

## LSIC2SD065C08A 650 V, 8 A SiC Schottky Barrier Diode









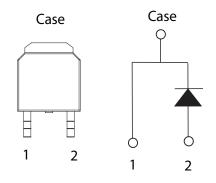
### **Description**

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. These diodes series are ideal for applications where improvements in efficiency, reliability, and thermal management are desired.

#### **Features**

- AEC-Q101 qualified
- 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-252-2L (DPAK)



### **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-free lead plating

### **Maximum Ratings**

Characteristics	Symbol	Conditions	Value	Unit	
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>	-	650	V	
DC Blocking Voltage	V <sub>R</sub>	T <sub>J</sub> = 25 °C	650	V	
Continuous Forward Current		T <sub>C</sub> = 25 °C	23		
	l <sub>F</sub>	T <sub>C</sub> = 135 °C	10.7	А	
		T <sub>C</sub> = 150 °C	8		
Non-Repetitive Forward Surge Current	I <sub>FSM</sub>	$T_{\rm C}$ = 25 °C, $T_{\rm P}$ = 10 ms, Half sine pulse	40	А	
Davida Dispiration	D	T <sub>C</sub> = 25 °C	88	W	
Power Dissipation	P <sub>Tot</sub>	T <sub>C</sub> = 110 °C	38		
Operating Junction Temperature	T <sub>J</sub>	-	-55 to 175	°C	
Storage Temperature	T <sub>STG</sub>	-	-55 to 150	°C	
Soldering Temperature (reflow MSL1)	T <sub>sold</sub>	-	260	°C	

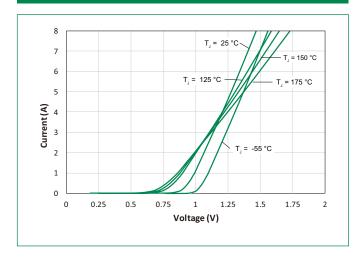
## **Electrical Characteristics**

	Symbol	2	Value				
Characteristics		Conditions	Min.	Тур.	Max.	Unit	
Forward Voltage	\/	I <sub>F</sub> = 8 A, T <sub>J</sub> = 25 °C	-	1.5	1.8	V	
	V <sub>F</sub>	I <sub>F</sub> = 8 A, T <sub>J</sub> = 175 °C	-	1.85	-		
Reverse Current	I <sub>R</sub>	$V_{R} = 650  \text{V}$ , $T_{J} = 25  ^{\circ}\text{C}$	-	<1	50	^	
		$V_{R} = 650  \text{V} , T_{J} = 175  ^{\circ}\text{C}$	-	15	-	μΑ	
Total Capacitance		V <sub>R</sub> = 1 V, f = 1 MHz	-	415	-		
	С	$V_{R} = 200  V, f = 1  MHz$	-	56	-	pF	
		$V_{R} = 400  \text{V},  f = 1  \text{MHz}$	-	41	-		
Total Capacitive Charge	O <sub>c</sub>	$V_R = 400 \text{ V},  Q_C = \int\limits_0^{V_R} C(V)dV$	-	29	-	nC	

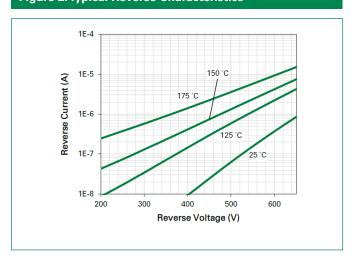
Footnote: T<sub>J</sub> = +25 °C unless otherwise specified

Thermal Characteristics						
Characteristics	Symbol	Value	Unit			
Thermal Resistance	R <sub>euc</sub>	1.7	°C/W			

