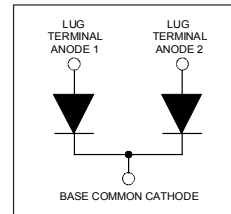


International  
**IR** Rectifier

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 $\mu$ s sine	16000	A
$V_F$ @100Apk, $T_J=125^\circ\text{C}$ (per leg)	0.58	V
$T_J$ range	-55 to 175	$^\circ\text{C}$

#### 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 $^\circ\text{C}$  junction temperature. Typical applications are in high current switching power supplies, converters, free-wheeling diodes, welding, and reverse battery protection.

- 175 $^\circ\text{C}$   $T_J$  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 <sub>R</sub> Max. DC Reverse Voltage (V)	45
V <sub>RWM</sub> Max. Working Peak Reverse Voltage (V)	

## Absolute Maximum Ratings

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

## Electrical Specifications

Parameters	201CNQ	Units	Conditions
V <sub>FM</sub> Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.67 0.81 0.58 0.71	V	@ 100A @ 200A @ 100A @ 200A T <sub>J</sub> = 25 °C T <sub>J</sub> = 125 °C V <sub>R</sub> = rated V <sub>R</sub>
I <sub>RM</sub> Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	10 90	mA	T <sub>J</sub> = 25 °C T <sub>J</sub> = 125 °C
C <sub>T</sub> Max. Junction Capacitance (Per Leg)	5200	pF	V <sub>R</sub> = 5V <sub>DC</sub> (test signal range 100Khz to 1Mhz) 25°C
L <sub>S</sub> 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 <sub>R</sub> )	10,000	V/ µs	

(1) Pulse Width &lt; 300µs, Duty Cycle &lt;2%

## Thermal - Mechanical Characteristics

Parameters	Min	Typ	Max	Units
T <sub>J</sub> Max. Junction Temperature Range	- 55	-	175	°C
T <sub>Stg</sub> Max. Storage Temperature Range	- 55	-	175	°C
R <sub>thJC</sub> Thermal Resistance, Junction to Case	-	-	0.38	°C/W
Thermal Resistance, Junction to Case	-	-	0.19	K/W
R <sub>thCS</sub> 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	

