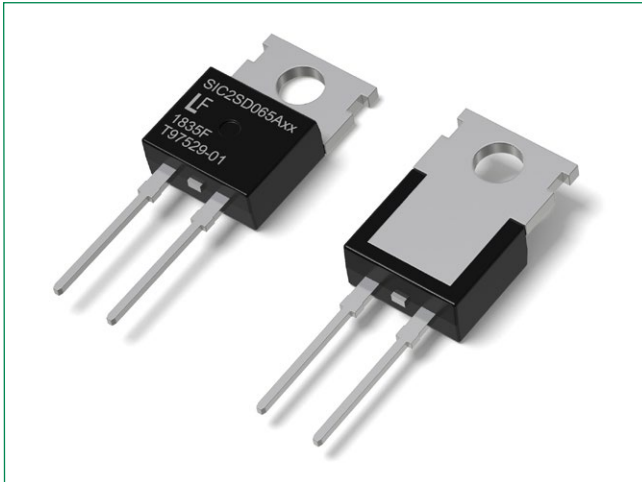


LSIC2SD065A20A 650 V, 20 A SiC Schottky Barrier Diode



*Image for reference only, for details refer to Dimensions-Package.

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.

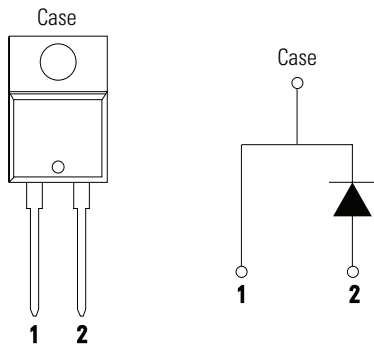
Features

- 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

Applications

- Boost diodes in PFC or DC/DC stages
- Switch-mode power supplies
- Uninterruptible power supplies
- Solar inverters
- Industrial motor drives
- EV charging stations

Circuit Diagram TO-220-2L



Environmental

- Littelfuse "RoHS" logo = 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_{RRM}	-	650	V
DC Blocking Voltage	V_R	$T_J = 25\text{ °C}$	650	V
Continuous Forward Current	I_F	$T_C = 25\text{ °C}$	45	A
		$T_C = 135\text{ °C}$	20	
Non-Repetitive Forward Surge Current	I_{FSM}	$T_C = 25\text{ °C}, T_P = 10\text{ ms}, \text{Half sine pulse}$	90	A
Power Dissipation	P_{Tot}	$T_C = 25\text{ °C}$	135	W
		$T_C = 110\text{ °C}$	60	
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 ($T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified)

Characteristics	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F = 20\text{ A}, T_J = 25\text{ }^\circ\text{C}$	-	1.5	1.8	V
		$I_F = 20\text{ A}, T_J = 175\text{ }^\circ\text{C}$	-	1.85	-	
Reverse Current	I_R	$V_R = 650\text{ V}, T_J = 25\text{ }^\circ\text{C}$	-	<1	50	μA
		$V_R = 650\text{ V}, T_J = 175\text{ }^\circ\text{C}$	-	60	-	
Total Capacitance	C	$V_R = 1\text{ V}, f = 1\text{ MHz}$	-	960	-	pF
		$V_R = 200\text{ V}, f = 1\text{ MHz}$	-	120	-	
		$V_R = 400\text{ V}, f = 1\text{ MHz}$	-	86	-	
Total Capacitive Charge	Q_C	$V_R = 400\text{ V}, Q_C = \int_0^{V_R} C(V)dV$	-	63	-	nC

Thermal Characteristics

Characteristics	Symbol	Value	Unit
Thermal Resistance	$R_{\theta JC}$	1.1	$^\circ\text{C}/\text{W}$

