

Bulletin PD-21004 01/05

International IOR Rectifier

112CNQ030APbF 112CNQ030ASMPbF

SCHOTTKY RECTIFIER
New GenIII D-61 Package

110 Amp

Major Ratings and Characteristics

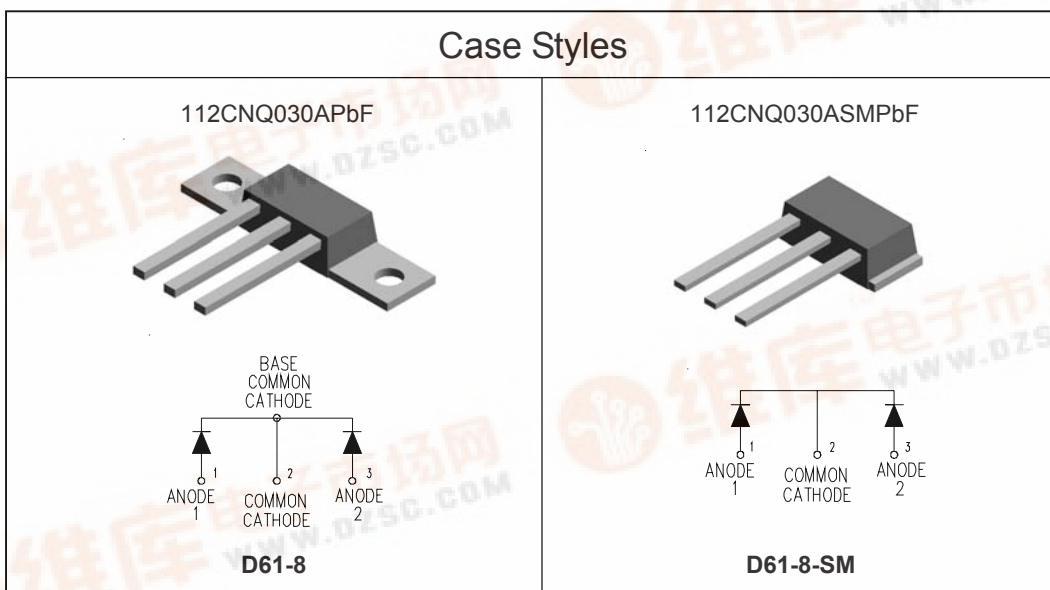
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	110	A
V_{RRM}	30	V
I_{FSM} @ $t_p=5\mu s$ sine	5100	A
V_F @55Apk, $T_J=125^\circ C$ (per leg)	0.39	V
T_J range	-55 to 150	$^\circ C$

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 °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



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 Per Device	55	A	50% duty cycle @ $T_C = 131^\circ\text{C}$, rectangular wave form
	110		
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	5100	A	5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated V_{RRM} 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 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	112CNQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.49	V	@ 55A $T_J = 25^\circ\text{C}$
	0.57	V	@ 110A
	0.39	V	@ 55A $T_J = 125^\circ\text{C}$
	0.51	V	@ 110A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	3.5	mA	$T_J = 25^\circ\text{C}$ $V_R = \text{rated } V_R$
	400	mA	$T_J = 125^\circ\text{C}$
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 < 300 μs , Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters	112CNQ	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)	0.50	$^\circ\text{C}/\text{W}$	DC operation * See Fig. 4
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.25	$^\circ\text{C}/\text{W}$	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink (D61-8 Only)	0.30	$^\circ\text{C}/\text{W}$	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)	

