

**LSIC2SD065D06A 650 V, 6 A SiC Schottky Barrier Diode**



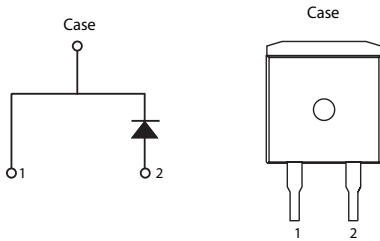
**Description**

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 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	$I_F$	$T_c = 25\text{ °C}$	18.5	A
		$T_c = 135\text{ °C}$	8.6	
		$T_c = 152\text{ °C}$	6	
Non-Repetitive Forward Surge Current	$I_{FSM}$	$T_c = 25\text{ °C}, T_p = 10\text{ ms}, \text{Half sine pulse}$	32	A
Power Dissipation	$P_{Tot}$	$T_c = 25\text{ °C}$	75	W
		$T_c = 110\text{ °C}$	32	
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

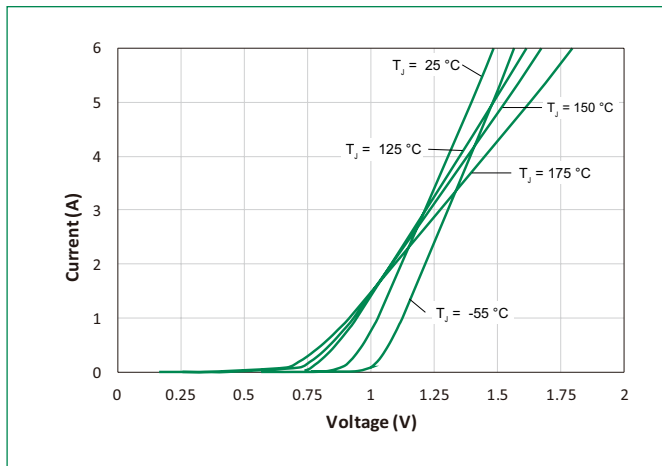
**Electrical Characteristics ( $T_J = 25\text{ }^\circ\text{C}$  unless otherwise specified)**

Characteristics	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	$V_F$	$I_F = 6\text{ A}, T_J = 25\text{ }^\circ\text{C}$	-	1.5	1.8	V
		$I_F = 6\text{ A}, T_J = 175\text{ }^\circ\text{C}$	-	1.85	-	
Reverse Current	$I_R$	$V_R = 650\text{ V}, T_J = 25\text{ }^\circ\text{C}$	-	<1	50	$\mu\text{A}$
		$V_R = 650\text{ V}, T_J = 175\text{ }^\circ\text{C}$	-	15	-	
Capacitance	C	$V_R = 1\text{ V}, f = 1\text{ MHz}$	-	300	-	pF
		$V_R = 200\text{ V}, f = 1\text{ MHz}$	-	39	-	
		$V_R = 400\text{ V}, f = 1\text{ MHz}$	-	28	-	
Total Capacitive Charge	$Q_C$	$V_R = 400\text{ V}, Q_C = \int_0^{V_R} c(v)dv$	-	20	-	nC

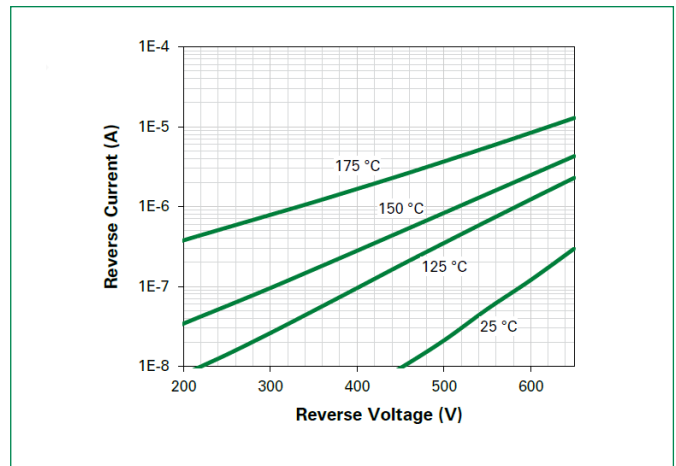
**Thermal Characteristics**

Characteristics	Symbol	Value	Unit
Thermal Resistance	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$

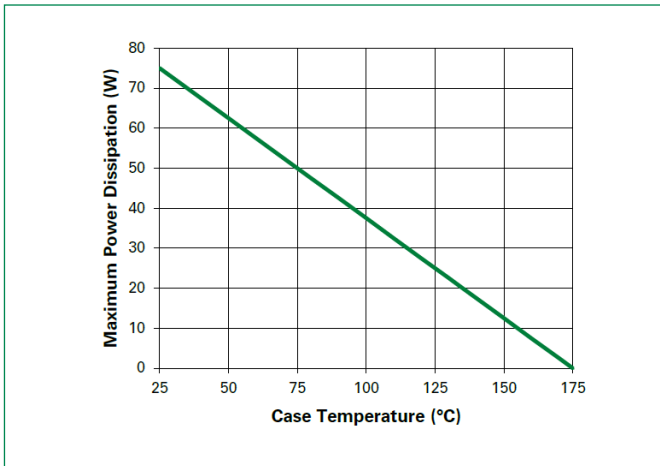
**Figure 1: Typical Forward Characteristics**



