

# International IR Rectifier

## 82CNQ030APbF 82CNQ030ASMPbF

SCHOTTKY RECTIFIER  
New GenIII D-61 Package

80 Amp

### Major Ratings and Characteristics

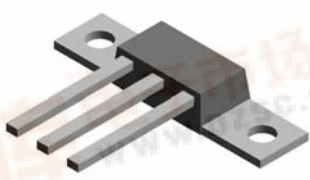
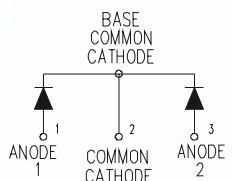
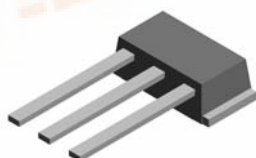
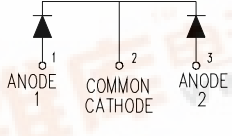
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	80	A
$V_{RRM}$	30	V
$I_{FSM}$ @ $t_p=5\mu s$ sine	5100	A
$V_F$ @40Apk, $T_J=125^\circ C$ (per leg)	0.37	V
$T_J$ range	-55 to 150	$^\circ C$

### 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

<p>82CNQ030APbF</p>  <div style="text-align: center;">  <p>ANODE 1    COMMON CATHODE 2    ANODE 3</p> <p><b>D61-8</b></p> </div>	<p>82CNQ030ASMPbF</p>  <div style="text-align: center;">  <p>ANODE 1    COMMON CATHODE 2    ANODE 3</p> <p><b>D61-8-SM</b></p> </div>
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Bulletin PD-21006 01/05



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
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	80	A	50% duty cycle @ $T_C = 119^\circ\text{C}$ , rectangular wave form
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	5100	A	Following any rated load condition and with rated $V_{RWM}$ applied
	880		
$E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)	36	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 8$ Amps, $L = 1.12$ mH
$I_{AR}$ Repetitive Avalanche Current (Per Leg)	8	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	82CNQ	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.47	V	@ 40A
	0.55	V	@ 80A
	0.37	V	@ 40A
	0.47	V	@ 80A
$I_{RM}$ Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	5	mA	$T_J = 25^\circ\text{C}$
	280	mA	$T_J = 125^\circ\text{C}$
$C_T$ Max. Junction Capacitance (Per Leg)	3700	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$
$L_S$ Typical Series Inductance (Per Leg)	5.5	nH	Measured lead to lead 5mm from package body
$dv/dt$ Max. Voltage Rate of Change (Rated $V_R$ )	10000	V/ $\mu\text{s}$	

(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)	

