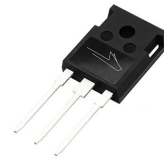


C2D20120D

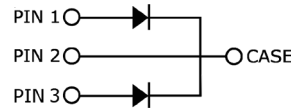
1200 V, 20 A Silicon Carbide Schottky Diode

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 ($T_C = 25^\circ\text{C}$ 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	$T_C = 25^\circ\text{C}$	
		14.5/29		$T_C = 135^\circ\text{C}$	
		10/20		$T_C = 152^\circ\text{C}$	
Repetitive Peak Forward Surge Current	I_{FRM}	50*		$T_C = 25^\circ\text{C}$, $t_p = 8.3\text{ ms}$, Half Sine Wave	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	250*		$T_C = 25^\circ\text{C}$, $t_p = 10\text{ }\mu\text{s}$, Pulse	
Power Dissipation (Per Leg/Device)	P_{tot}	312/624	W	$T_C = 25^\circ\text{C}$	
		135/270		$T_C = 110^\circ\text{C}$	
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			$V_R = 400\text{ V}, T_J = 25\text{ }^{\circ}\text{C}, f = 1\text{ MHz}$	

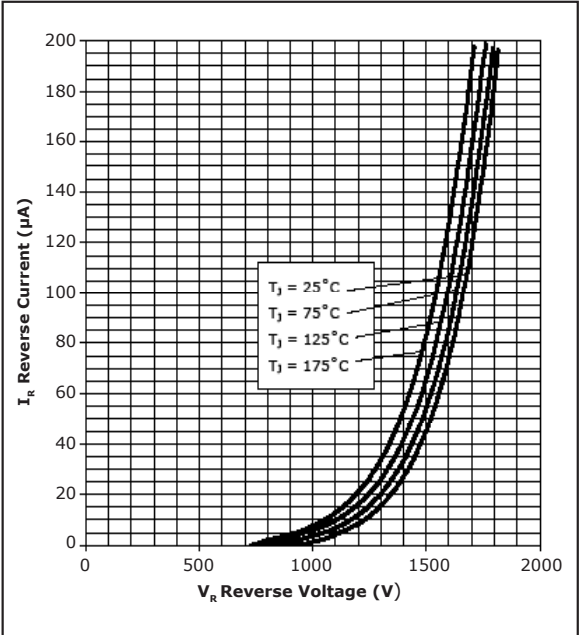
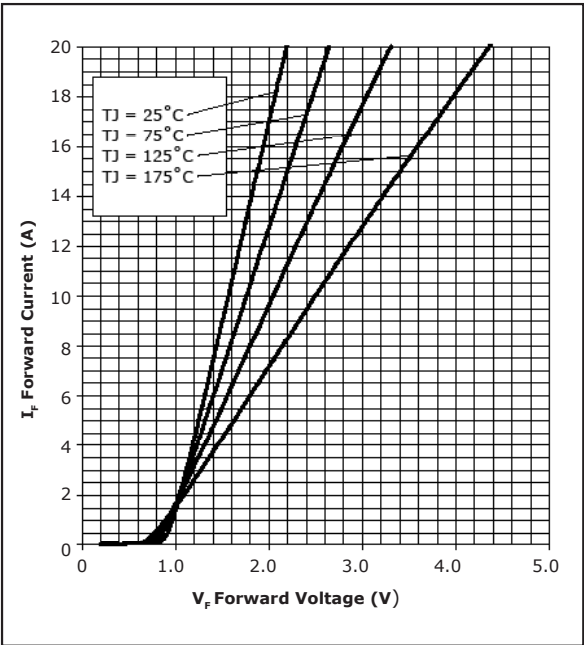
Note: This is a majority carrier diode, so there is no reverse recovery charge.

