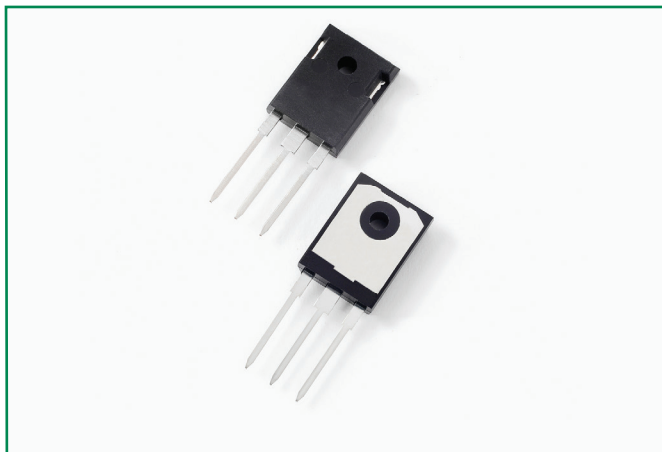


## LFUSCD20120B



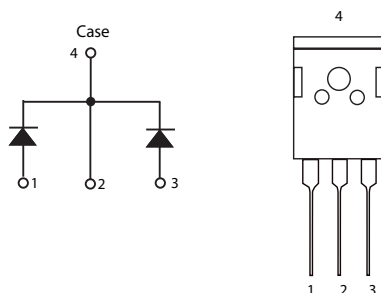
## Description

The LFUSCD series of silicon carbide (SiC) Schottky diodes has near-zero recovery current, high surge capability, and a maximum operating junction temperature of 175 °C. The diode series is ideal for applications where improvements in efficiency, reliability, and thermal management are desired.

## Features

- Positive temperature coefficient for safe operation and ease of paralleling
- 175 °C maximum operating junction temperature
- Enhanced surge capability
- Extremely fast, temperature-independent switching behavior
- Dramatically reduced switching losses compared to Si bipolar diodes

## Circuit Diagram



## Applications

- Boost diodes in power factor correction
- Switch-mode power supplies
- Uninterruptible power supplies
- Solar inverters
- Industrial motor drives

## Maximum Ratings

Characteristics	Symbol	Conditions	Max. (Leg / Device)	Unit
DC Blocking Voltage	$V_R$	-	1200	V
Repetitive Peak Reverse Voltage, $T_j = 25\text{ °C}$	$V_{RRM}$		1200	V
Maximum DC Forward Current	$I_F$	$T_C = 142\text{ °C}$	10 / 20	A
Non-Repetitive Forward Surge Current	$I_{FSM}$	$T_C = 25\text{ °C}$ , 8.3 ms, half sine pulse	80 / 160	A
Power Dissipation	$P_{Tot}$	$T_C = 25\text{ °C}$	136 / 272	W
		$T_C = 142\text{ °C}$	30 / 60	
Maximum Operating Junction Temperature	$T_{J,MAX}$		175	°C
Storage Temperature	$T_{STG}$		-55 to 175	°C
Soldering Temperatures, Wavesoldering Only Allowed at Leads	$T_{sold}$	1.6 mm from case for 10s	260	°C

**Electrical Characteristics**

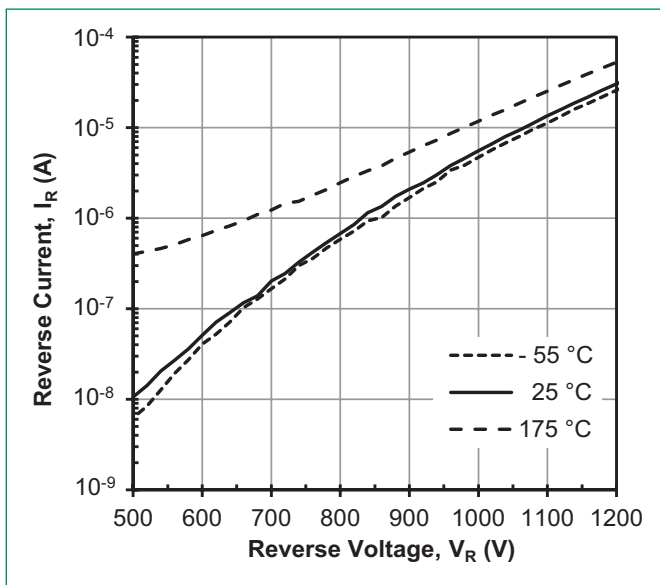
Characteristics	Symbol	Conditions	Value (Leg / Device)			Unit
			Min.	Typ.	Max.	
Forward Voltage	$V_F$	$I_F = 20\text{ A}, T_J = 25\text{ }^\circ\text{C}$	-	1.5	1.7	V
		$I_F = 20\text{ A}, T_J = 175\text{ }^\circ\text{C}$	-	2.5	3	
Reverse Current	$I_R$	$V_R = 1200\text{ V}, T_J = 25\text{ }^\circ\text{C}$	-	30 / 60	250 / 500	$\mu\text{A}$
		$V_R = 1200\text{ V}, T_J = 175\text{ }^\circ\text{C}$	-	60 / 120	800 / 1600	
Total Capacitive Charge	$Q_C$	$V_R = 600\text{ V}, I_F = 20\text{ A}, di/dt = 250\text{ A}/\mu\text{s}$	-	35 / 70	-	nC
Total Capacitance	C	$V_R = 1\text{ V}, f = 1\text{ MHz}$	-	500 / 1000	-	pF
		$V_R = 300\text{ V}, f = 1\text{ MHz}$	-	50 / 100	-	
		$V_R = 600\text{ V}, f = 1\text{ MHz}$	-	36 / 72	-	

