Bulletin PD-21004 01/05

International
IOR Rectifier

112CNQ030APbF
112CNQ030ASMPbF

SCHOTTKY RECTIFIER
New GenIII D-61 Package

110 Amp

Major Ratings and Characteristics

Characteristics		Values	Units
$I_{F(AV)}$	Rectangular waveform	110	A
V_{RRM}		30	V
I_{FSM}	@ tp = 5 µs sine	5100	A
V_F	@55Apk, T_J = 125°C (per leg)	0.39	V
T_J	range	- 55 to 150	°C

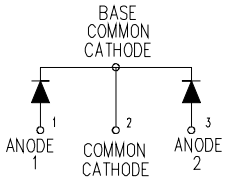
Description/ Features

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 °C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150 °C T_J operation
- 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
- Low profile, small footprint, high current package
- *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)

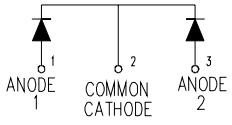
Case Styles

112CNQ030APbF



D61-8

112CNQ030ASMPbF



D61-8-SM

Voltage Ratings

	Part number	112CNQ030A..
V_R	Max. DC Reverse Voltage (V)	30
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters		112CNQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current * See Fig. 5	Per Leg	55	A	50% duty cycle @ T_C = 131 °C, rectangular wave form	
		Per Device	110			
I_{FSM}	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_{RRM} applied
			880		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)		36	mJ	T_J = 25 °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 µsec Frequency limited by T_J max. V_A = 1.5 x V_R typical	

Electrical Specifications

	Parameters	112CNQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.49	V	@ 55A	T_J = 25 °C
		0.57	V	@ 110A	
		0.39	V	@ 55A	T_J = 125 °C
		0.51	V	@ 110A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	3.5	mA	T_J = 25 °C	V_R = rated V_R
		400	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance (Per Leg)	5100	pF	V_R = 5V_{DC}, (test signal range 100Khz to 1Mhz) 25°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/ µs		

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

Thermal-Mechanical Specifications

	Parameters		112CNQ	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 150	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 150	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)		0.50	°C/W	DC operation * See Fig. 4
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		0.25	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance, Case to Heatsink **(D61-8 Only)**		0.30	°C/W	Mounting surface , smooth and greased Device flatness < 5 mils
wt	Approximate Weight		7.8 (0.28)	g (oz.)	
T	Mounting Torque	Min.	40 (35)	Kg-cm (lbf-in)	
	(D61-8 Only)	Max.	58 (50)		

