Bulletin PD-20630 rev. A 09/01

International
IOR Rectifier

112CNQ030A

SCHOTTKY RECTIFIER
New GenIII D-61 Package

110 Amp

Major Ratings and Characteristics

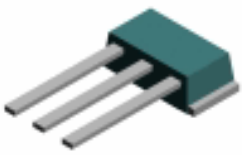
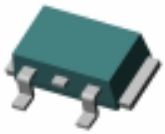
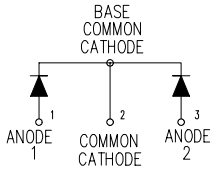
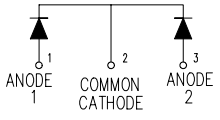
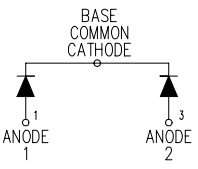
Characteristics		112CNQ030A	Units
$I_{F(AV)}$	Rectangular waveform	110	A
V_{RRM}		30	V
I_{FSM}	@tp = 5 µs sine	5100	A
V_F	@55Apk, T_J=125°C (per leg)	0.39	V
T_J	range	-55 to 150	°C

Description/Features

The 112CNQ030A 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*

Case Styles

112CNQ030A	112CNQ030ASM	112CNQ030ASL
		
		
D61-8	**D61-8-SM**	**D61-8-SL**

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 **(D61-8 Only)**	Min.	40 (35)	Kg-cm (lbf-in)	
		Max.	58 (50)		

