

C2D05120E

1200 V, 5 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



Package Types: TO-252-2

PN's: C2D05120E

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
- High voltage multipliers

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	I_F	17.5	A	$T_c = 25^\circ\text{C}$	
		8.5		$T_c = 135^\circ\text{C}$	
		5		$T_c = 157^\circ\text{C}$	
Repetitive Peak Forward Surge Current	I_{FRM}	30		$T_c = 25^\circ\text{C}$, $t_p = 10$ ms, Half Sine Wave	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	100		$T_c = 25^\circ\text{C}$, $t_p = 10$ μs , Pulse	
Power Dissipation	P_{tot}	136	W	$T_c = 25^\circ\text{C}$	
		59		$T_c = 110^\circ\text{C}$	
Operating Junction and Storage Temperature	T_J, T_{stg}	-55 to +175	$^\circ\text{C}$		



Electrical Characteristics

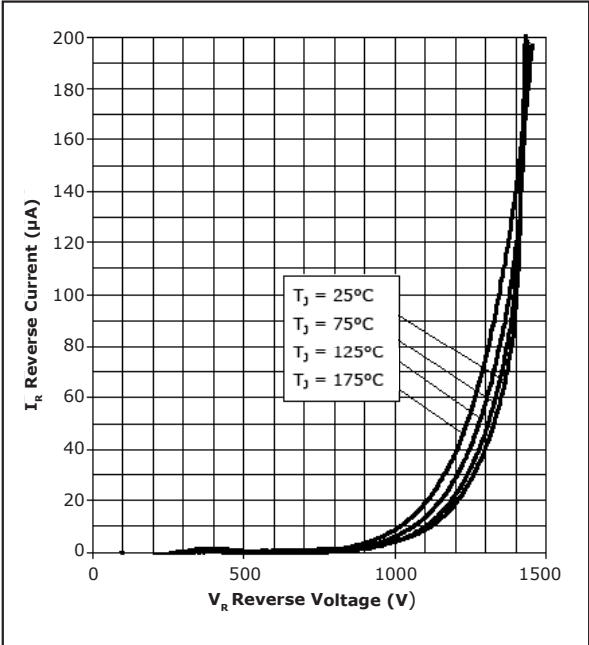
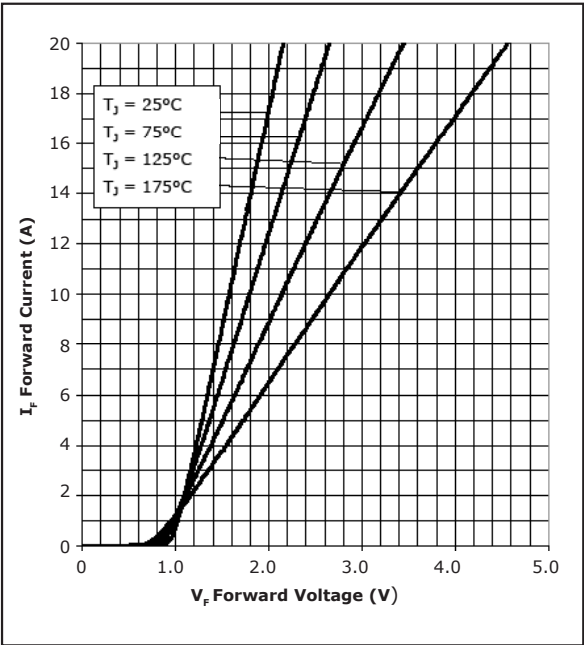
Parameter	Symbol	Typ.	Max.	Unit	Test Conditions	Note
Forward Voltage	V_F	1.6	1.8	V	$I_F = 5\text{ A}$, $T_J = 25\text{ }^\circ\text{C}$	
		2.6	3.0		$I_F = 5\text{ A}$, $T_J = 175\text{ }^\circ\text{C}$	
Reverse Current	I_R	50	200	μA	$V_R = 1200\text{ V}$, $T_J = 25\text{ }^\circ\text{C}$	
		100	1000		$V_R = 1200\text{ V}$, $T_J = 150\text{ }^\circ\text{C}$	
Total Capacitive Charge	Q_C	28		nC	$V_R = 1200\text{ V}$, $I_F = 5\text{ A}$ $di/dt = 500\text{ A}/\mu\text{s}$	
Total Capacitance	C	455		pF	$V_R = 0\text{ V}$, $T_J = 25\text{ }^\circ\text{C}$, $f = 1\text{ MHz}$	
		45			$V_R = 200\text{ V}$, $T_J = 25\text{ }^\circ\text{C}$, $f = 1\text{ MHz}$	
		33			$V_R = 400\text{ V}$, $T_J = 25\text{ }^\circ\text{C}$, $f = 1\text{ MHz}$	

