

# LSIC2SD065D10A 650 V, 10 A SiC Schottky Barrier Diode











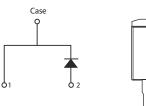
### **Description**

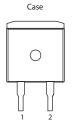
This series of silicon carbide (SiC) Schottky diodes has negligible reverse recovery current, high surge capability, and a maximum operating junction temperature of 175 °C. These diodes series are ideal for applications where improvements in efficiency, reliability, and thermal management are desired.

### **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-263-2L





### **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 = Po Pb-free lead plating

### **Maximum Ratings**

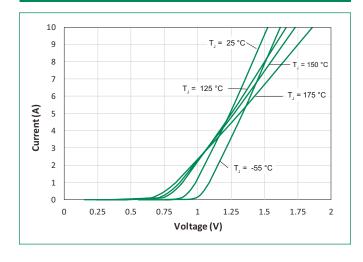
Characteristics	Symbol	Conditions	Value	Unit	
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>	-	650	V	
DC Blocking Voltage	V <sub>R</sub>	T <sub>J</sub> = 25 °C	650	V	
Continuous Forward Current		T <sub>C</sub> = 25 °C	27	А	
	I <sub>F</sub>	T <sub>C</sub> = 135 °C	12.5		
		T <sub>C</sub> = 147 °C	10		
Non-Repetitive Forward Surge Current	I <sub>FSM</sub>	$T_{\rm C} = 25  {\rm ^{\circ}C}$ , $T_{\rm P} = 10  {\rm ms}$ , Half sine pulse	48	А	
Power Dissipation	D	T <sub>C</sub> = 25 °C	100	W	
	$P_Tot$	T <sub>C</sub> = 110 °C	43	VV	
Operating Junction Temperature	T <sub>J</sub>	-	-55 to 175	°C	
Storage Temperature	T <sub>STG</sub>	-	-55 to 150	°C	
Soldering Temperature	T <sub>SOLD</sub>	-	260	°C	

## Electrical Characteristics (T<sub>1</sub> = 25 °C unless otherwise specified)

			Value				
Characteristics	Symbol	Conditions	Min.	Тур.	Max.	Unit	
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 10 A, T <sub>J</sub> = 25 °C	-	1.5	1.8	V	
		I <sub>F</sub> = 10 A, T <sub>J</sub> = 175 °C	-	1.85	-		
Reverse Current	I <sub>R</sub>	$V_R = 650 \mathrm{V}$ , $T_J = 25 \mathrm{^{\circ}C}$	-	<1	50	μА	
		$V_{_{\rm R}} = 650  \text{V}$ , $T_{_{\rm J}} = 175  ^{\circ}\text{C}$	-	25	-		
Total Capacitance C		$V_R = 1 V, f = 1 MHz$	-	470	-		
	С	$V_R = 200  V$ , $f = 1  MHz$	-	60	-	pF	
		$V_R = 400  \text{V},  \text{f} = 1  \text{MHz}$	-	43	-		
Total Capacitive Charge	Q <sub>c</sub>	$V_{R}=400 \text{ V},  Q_{c}=\int\limits_{0}^{V_{R}}C(V)dV$	-	30	-	nC	

Thermal Characteristics				
Characteristics	Symbol	Value	Unit	
Thermal Resistance	R <sub>esc</sub>	1.5	°C/W	

