

C3D10060G–Silicon Carbide Schottky Diode

Z-REC™ RECTIFIER

$V_{RRM} = 600\text{ V}$
 $I_F = 10\text{ A}$
 $(T_c < 150^\circ\text{C})$
 $Q_c = 25\text{ nC}$

Features

- 600-Volt 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

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
 - Typical PFC P_{out} : 1000W-2000W
- Motor Drives
 - Typical Power : 3HP-5HP

Package



TO-263-2



Part Number	Package	Marking
C3D10060G	TO-263-2	C3D10060

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	600	V		
V_{RSM}	Surge Peak Reverse Voltage	600	V		
V_{DC}	DC Blocking Voltage	600	V		
I_F	Continuous Forward Current	10 12	A	$T_c < 150^\circ\text{C}$ $T_c < 140^\circ\text{C}$	
I_{FRM}	Repetitive Peak Forward Surge Current	67 44	A	$T_c=25^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Wave, $D=0.3$ $T_c=110^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Wave, $D=0.3$	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	90 71	A	$T_c=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave, $D=0.3$ $T_c=110^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Wave, $D=0.3$	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	250	A	$T_c=25^\circ\text{C}$, $t_p=10\text{ }\mu\text{s}$, Pulse	
P_{tot}	Power Dissipation	136 59	W	$T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$	
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$		
	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	1.5 2.0	1.8 2.4	V	$I_F = 10\text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 10\text{ A}$ $T_J = 175^\circ\text{C}$	
I_R	Reverse Current	10 20	50 200	μA	$V_R = 600\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 600\text{ V}$ $T_J = 175^\circ\text{C}$	
Q_C	Total Capacitive Charge	25		nC	$V_R = 600\text{ V}$, $I_F = 10\text{ A}$ $di/dt = 500\text{ A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$	
C	Total Capacitance	480 50 42		pF	$V_R = 0\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ $V_R = 200\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ $V_R = 400\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$	

Note:

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

Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.2	$^\circ\text{C}/\text{W}$

