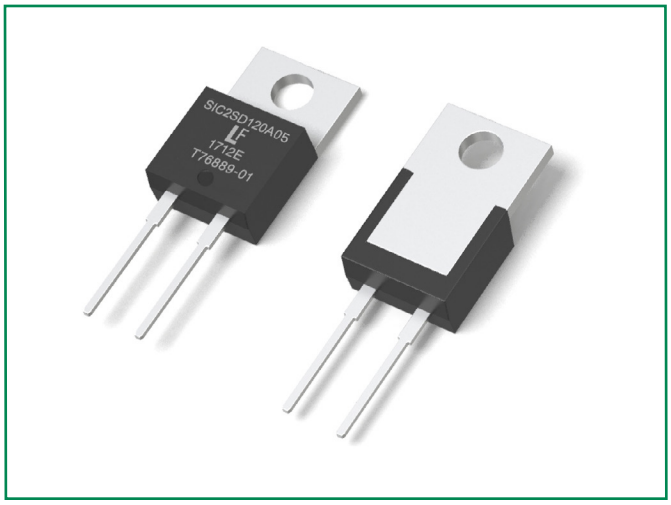
GEN2 SiC Schottky Diode

LSIC2SD120A05, 1200 V, 5 A, TO-220-2L

Littelfuse
Expertise Applied | Answers Delivered

LSIC2SD120A05

HF RoHS Pb



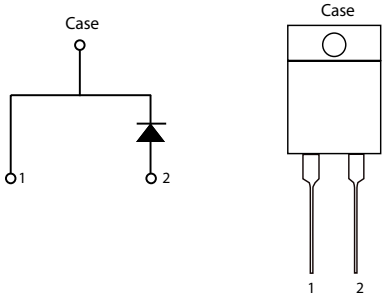
Description

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	17.5	A
		T_C = 135 °C	8.5	
		T_C = 158 °C	5	
Non-Repetitive Forward Surge Current	I_{FSM}	T_C = 25 °C, T_P = 10 ms, Half sine pulse	40	A
Power Dissipation	P_{Tot}	T_C = 25 °C	100	W
		T_C = 110 °C	43.3	
Operating Junction Temperature	T_J	-	-55 to 175	°C
Storage Temperature	T_{STG}	-	-55 to 150	°C
Soldering Temperature (reflow MSL 1)	T_{sold}	-	260	°C

Revised: 10/02/17

GEN2 SiC Schottky Diode

LSIC2SD120A05, 1200 V, 5 A, TO-220-2L

Electrical Characteristics

Characteristics	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	I_F = 5 A, T_J = 25 °C	-	1.5	1.8	V
		I_F = 5 A, T_J = 175 °C	-	2.1		
Reverse Current	I_R	V_R = 1200 V, T_J = 25 °C	-	<1	100	µA
		V_R = 1200 V, T_J = 175 °C	-	5		
Total Capacitance	C	V_R = 1 V, f =1 MHz	-	310		pF
		V_R = 400 V, f = 1 MHz	-	29		
		V_R = 800 V, f = 1 MHz	-	21		
Total Capacitive Charge	Q_C	V_R = 800 V, $Q_c = \int_0^{V_R} C(V)dV$	-	30		nC

Footnote: T_J = +25 °C unless otherwise specified

Thermal Characteristics

Characteristics	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Thermal Resistance	$R_{\theta JC}$	-	-	1.50		°C/W

