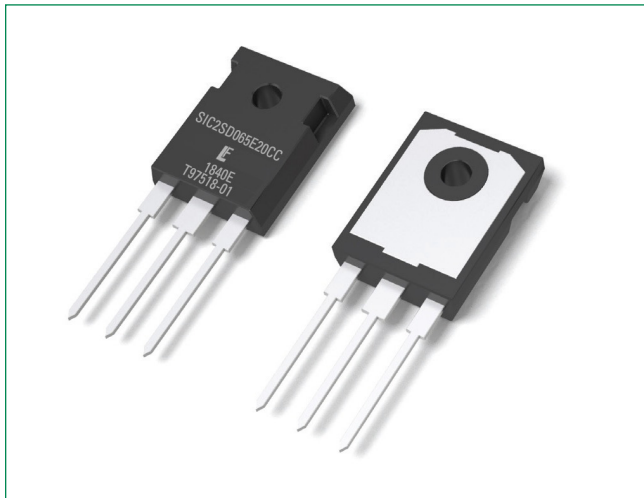


LSIC2SD065E20CCA 650 V, 20 A SiC Schottky Barrier Diode



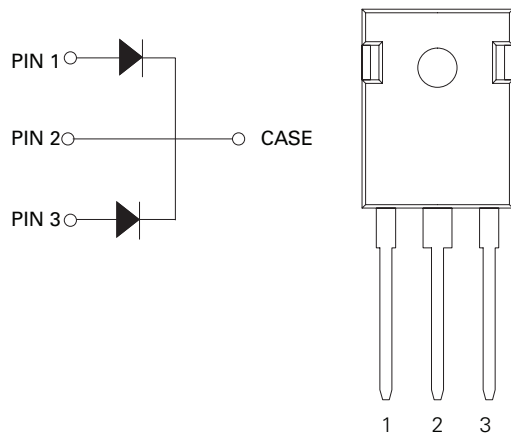
**Description**

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. This diode series is 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-247-3L**



**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	$V_{RRM}$	-	650	V
DC Blocking Voltage	$V_R$	$T_J = 25\text{ °C}$	650	V
Continuous Forward Current (Per Leg/Component)	$I_F$	$T_C = 25\text{ °C}$	27 / 54	A
		$T_C = 147\text{ °C}$	10 / 20	
Non-Repetitive Forward Surge Current (Per Leg)	$I_{FSM}$	$T_C = 25\text{ °C}$ , $t_p = 10\text{ ms}$ , Half sine pulse	50	A
Power Dissipation (Per Leg/Component)	$P_{Tot}$	$T_C = 25\text{ °C}$	100 / 200	W
		$T_C = 110\text{ °C}$	43 / 86	
Operating Junction Temperature	$T_J$	-	-55 to 175	°C
Storage Temperature	$T_{STG}$	-	-55 to 150	°C
Soldering Temperature	$T_{sold}$	-	260	°C

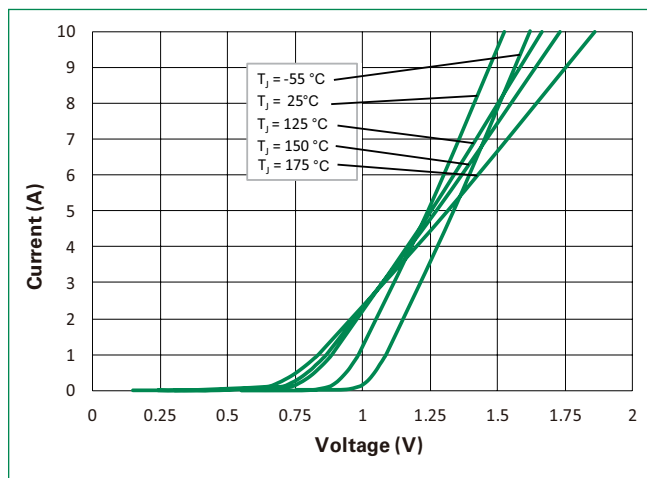
**Electrical Characteristics ( $T_J = 25^\circ\text{C}$  unless otherwise specified)**

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
		$I_F = 10\text{ A}, T_J = 175^\circ\text{C}$	-	1.85	-	
Reverse Current	$I_R$	$V_R = 650\text{ V}, T_J = 25^\circ\text{C}$	-	<1	50	$\mu\text{A}$
		$V_R = 650\text{ V}, T_J = 175^\circ\text{C}$	-	25	-	
Total Capacitance	C	$V_R = 1\text{ V}, f = 1\text{ MHz}$	-	470	-	pF
		$V_R = 200\text{ V}, f = 1\text{ MHz}$	-	60	-	
		$V_R = 400\text{ V}, f = 1\text{ MHz}$	-	43	-	
Total Capacitive Charge	$Q_C$	$V_R = 400\text{ V}, Q_C = \int_0^{V_R} C(V) dV$	-	30	-	nC

