

# C2D05120A

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-220-2  
PN's: C2D05120A

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## 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 ( $T_c = 25\text{ }^\circ\text{C}$ 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 Peak Reverse Voltage	$V_R$	1200			
Continuous Forward Current	$I_F$	17.5	A	$T_c = 25\text{ }^\circ\text{C}$	
		8.5		$T_c = 135\text{ }^\circ\text{C}$	
		5		$T_c = 157\text{ }^\circ\text{C}$	
Repetitive Peak Forward Surge Current	$I_{FRM}$	30		$T_c = 25\text{ }^\circ\text{C}$ , $t_p = 10\text{ ms}$ , Half Sine Wave	
Non-Repetitive Peak Forward Surge Current	$I_{FSM}$	100		$T_c = 25\text{ }^\circ\text{C}$ , $t_p = 10\text{ }\mu\text{s}$ , Pulse	
Power Dissipation	$P_{tot}$	136	W	$T_c = 25\text{ }^\circ\text{C}$	
		59		$T_c = 110\text{ }^\circ\text{C}$	
Operating Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +175	$^\circ\text{C}$		
TO-220 Mounting Torque		1	Nm lbf-in	M3 Screw 6-32 Screw	
		8.8			



## Electrical Characteristics

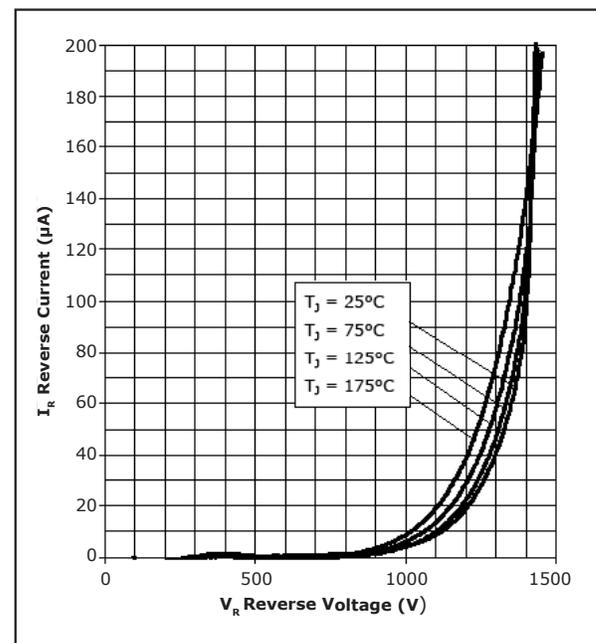
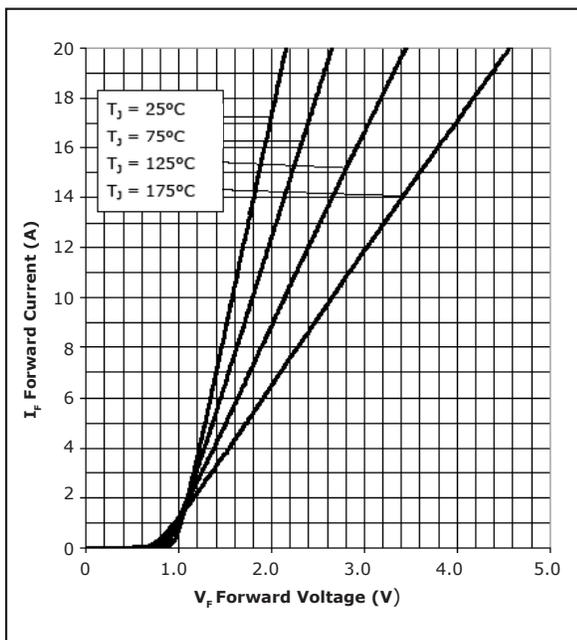
Parameter	Symbol	Typ.	Max.	Unit	Test Conditions	Note
Forward Voltage	$V_F$	1.6	1.8	V	$I_F = 5 \text{ A}, T_J = 25^\circ\text{C}$	
		2.6	3.0		$I_F = 5 \text{ A}, T_J = 175^\circ\text{C}$	
Reverse Current	$I_R$	50	200	$\mu\text{A}$	$V_R = 1200 \text{ V}, T_J = 25^\circ\text{C}$	
		100	1000		$V_R = 1200 \text{ V}, T_J = 175^\circ\text{C}$	
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	$V_R = 0 \text{ V}, T_J = 25^\circ\text{C}, f = 1 \text{ MHz}$	
		45			$V_R = 200 \text{ V}, T_J = 25^\circ\text{C}, f = 1 \text{ MHz}$	
		33			$V_R = 400 \text{ V}, T_J = 25^\circ\text{C}, f = 1 \text{ MHz}$	

