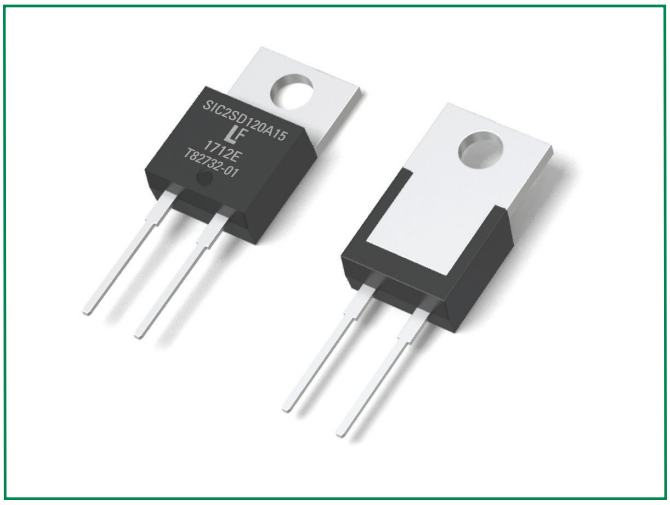
Littelfuse® Power Semiconductors

GEN2 SiC Schottky Diode
LSIC2SD120A15, 1200 V, 15 A, TO-220-2L

LSIC2SD120A15

HF RoHS Pb



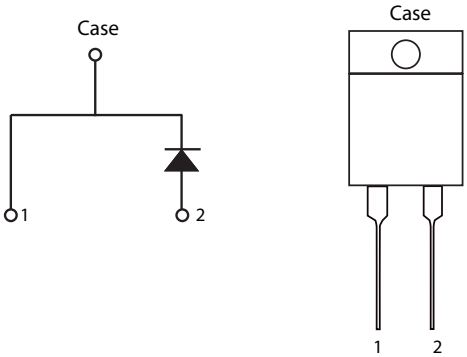
Description

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-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
  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 °C	1200	V
Continuous Forward Current	I_F	T_C = 25 °C	44	A
		T_C = 135 °C	21	
		T_C = 150 °C	15	
Non-Repetitive Forward Surge Current	I_{FSM}	T_C = 25 °C, T_P = 10 ms, Half sine pulse	120	A
Power Dissipation	P_{Tot}	T_C = 25 °C	214	W
		T_C = 110 °C	93	
Operating Junction Temperature	T_J	-	-55 to 175	°C
Storage Temperature	T_{STG}	-	-55 to 150	°C
Soldering Temperature	T_{sold}	-	260	°C

© 2017 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: 10/20/17

Electrical Characteristics

Characteristics	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	I_F = 15 A, T_J = 25 °C	-	1.5	1.8	V
		I_F = 15 A, T_J = 175 °C	-	2.2		
Reverse Current	I_R	V_R = 1200 V, T_J = 25 °C	-	<1	100	µA
		V_R = 1200 V, T_J = 175 °C	-	10		
Total Capacitance	C	V_R = 1 V, f =1 MHz	-	920		pF
		V_R = 400 V, f = 1 MHz	-	88		
		V_R = 800 V, f = 1 MHz	-	64		
Total Capacitive Charge	Q_C	V_R = 800 V, $Q_C = \int_0^{V_R} C(V)dV$	-	92		nC

Footnote: T_J = +25 °C unless otherwise specified

Thermal Characteristics

Characteristics	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Thermal Resistance	$R_{\theta JC}$	-	-	0.7	-	°C/W

