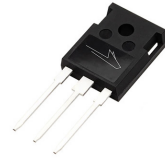


C2D20120D

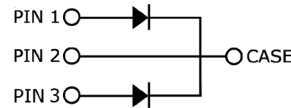
1200 V, 20 A Silicon Carbide Schottky Diode

Features

- 1.2 kV Schottky rectifier
- Zero reverse recovery current
- Zero forward recovery voltage
- High-frequency operation
- Temperature-independent switching behavior
- Extremely fast switching
- Positive temperature coefficient on V_f



TO-247-3



Package Types: TO-247-3

PN's: C2D20120D

Wolfspeed, Inc. is in the process of rebranding its products and related materials pursuant to the entity name change from Cree, Inc. to Wolfspeed, Inc. During this transition period, products received may be marked with either the Cree

Applications

- Switch mode power supplies
- Power factor correction
- Motor drives

Benefits

- Replace bipolar with unipolar rectifiers
- Essentially no switching losses
- Higher efficiency
- Reduction of heat sink requirements
- Parallel devices without thermal runaway

Maximum Ratings ($T_c = 25\text{ }^\circ\text{C}$ Unless Otherwise Specified)

Parameter	Symbol	Value	Unit	Test Conditions	Note
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V		
Surge Peak Reverse Voltage	V_{RSM}	1200			
DC Blocking Voltage	V_{DC}	1200			
Continuous Forward Current (Per Leg/Device)	I_F	31/62	A	$T_c = 25\text{ }^\circ\text{C}$	
		14.5/29		$T_c = 135\text{ }^\circ\text{C}$	
		10/20		$T_c = 152\text{ }^\circ\text{C}$	
Repetitive Peak Forward Surge Current	I_{FRM}	50*	A	$T_c = 25\text{ }^\circ\text{C}$, $t_p = 8.3\text{ ms}$, Half Sine Wave	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	250*		$T_c = 25\text{ }^\circ\text{C}$, $t_p = 10\text{ }\mu\text{s}$, Pulse	
Power Dissipation (Per Leg/Device)	P_{tot}	312/624	W	$T_c = 25\text{ }^\circ\text{C}$	
		135/270		$T_c = 110\text{ }^\circ\text{C}$	
Operating Junction and Storage Temperature	T_J, T_{stg}	-55 to +175	$^\circ\text{C}$		



Electrical Characteristics (Per Leg)

Parameter	Symbol	Typ.	Max.	Unit	Test Conditions	Note
Forward Voltage	V_F	1.6	1.8	V	$I_F = 10\text{ A}, T_J = 25\text{ }^\circ\text{C}$	
		2.5	3.0		$I_F = 10\text{ A}, T_J = 175\text{ }^\circ\text{C}$	
Reverse Current	I_R	10	200	μA	$V_R = 1200\text{ V}, T_J = 25\text{ }^\circ\text{C}$	
		20	1000		$V_R = 1200\text{ V}, T_J = 175\text{ }^\circ\text{C}$	
Total Capacitive Charge	Q_C	61		nC	$V_R = 1200\text{ V}, I_F = 10\text{ A}$ $di/dt = 500\text{ A}/\mu\text{s}$ $T_J = 25\text{ }^\circ\text{C}$	
Total Capacitance	C	1000		pF	$V_R = 0\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	
		80			$V_R = 200\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	
		59			$V_R = 400\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	