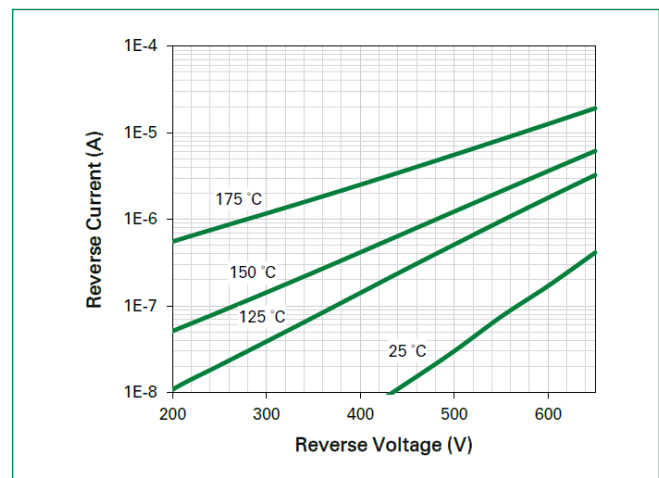
**Thermal Characteristics**

Characteristics	Symbol	Value	Unit
Thermal Resistance (Per Leg/Component)	$R_{\theta JC}$	1.50 / 0.75	$^\circ\text{C/W}$

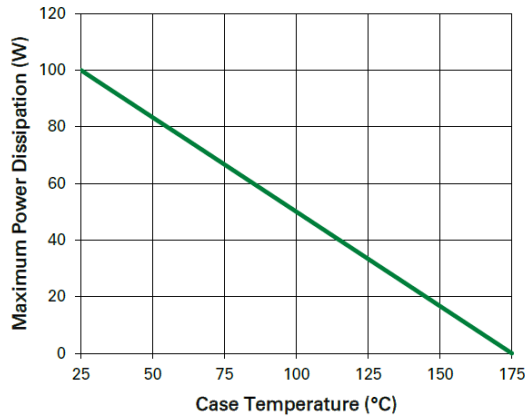
**Figure 1: Typical Forward Characteristics**



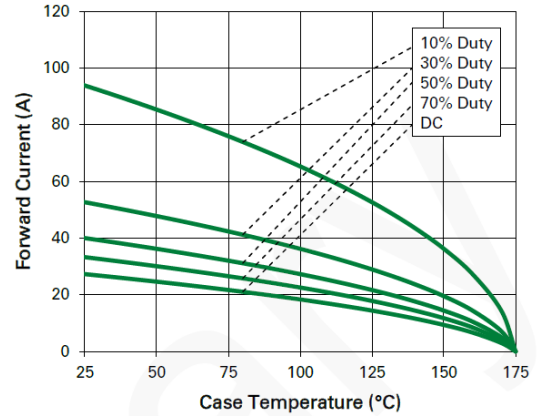
**Figure 2: Typical Reverse Characteristics**



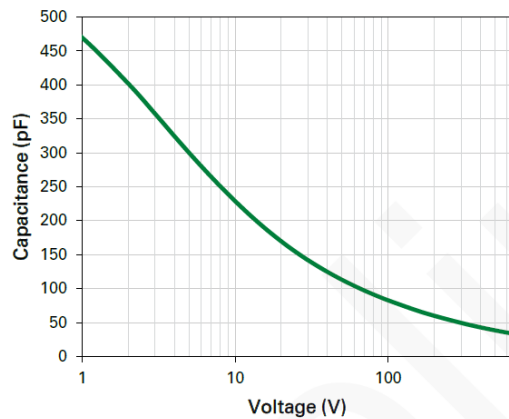
**Figure 3: Power Derating**



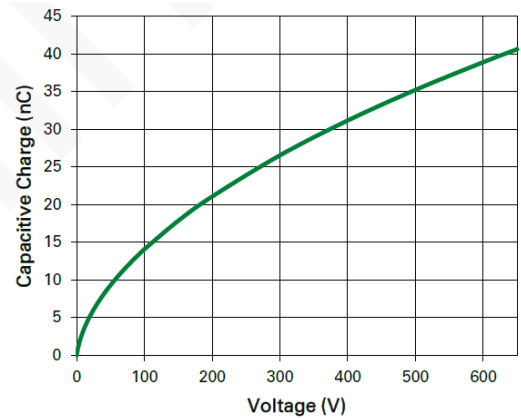
**Figure 4: Current Derating**



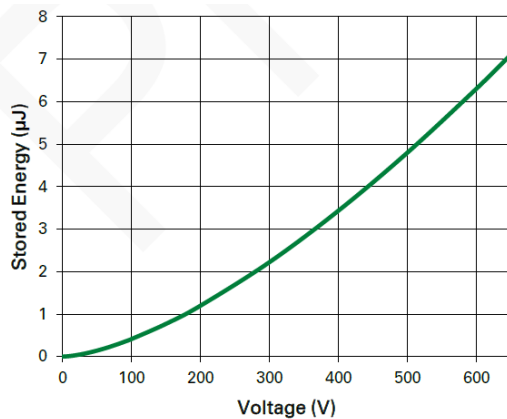
**Figure 5: Capacitance vs. Reverse Voltage**