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

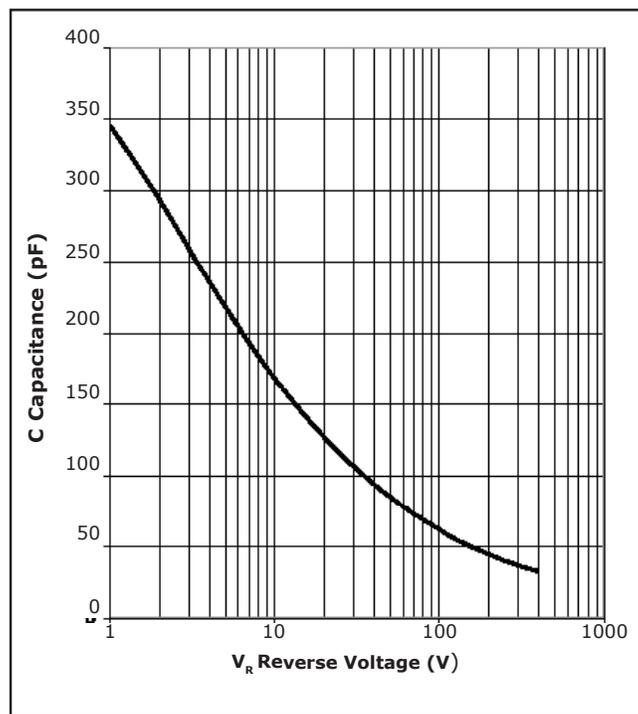
