Bulletin PD-20.758 rev. A 03/02

International
IOR Rectifier

111CNQ045A

SCHOTTKY RECTIFIER 110 Amp

New GenIII D-61 Package

Major Ratings and Characteristics

Characteristics	111CNQ045A	Units
$I_{F(AV)}$ Rectangular waveform	110	A
V_{RRM}	45	V
I_{FSM} @ tp = 5 µs sine	4000	A
V_F @55Apk, T_J=125°C (per leg)	0.55	V
T_J range	-55 to 175	°C

Description/Features

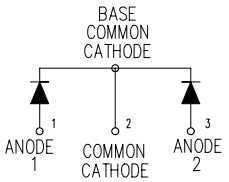
The 111CNQ045A center tap Schottky rectifier module has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 175 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

- 175 °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

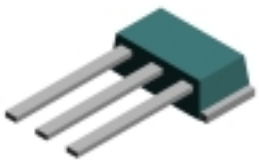
111CNQ045A

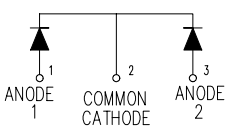




D61-8

111CNQ045ASM

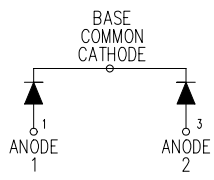




D61-8-SM

111CNQ045ASL





D61-8-SL

Voltage Ratings

	Part number	111CNQ045A
V_R	Max. DC Reverse Voltage (V)	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters		111CNQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current * See Fig. 5	Per Leg	55	A	50% duty cycle @ T_C = 152 °C, rectangular wave form	
		Per Device	110			
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7		4000	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
			600		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)		54	mJ	T_J = 25 °C, I_{AS} = 8 Amps, L = 1.7 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	111CNQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) (1)	0.61	V	@ 55A	T_J = 25 °C
		0.75	V	@ 110A	
		0.55	V	@ 55A	T_J = 125 °C
		0.69	V	@ 110A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) (1)	1.5	mA	T_J = 25 °C	V_R = rated V_R
		65	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance (Per Leg)	3900	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		111CNQ	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 175	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 175	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)		0.5	°C/W	DC operation
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)		