**Figure 1: Typical Foward Characteristics** 



**Figure 2: Typical Reverse Characteristics** 

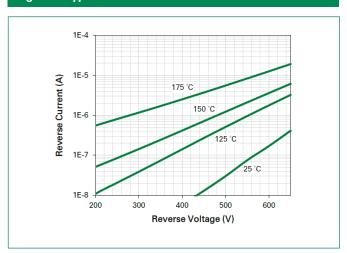




Figure 3: Power Derating

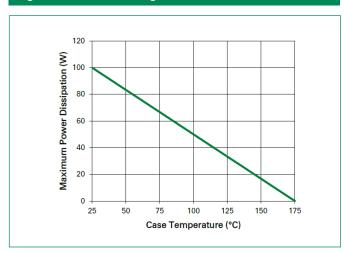


Figure 4: Current Derating

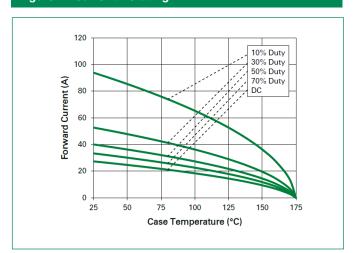


Figure 5: Capacitance vs. Reverse Voltage

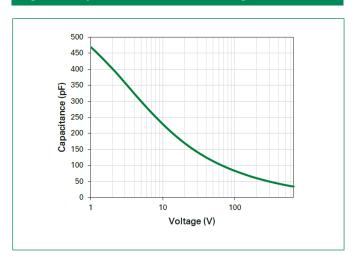


Figure 6: Capacitive Charge vs. Reverse Voltage

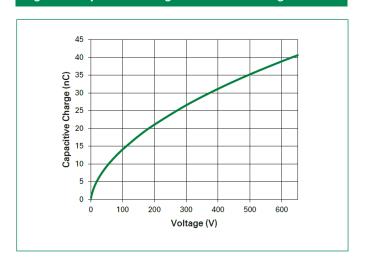


Figure 7: Stored Energy vs. Reverse Voltage

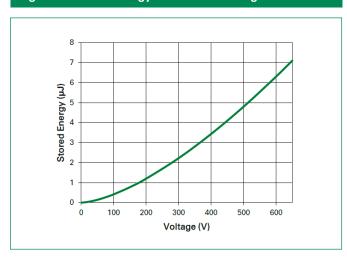
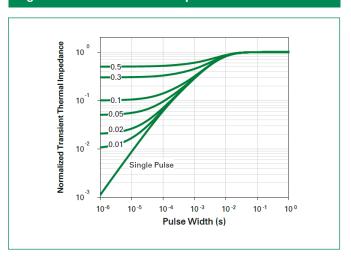
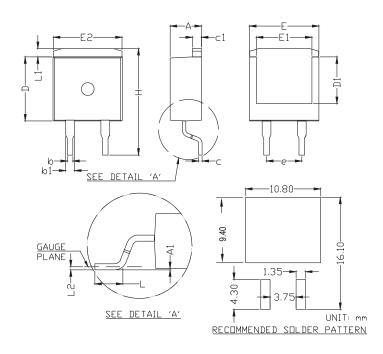


Figure 8: Transient Thermal Impedance

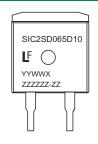


## Dimensions-Package TO-263-2L



Cumbal	Millimeters				
Symbol	Min	Nom	Max		
А	4.30	4.50	4.70		
A1	0.00	-	0.25		
b	0.70	0.80	0.90		
b1	1.17	1.27	1.37		
С	0.46	0.50	0.60		
c1	1.25	1.30	1.40		
D	9.00	9.20	9.40		
D1	6.50	6.70	6.90		
E	9.80	10.00	10.20		
E1	7.80	8.00	8.20		
E2	9.70	9.90	10.10		
е	5.08 BSC				
Н	15.00	15.30	15.60		
L	2.00	2.30	2.60		
L1	1.00	1.20	1.40		
L2	0.254 BSC				

## **Part Numbering and Marking System**



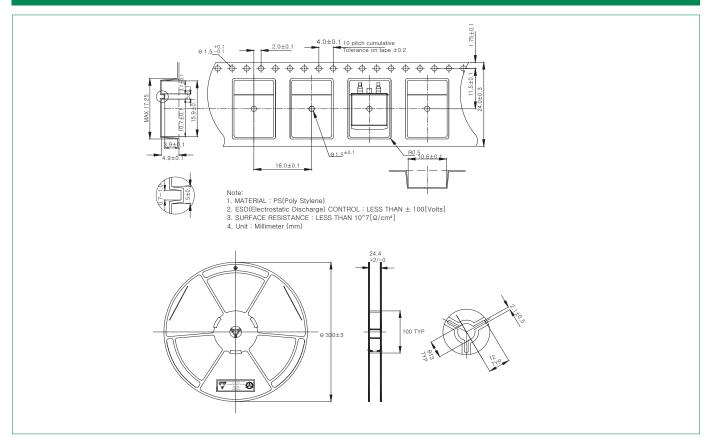
- = SiC Diode SIC 2
  - = Gen2
- SD = Schottky Diode = Voltage Rating (650 V) 065 = TO-263-2L (D2PAK)
- D 10 = Current Rating (10 A)
- YY= Year WW = Week
- = Special Code ZZZZZZ-ZZ = Lot Number

## **Packing Option**

Part Number	Marking	Packing Mode	M.O.Q
LSIC2SD065D10A	SIC2SD065D10	Tape and Reel	800



### **TO-263 Carrier Reel Specifications**



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