Figure 1: Typical Foward Characteristics

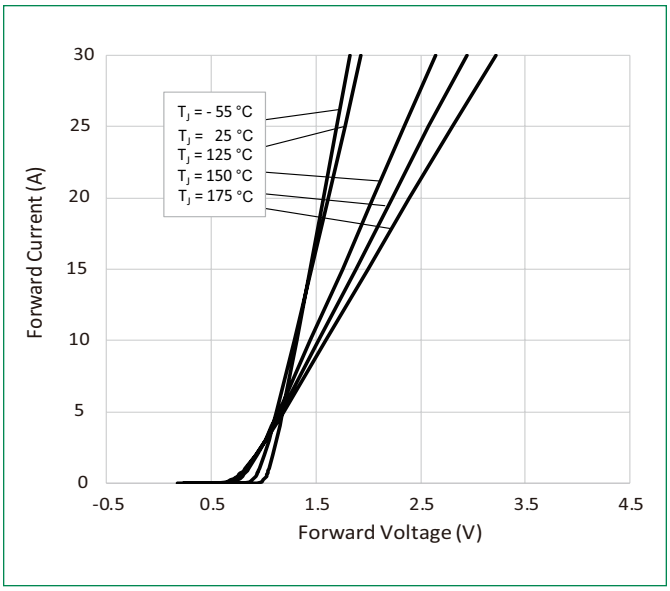
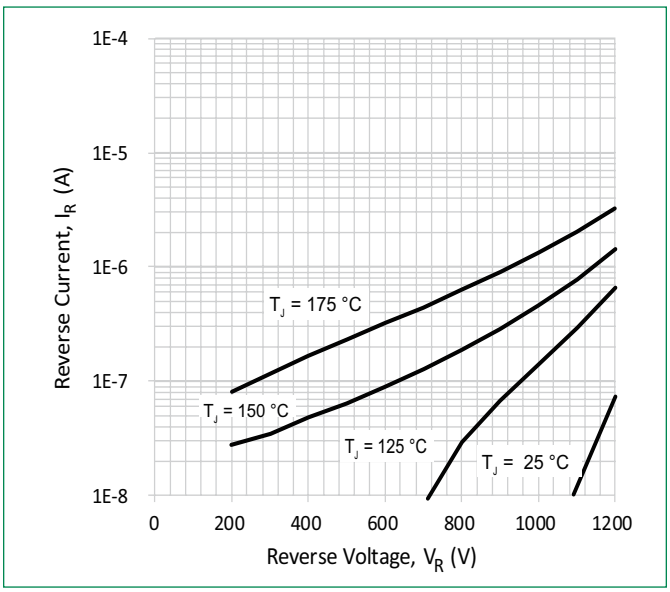


Figure 2: Typical Reverse Characteristics



© 2017 Littelfuse, Inc.
Specifications are subject to change without notice.

