C4D02120A–Silicon Carbide Schottky Diode

Z-Rec™ Rectifier

V_{RRM} = 1200 V
I_F = 2 A
Q_c = 15 nC

Features

- 1.2kV Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Swtitching

Benefits

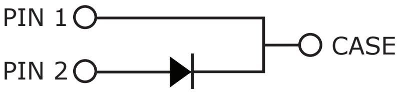
- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drives

Package

TO-220-2



Part Number	Package	Marking
C4D02120A	TO-220-2	C4D02120

Maximum Ratings (T$_C$=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V		
V_{RSM}	Surge Peak Reverse Voltage	1300	V		
V_R	DC Peak Reverse Voltage	1200	V		
$I_{F(AVG)}$	Maximum DC Current	5.9	A	$T_C=135^\circ C$, no AC component	
I_{FRM}	Repetitive Peak Forward Surge Current	13 8.4	A	$T_C=25^\circ C$, $t_P=10$ ms, Half Sine Pulse $T_C=110^\circ C$, $t_P=10$ ms, Half Sine Pulse	
I_{FSM}	Non-Repetitive Forward Surge Current	19 16.5	A	$T_C=25^\circ C$, $t_P=10$ ms, Half Sine Pulse $T_C=110^\circ C$, $t_P=10$ ms, Half Sine Pulse	
P_{tot}	Power Dissipation	40.5 17.6	W	$T_C=25^\circ C$ $T_C=110^\circ C$	
T_c	Maximum Case Temperature	135	°C		
T_J	Operating Junction Range	-55 to +175	°C		
T_{stg}	Storage Temperature Range	-55 to +135	°C		
	TO-220 Mounting Torque	1 8.8	Nm lbf-in	M3 Screw 6-32 Screw	

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.4 1.9	1.8 3	V	I_F = 2 A T_J=25°C I_F = 2 A T_J=175°C	
I_R	Reverse Current	10 40	50 150	μA	V_R = 1200 V T_J=25°C V_R = 1200 V T_J=175°C	
Q_C	Total Capacitive Charge	15		nC	V_R = 1200 V, I_F = 2A d*i*/d*t* = 200 A/μs T_J = 25°C	
C	Total Capacitance	167 11 8		pF	V_R = 0 V, T_J = 25°C, f = 1 MHz V_R = 400 V, T_J = 25°C, f = 1 MHz V_R = 800 V, T_J = 25°C, f = 1 MHz	

Note:

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

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	3.7		°C/W		

Typical Performance

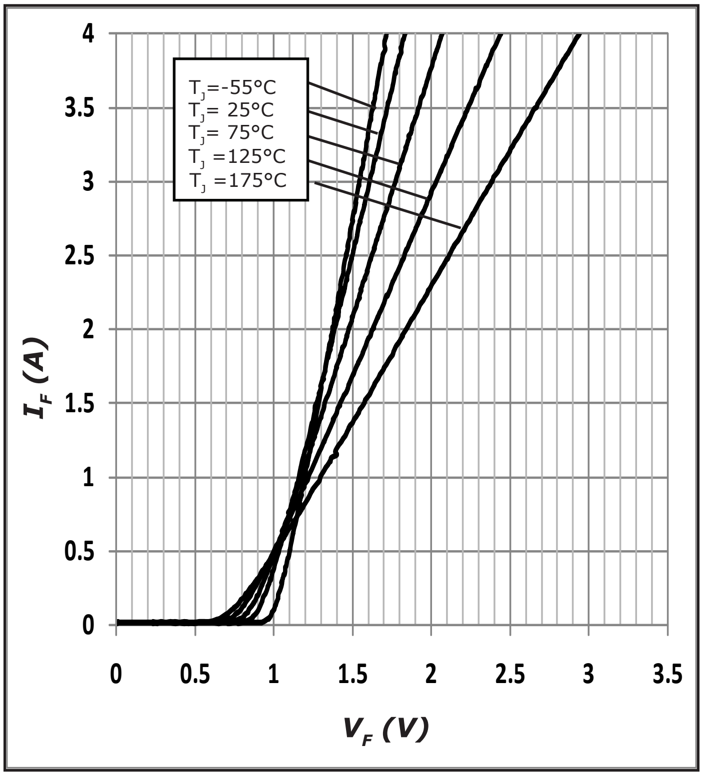


Figure 1. Forward Characteristics