Figure 1: Typical Foward Characteristics

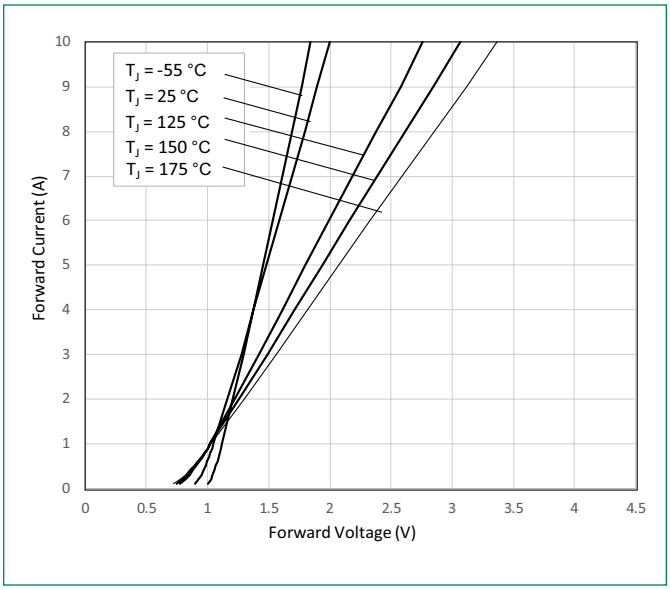
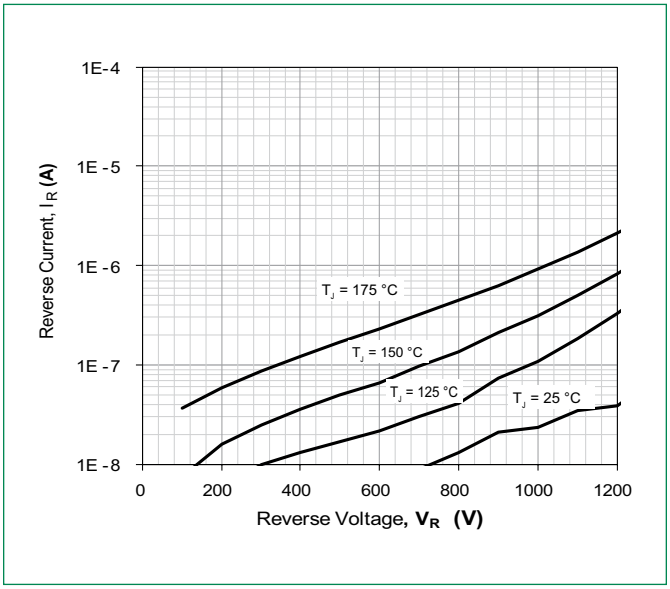


