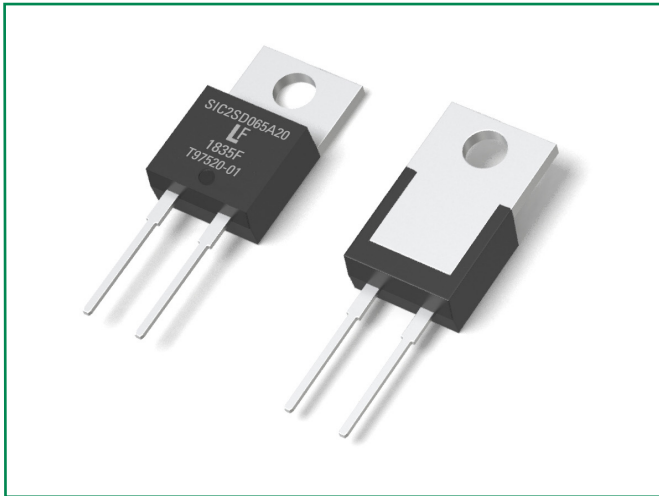


**LSIC2SD065A20A 650 V, 20 A SiC Schottky Barrier Diode**



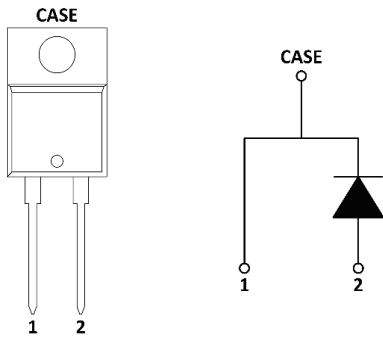
**Description**

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. 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-220-2L**



**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 = **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

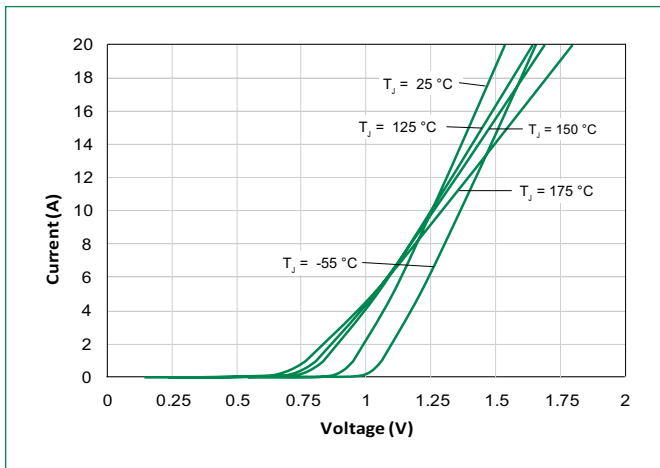
**Electrical Characteristics ( $T_J = 25^\circ\text{C}$  unless otherwise specified)**

Characteristics	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	$V_F$	$I_F = 20\text{ A}, T_J = 25^\circ\text{C}$	-	1.5	1.8	V
		$I_F = 20\text{ A}, T_J = 175^\circ\text{C}$	-	1.85	-	
Reverse Current	$I_R$	$V_R = 650\text{ V}, T_J = 25^\circ\text{C}$	-	<1	50	$\mu\text{A}$
		$V_R = 650\text{ V}, T_J = 175^\circ\text{C}$	-	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

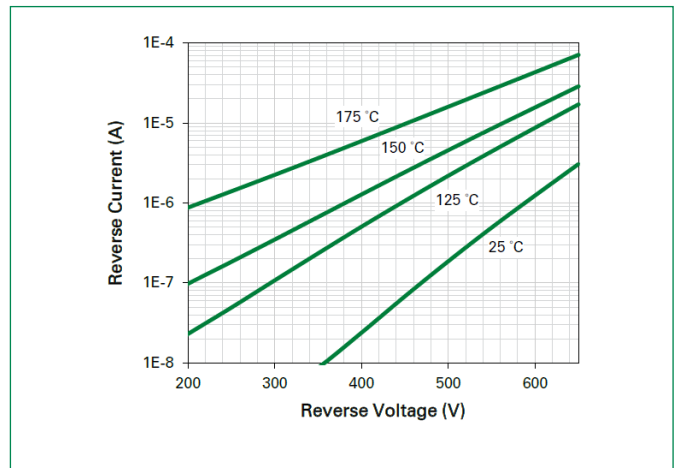
**Thermal Characteristics**

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

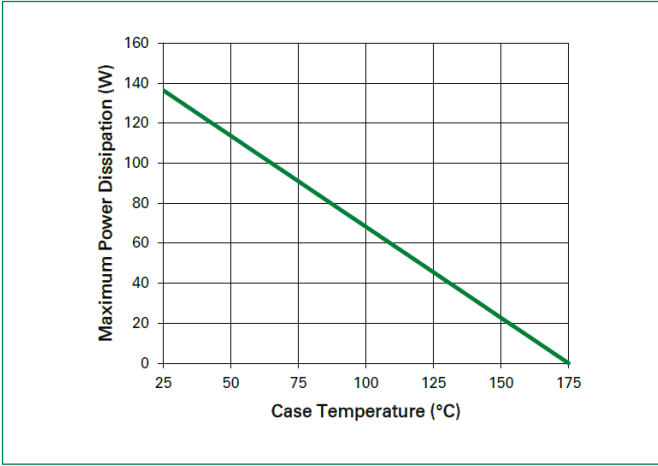
**Figure 1: Typical Forward Characteristics**