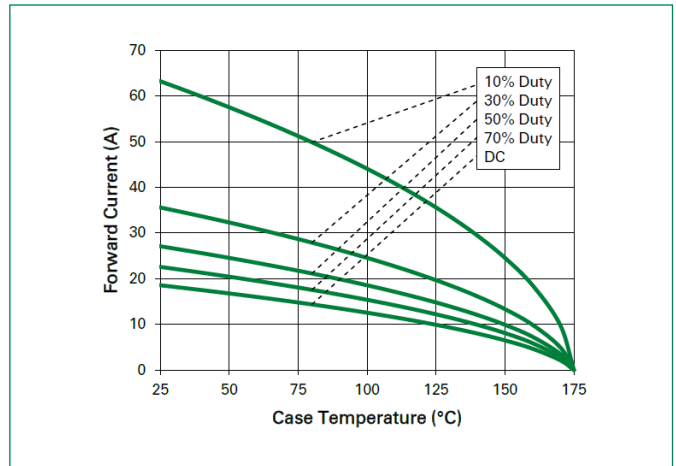
**Figure 2: Typical Reverse Characteristics**



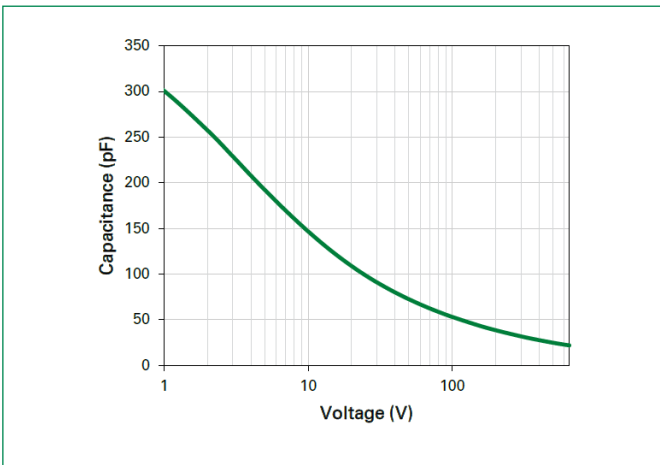
**Figure 3: Power Derating**



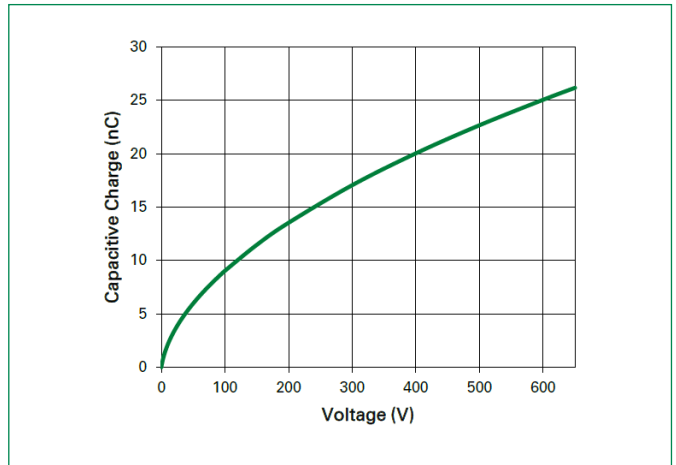
**Figure 4: Current Derating**



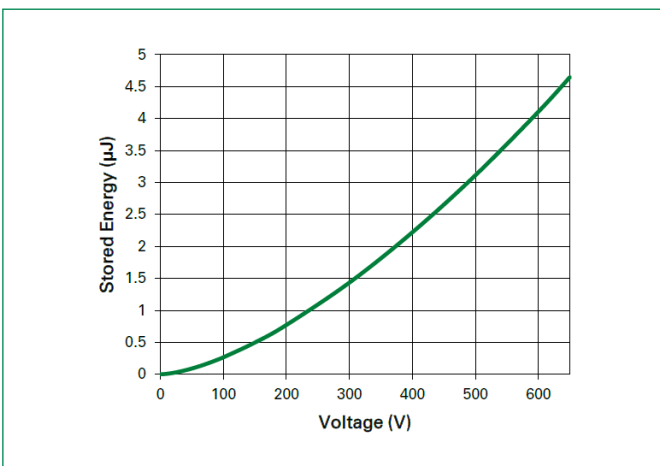
**Figure 5: Capacitance vs. Reverse Voltage**