Figure 3: Power Derating

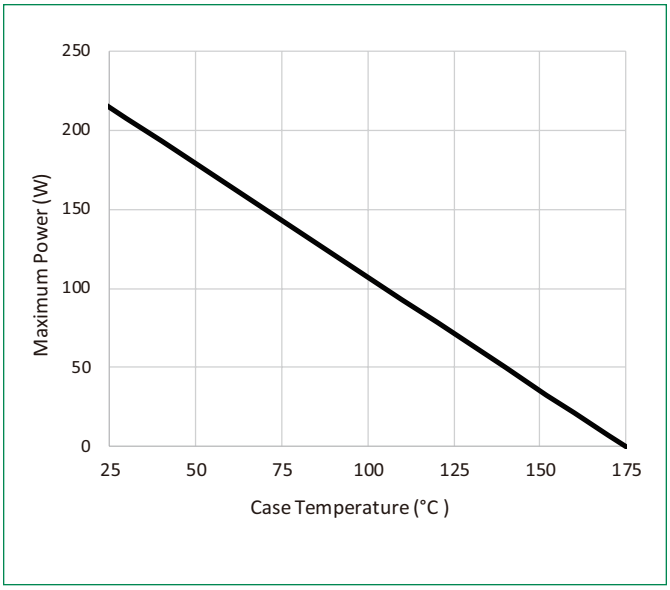


Figure 4: Current Derating

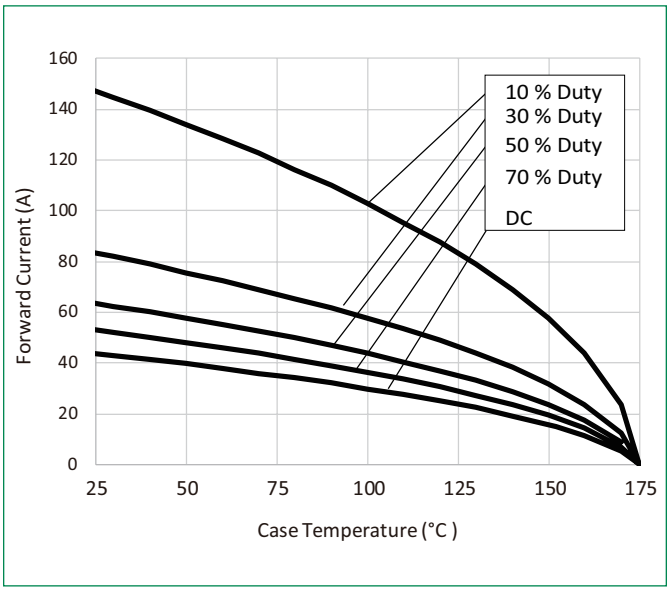


Figure 5: Capacitance vs. Reverse Voltage

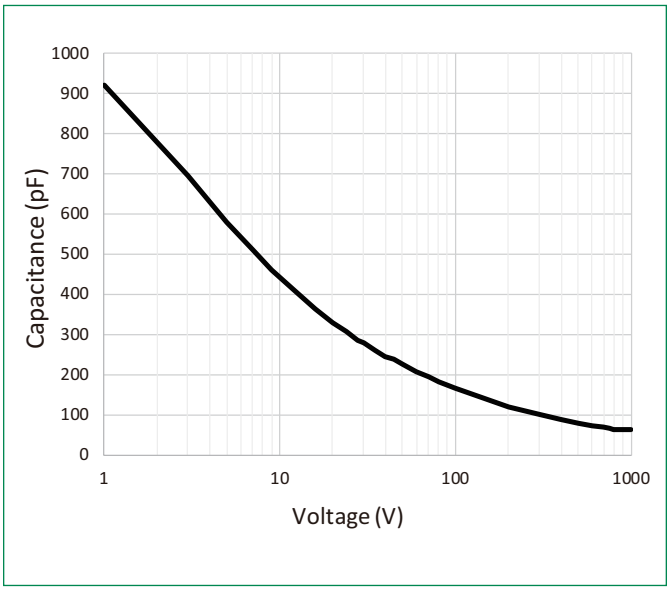
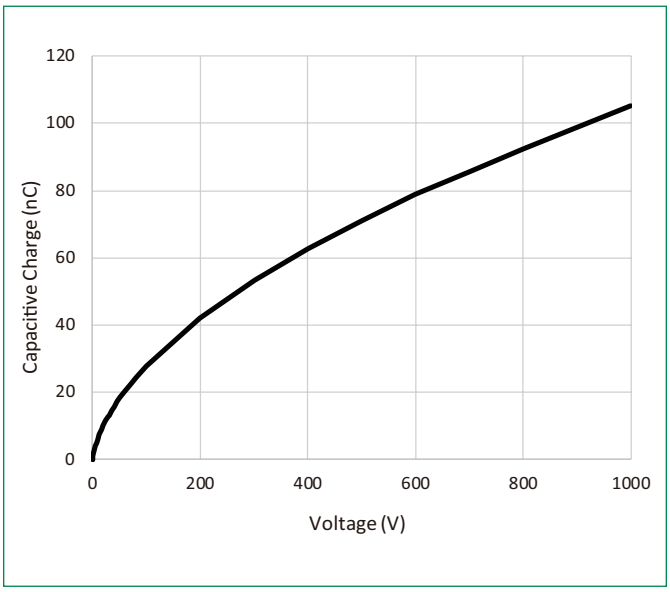


Figure 6: Capacitive Charge vs. Reverse Voltage



© 2017 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: 10/20/17

Figure 7: Stored Energy vs. Reverse Voltage

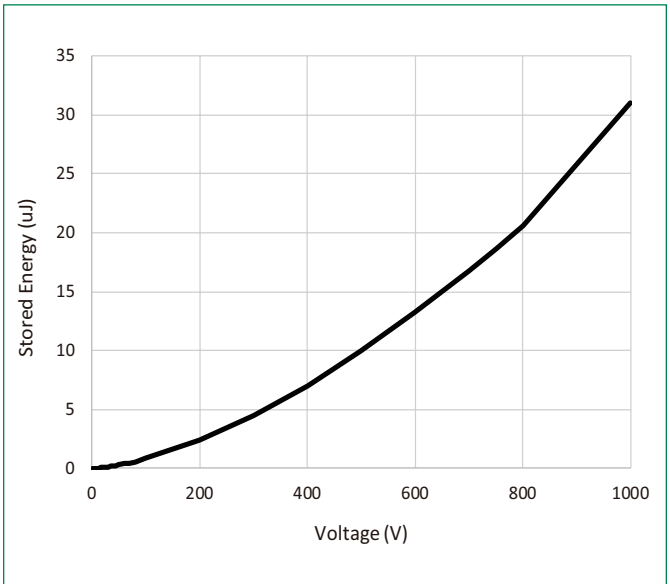
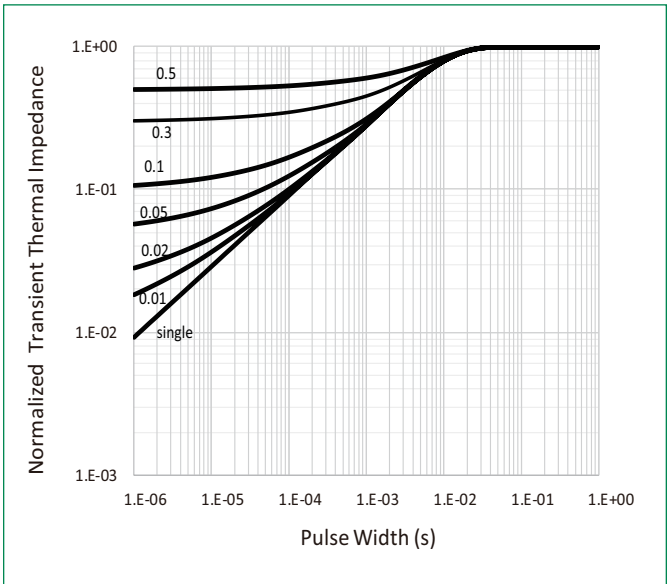
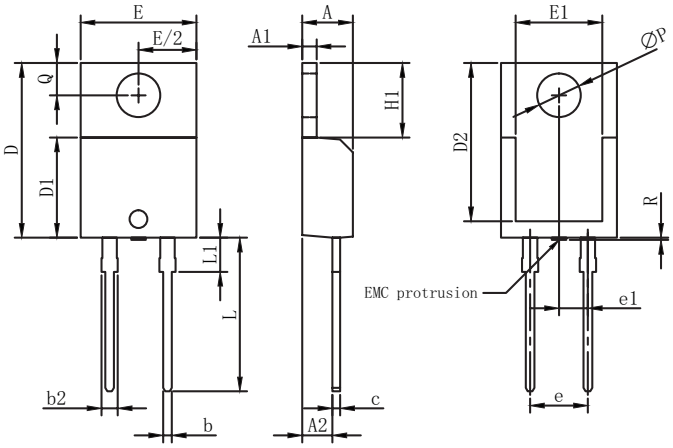