Figure 1: Typical Forward Characteristics

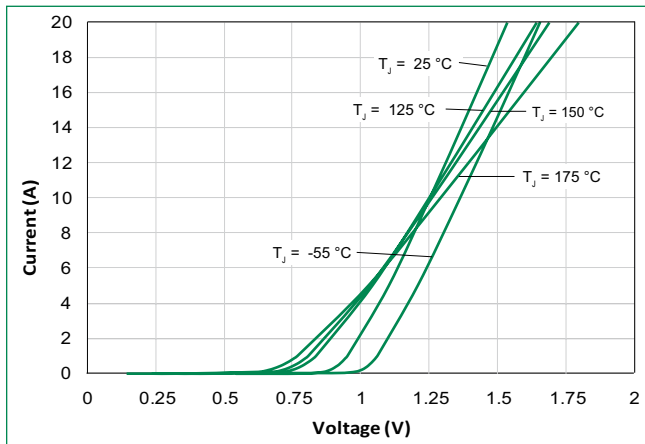


Figure 2: Typical Reverse Characteristics

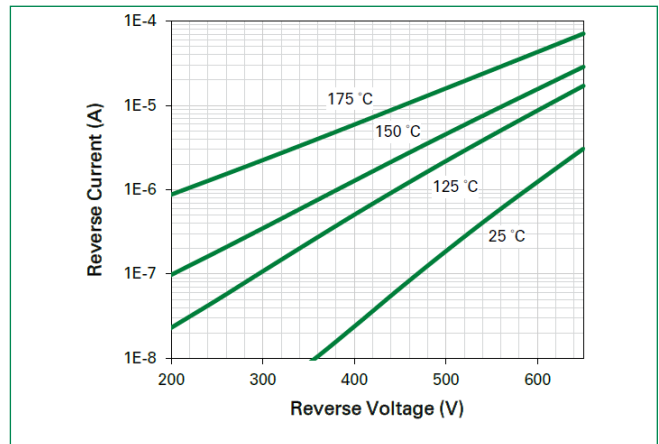


Figure 3: Power Derating

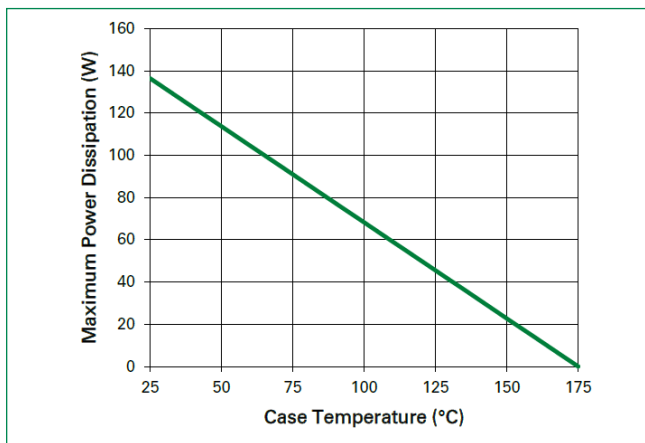


Figure 4: Current Derating

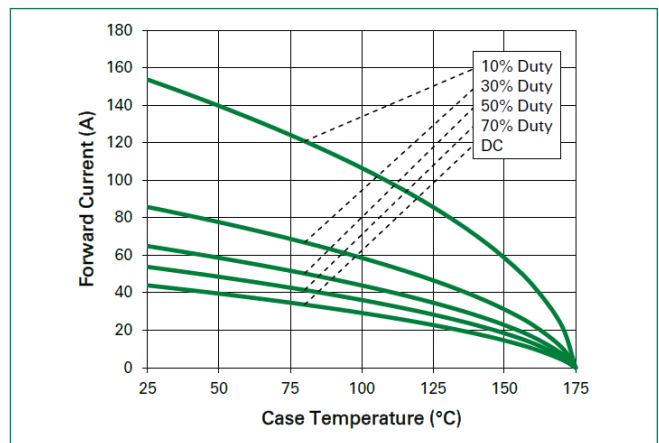