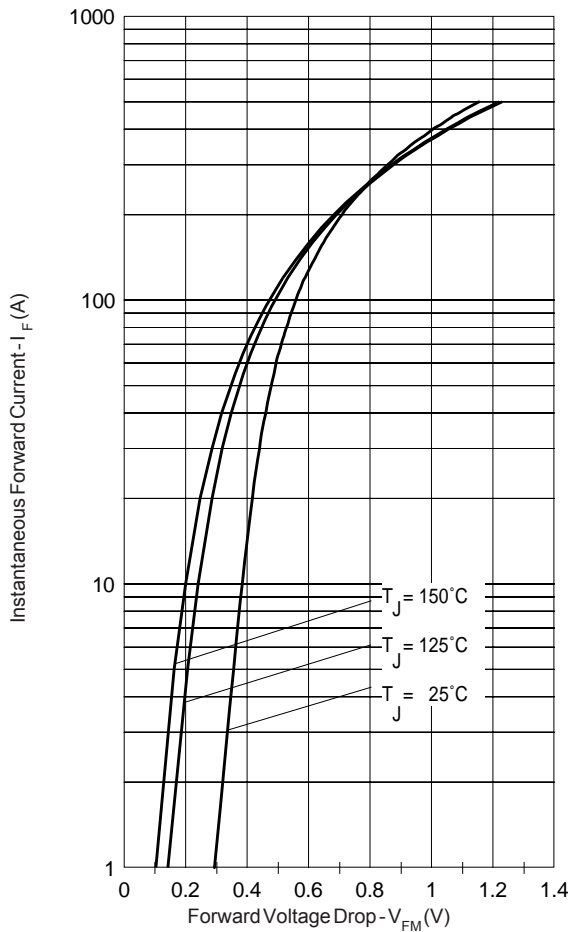


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

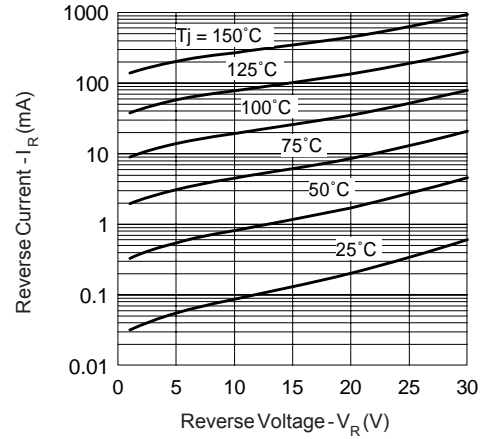


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

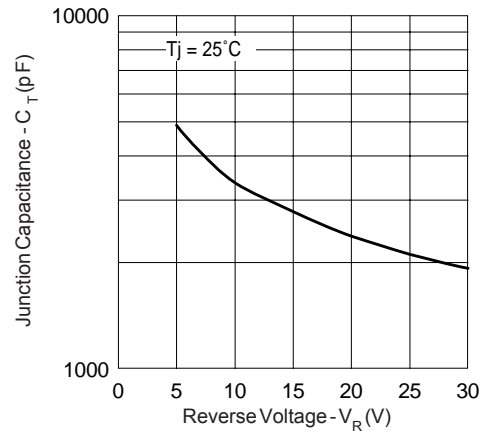


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

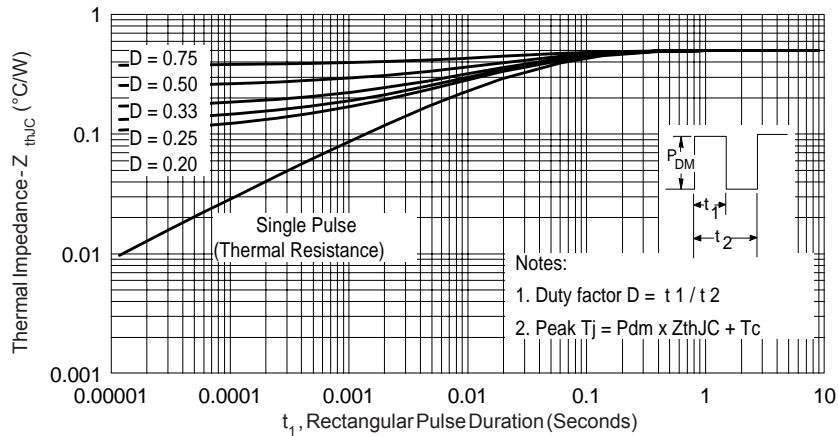


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

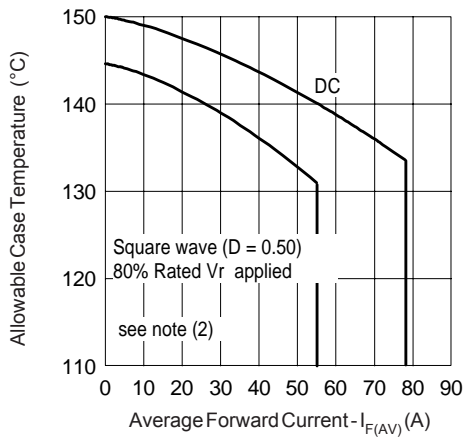


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

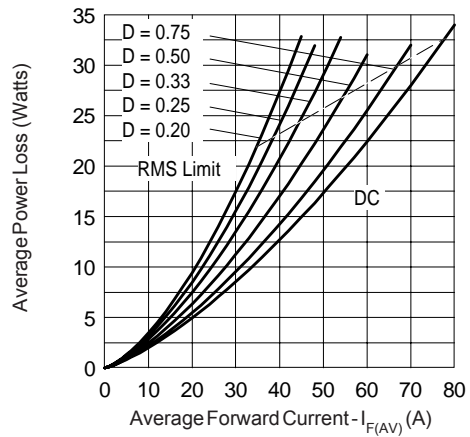


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

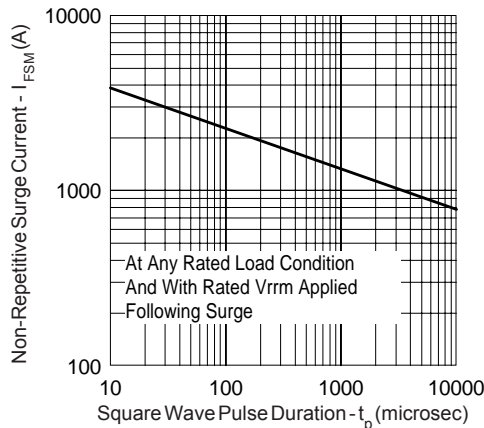


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