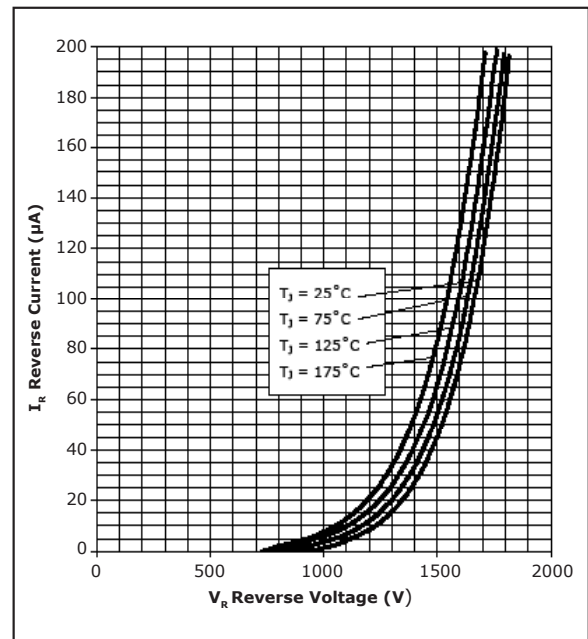
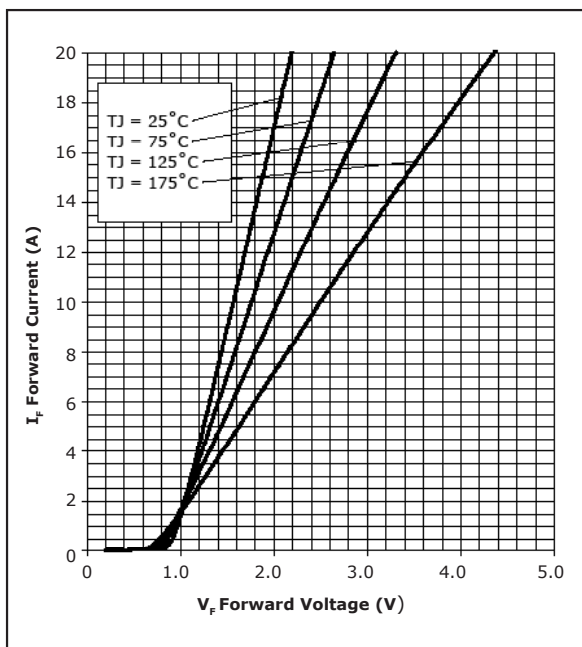
Note: This is a majority carrier diode, so there is no reverse recovery charge.

Thermal Characteristics

Parameter	Symbol	Typ.	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.48**	$^\circ\text{C}/\text{W}$
		0.24*	

** Per Leg, * Both Legs

Typical Performance (Per Leg)