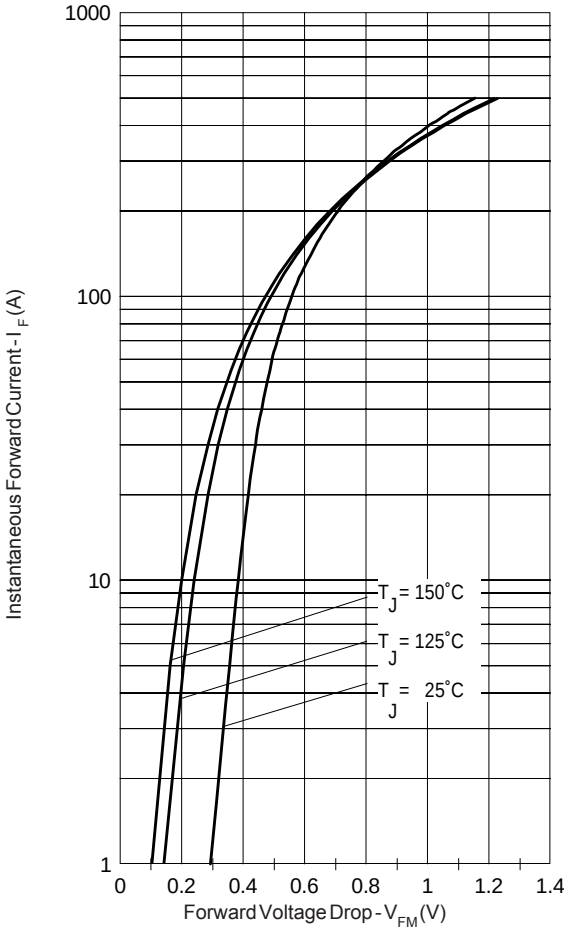


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

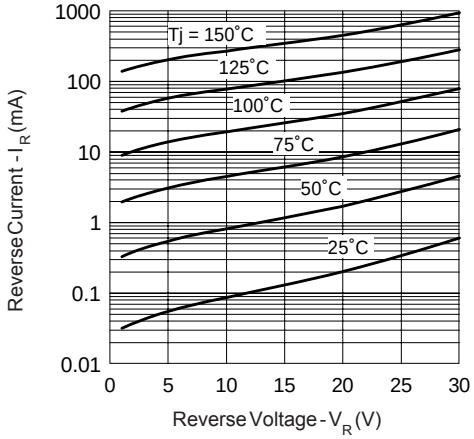


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

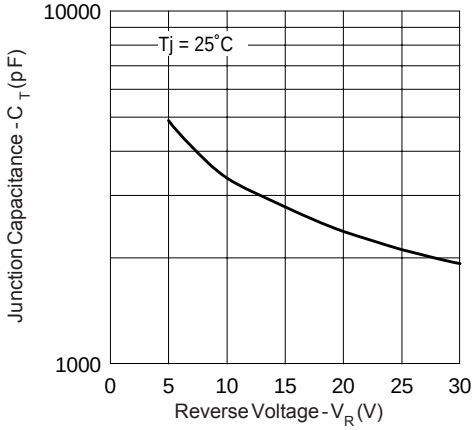


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

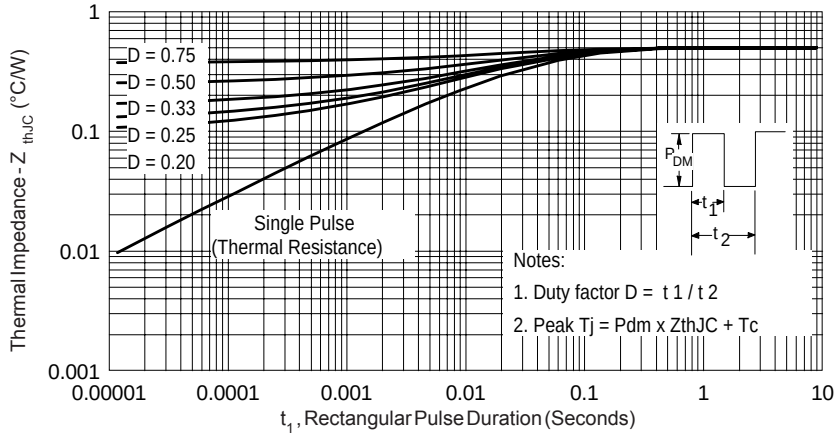


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

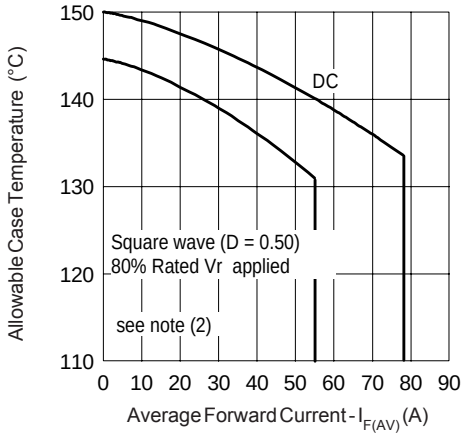


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

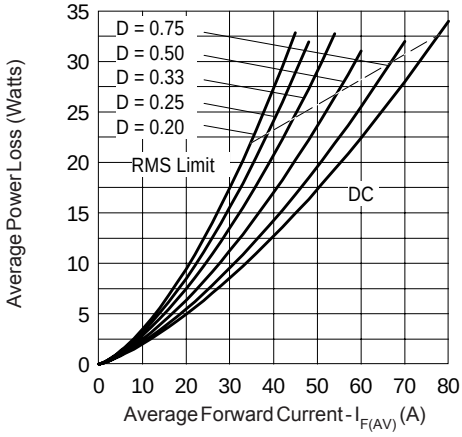


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

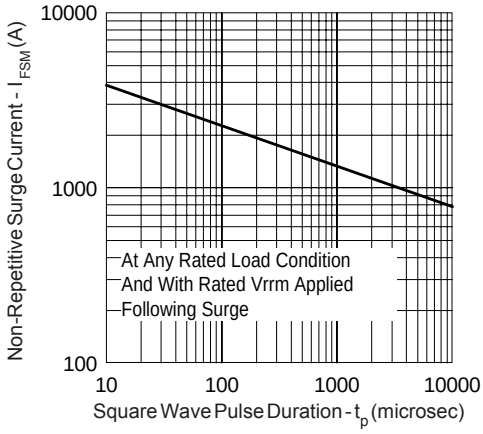


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

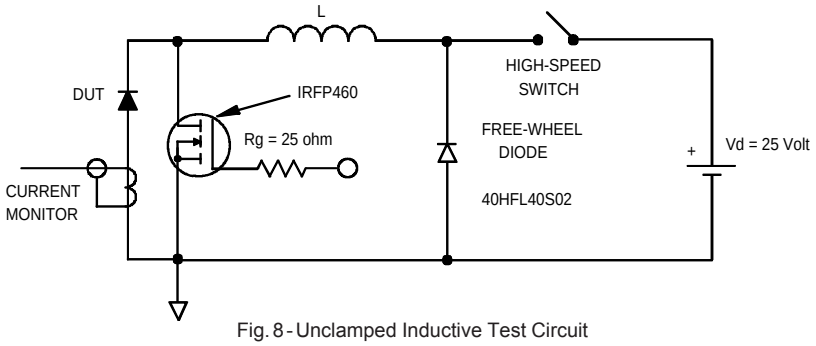
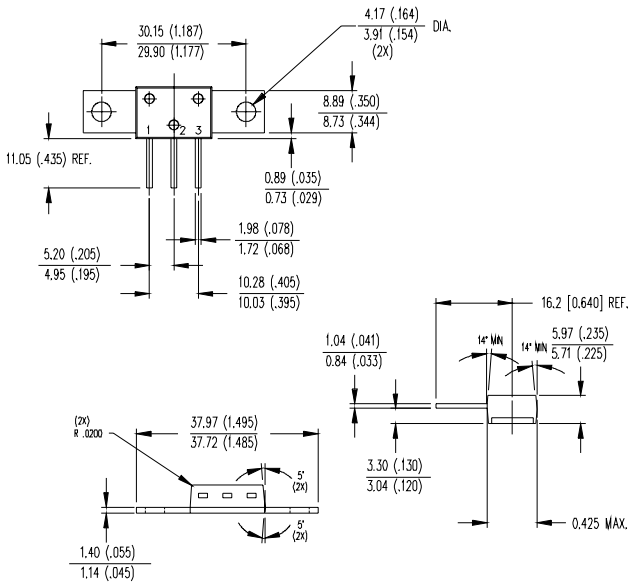


Fig. 8 - Unclamped Inductive Test Circuit

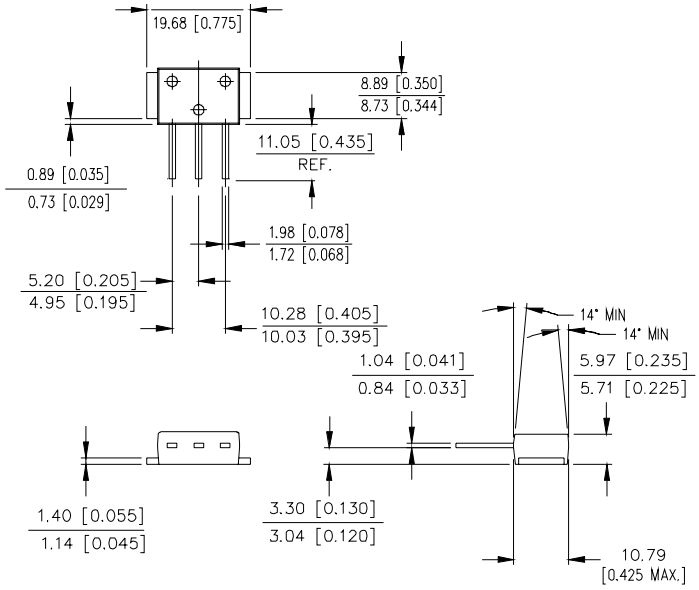
(2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1}$ = 80% rated V_R

Outline Table