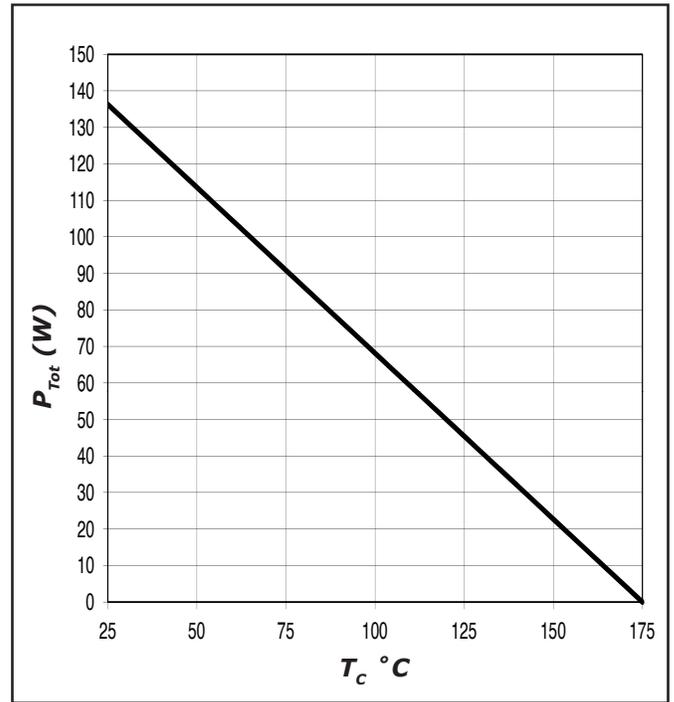
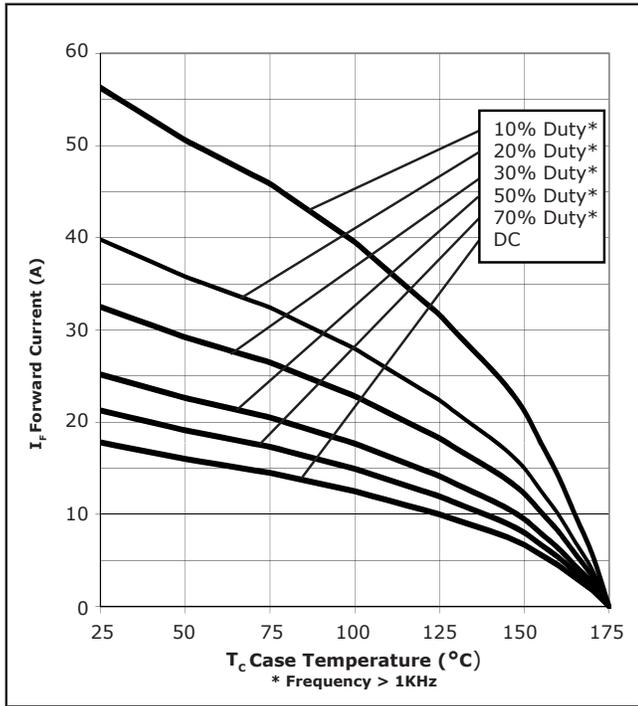
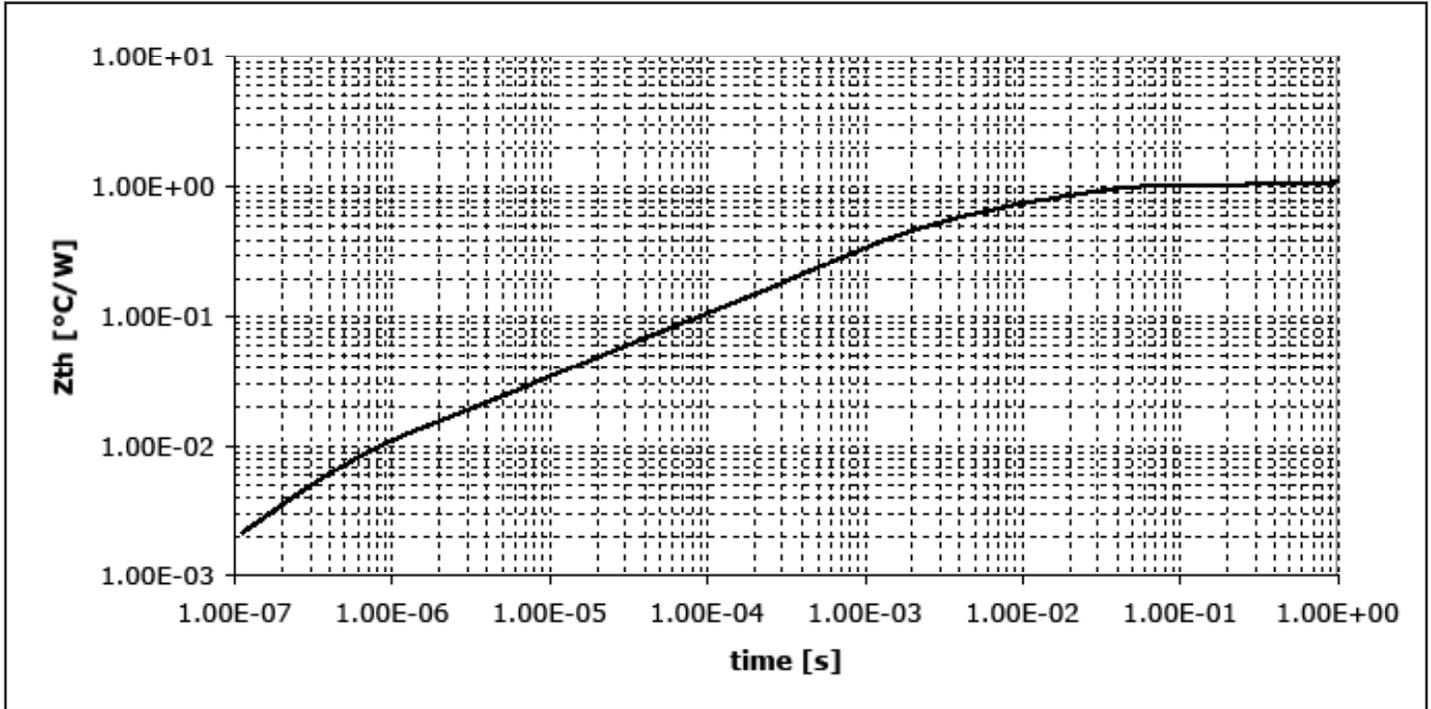