Typical Performance

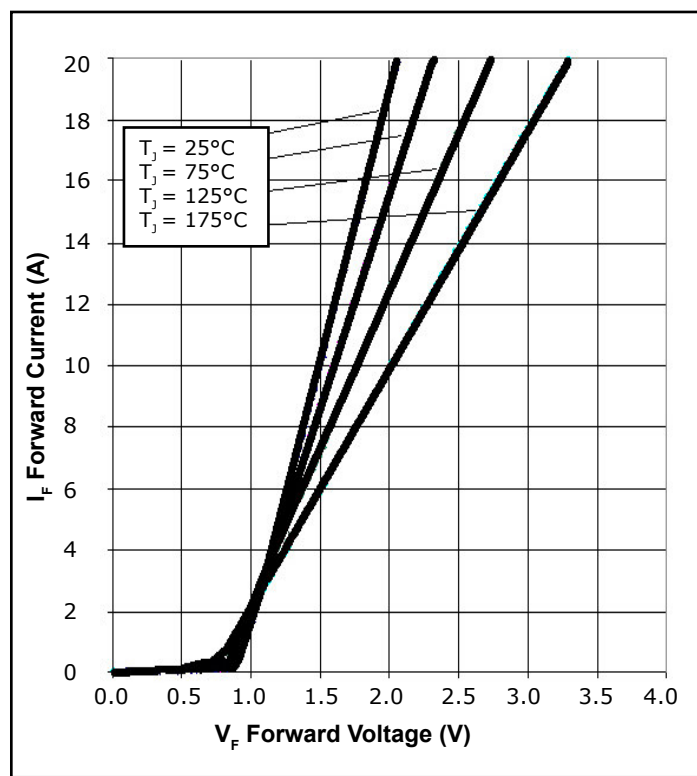


Figure 1. Forward Characteristics

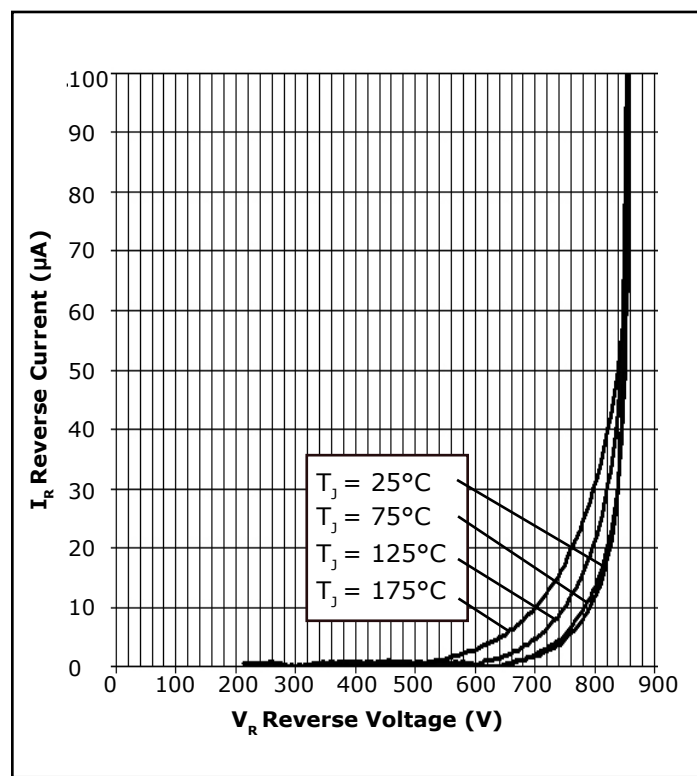


Figure 2. Reverse Characteristics

Typical Performance

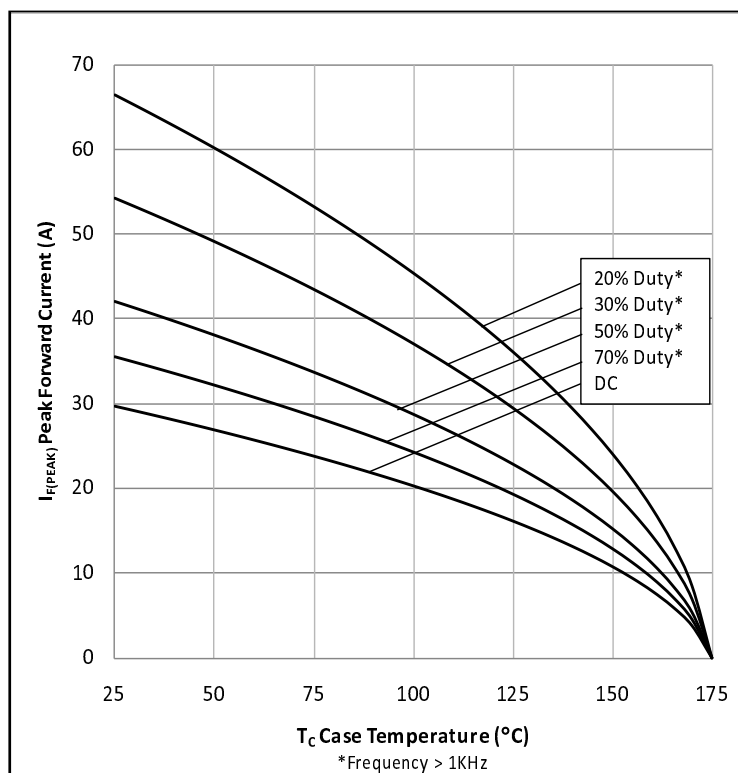


Figure 3. Current Derating

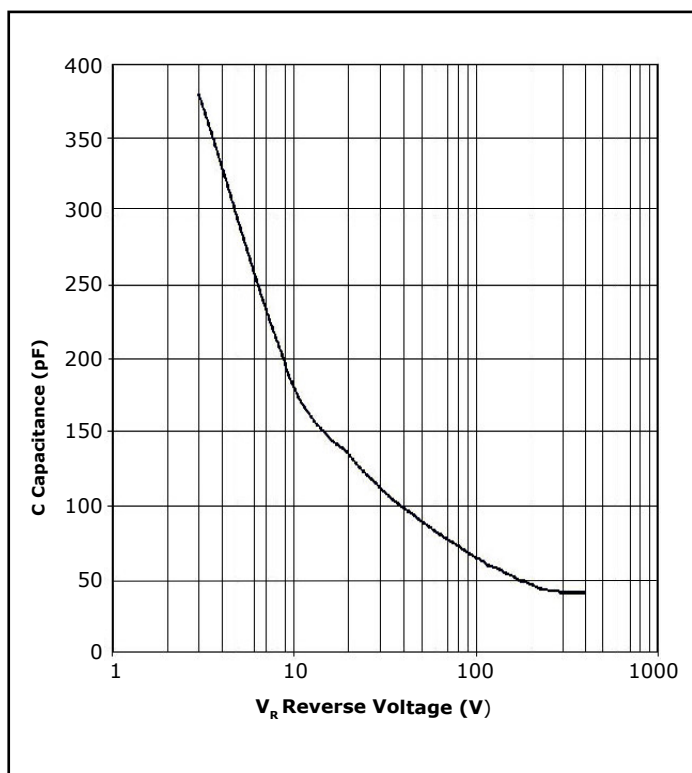


Figure 4. Capacitance vs. Reverse Voltage

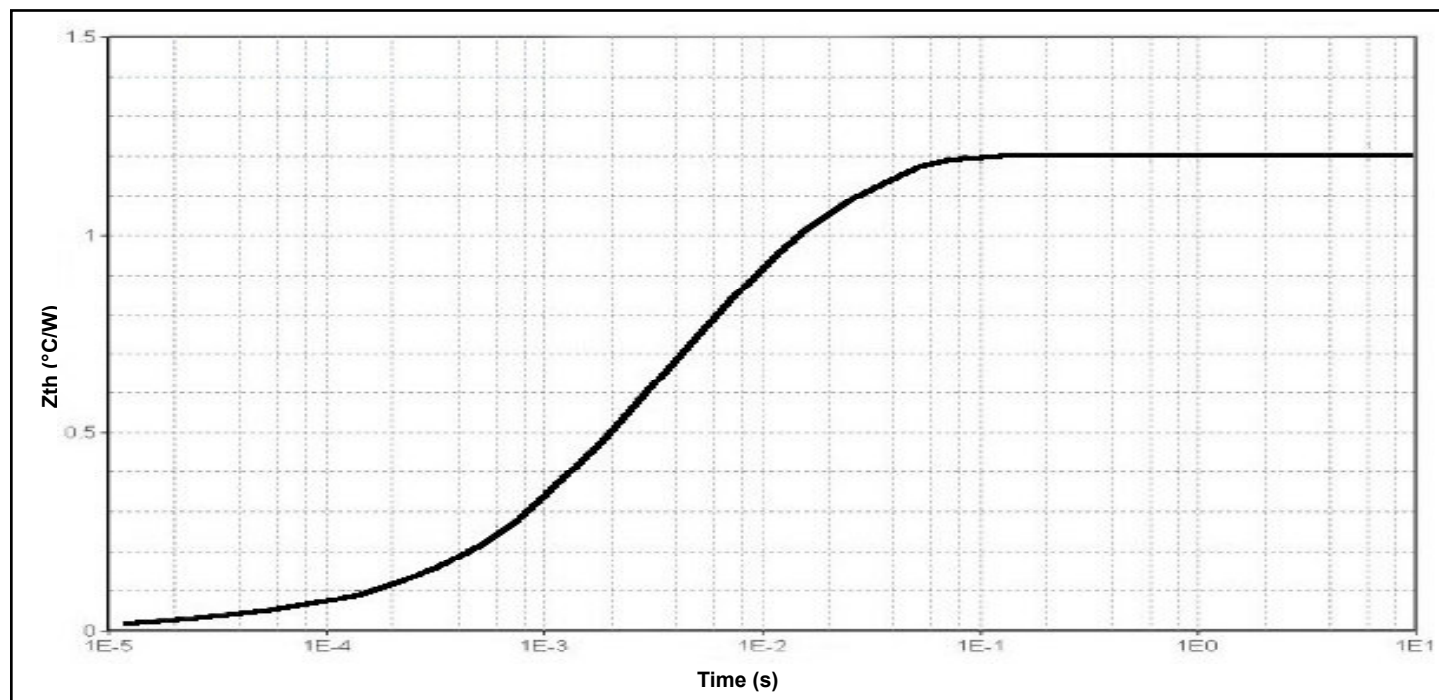


Figure 5. Transient Thermal Impedance

Typical Performance

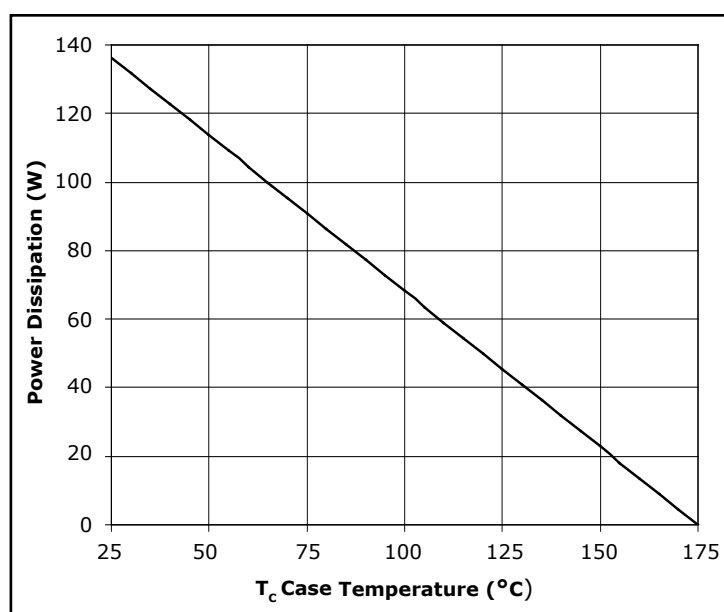
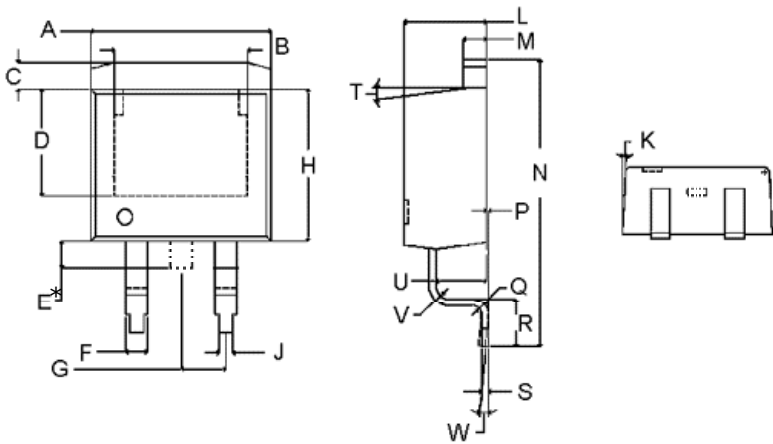


Figure 6. Power Derating



Package Dimensions

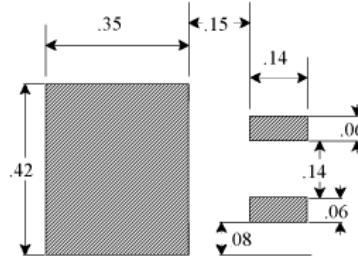
Package TO-263-2



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.396	.406	10.058	10.312
B	.295	.335	7.493	8.509
C	.05	.065	1.27	1.651
D	.25	.27	6.35	6.858
E*	0.00	.07	0.00	1.778
F	.048	.062	1.219	1.575