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



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

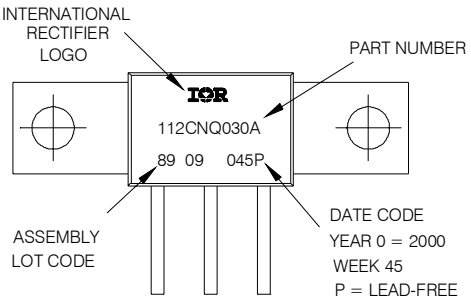


Marking Information

Outline D61-8

EXAMPLE: THIS IS A 112CNQ030A WITH
LOT CODE 89 09
ASSEMBLED ON WW 45, 2000

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



Outline D61-8-SM

EXAMPLE: THIS IS A 112CNQ030ASM WITH
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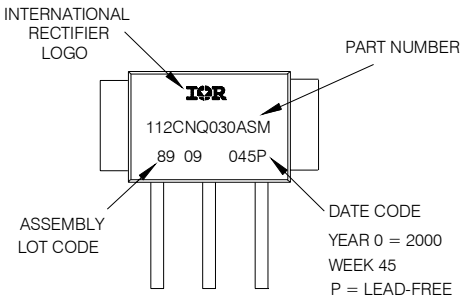
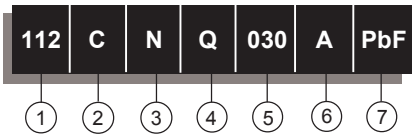
ASSEMBLED ON WW 45, 2000

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



Ordering Information Table

Device Code



1 - Current Rating (110A)

2 - Circuit Configuration
C = Common Cathode

3 - Package
N = D-61

4 - Schottky "Q" Series

5 - Voltage Rating (030 = 30V)

6 - • A = D-61-8 package style
• ASM = D-61-8-SM package style

7 - • 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.

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