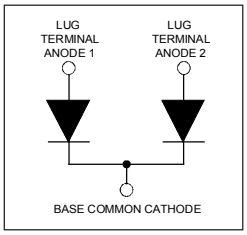
Bulletin PD-21102 rev. A 11/06

International
IOR Rectifier

201CNQ045PbF SERIES

SCHOTTKY RECTIFIER 200 Amp



Major Ratings and Characteristics

Characteristics		Values	Units
$I_{F(AV)}$	Rectangular waveform	200	A
V_{RRM}		45	V
I_{FSM}	@tp = 5 µs sine	16000	A
V_F	@100Apk, T_J=125°C (per leg)	0.58	V
T_J	range	-55 to 175	°C

Description/ Features

The 201CNQ.. center tap Schottky rectifier module series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175° C junction temperature. Typical applications are in high current switching power supplies, converters, free-wheeling diodes, welding, and reverse battery protection.

- 175° C T_J operation
- Center tap module
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free

Case Styles

TO-244

Voltage Ratings

	Part number	201CNQ045PbF
V_R	Max. DC Reverse Voltage (V)	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters		201CNQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current * See Fig. 5	Per Device	200	A	50% duty cycle @ T_C = 146 °C, rectangular wave form	
		Per Leg	100			
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7		16,000	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
			2000		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)		135	mJ	T_J = 25 °C, I_{AS} = 17 Amps, L = 1 mH	
I_{AR}	Repetitive Avalanche Current (Per Leg)		20	A	Current decaying linearly to zero in 1 µsec Frequency limited by T_J max. V_A = 1.5 x V_R typical	

Electrical Specifications

	Parameters		201CNQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)		0.67	V	@ 100A	T_J = 25 °C
			0.81	V	@ 200A	
			0.58	V	@ 100A	T_J = 125 °C
			0.71	V	@ 200A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)		10	mA	T_J = 25 °C	V_R = rated V_R
			90	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance (Per Leg)		5200	pF	V_R = 5V_{DC} (test signal range 100Khz to 1Mhz) 25°C	
L_S	Typical Series Inductance (Per Leg)		7.0	nH	From top of terminal hole to mounting plane	
dv/dt	Max. Voltage Rate of Change (Rated V_R)		10,000	V/ µs		

(1) Pulse Width < 300µs, Duty Cycle <2%

Thermal - Mechanical Characteristics

	Parameters		Min	Typ	Max	Units
T_J	Max. Junction Temperature Range		- 55	-	175	°C
T_{Stg}	Max. Storage Temperature Range		- 55	-	175	
R_{thJC}	Thermal Resistance, Junction to Case	Per Leg	-	-	0.38	°C/W
	Thermal Resistance, Junction to Case	Per Module	-	-	0.19	K/W
R_{thCS}	Thermal Resistance, Case to Heatsink		-	0.10	-	
Wt	Weight		-	68 (2.4)	-	g (oz)
	Mounting Torque		35.4 (4)	-	53.1 (6)	lbf*in
	Mounting Torque Center Hole		30 (3.4)	-	40 (4.6)	(Nm)
	Terminal Torque		30 (3.4)	-	44.2 (5)	
	Vertical Pull		-	-	80	lbf.in
	2 inch Lever Pull		-	-	35	