G	.100 TYP		2.540 TYP	
H	.35	.37	8.890	9.398
J	.028	.034	.711	.864
K	2°	5°	2°	5°
L	.170	.180	4.318	4.572
M	.045	.055	1.143	1.397
N	.595	.615	15.113	15.621
P	0.00	0.10	0.00	2.54
Q	R0.018 TYP	R0.022 TYP	R0.457 TYP	R0.559 TYP
R	.090	.110	2.286	2.794
S	.013	.02	.330	.508
T	6.5°	8.5°	6.5°	8.5°
U	.100	.107	2.540	2.718
W	—	5.0°	—	5.0°

Note:
* Tab "E" may not be present

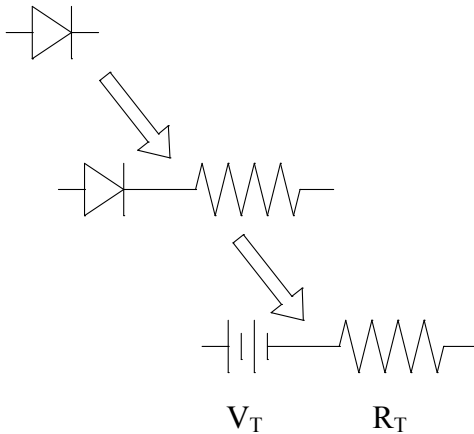
Recommended Solder Pad Layout



TO-263-2

Part Number	Package	Marking
C3D10060G	TO-263-2	C3D10060

Diode Model



$$V_{fT} = V_T + I_f \cdot R_T$$

$$V_T = 0.98 + (T_J \cdot -1.6 \cdot 10^{-3})$$

$$R_T = 0.04 + (T_J \cdot 0.522 \cdot 10^{-3})$$

Note: T_J = Diode Junction Temperature In Degrees Celcius

"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.

This product has not been designed or tested for use in, and is not intended for use in, applications implanted into the human body nor in applications in which failure of the product could lead to death, personal injury or property damage, including but not limited to equipment used in the operation of nuclear facilities, life-support machines, cardiac defibrillators or similar emergency medical equipment, aircraft navigation or communication or control systems, air traffic control systems, or weapons systems.

Copyright © 2009-2011 Cree, Inc. All rights reserved. The information in this document is subject to change without notice. Cree and the Cree logo are registered trademarks and Z-Rec is a trademark of Cree, Inc.

Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
Fax: +1.919.313.5451
www.cree.com/power

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9