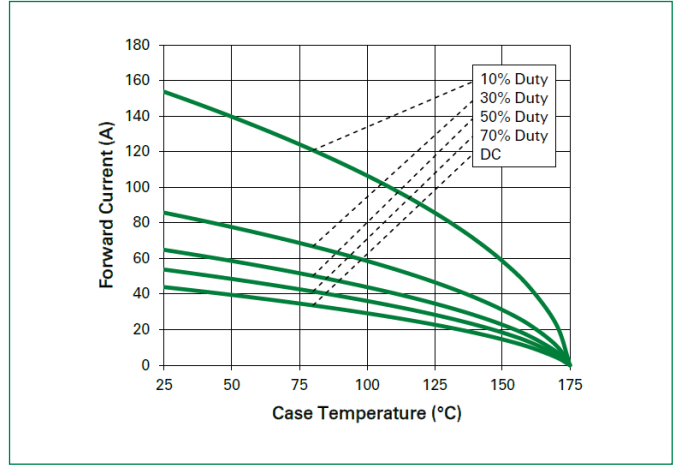
**Figure 2: Typical Reverse Characteristics**



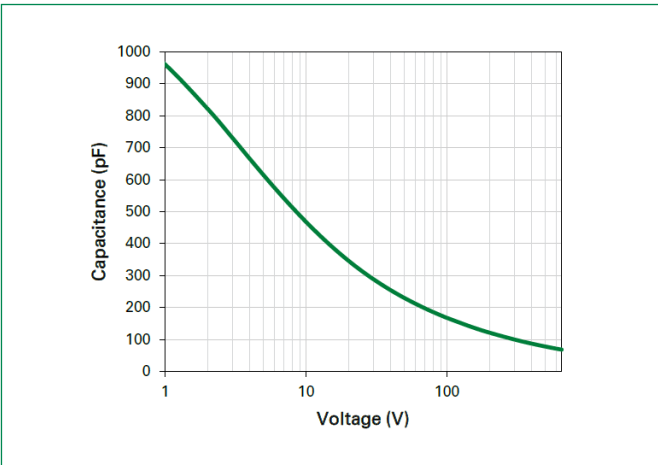
**Figure 3: Power Derating**



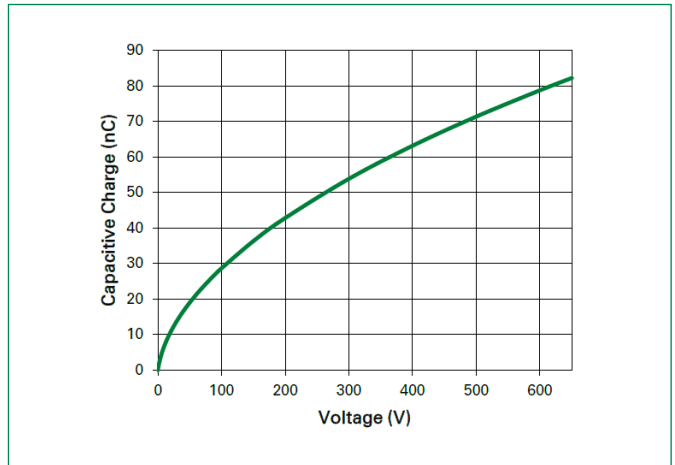
**Figure 4: Current Derating**



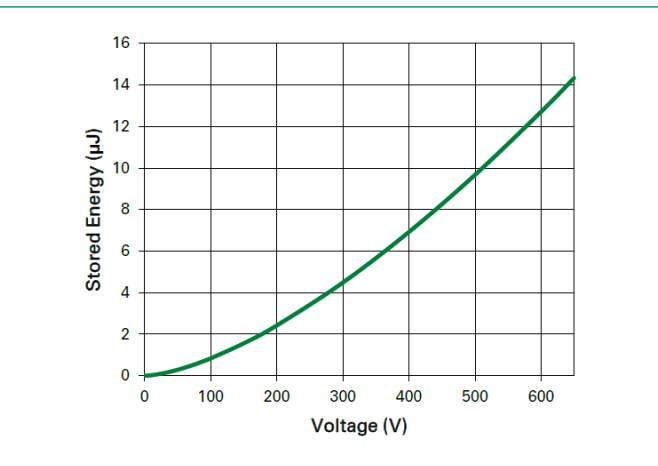
**Figure 5: Capacitance vs. Reverse Voltage**