Typical Performance

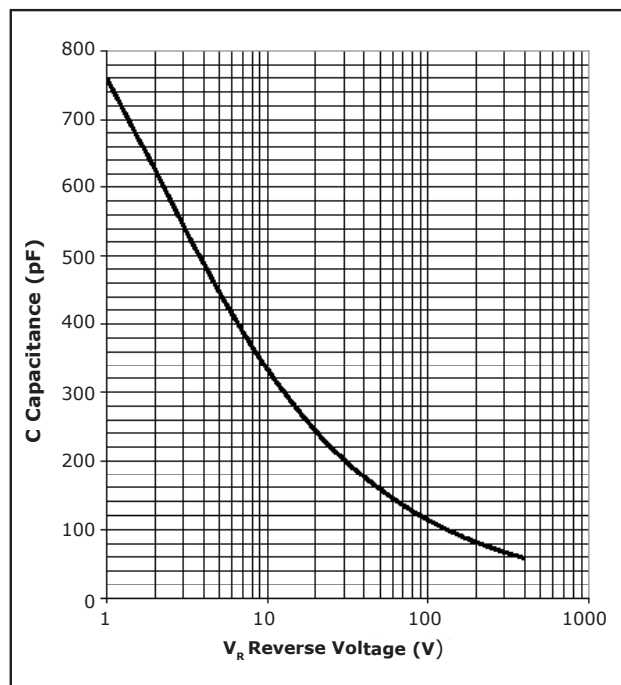
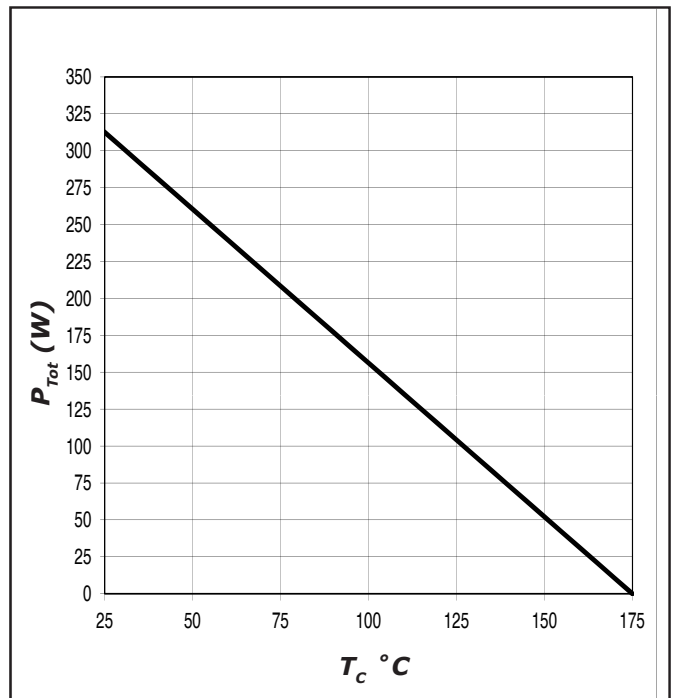