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

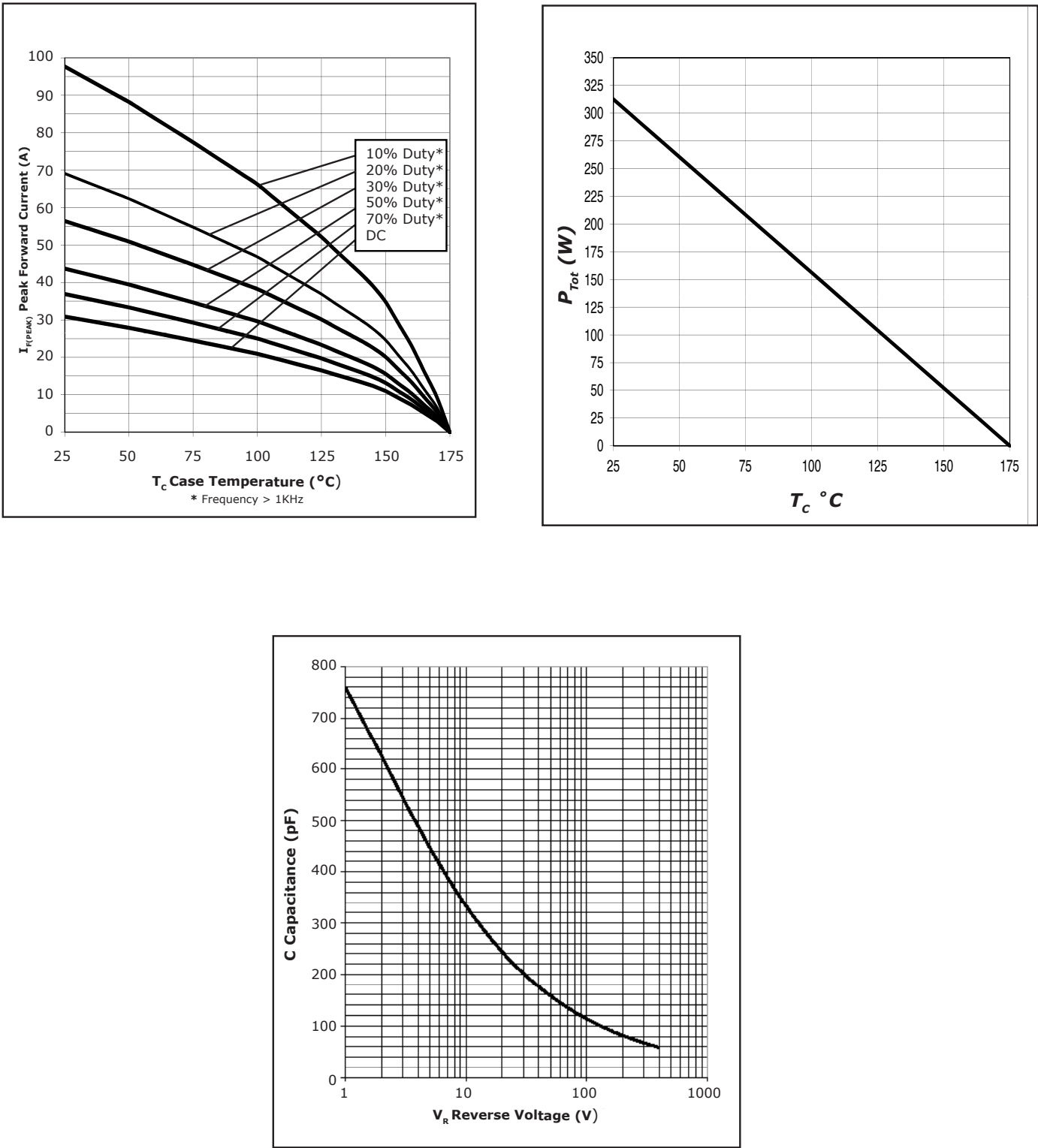
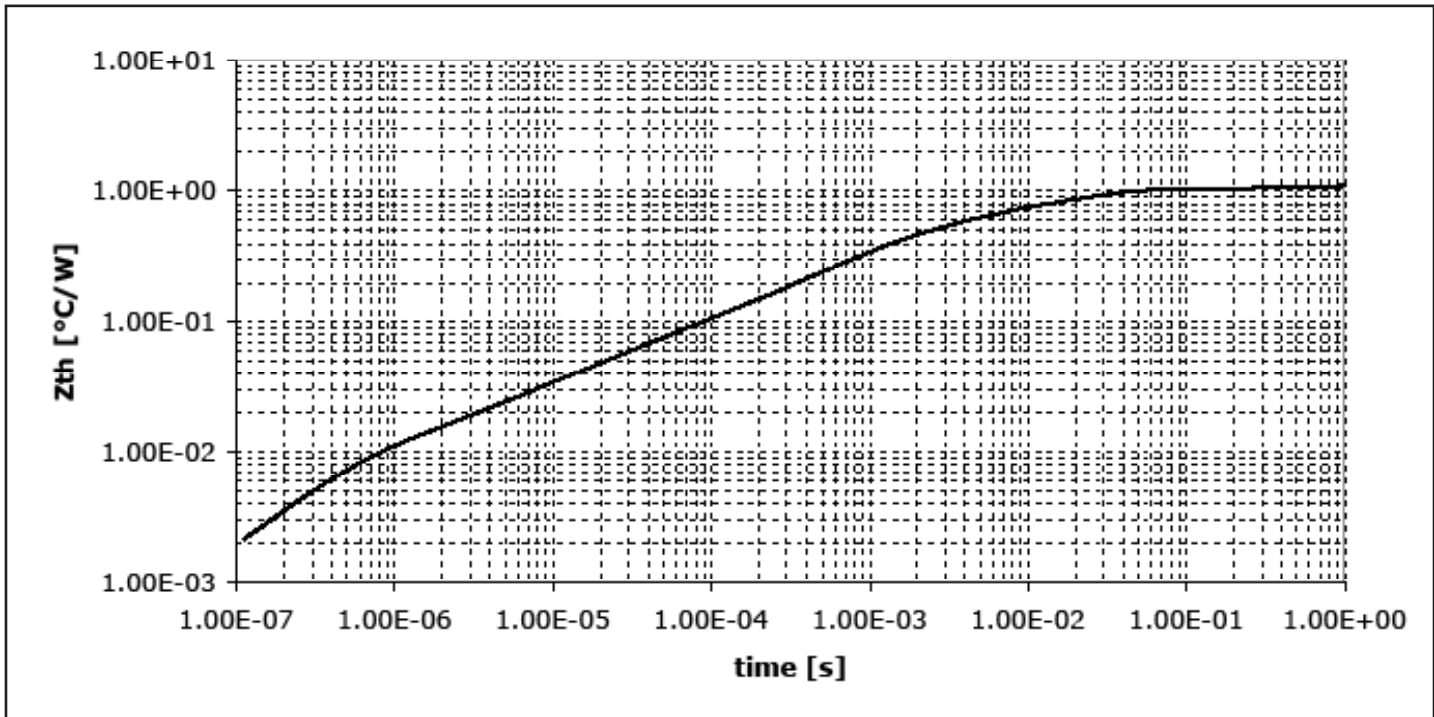