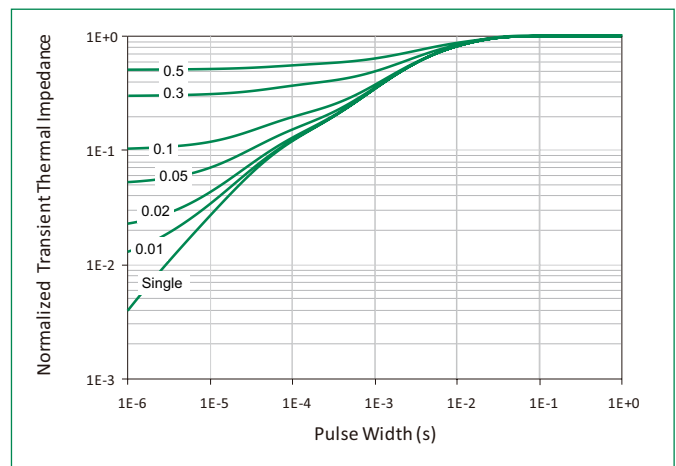
**Figure 6: Capacitive Charge vs. Reverse Voltage**



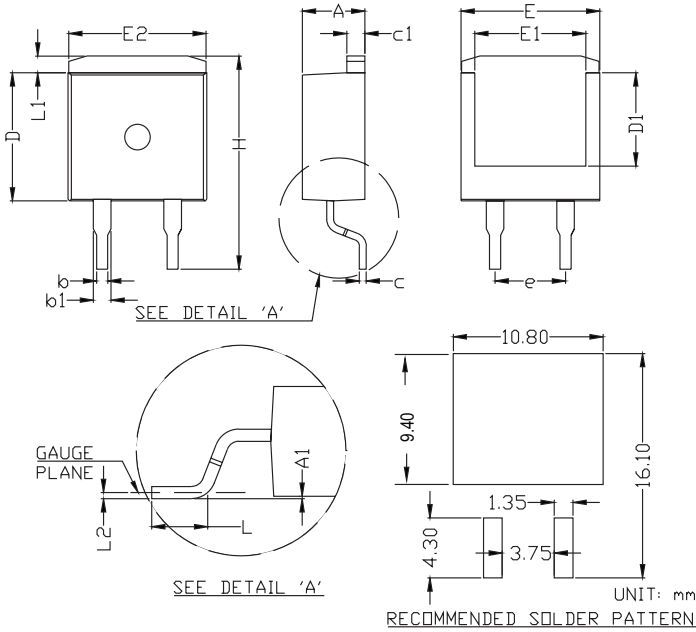
**Figure 7: Stored Energy vs. Reverse Voltage**



**Figure 8: Transient Thermal Impedance**

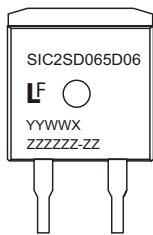


**Dimensions-Package TO-263-2L**



Symbol	Millimeters		
	Min	Nom	Max
A	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
c	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
e	5.08 BSC		
H	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**

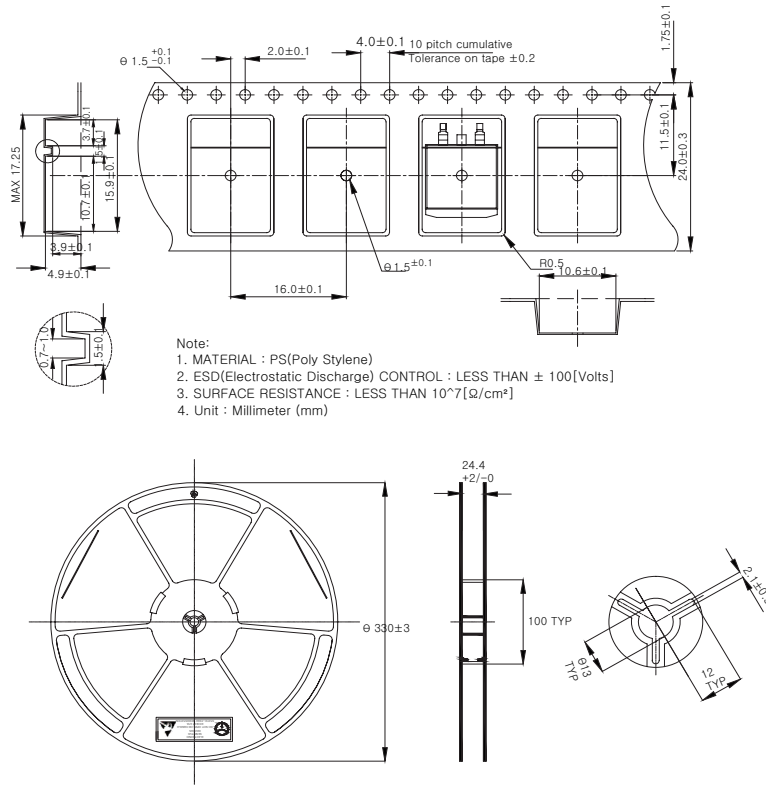


- SIC = SiC Diode
- 2 = Gen2
- SD = Schottky Diode
- 065 = Voltage Rating (650 V)
- D = TO-263 Package (2 Lead)
- 06 = Current Rating (6 A)
- YY = Year
- WW = Week
- X = Special Code
- ZZZZZZ-ZZ = Lot Number

**Packing Option**

Part Number	Marking	Packing Mode	M.O.Q
LSIC2SD065D06A	SIC2SD065D06	Tape and Reel	800

**TO-263 Carrier Reel Specifications**



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