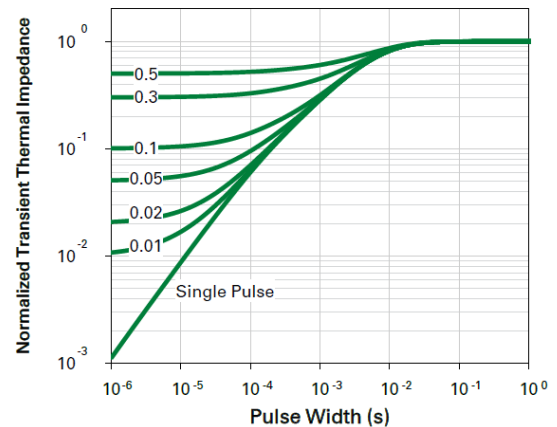
**Figure 6: Capacitive Charge vs. Reverse Voltage**



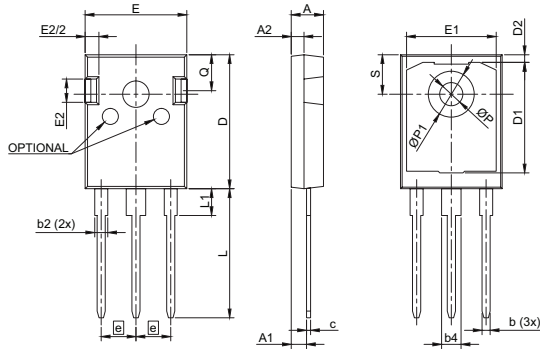
**Figure 7: Stored Energy vs. Reverse Voltage**



**Figure 8: Transient Thermal Impedance**



## Package Dimensions TO-247-3L



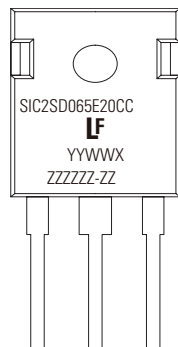
### Recommended Hole Pattern Layout



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

## Part Numbering and Marking System

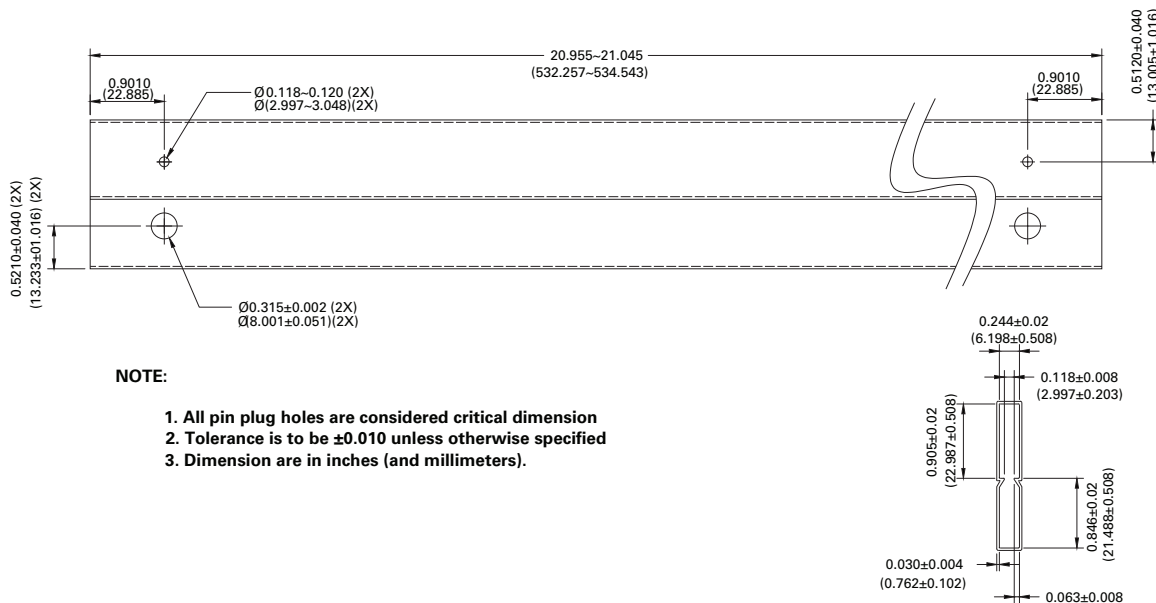


SIC	= SiC
2	= Gen2
SD	= Schottky Diode
065	= Voltage Rating (650 V)
E	= TO-247-3L
20	= Current Rating (20 A)
CC	= Common Cathode
YY	= Year
WW	= Week
X	= Trace Code (Any Letter)
ZZZZZZ-ZZ	= Lot Number

## Packing Options

Part Number	Marking	Packing Mode	M.O.Q
LSIC2SD065E20CCA	SIC2SD065E20CC	Tube (30pcs)	450

**Packing Specification TO-247-3L**



**NOTE:**

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

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