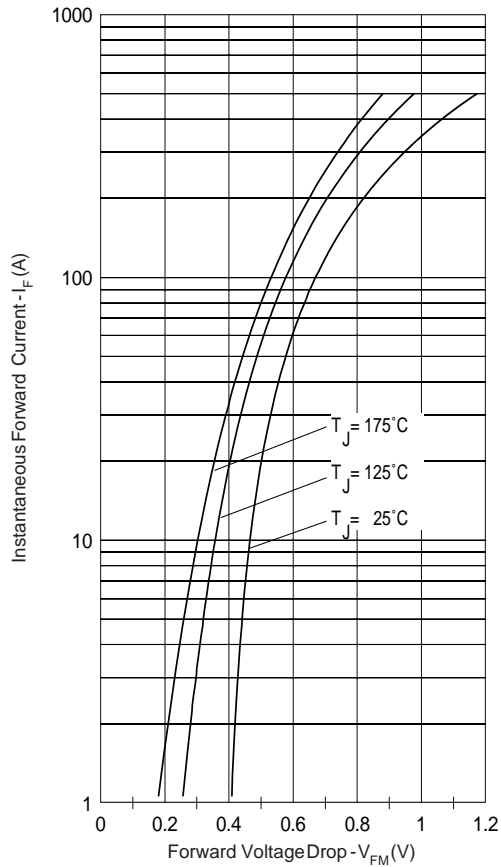


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

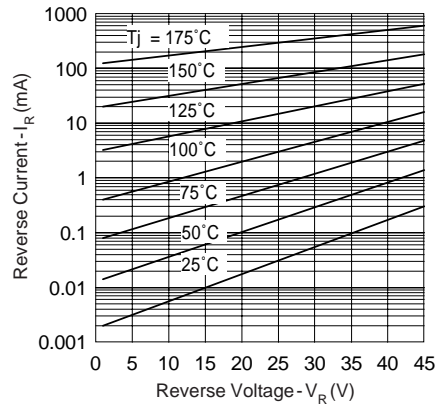


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

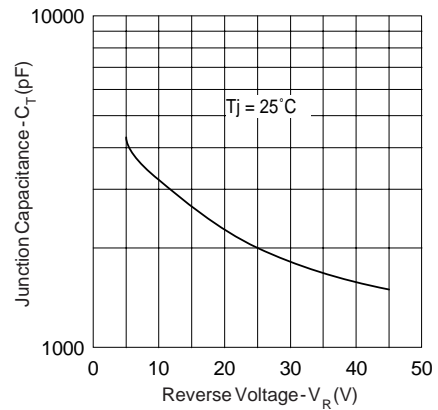


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

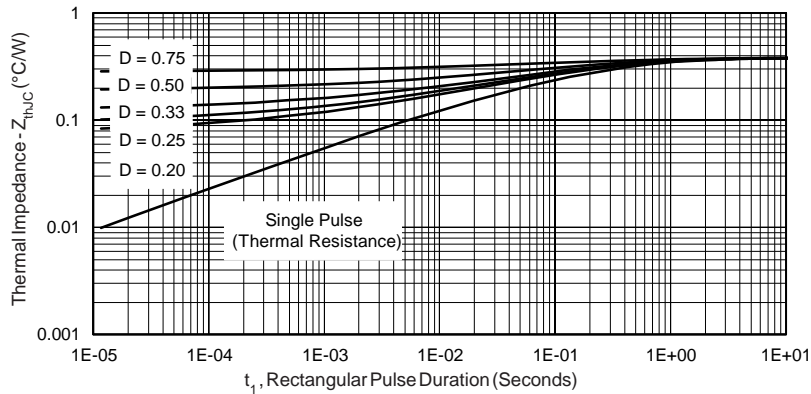


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

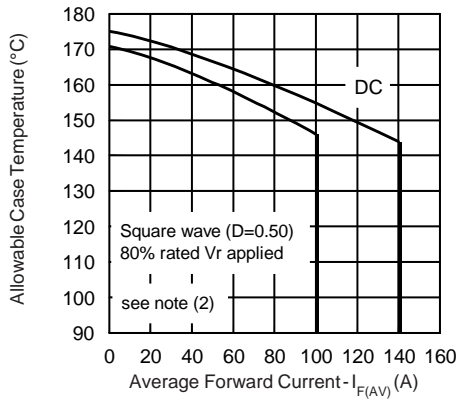


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

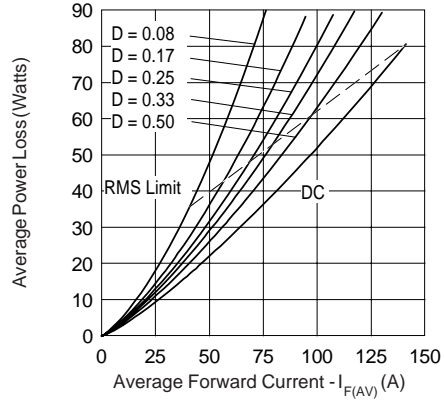


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

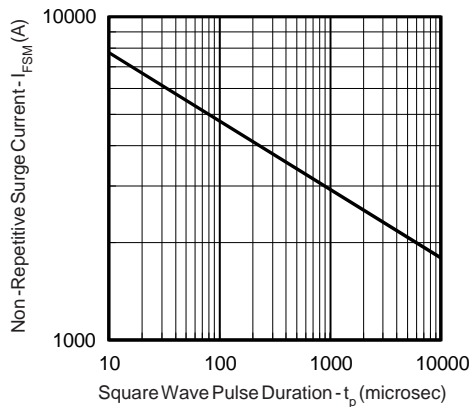