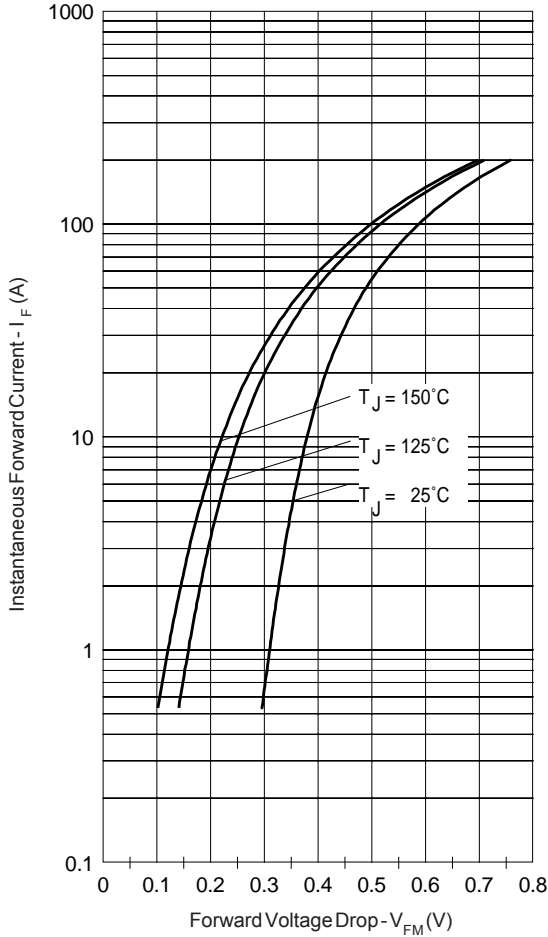


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

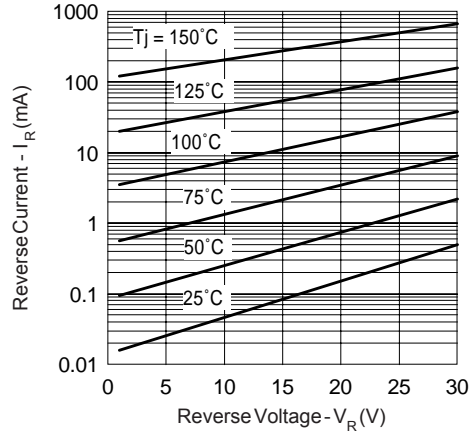


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

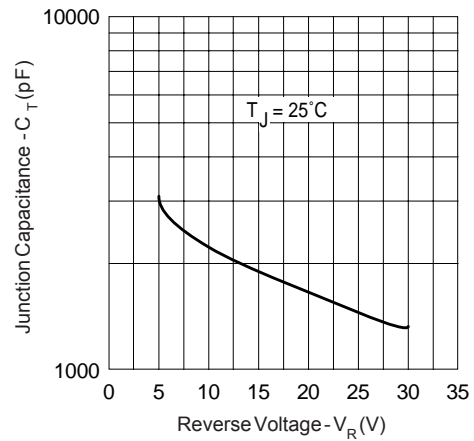


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

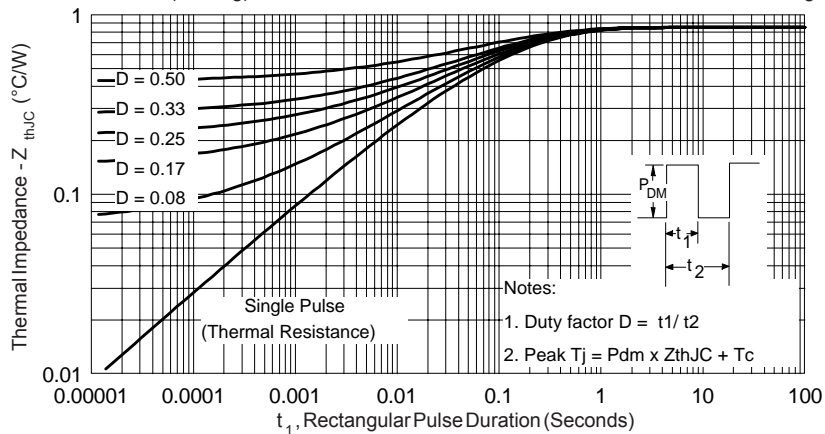


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

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IR Rectifier

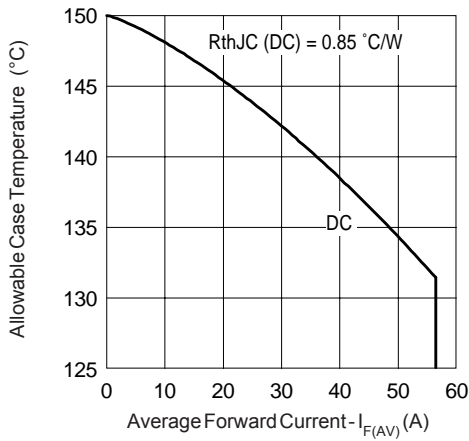


Fig. 5- Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

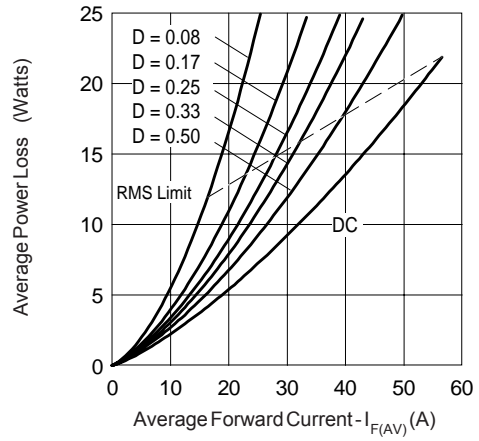


Fig. 6- Forward Power Loss Characteristics (Per Leg)