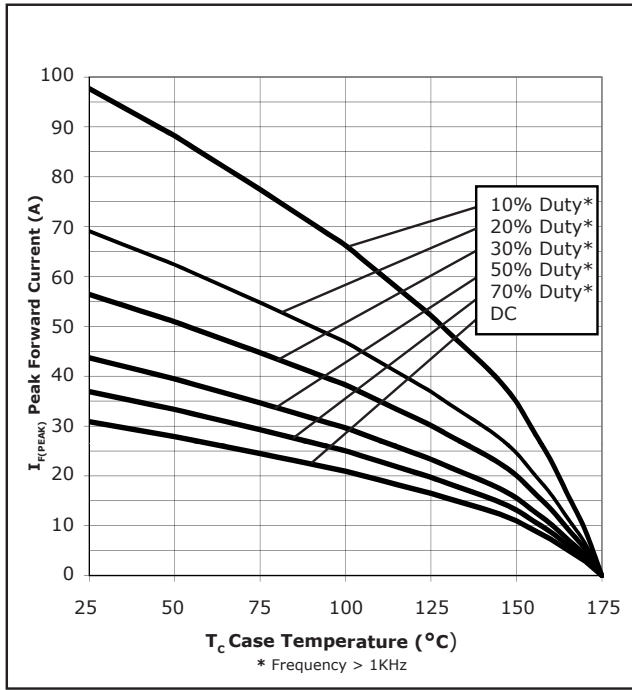
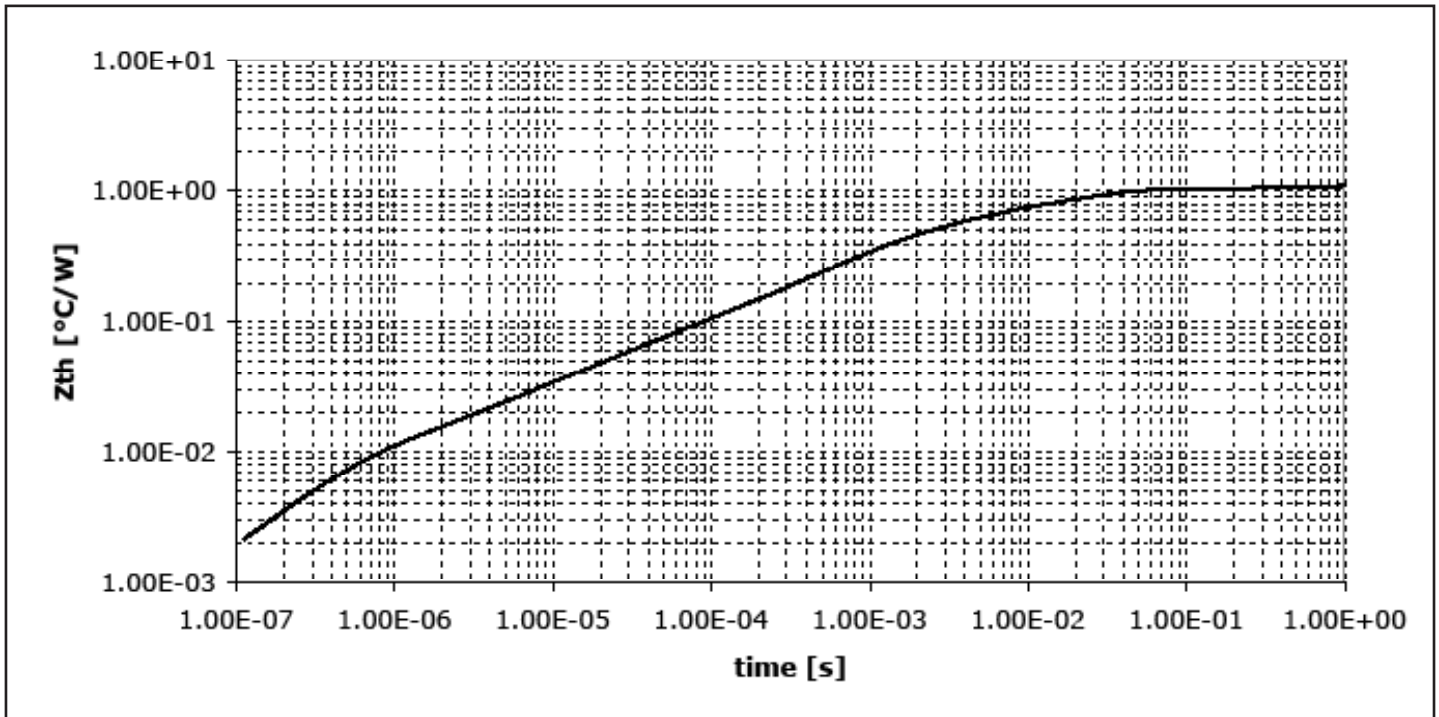