Figure 5: Capacitance vs. Reverse Voltage

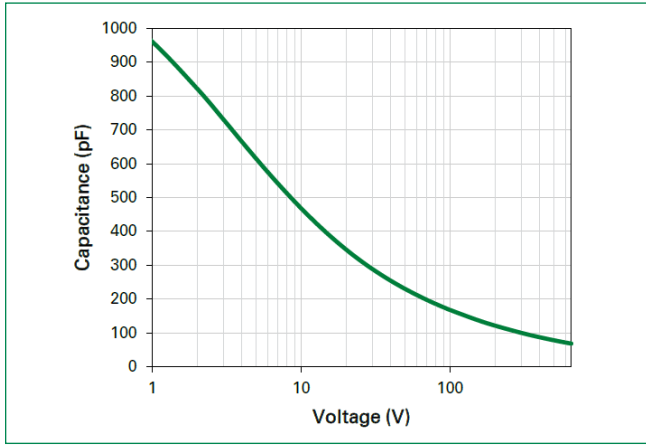


Figure 6: Capacitive Charge vs. Reverse Voltage

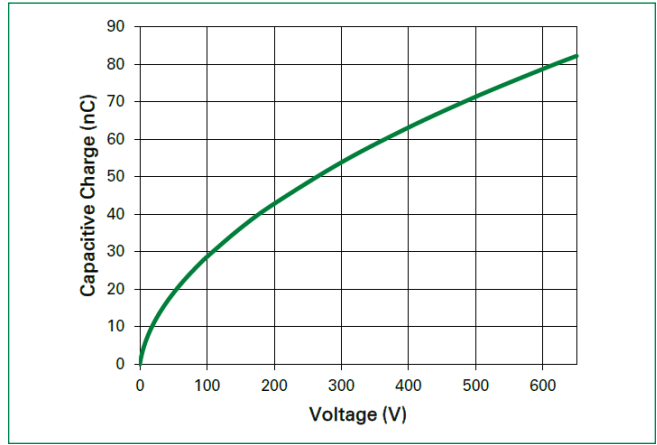


Figure 7: Stored Energy vs. Reverse Voltage

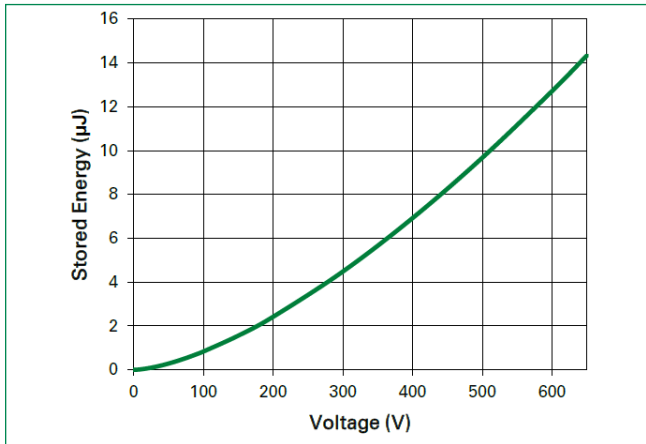
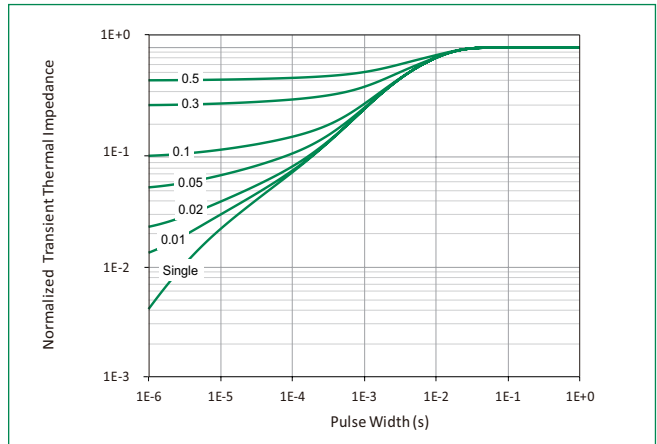
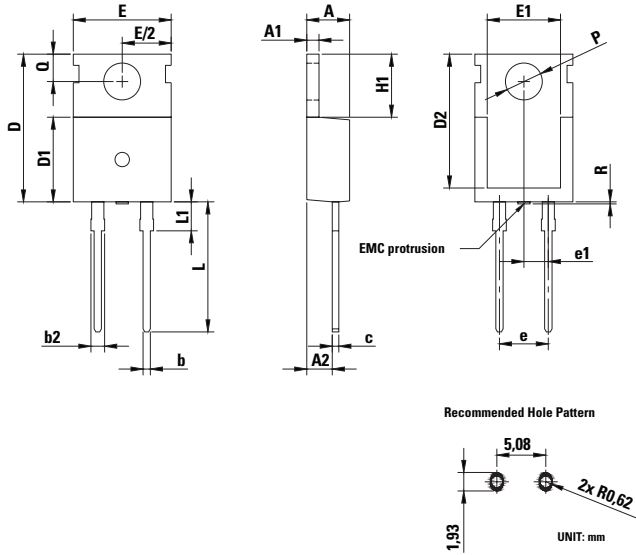