Figure 5. Capacitance vs. Reverse Voltage

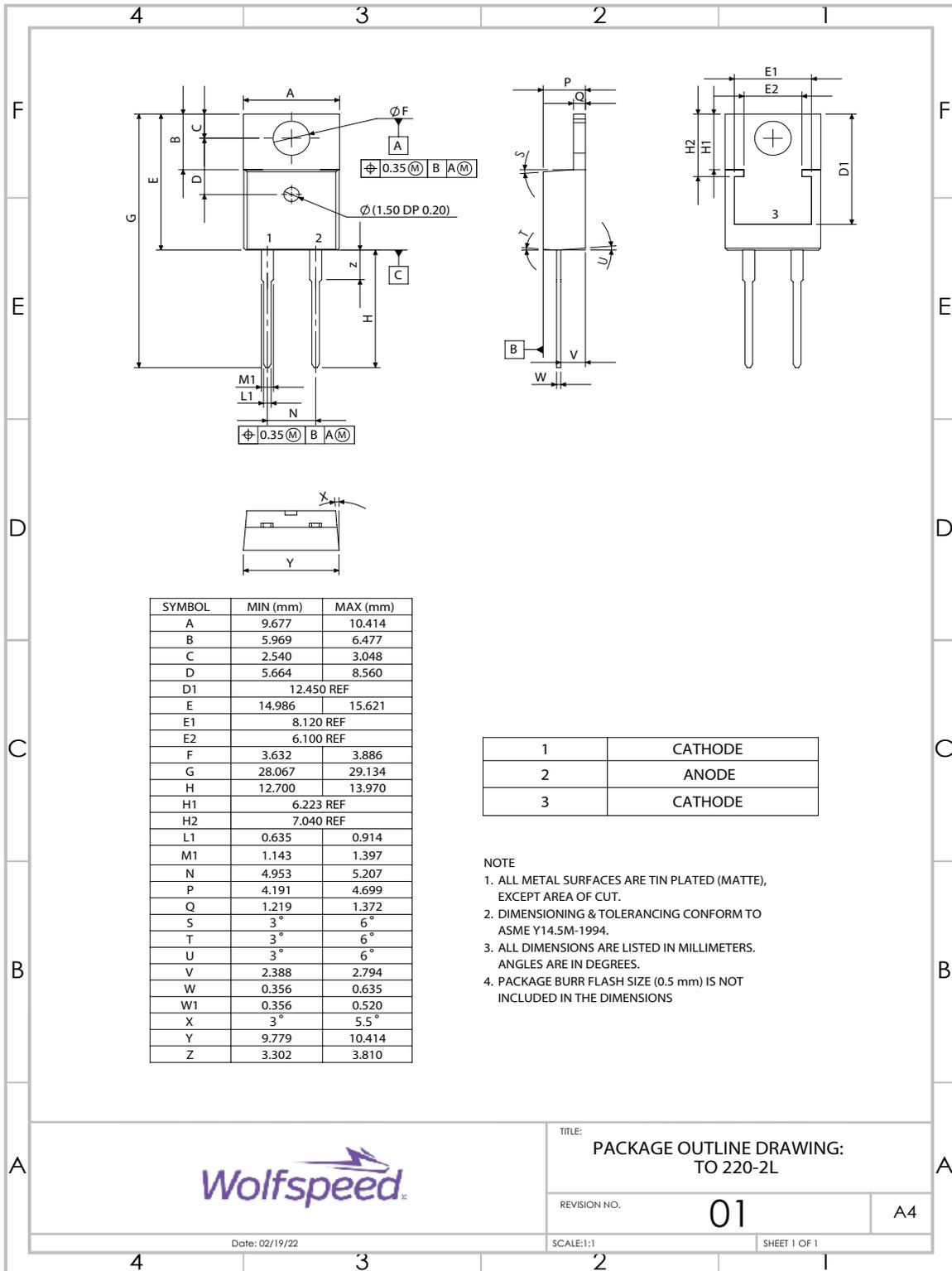


### Typical Performance

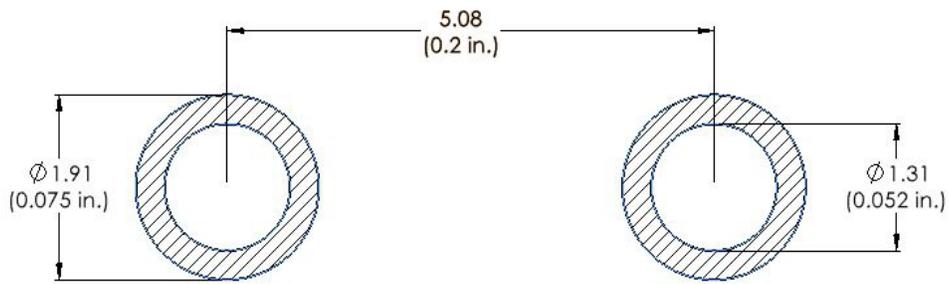




Package Dimensions



### Recommended Solder Pad Layout



Part Number	Package	Marking
C2D05120A	TO-220-2	C2D05120



## Revision History

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



## Notes & Disclaimer

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