

International  
**IOR** Rectifier

**82CNQ030APbF**  
**82CNQ030ASMPbF**

**SCHOTTKY RECTIFIER**  
**New GenIII D-61 Package**

**80 Amp**

#### Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	80	A
$V_{RRM}$	30	V
$I_{FSM}$ @ $t_p = 5 \mu s$ sine	5100	A
$V_F$ @ 40 Apk, $T_J = 125^\circ C$ (per leg)	0.37	V
$T_J$ range	-55 to 150	$^\circ C$

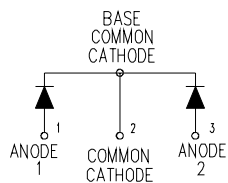
#### Description/ Features

The center tap Schottky rectifier module has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to  $150^\circ C$  junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- $150^\circ C$   $T_J$  operation
- Dual center tap module
- Very low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- ***New fully transfer-mold low profile, small footprint, high current package***
- Through-hole versions are currently available for use in Lead-Free applications ("PbF" suffix)

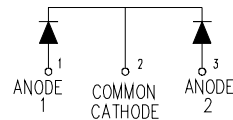
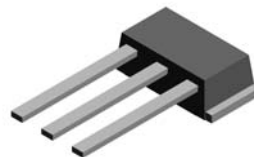
#### Case Styles

82CNQ030APbF



**D61-8**

82CNQ030ASMPbF



**D61-8-SM**

## Voltage Ratings

Part number	82CNQ030A..
$V_R$ Max. DC Reverse Voltage (V)	30
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)	

## Absolute Maximum Ratings

Parameters		82CNQ	Units	Conditions	
I <sub>F(AV)</sub>	Max. Average Forward Current * See Fig. 5	80	A	50% duty cycle @ T <sub>C</sub> = 119 °C, rectangular wave form	
I <sub>FSM</sub>	Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	5100	A	5μs Sine or 3μs Rect. pulse	Following any rated load condition and with rated V <sub>RRM</sub> applied
		880		10ms Sine or 6ms Rect. pulse	
E <sub>AS</sub>	Non-Repetitive Avalanche Energy (Per Leg)	36	mJ	T <sub>J</sub> = 25 °C, I <sub>AS</sub> = 8 Amps, L = 1.12 mH	
I <sub>AR</sub>	Repetitive Avalanche Current (Per Leg)	8	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		82CNQ	Units	Conditions	
V <sub>FM</sub>	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.47	V	@ 40A	T <sub>J</sub> = 25 °C
		0.55	V	@ 80A	
		0.37	V	@ 40A	T <sub>J</sub> = 125 °C
		0.47	V	@ 80A	
I <sub>RM</sub>	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	5	mA	T <sub>J</sub> = 25 °C	V <sub>R</sub> = rated V <sub>R</sub>
		280	mA	T <sub>J</sub> = 125 °C	
C <sub>T</sub>	Max. Junction Capacitance (Per Leg)	3700	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)	5.5	nH	Measured lead to lead 5mm from package body	
dv/dt	Max. Voltage Rate of Change (Rated V <sub>R</sub> )	10000	V/ μs		

(1) Pulse Width < 300 $\mu\text{s}$ , Duty Cycle < 2%

## Thermal-Mechanical Specifications

Parameters	82CNQ	Units	Conditions
$T_J$ Max. Junction Temperature Range	-55 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Leg)	0.85	$^\circ\text{C/W}$	DC operation * See Fig. 4
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Package)	0.42	$^\circ\text{C/W}$	DC operation
$R_{thCS}$ Typical Thermal Resistance, Case to Heatsink (D61-8 Only)	0.30	$^\circ\text{C/W}$	Mounting surface, smooth and greased Device flatness < 5 mils
wt Approximate Weight	7.8 (0.28)	g (oz.)	
T Mounting Torque (D61-8 Only)	Min. 40 (35)	Kg-cm (lbf-in)	
	Max. 58 (50)		