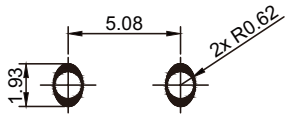
Figure 8: Transient Thermal Impedance



Dimensions-Package TO-220-2L



Recommended Solder Pad Layout



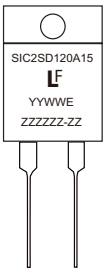
UNIT: mm

Symbol	Millimeters		
	Min	Nom	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

© 2017 Littelfuse, Inc.
Specifications are subject to change without notice.

GEN2 SiC Schottky Diode
LSIC2SD120A15, 1200 V, 15 A, TO-220-2L

Part Numbering and Marking System

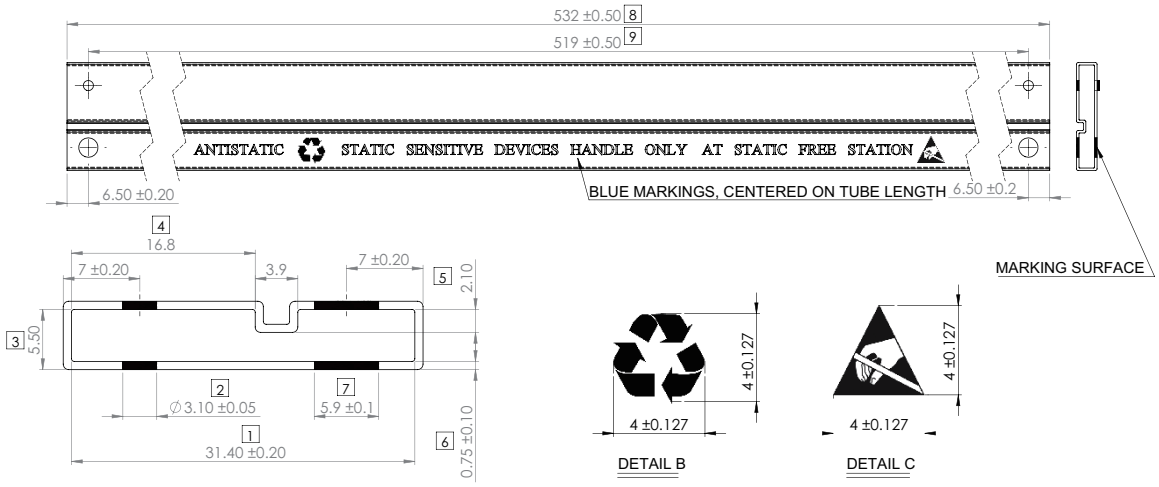


SIC	= SiC Diode
2	= Gen2
SD	= Schottky Diode
120	= Voltage Rating (1200 V)
A	= TO-220 Package (2 Lead)
15	= Current Rating (15 A)
YY	= Year
WW	= Week
E	= Special Code
ZZZZZZ-ZZ	= Lot Number

Packing Options

Part Number	Marking	Packing Mode	M.O.Q
LSIC2SD120A15	SIC2SD120A15	Tube	1000

Packing Specification (Tube for TO-220-2L)



NOTES:
1. Material transparent extruded PVC with antistatic dipping
2. Radius : 0.5 maximum unless otherwisen 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)

Disclaimer Notice - Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable Littelfuse product documentation. Warranties granted by Littelfuse shall be deemed void for products used for any purpose not expressly set forth in applicable Littelfuse documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation. The sale and use of Littelfuse products is subject to Littelfuse Terms and Conditions of Sale, unless otherwise agreed by Littelfuse. Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

© 2017 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: 10/20/17