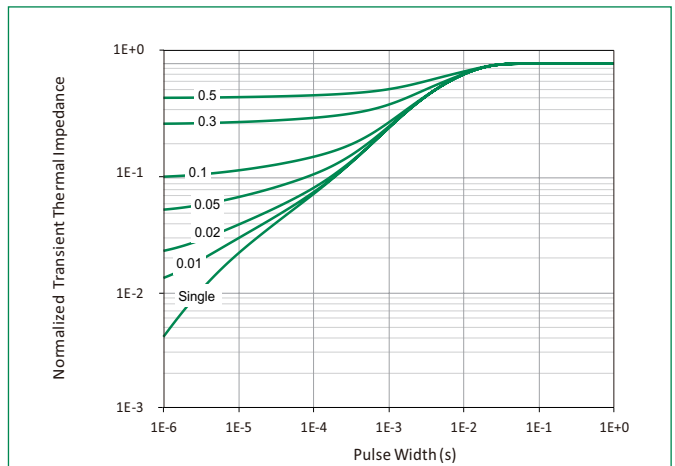
**Figure 6: Capacitive Charge vs. Reverse Voltage**



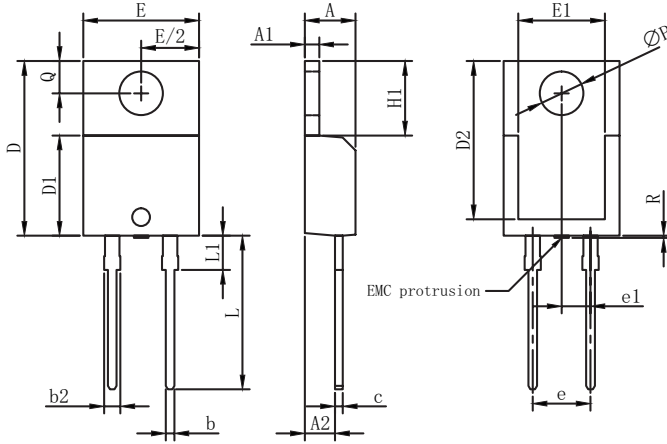
**Figure 7: Stored Energy vs. Reverse Voltage**



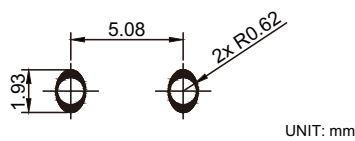
**Figure 8: Transient Thermal Impedance**



**Dimensions-Package TO-220-2L**

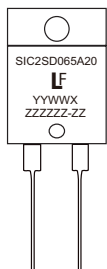


Recommended Solder Pad Layout



Symbol	Millimeters		
	Min	Nom	Max
A	4.32	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**

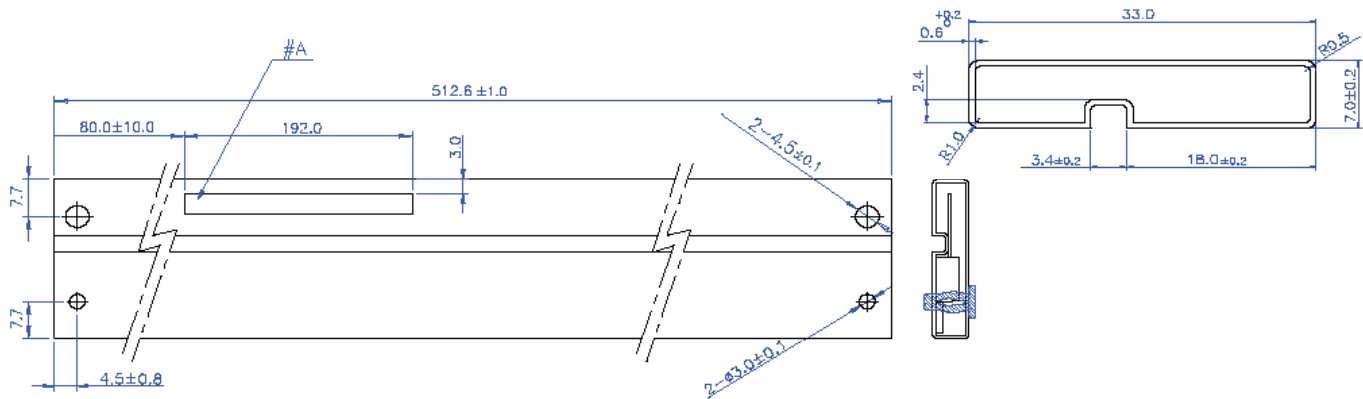


- SIC = SiC Diode
- 2 = Gen2
- SD = Schottky Diode
- 065 = Voltage Rating (650 V)
- A = TO-220 Package (2 Lead)
- 20 = Current Rating (20 A)
- YY = Year
- WW = Week
- X = Special Code
- ZZZZZ-ZZ = Lot Number

**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 :  $10^8 \sim 10^{11} \Omega$ /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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