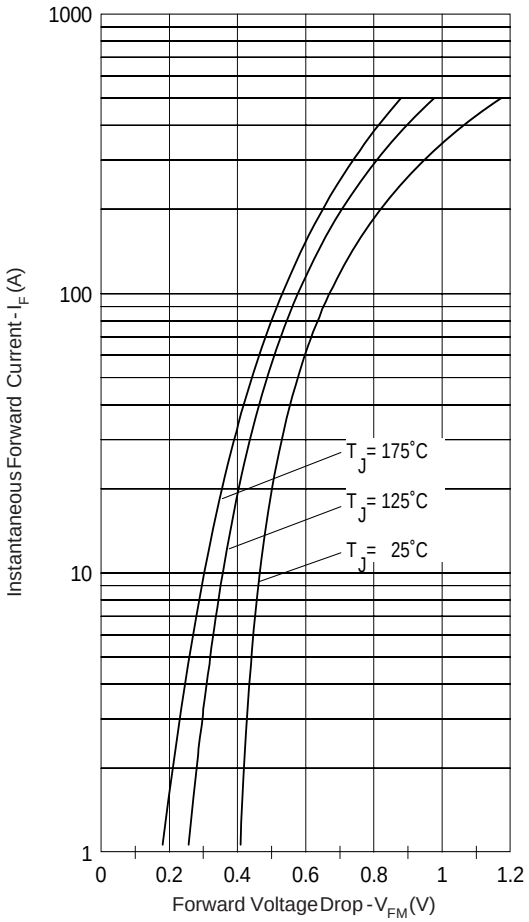


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

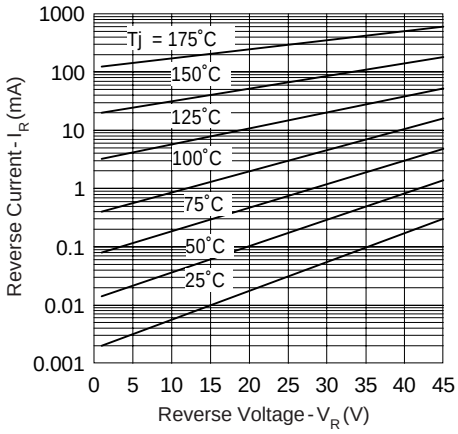


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

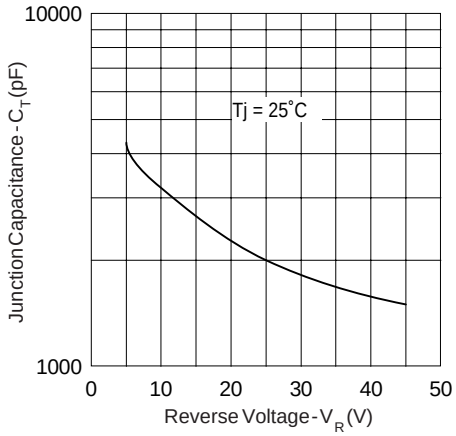


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

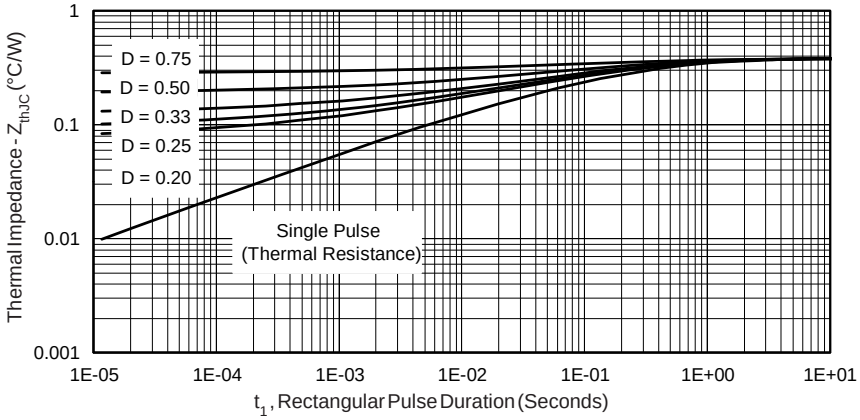


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

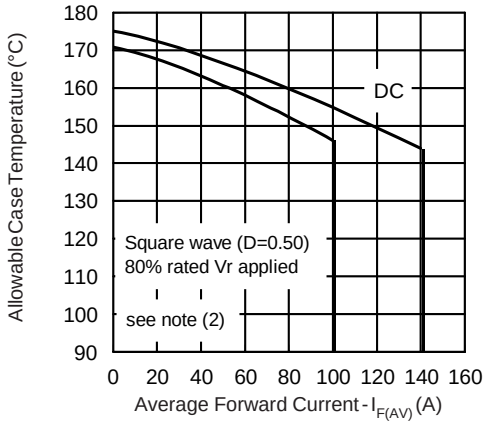


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

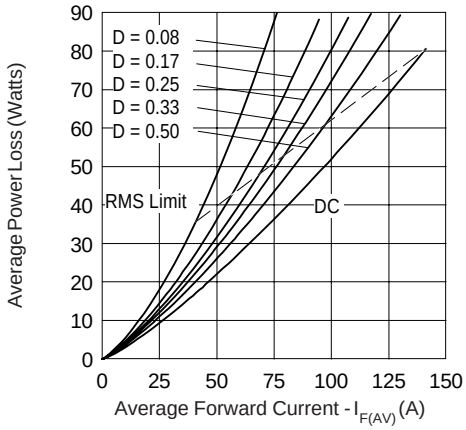


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

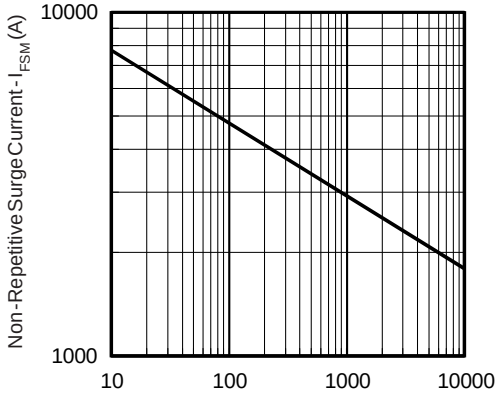


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

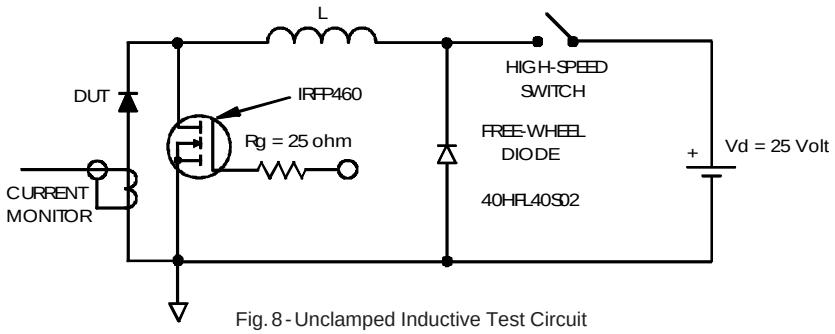
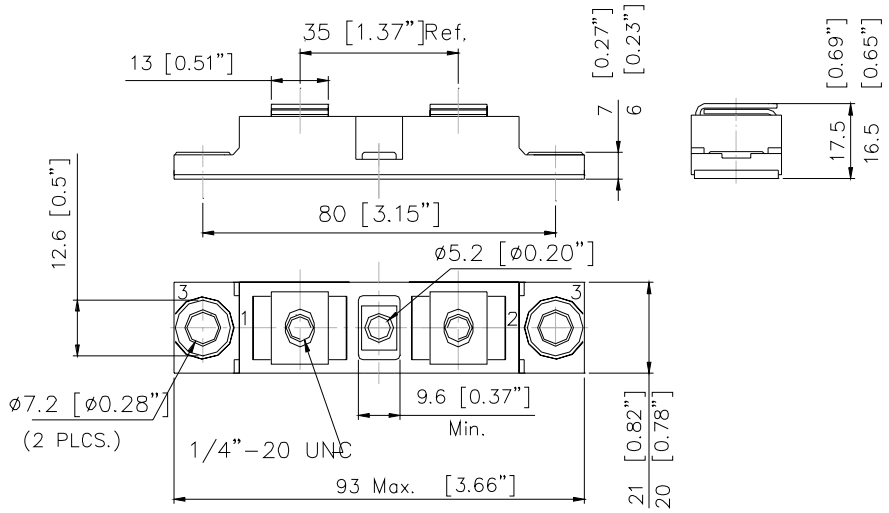


Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1}$ = 80% rated V_R

Outline Table



Conforms to JEDEC Outline TO-244
Dimensions in millimeters and (inches)

Ordering Information Table

Device Code

20	1	C	N	Q	045	PbF
1	2	3	4	5	6	7

1	-	Average Current Rating (x 10)
2	-	Product Silicon Identification
3	-	C = Circuit Configuration
4	-	N = NOt Isolated
5	-	Q = Schottky Rectifier Diode
6	-	Voltage Rating (045 = 45V)
7	-	Lead-Free

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level and Lead-Free.
Qualification Standards can be found on IR's Web site.

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
11/06

Notice

The products described herein were acquired by Vishay Intertechnology, Inc., as part of its acquisition of International Rectifier's Power Control Systems (PCS) business, which closed in April 2007. Specifications of the products displayed herein are pending review by Vishay and are subject to the terms and conditions shown below.

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.

International Rectifier®, IR®, the IR logo, HEXFET®, HEXSense®, HEXDIP®, DOL®, INTERO®, and POWIRTRAIN® are registered trademarks of International Rectifier Corporation in the U.S. and other countries. All other product names noted herein may be trademarks of their respective owners.