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	$R_{\theta JC}$	1.1	$^\circ\text{C}/\text{W}$

Typical Performance





Typical Performance

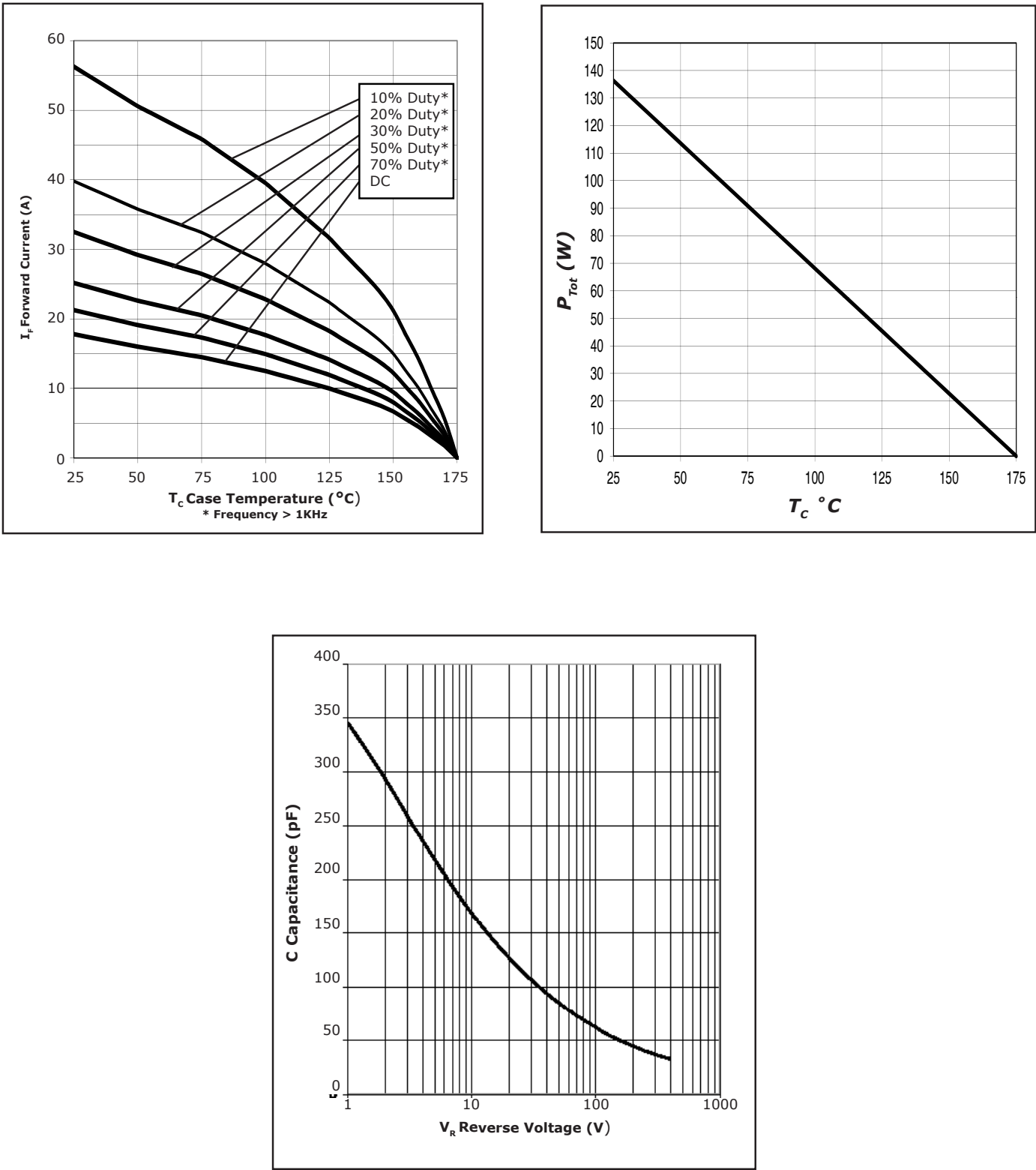
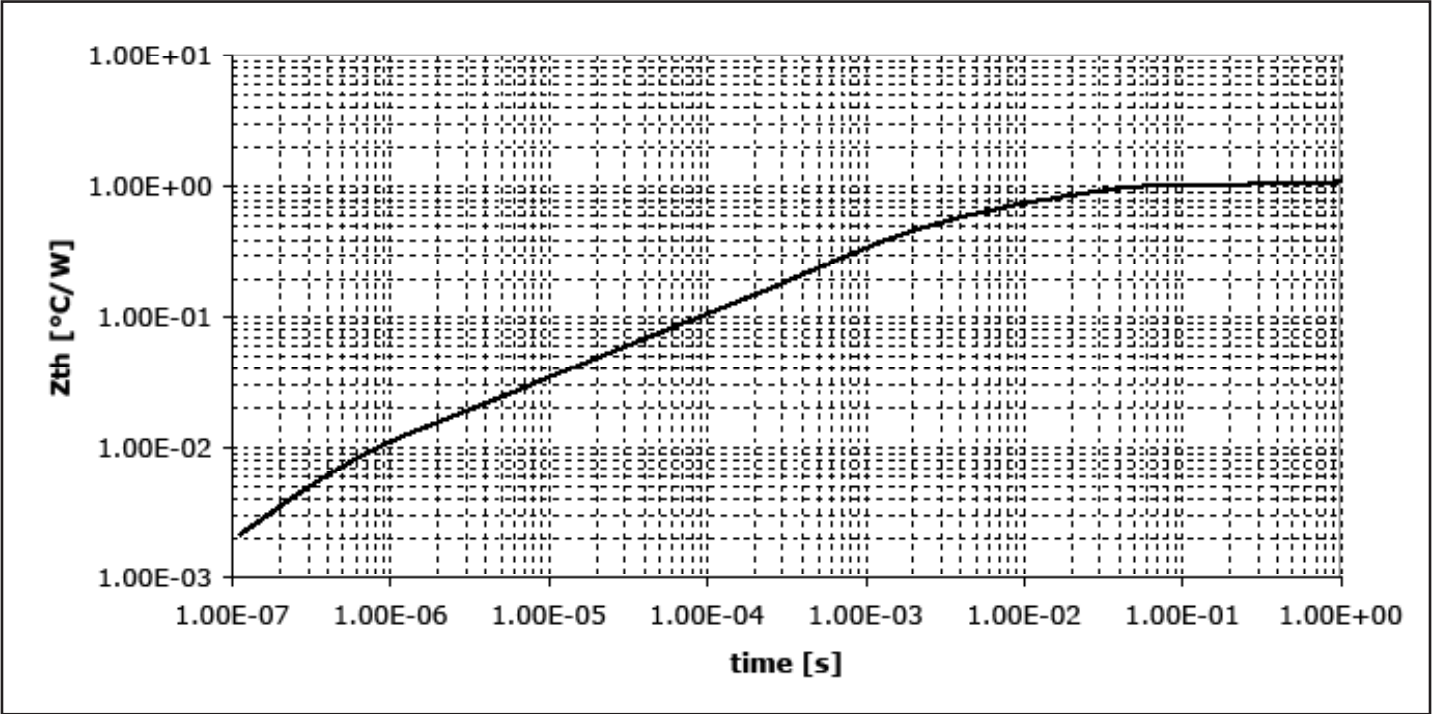