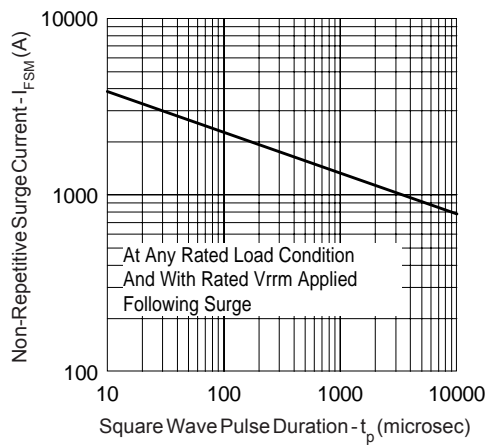


Fig. 7- Max. Non-Repetitive Surge Current (Per Leg)

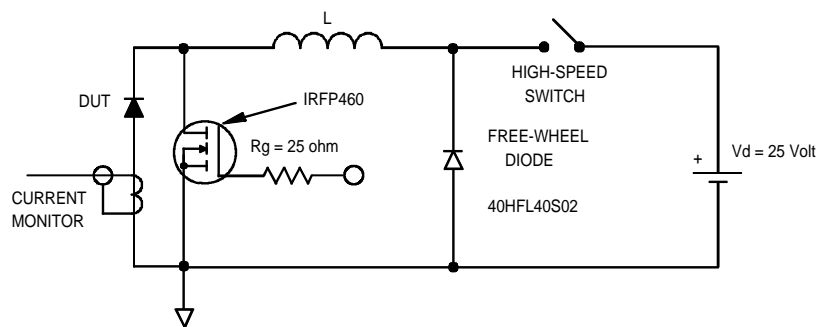
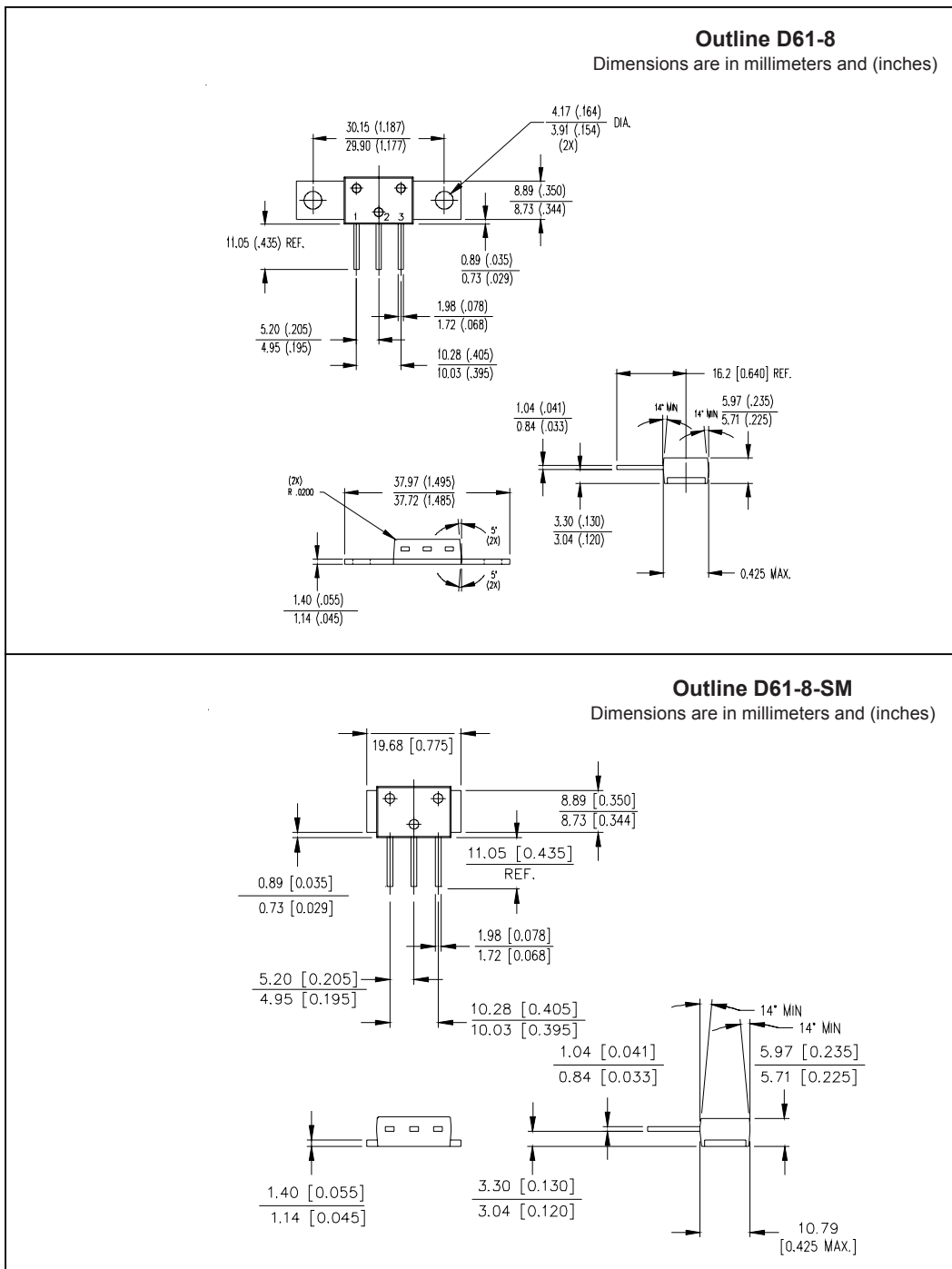