Figure 1: Typical Foward Characteristics



**Figure 2: Typical Reverse Characteristics** 





**Figure 3: Power Derating** 

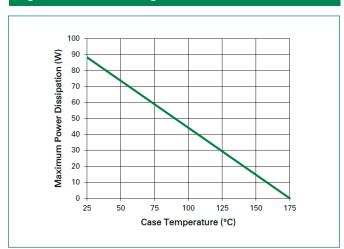


Figure 4: Current Derating

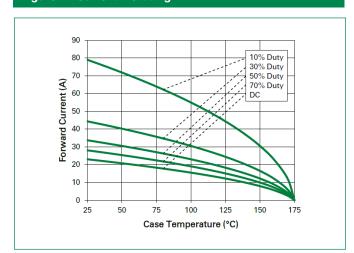


Figure 5: Capacitance vs. Reverse Voltage

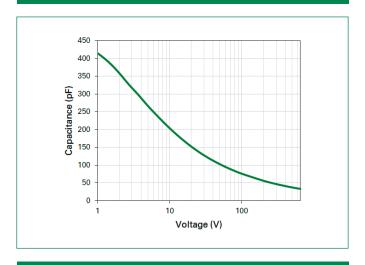


Figure 6: Capacitive Charge vs. Reverse Voltage

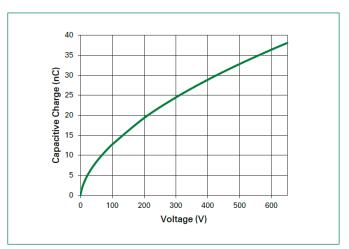


Figure 7: Stored Energy vs. Reverse Voltage

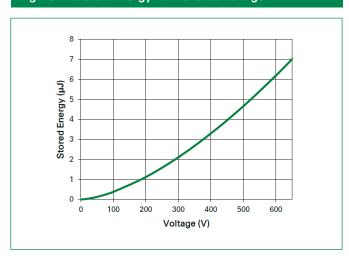
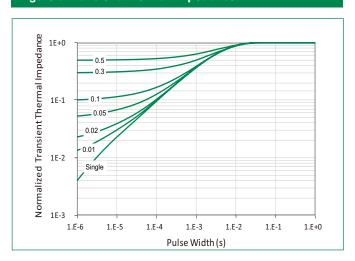
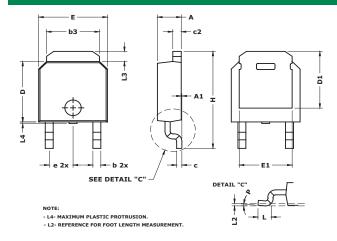


Figure 8: Transient Thermal Impedance

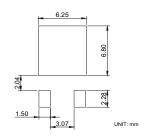




### **Dimensions TO-252-2L (DPAK)**

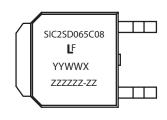


### Recommended Solder Pattern Layout



Symbol		Inches		N	Millimeters	
Зуппон	Min	Nom	Max	Min	Nom	Max
А	0.085	0.090	0.095	2.16	2.29	2.41
A1	0	0.003	0.005	0	0.08	0.13
b	0.025	0.030	0.035	0.64	0.76	0.89
b3	0.195	0.200	0.215	4.95	5.08	5.46
С	0.018	0.020	0.024	0.46	0.51	0.61
C2	0.018	0.032	0.035	0.46	0.81	0.89
D	0.235	0.240	0.245	5.97	6.10	6.22
D1	0.205	-	-	5.21	-	-
Е	0.250	0.260	0.265	6.35	6.60	6.73
E1	0.170	-	-	4.32	-	-
е	0.090 BSC			2.29 BSC		
Н	0.370	0.387	0.410	9.40	9.83	10.41
L	0.040	0.045	0.050	1.02	1.14	1.27
L2	0.010 BSC			0.25 BSC		
L3	0.035	-	0.050	0.89	-	1.27
L4	0	-	0.006	0	-	0.15
Р	0°	-	8°	0°	-	8°

## **Part Numbering and Marking System**



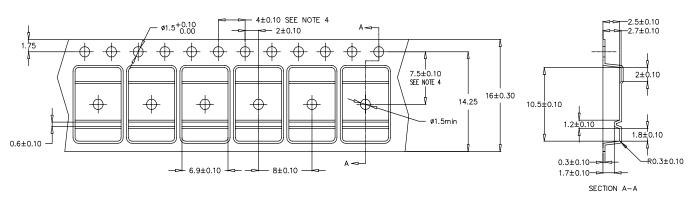
SIC = SiC Diode = Gen2 = Schottky Diode SD 065 = Voltage Rating (650 V) С = TO-252-2L (DPAK) = Current Rating (8 Å) 08 ΥY = Year  $\mathsf{W}\mathsf{W}$ = Week = Special code

ZZZZZZ-ZZ = Lot Number

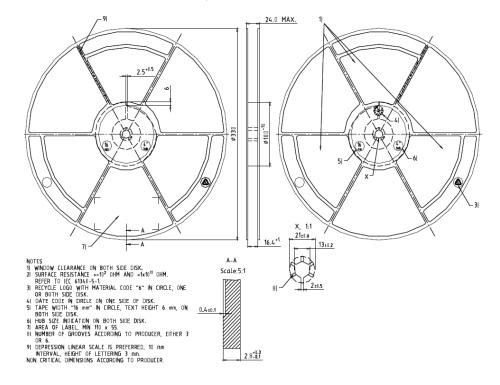
## **Packing Options**

Part Number	Marking	Packing Mode	M.O.Q
LSIC2SD065C08A	SIC2SD065C08	Tape and Reel	2500

### Carrier Tape & Reel Specification TO-252-2L (DPAK)



- Material: Black Conductive Polysterene
  10 sprocket hole pitch cumulative tolerance ± 0.20
  Camber not to exceed 1 mm in 100 mm.
  Pocket position relative to sprocket hole measured
  as true position of pocket, not pocket hole.
- 5. Device orientation: TRL (leads perpendicular to the sprocket)
- 6. General tolerance is  $\pm$  0.10 mm unless otherwise specified.



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