Figure 2: Typical Reverse Characteristics



Revised: 10/02/17

Figure 3: Power Derating

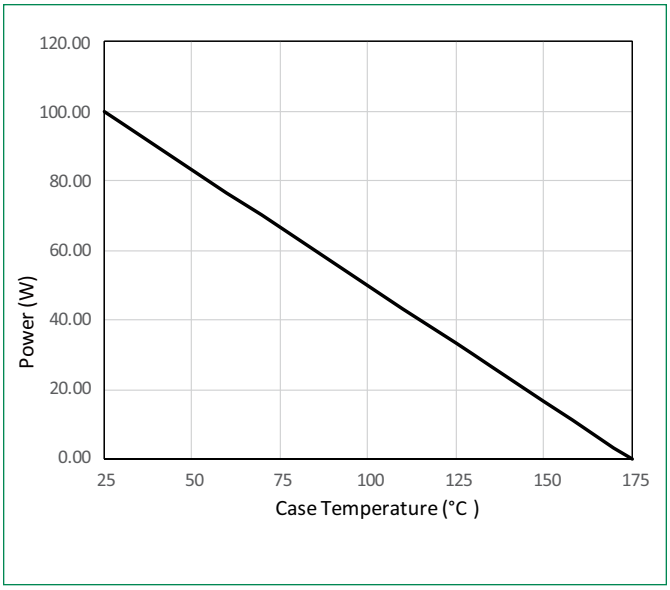


Figure 4: Current Derating

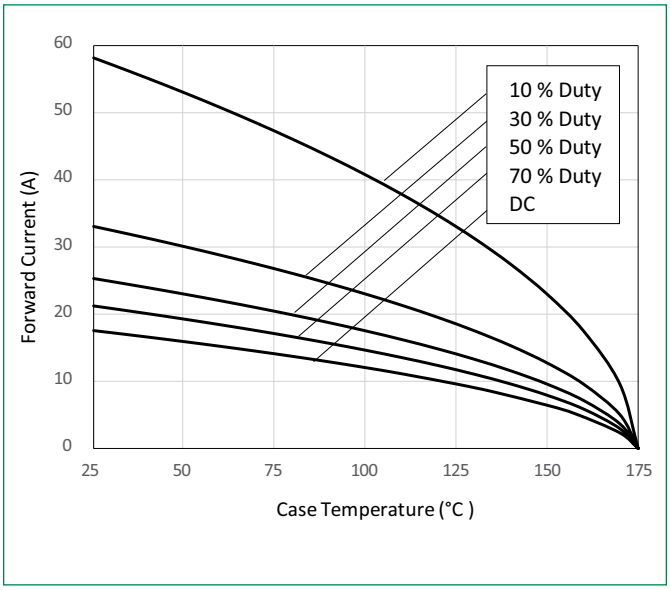


Figure 5: Capacitance vs. Reverse Voltage

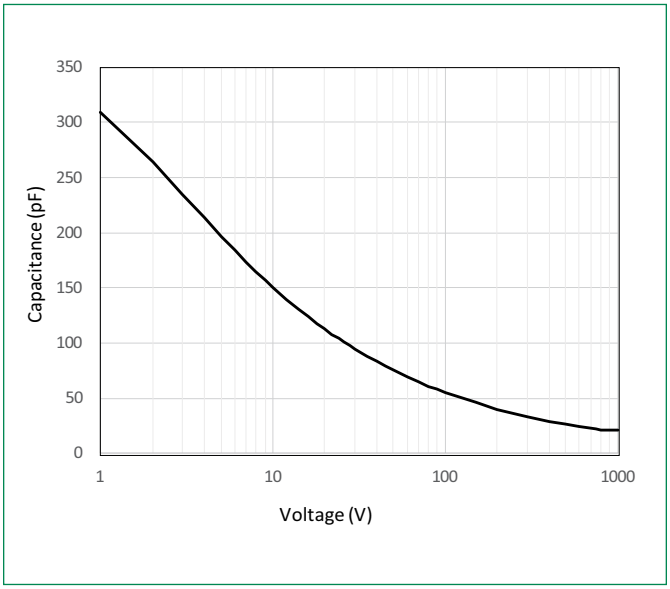
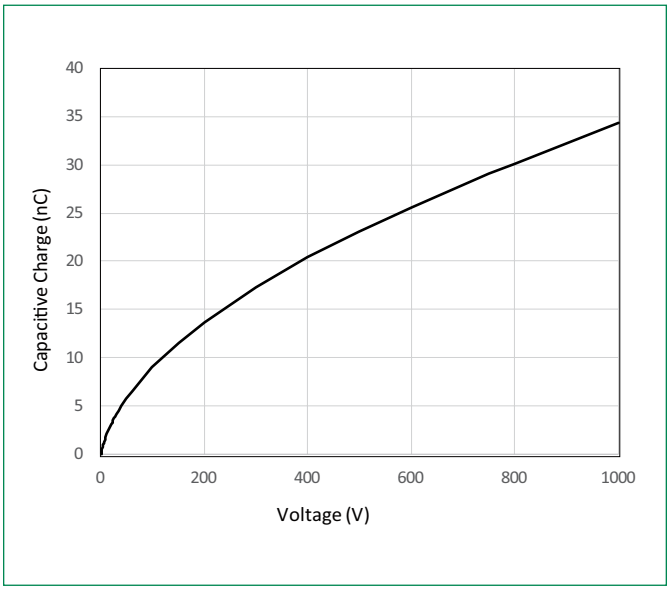