Fig. 8- Unclamped Inductive Test Circuit

Outline Table



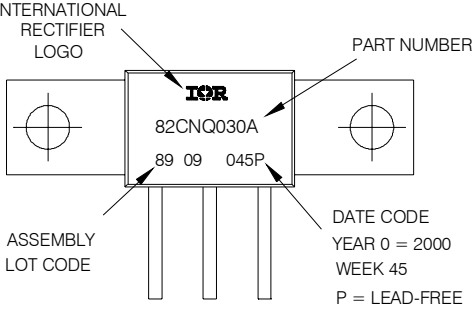
**Outline D61-8-SM**  
 Dimensions are in millimeters and (inches)

### 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"



INTERNATIONAL  
RECTIFIER  
LOGO

PART NUMBER

82CNQ030A

89 09 045P

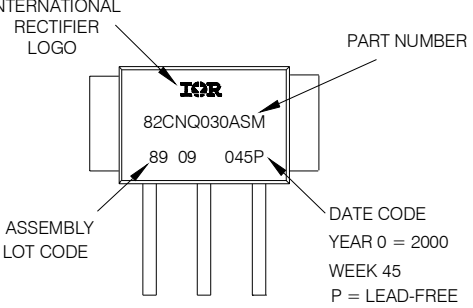
ASSEMBLY  
LOT CODE

DATE CODE  
YEAR 0 = 2000  
WEEK 45  
P = 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"



INTERNATIONAL  
RECTIFIER  
LOGO

PART NUMBER

82CNQ030ASM

89 09 045P

ASSEMBLY  
LOT CODE

DATE CODE  
YEAR 0 = 2000  
WEEK 45  
P = 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>	-	• A = D-61-8 package style • ASM = D-61-8-SM package style				
<b>7</b>	-	• none = Standard Production • PbF = Lead-Free				
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.