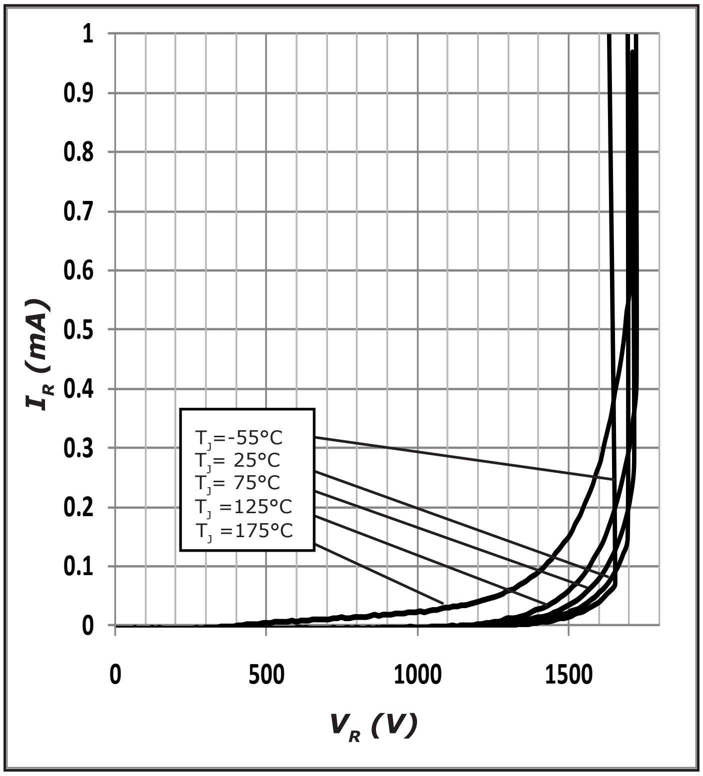


Figure 2. Reverse Characteristics

Typical Performance

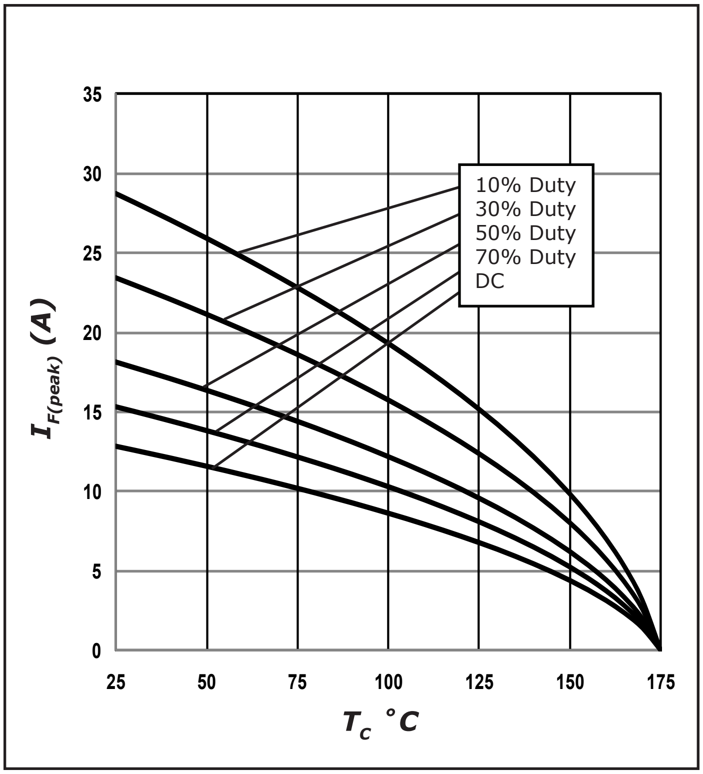


Figure 3. Current Derating

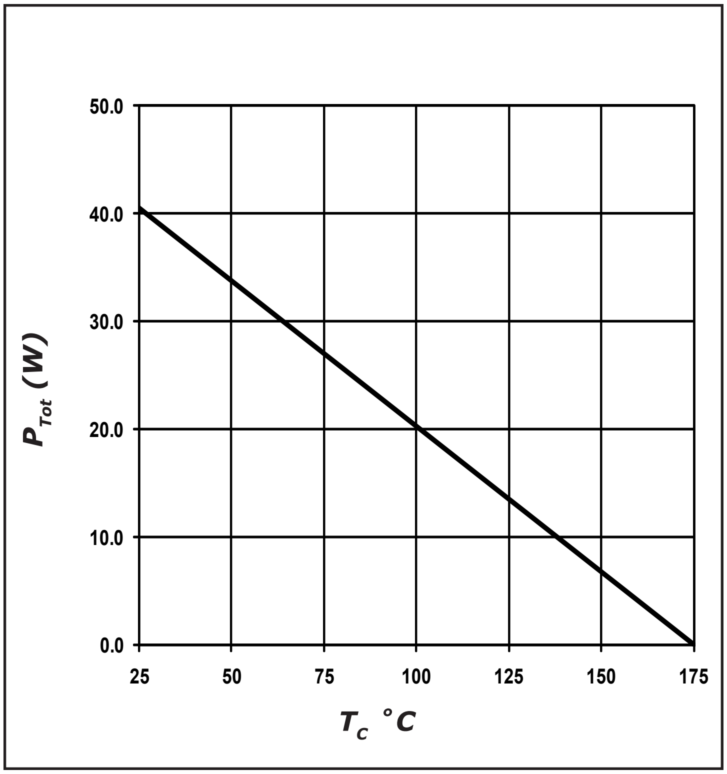


Figure 4. Power Derating