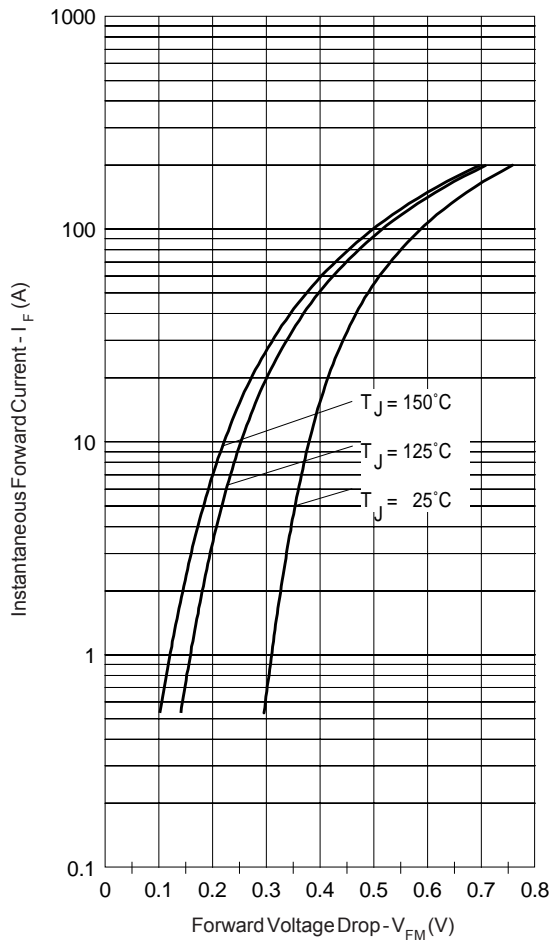


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

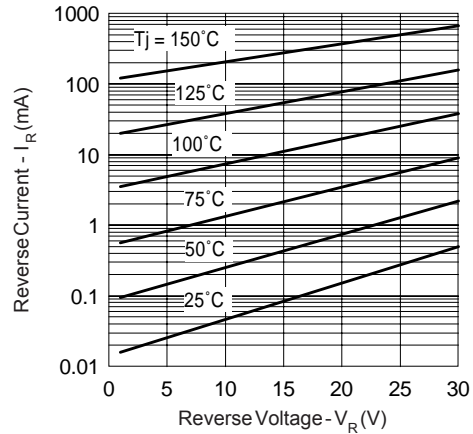


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

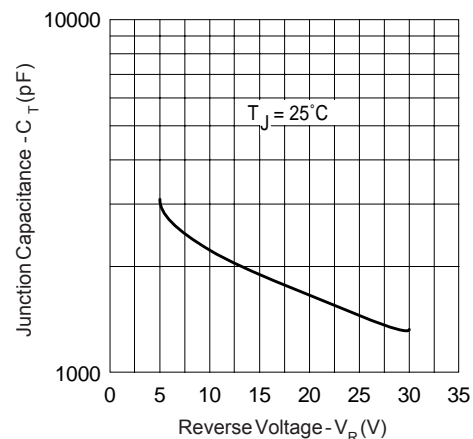


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

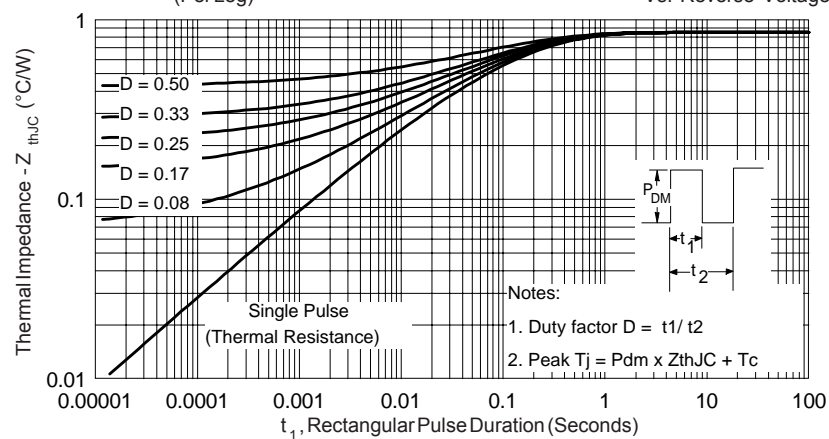


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