Figure 6: Capacitive Charge vs. Reverse Voltage



Revised: 10/02/17

GEN2 SiC Schottky Diode

LSIC2SD120A05, 1200 V, 5 A, TO-220-2L

Figure 7: Stored Energy vs. Reverse Voltage

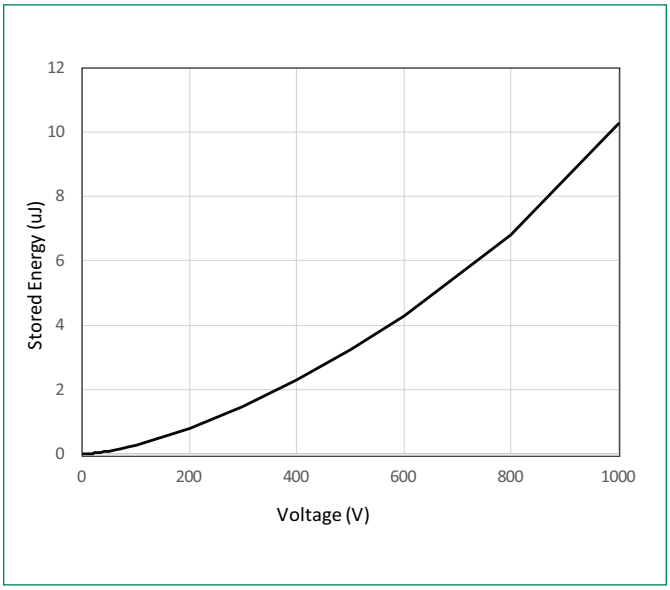
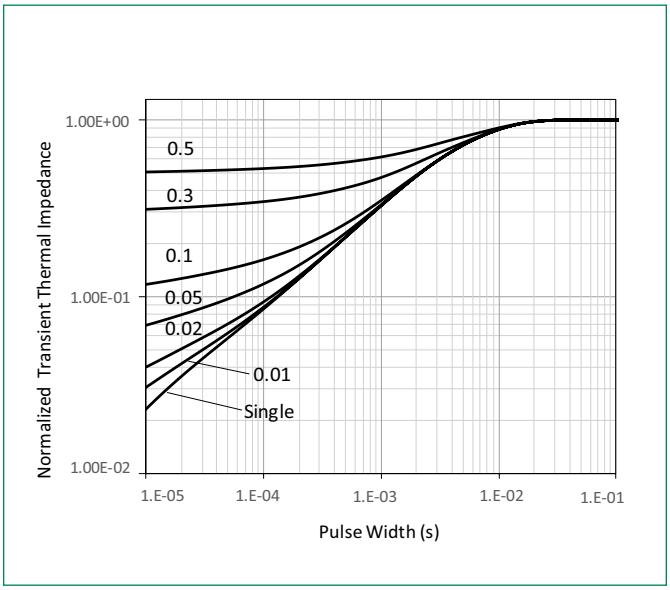
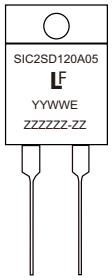


Figure 8: Transient Thermal Impedance



Part Numbering and Marking System



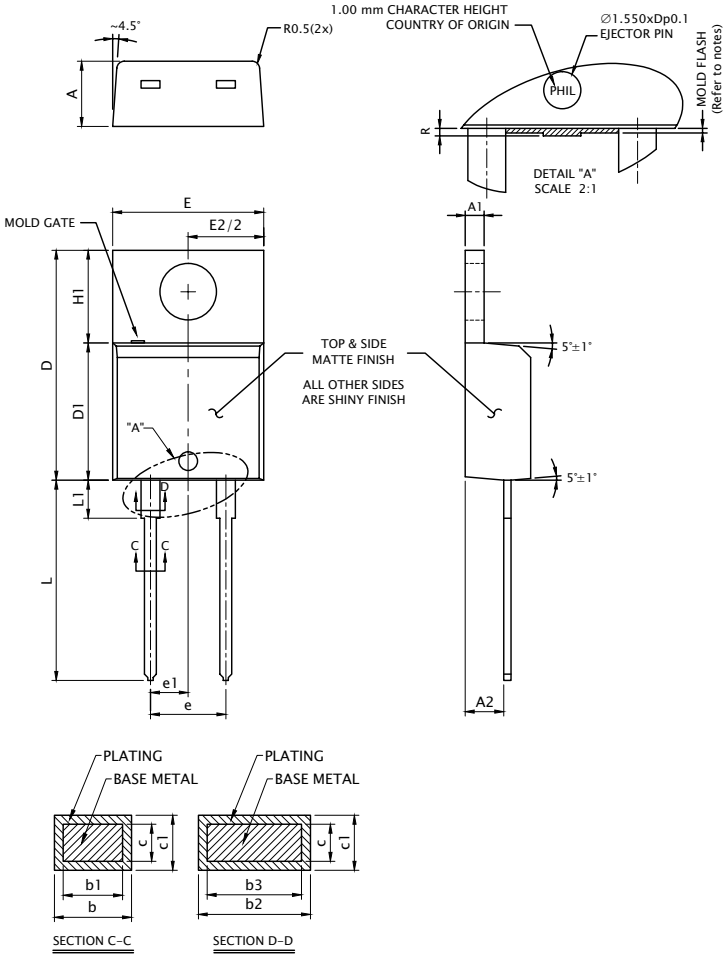
SIC	= SiC Diode
2	= Gen2
SD	= Schottky Diode
120	= Voltage Rating (1200 V)
A	= TO-220-2L
05	= Current Rating (5 A)
YY	= Year
WW	= Week
E	= Special Code
ZZZZZZ-ZZ	= Lot Number