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

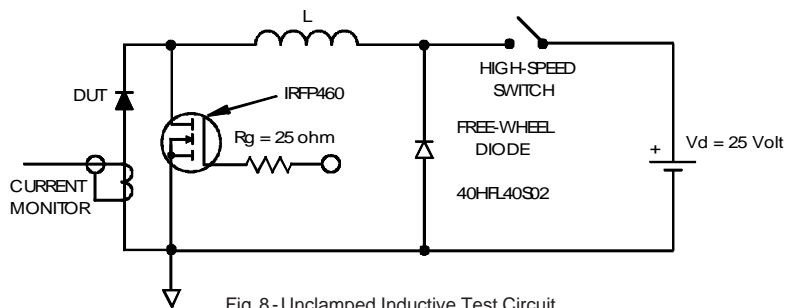


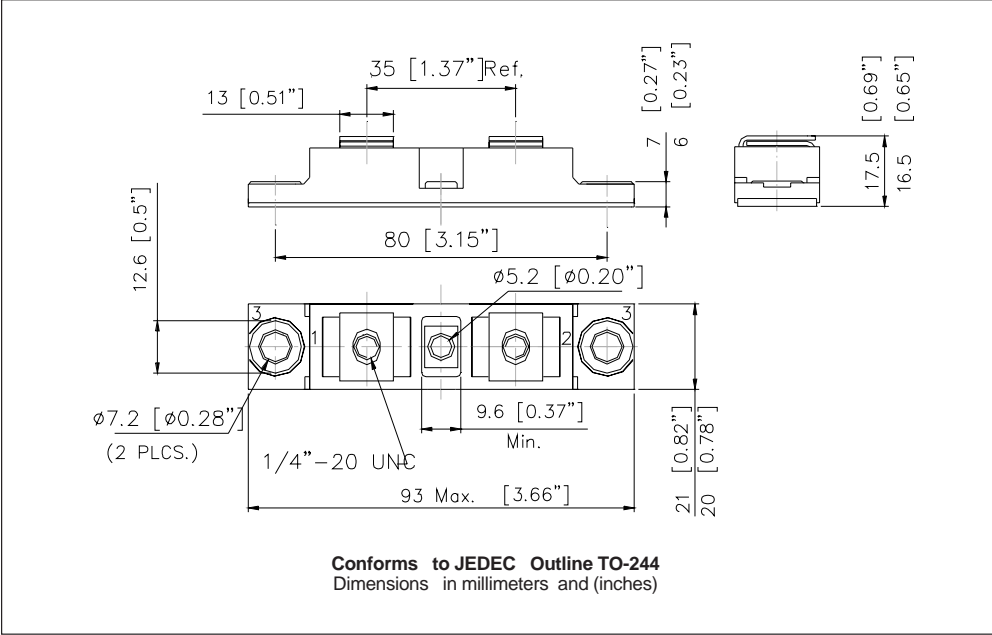
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used:  $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$ ;

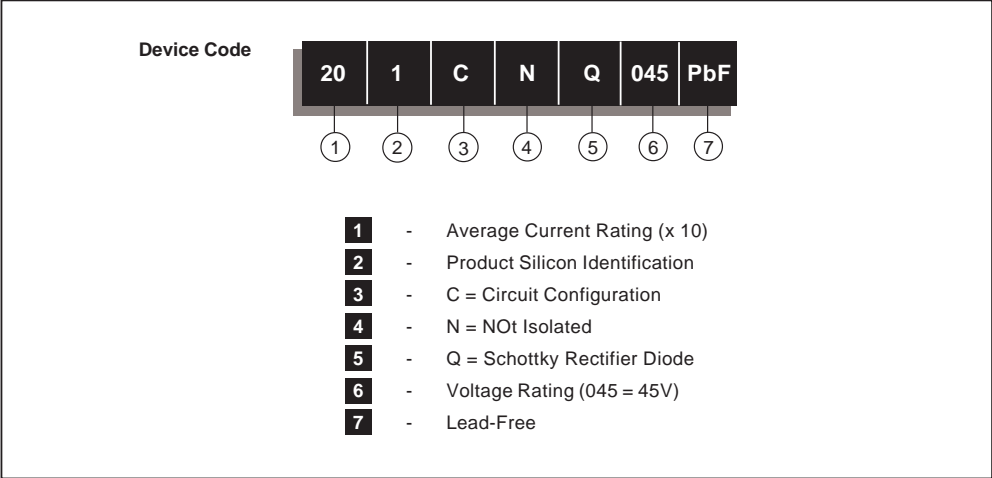
$Pd$  = Forward Power Loss =  $I_{F(AV)} \times V_{FM} @ (I_{F(AV)}/D)$  (see Fig. 6);

$Pd_{REV}$  = Inverse Power Loss =  $V_{R1} \times I_R (1 - D)$ ;  $I_R @ V_{R1} = 80\%$  rated  $V_R$

Outline Table



Ordering Information Table



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.

International  
**IOR** Rectifier

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