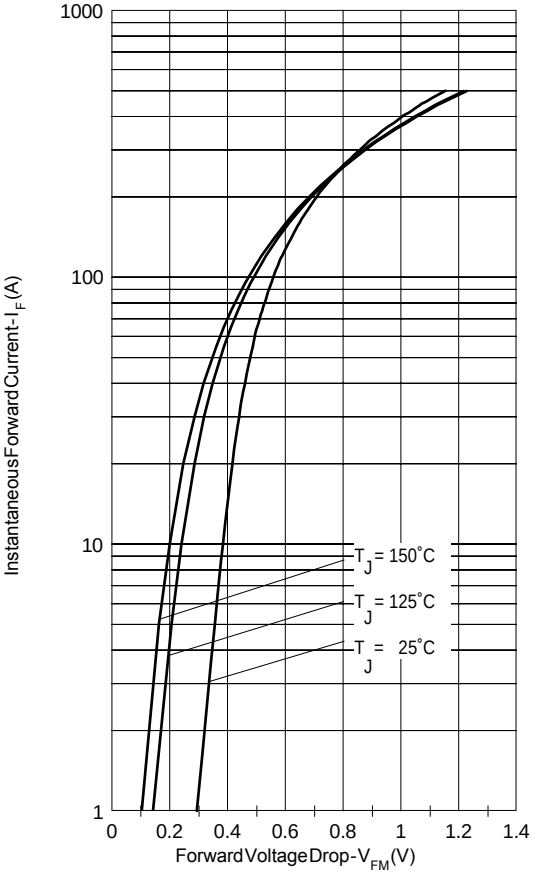


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

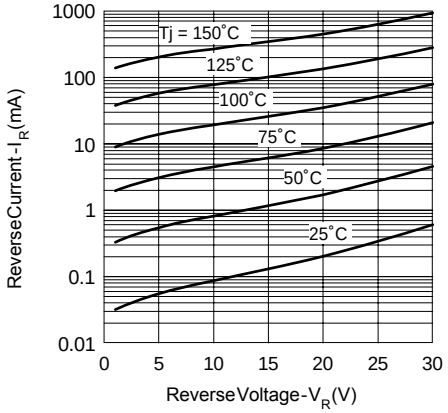


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

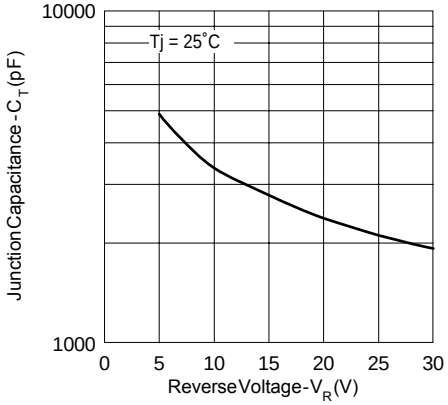


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

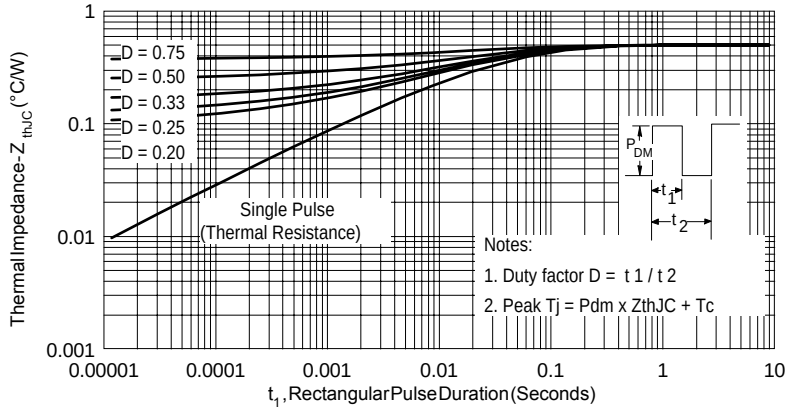


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

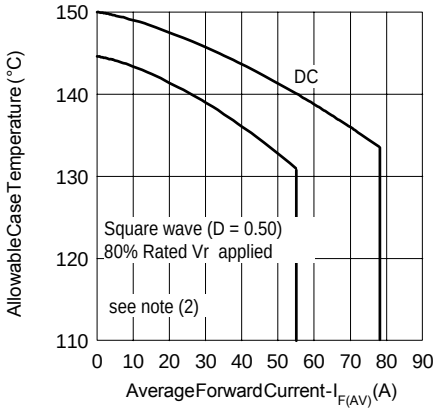


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

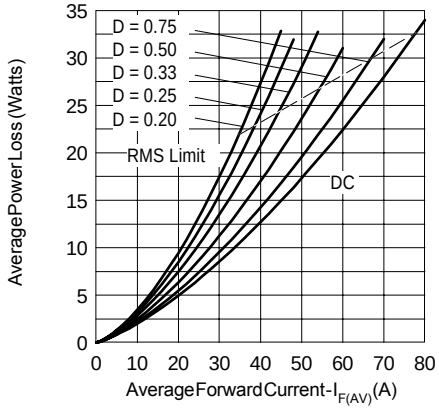


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

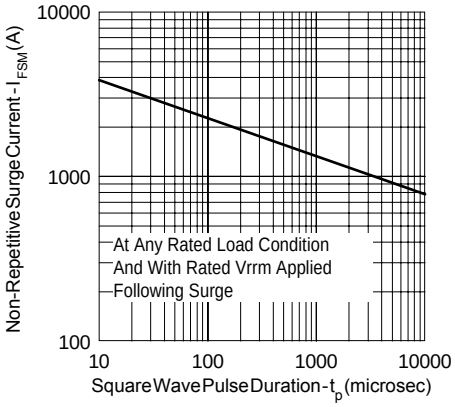


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

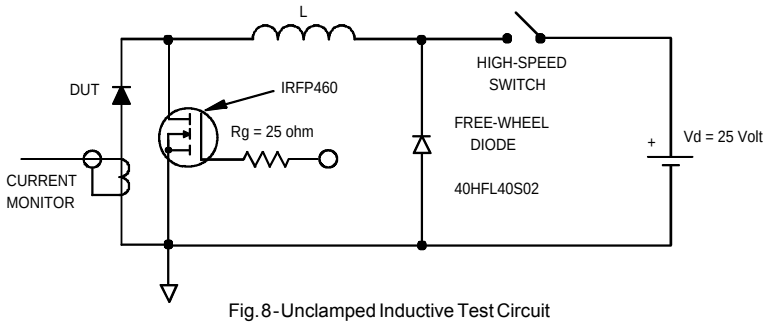
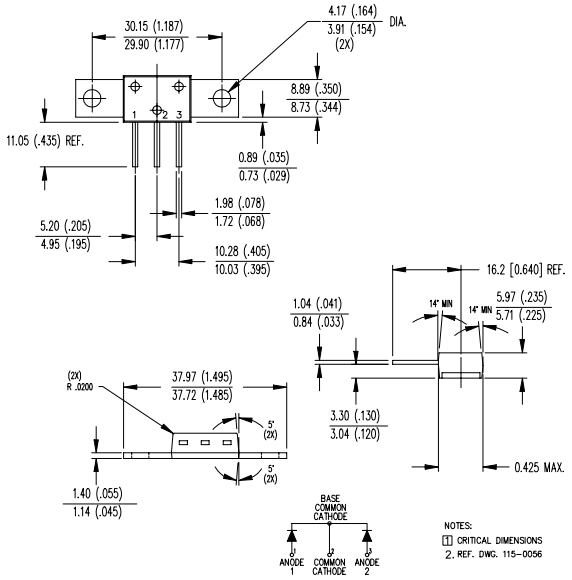