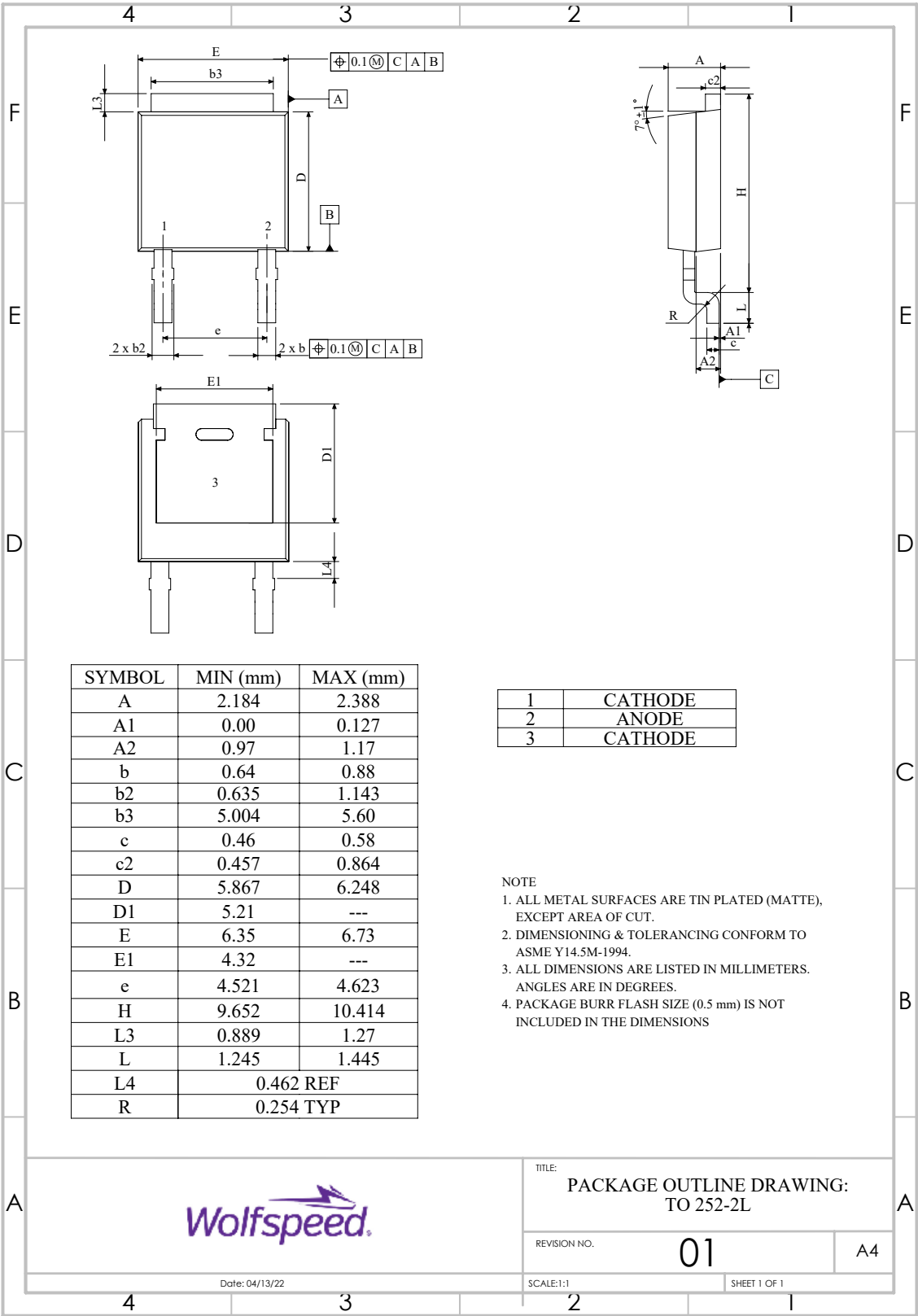
Figure 5. Capacitance vs. Reverse Voltage



