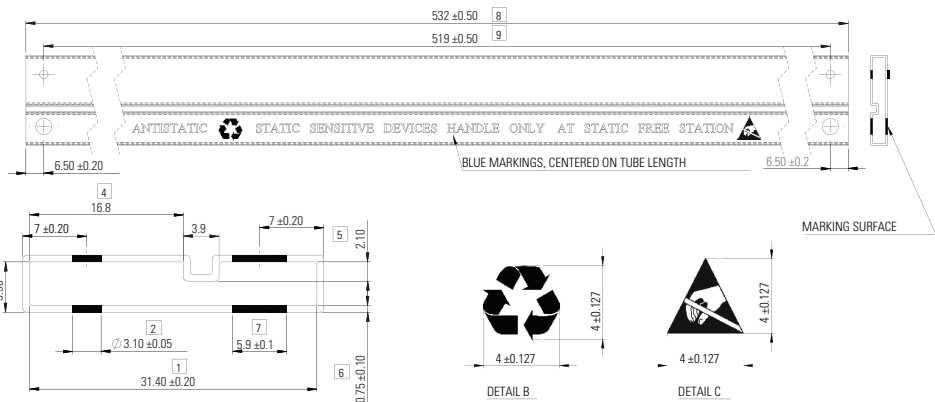
Packing Options

Part Number	Marking	Packing Mode	M.O.Q
LSIC2SD120A20	SIC2SD120A20	Tube (50pcs)	1000

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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