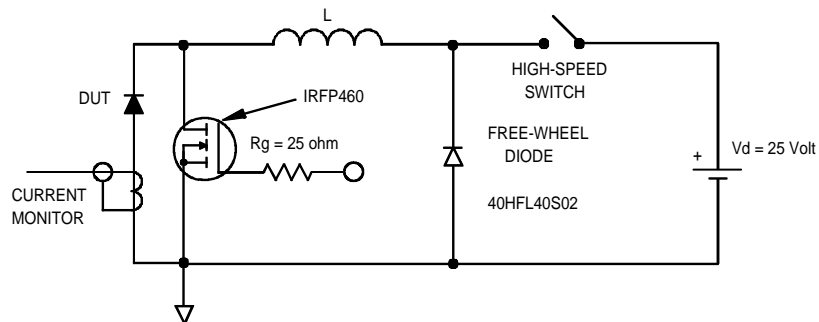


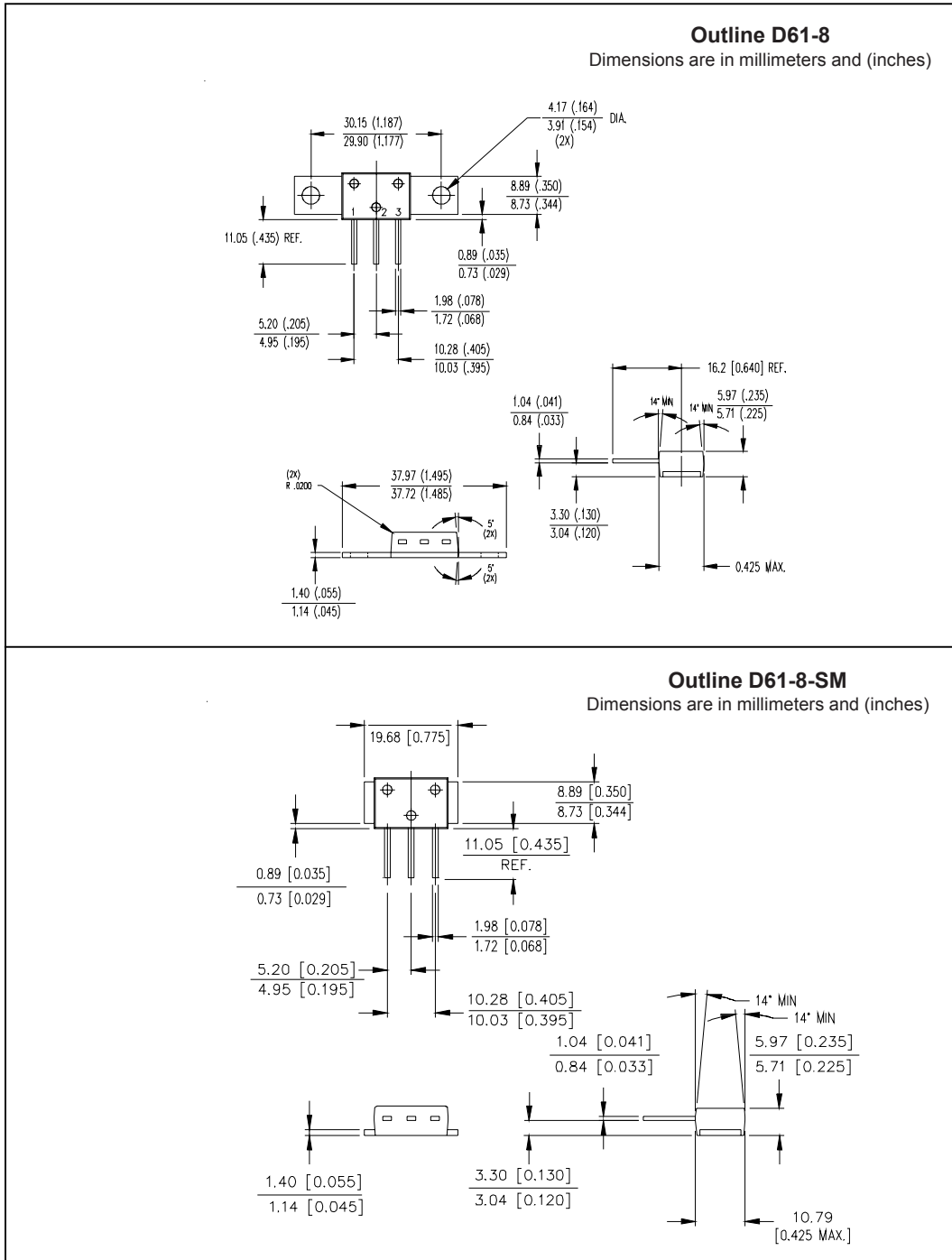
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;

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

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

Outline Table

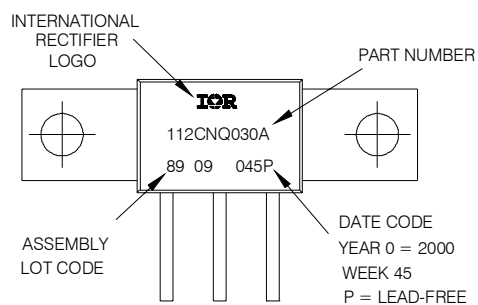


Marking Information

Outline D61-8

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

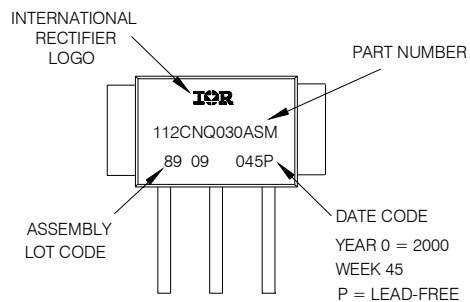
Note: "P" in assembly line
 position indicates "Lead-Free"



Outline D61-8-SM

EXAMPLE: THIS IS A 112CNQ030ASM WITH
 LOT CODE 89 09
 ASSEMBLED ON WW 45, 2000

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



Ordering Information Table

Device Code															
	<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">112</td> <td style="padding: 5px;">C</td> <td style="padding: 5px;">N</td> <td style="padding: 5px;">Q</td> <td style="padding: 5px;">030</td> <td style="padding: 5px;">A</td> <td style="padding: 5px;">PbF</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> <td style="text-align: center;">⑦</td> </tr> </table>	112	C	N	Q	030	A	PbF	①	②	③	④	⑤	⑥	⑦
112	C	N	Q	030	A	PbF									
①	②	③	④	⑤	⑥	⑦									
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	- <ul style="list-style-type: none"> • A = D-61-8 package style • ASM = D-61-8-SM package style 														
7	- <ul style="list-style-type: none"> • 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.