Typical Performance

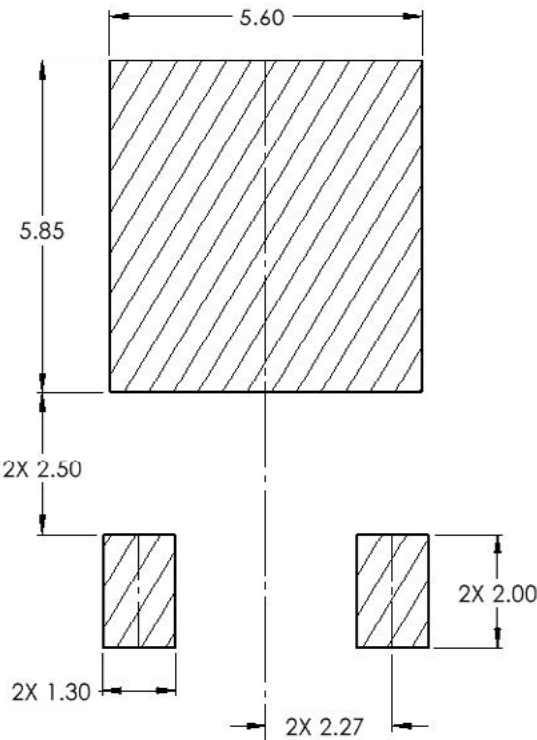


Package Dimensions





Recommended Solder Pad Layout



Part Number	Package	Marking
C2D05120E	TO-252-2	C2D05120



Revision History

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



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