Figure 5. Capacitance vs. Reverse Voltage



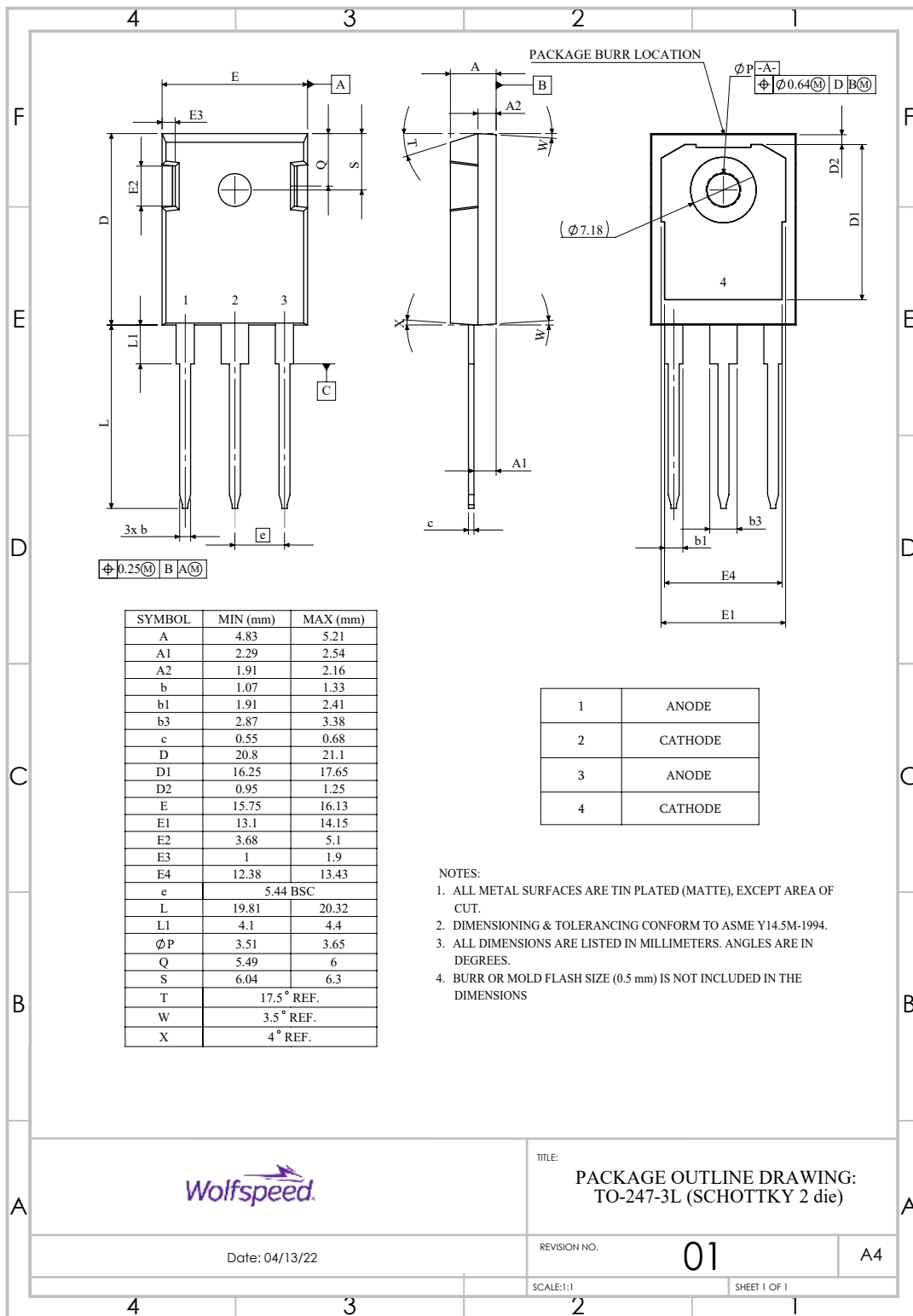
Typical Performance





Package Dimensions

Package: TO-247-3



TITLE:
 PACKAGE OUTLINE DRAWING:
 TO-247-3L (SCHOTTKY 2 die)

Date: 04/13/22

REVISION NO.

01

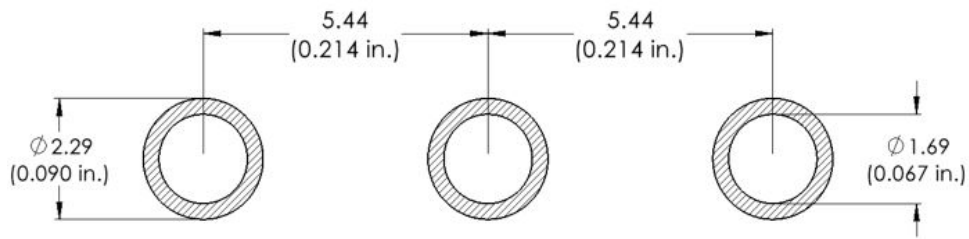
A4

SCALE:1:1

SHEET 1 OF 1



Recommended Solder Pad Layout



Part Number	Package	Marking
C2D20120D	TO-247-3	C2D20120



Revision History

Current Revision	Date of Release	Description of Changes
9	January-2024	Updated Wolfspeed branding, package drawing, and solder pad layout



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