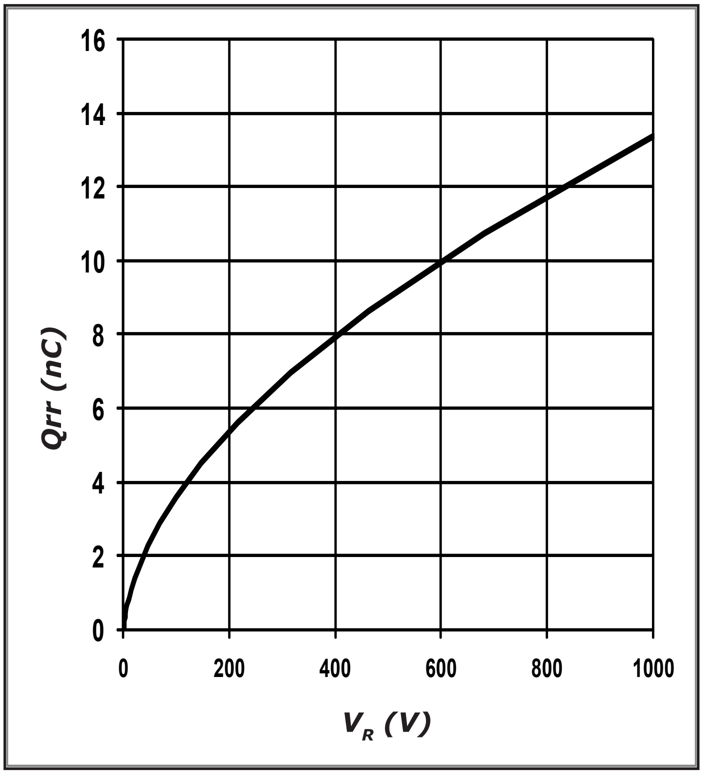


Figure 5. Recovery Charge vs. Reverse Voltage

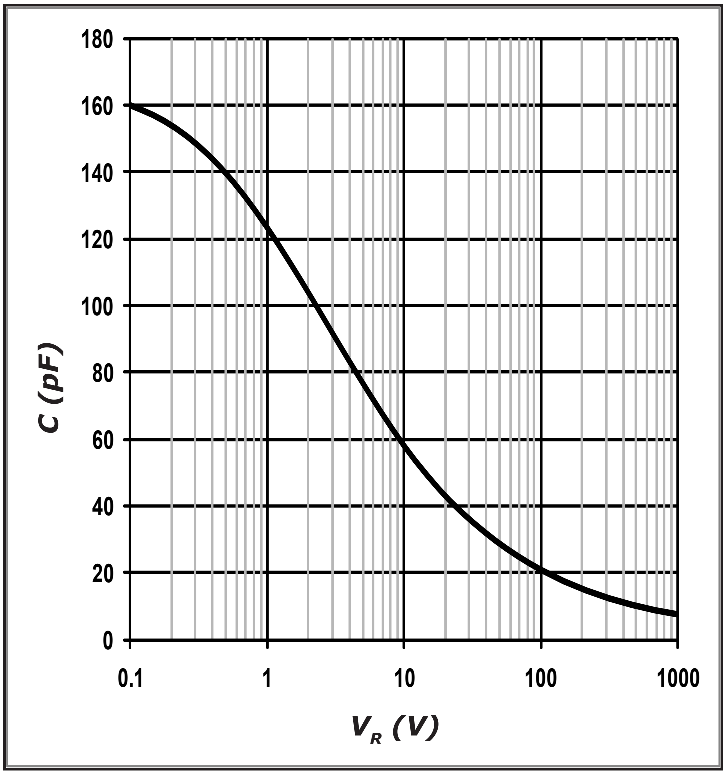


Figure 6. Capacitance vs. Reverse Voltage

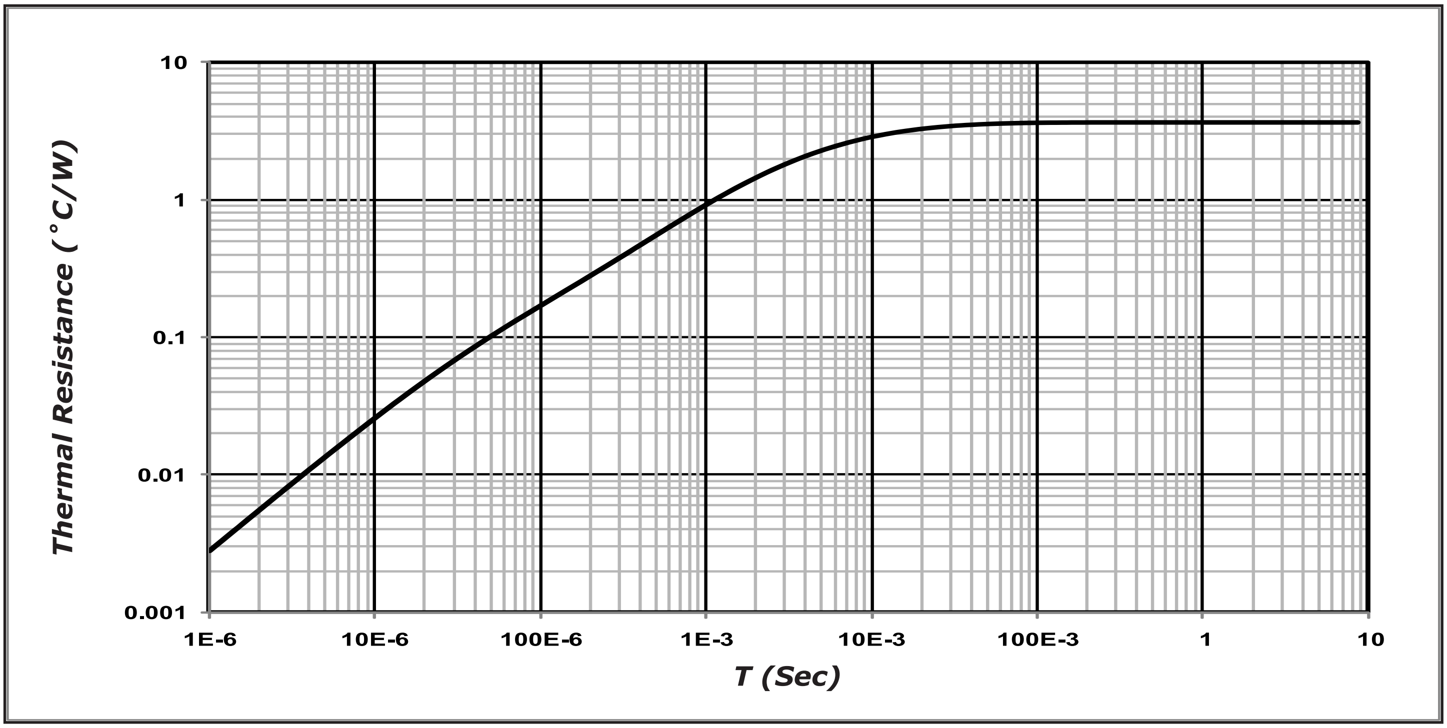
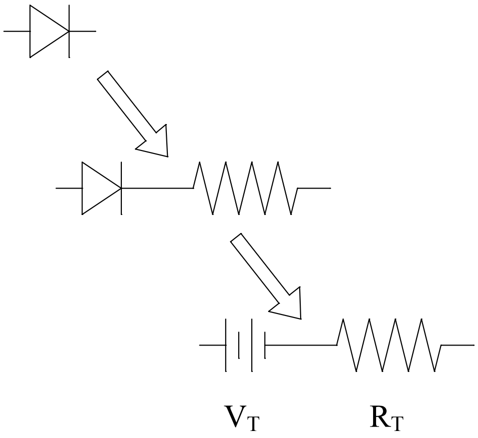