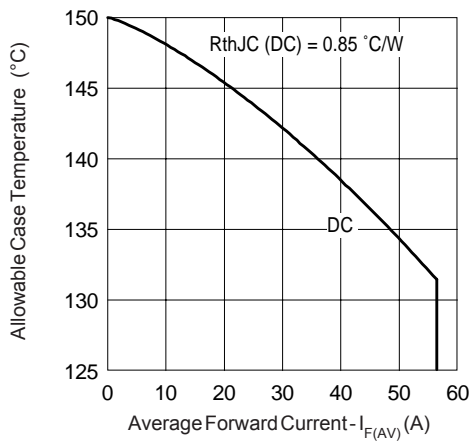


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

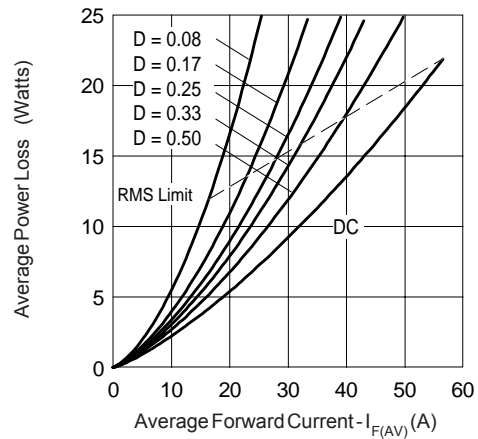


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

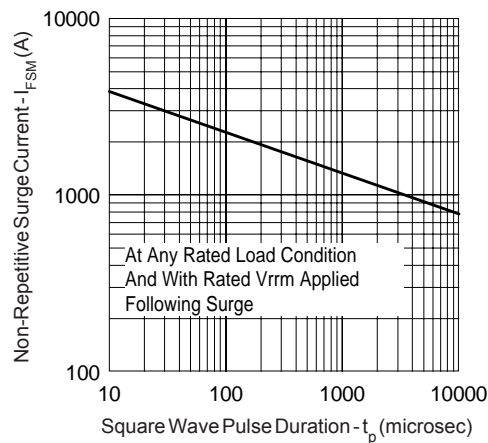


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

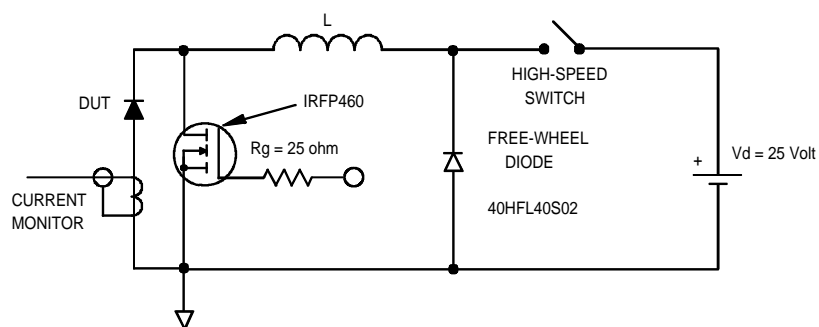
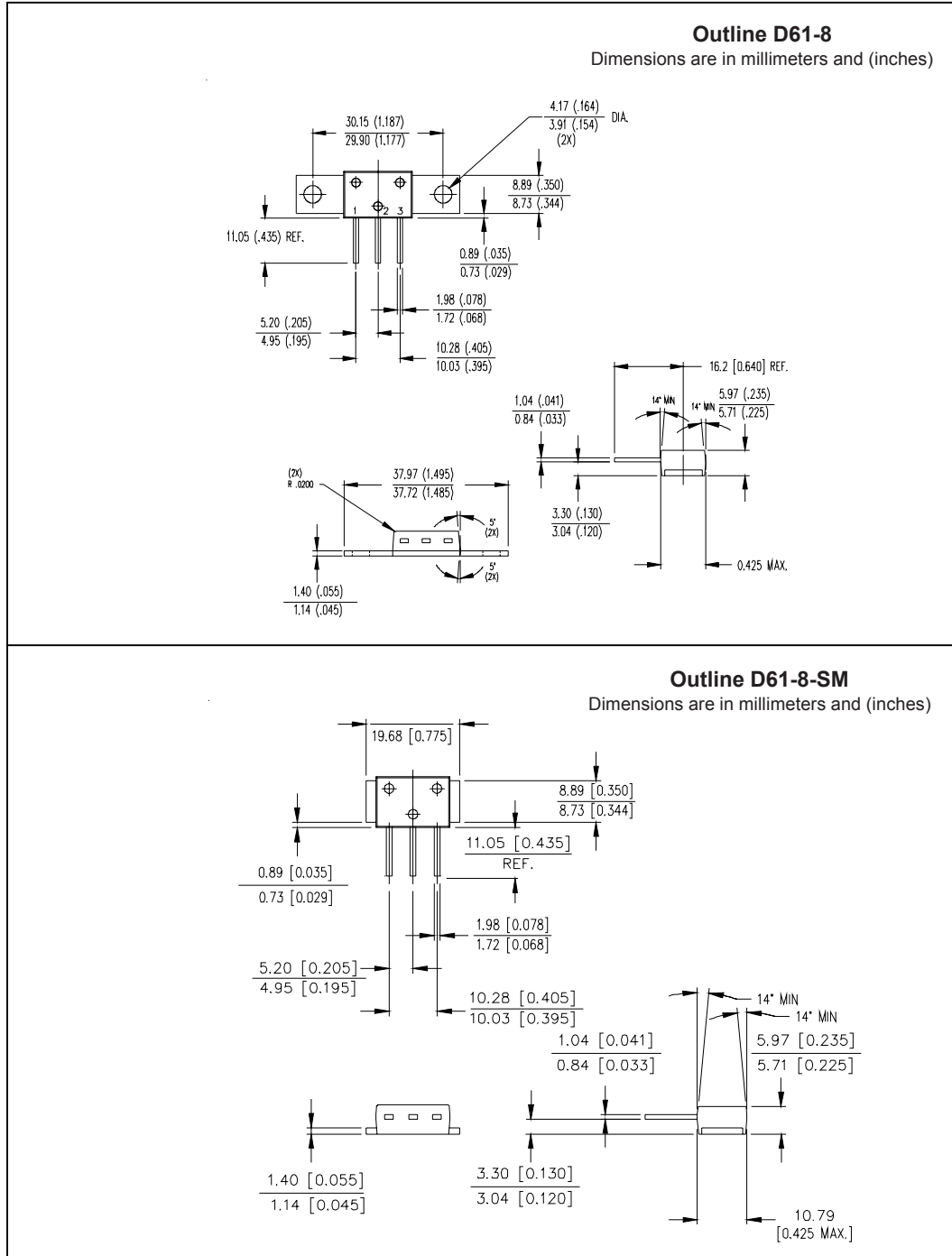