Figure 5. Capacitance vs. Reverse Voltage

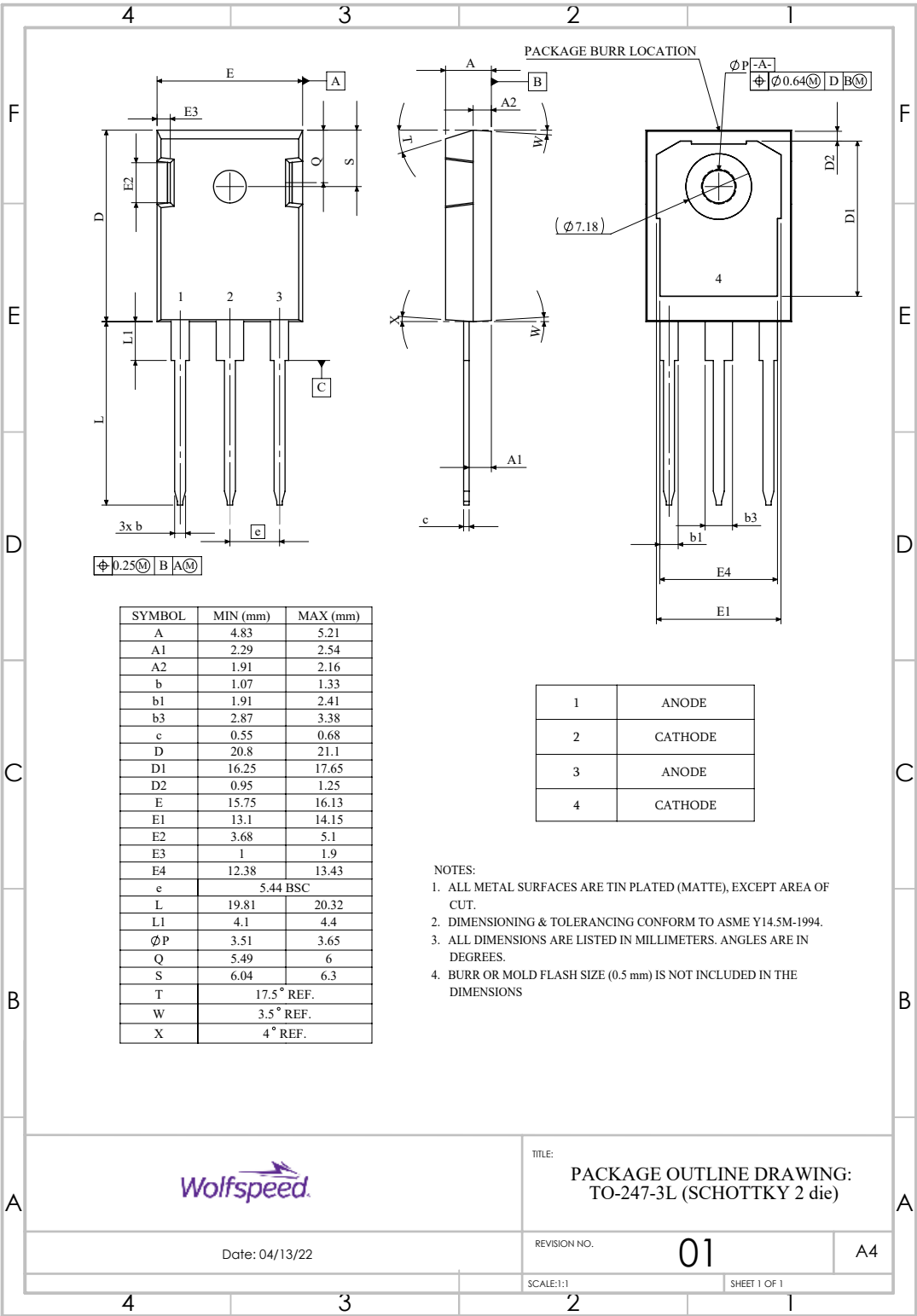


Typical Performance



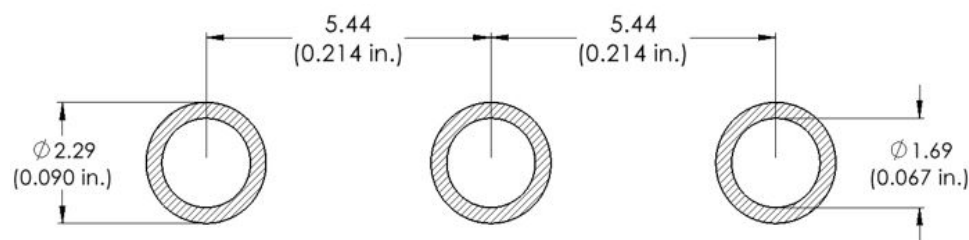
Package Dimensions

Package: TO-247-3





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



Notes & Disclaimer

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RoHS Compliance

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented January 2, 2013. RoHS Declarations for this product can be obtained from your Wolfspeed representative or from the Product Documentation sections of www.wolfspeed.com.

REACH Compliance

REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact your Wolfspeed representative to ensure you get the most up-to-date REACH SVHC Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

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