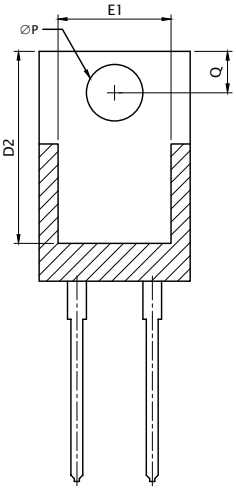
Packing Options

Part Number	Marking	Packing Mode	M.O.Q
LSIC2SD120A05	SIC2SD120A05	Tube	1000

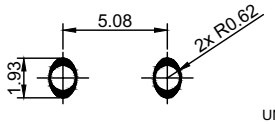
Revised: 10/02/17

Dimensions-Package TO-220-2L





Recommended Solder Pad Layout



UNIT: mm

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

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.

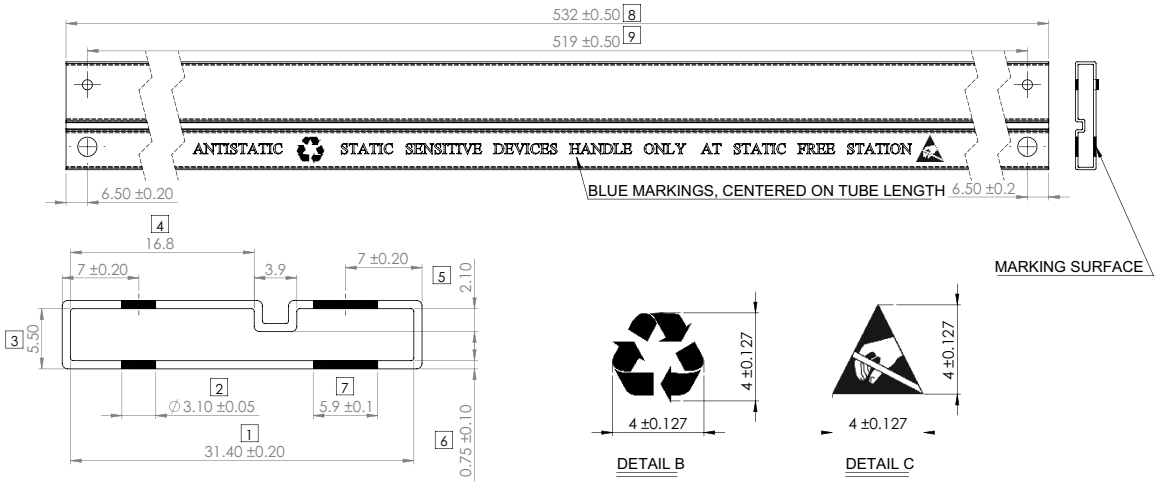
2. DIMENSIONS E2 & H1 DEFINE A ZONE WHERE STAMPING AND SINGULATION IRREGULARITIES RE ALLOWED.

Revised: 10/02/17

GEN2 SiC Schottky Diode

LSIC2SD120A05, 1200 V, 5 A, TO-220-2L

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)

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Littelfuse:
LSIC2SD120A05