Fig. 8 - Unclamped Inductive Test Circuit

## Outline Table

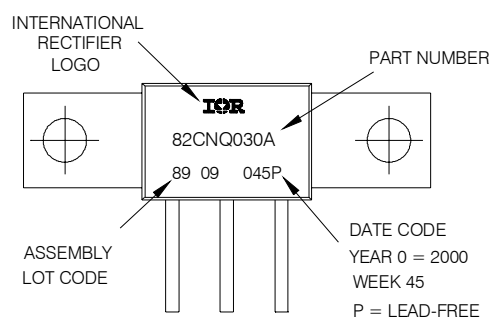


## Part Marking Information

## D61-8

EXAMPLE: THIS IS A 82CNQ030 WITH  
LOT CODE 89 09  
ASSEMBLED ON WW 45, 2000

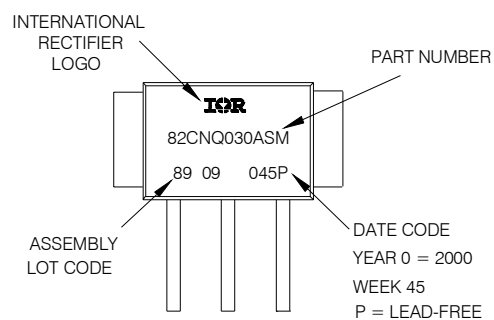
Note: "P" in assembly line  
position indicates "Lead-Free"



## D61-8-SM

EXAMPLE: THIS IS A 82CNQ030ASM WITH  
LOT CODE 89 09  
ASSEMBLED ON WW 45, 2000

Note: "P" in assembly line  
position indicates "Lead-Free"



## Ordering Information Table

# Device Code

82	C	N	Q	030	A	PbF
1	2	3	4	5	6	7

<b>1</b>	-	Current Rating (80A)
<b>2</b>	-	Circuit Configuration
		C = Common Cathode
<b>3</b>	-	Package
		N = D-61
<b>4</b>	-	Schottky "Q" Series
<b>5</b>	-	Voltage Rating (030 = 30V)
<b>6</b>	-	<ul style="list-style-type: none"> <li>• A = D-61-8 package style</li> <li>• ASM = D-61-8-SM package style</li> </ul>
<b>7</b>	-	<ul style="list-style-type: none"> <li>• none = Standard Production</li> <li>• PbF = Lead-Free</li> </ul>

Standard pack quantity: A = 10 pieces

ASM = 20 pieces

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.