Fig. 8 - Unclamped Inductive Test Circuit

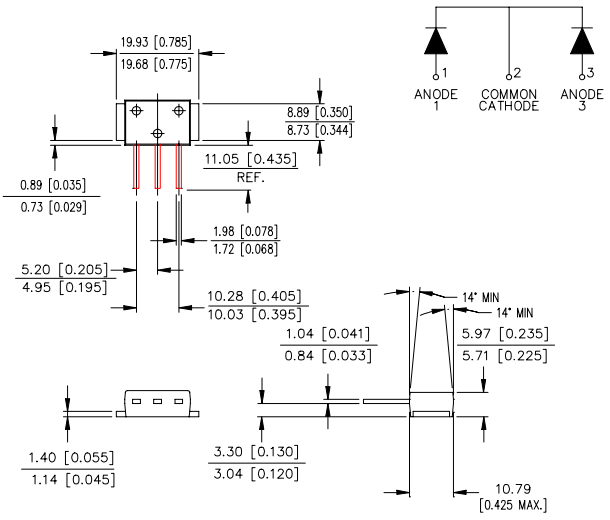
(2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM}$ @ ($I_{F(AV)}$ / D) (see Fig. 6);
Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; I_R @ V_{R1} = 80% rated V_R

Outline Table

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



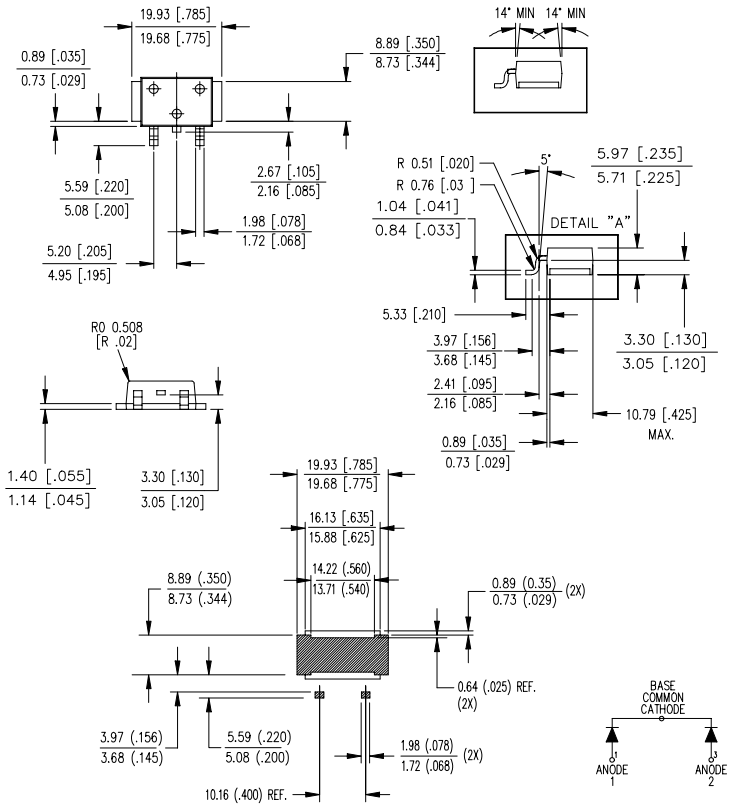
Outline D61-8-SM
Dimensions are in millimeters and (inches)



Outline Table

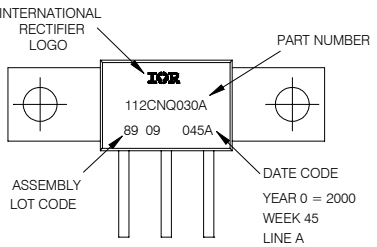
Outline D61-8-SL

Dimensions are in millimeters and (inches)



Marking Information

EXAMPLE: THIS IS A 112CNQ030A WITH
LOT CODE 89 09
ASSEMBLED ON WW 45, 2000
IN THE ASSEMBLY LINE "A"



Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
09/01

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.