Figure 7. Transient Thermal Impedance

Diode Model



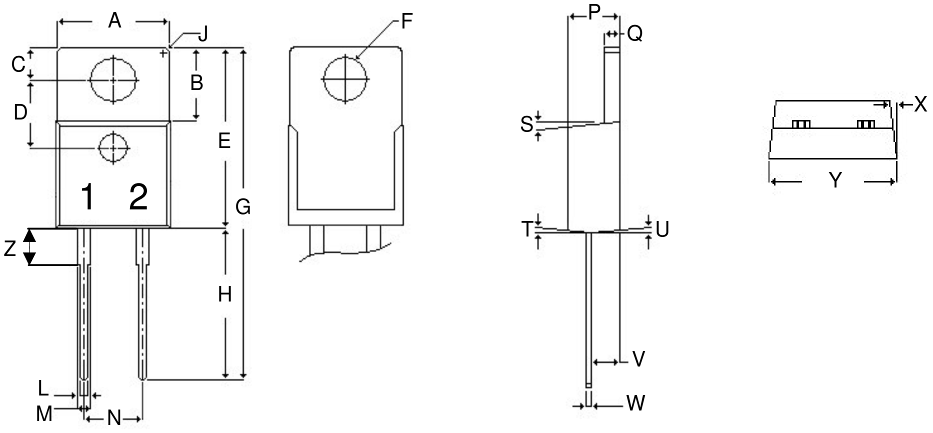
$$V_{fT} = V_T + If * R_T$$

$$V_T = 0.99 + (T_J * -1.70 * 10^{-3})$$
$$R_T = 0.15 + (T_J * 2.40 * 10^{-4})$$

Note: T_j = Diode Junction Temperature In Degrees Celcius

Package Dimensions

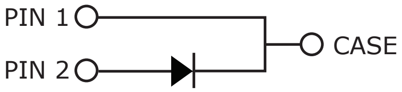
Package TO-220-2



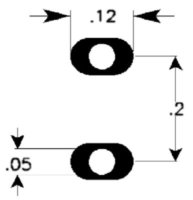
POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.381	.410	9.677	10.414
B	.235	.255	5.969	6.477
C	.100	.120	2.540	3.048
D	.223	.337	5.664	8.560
E	.590	.615	14.986	15.621
F	.143	.153	3.632	3.886
G	1.105	1.147	28.067	29.134
H	.500	.550	12.700	13.970
J	R 0.197		R 0.197	
L	.025	.036	.635	.914
M	.045	.055	1.143	1.397
N	.195	.205	4.953	5.207
P	.165	.185	4.191	4.699
Q	.048	.054	1.219	1.372
S	3°	6°	3°	6°
T	3°	6°	3°	6°
U	3°	6°	3°	6°
V	.094	.110	2.388	2.794
W	.014	.025	.356	.635
X	3°	5.5°	3°	5.5°
Y	.385	.410	9.779	10.414
z	.130	.150	3.302	3.810

NOTE:

1. Dimension L, M, W apply for Solder Dip Finish



Recommended Solder Pad Layout



TO-220-2

Part Number	Package	Marking
C4D02120A	TO-220-2	C4D02120

“The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise 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 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended through April 21, 2006.”

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.

Как с нами связаться

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