Figure 8: Transient Thermal Impedance

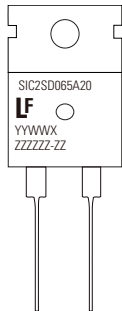


Dimensions-Package TO-220-2L



Symbol	Millimeters		
	Min	Nom	Max
A	4.30	4.45	4.70
A1	1.14	1.27	1.40
A2	2.20	-	2.74
b	0.69	-	0.90
b2	1.17	-	1.62
c	0.36	-	0.60
D	14.90	-	15.90
D1	8.62	-	9.40
D2	12.50	-	12.95
E	9.70	10.18	10.36
E1	7.57	7.61	8.30
e1	-	2.54	-
e	5.03	5.08	5.13
H1	6.30	6.55	6.80
L	12.88	13.50	14.00
L1	2.39	-	3.25
øP	3.50	3.84	3.96
Q	2.65	-	3.05
R	-	-	0.25

Part Numbering and Marking System

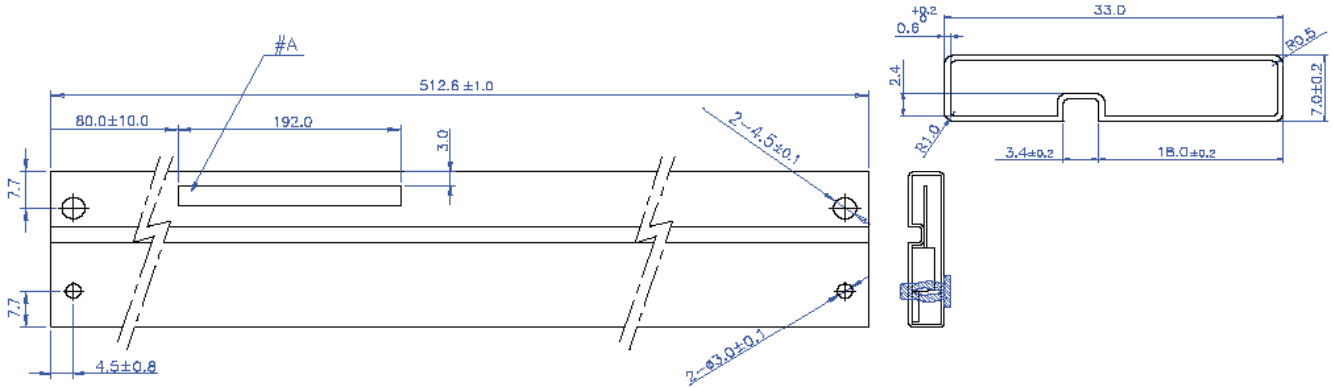


- SIC = SiC Diode
- 2 = Gen2
- SD = Schottky Diode
- 065 = Voltage Rating (650 V)
- A = TO-220 Package (2 Lead)
- 20 = Current Rating (20 A)
- YY = Year
- WW = Week
- X = Special Code
- ZZZZZ-ZZ = Lot Number

Packing Options

Part Number	Marking	Packing Mode	M.O.Q
LSIC2SD065A20A	SIC2SD065A20	Tube(50pcs)	1000

Packing Specification (Tube for TO-220-2L)



[NOTE]

1. TUBE
 - MATERIAL : PVC / PET (WITH ANTISTATIC COATING)
 - COLOR : TRANSPARENCY, RED, YELLO
 - MARKING #A : BLACK COLOR, LETTER STYLE : Arial
 - Tube Surface Resistance : $10^6 \sim 10^{11} \Omega$ /square
 - ESD (Electro Static Discharge) : less than 100 [volts], 6 Months
 - CAMBAR : 1.5 MAX
2. PIN
 - COLOR : GREEN (ONE PIN MUST BE INSERTED IN LEFT-SIDE OF "ANTISTATIC-" AND ANOTHER PIN IS FREE.)

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