Footnote:  $T_J = +25\text{ }^\circ\text{C}$  unless otherwise specified

**Thermal Characteristics**

Characteristics	Symbol	Conditions	Value ( Leg / Device )			Unit
			Min.	Typ.	Max.	
Thermal Resistance	$R_{\theta JC}$	-	-	-	1.1 / 0.55	$^\circ\text{C}/\text{W}$

**Figure 1: Typical Reverse Characteristics**



**Figure 2: Typical Forward Characteristics**

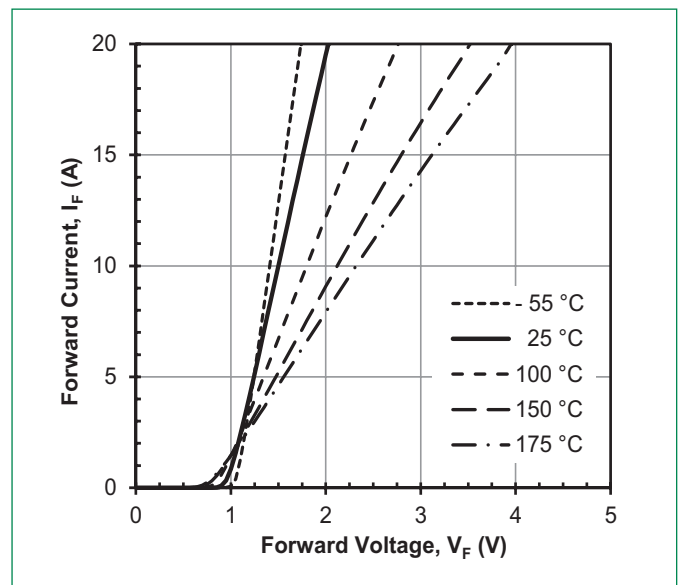


Figure 3: Power Dissipation

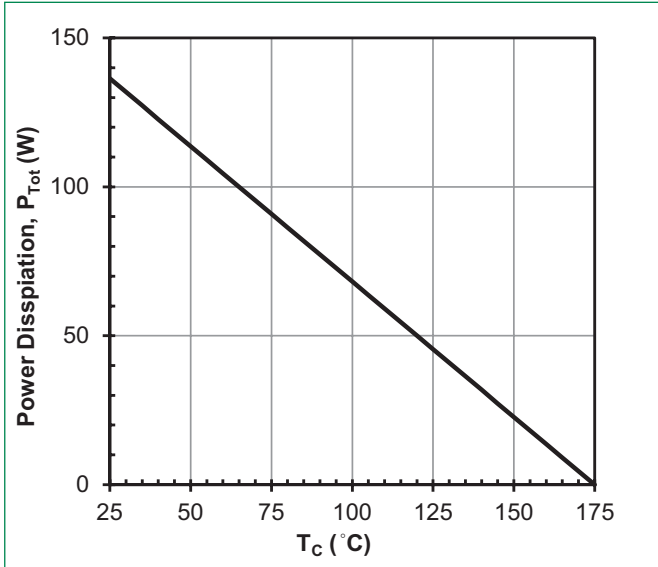


Figure 4: Diode Forward Current

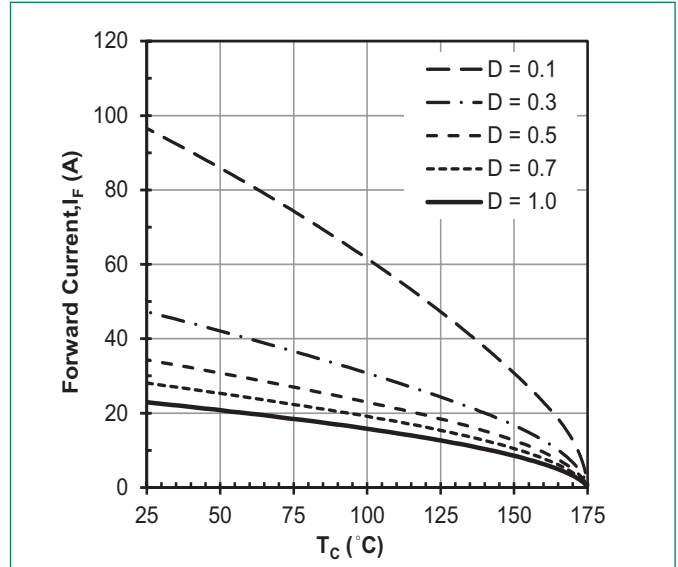


Figure 5: Capacitance vs. Reverse Voltage

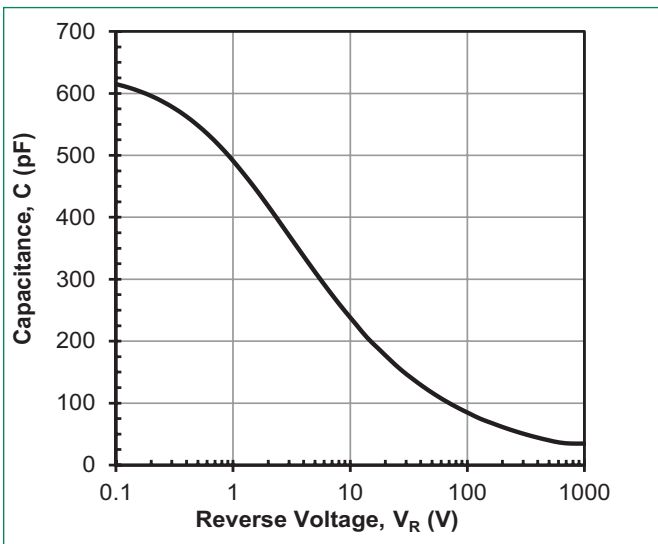
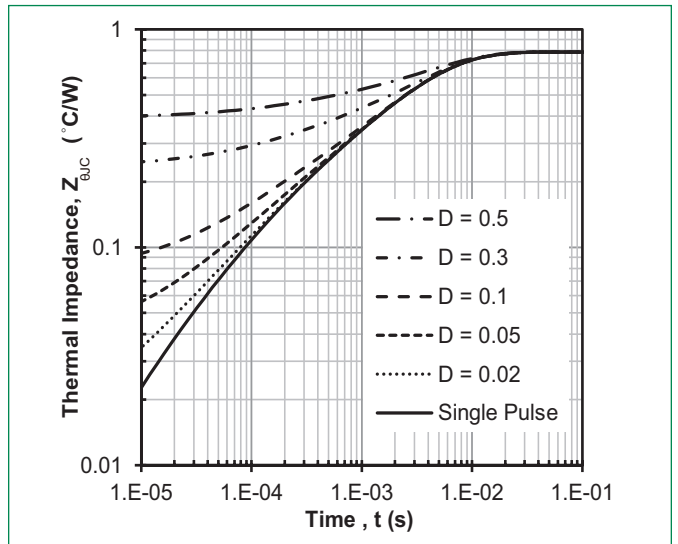
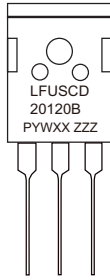


Figure 6: Transient Thermal Impedance



### Part Marking System

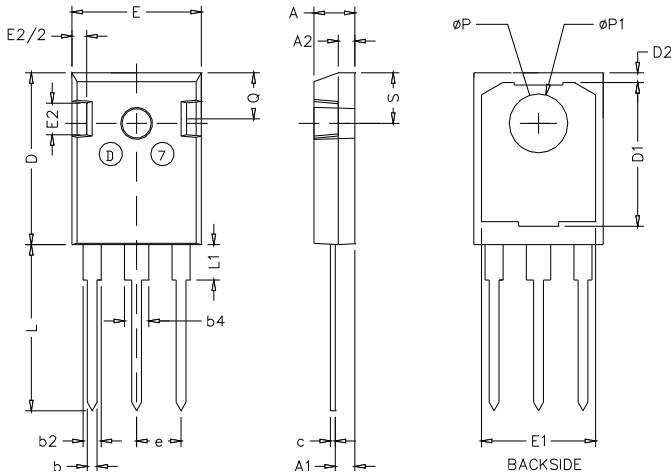


LFU = Littelfuse  
 SCD = SiC diode  
 20 = Current Rating (20A)  
 120 = Voltage Rating (1200V)  
 B = TO-247-3 package  
 PYWXX = Lot Number  
 ZZZ = Date Code

### Packing Options

Part Number	Marking	Packing Mode	M.O.Q
LFUSCD20120B	LFUSCD20120B	30 pcs / Tube	240

### Dimensions-Package TO-247 3-lead



Symbol	Inches		
	Min	Nom	Max
A	0.193	0.198	0.203
A1	0.900	0.950	0.100
A2	0.073	0.078	0.083
b	0.042	0.047	0.052
b2	0.075	0.080	0.094
b4	0.113	0.118	0.133
C	0.022	0.024	0.027
D	0.820	0.825	0.830
D1	0.684	0.690	0.696
D2	0.042	0.047	0.052
E	0.621	0.626	0.631
E1	0.547	0.552	0.557
E2	0.135	0.146	0.157
E2/2	0.081	0.088	0.095
e	0.215 BSC		
L	0.789	0.794	0.799
L1	0.164	0.170	0.176
øP	0.140	0.142	0.144
øP1	0.278	0.283	0.288
Q	0.216	0.221	0.226
S	0.238	0.243	0.248

Mounting	M3/M3.5	1Nm
Torque	Screw	8.8 lbf-in

### Packing Specification ( Tube for TO-247 3-lead )