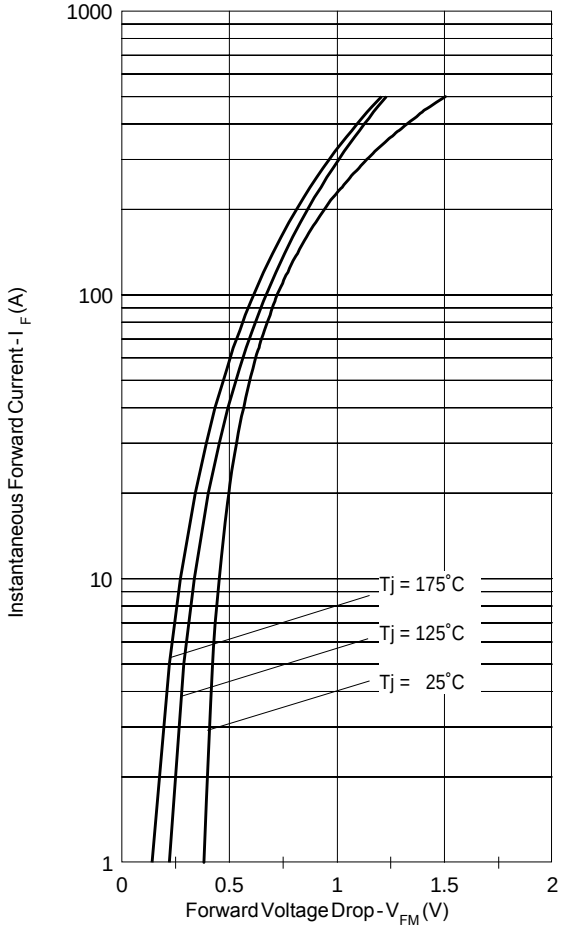


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

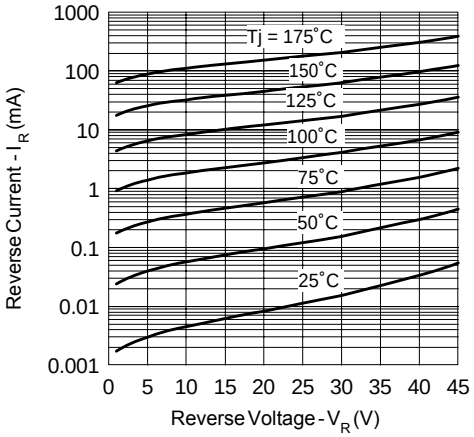


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

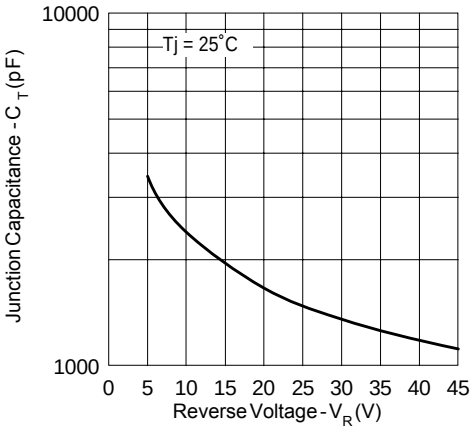


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

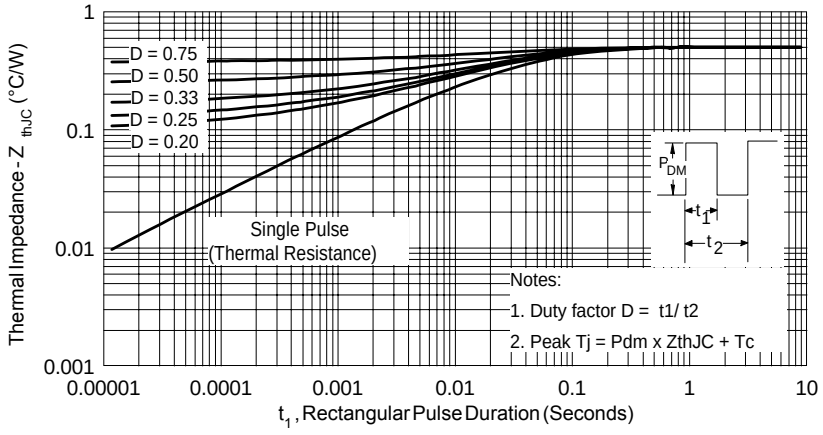


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

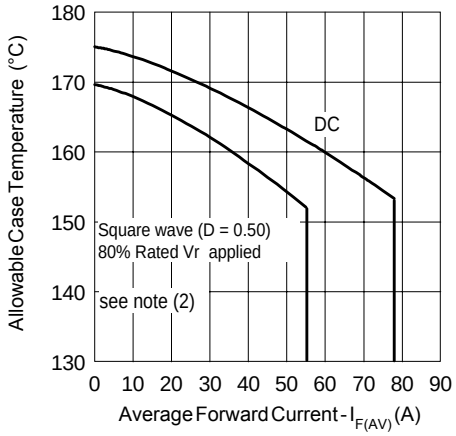


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

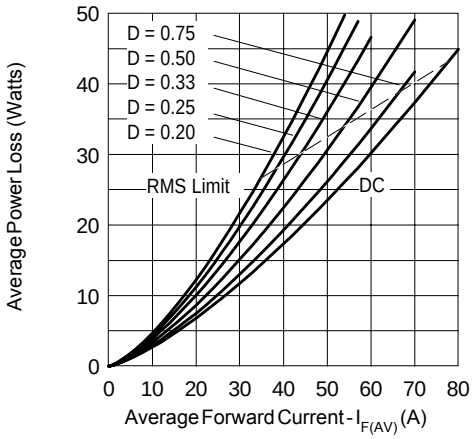


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

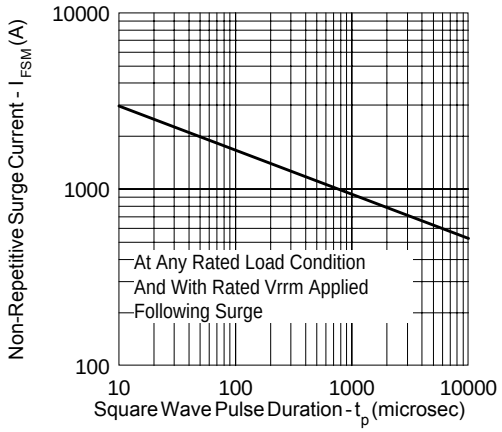


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

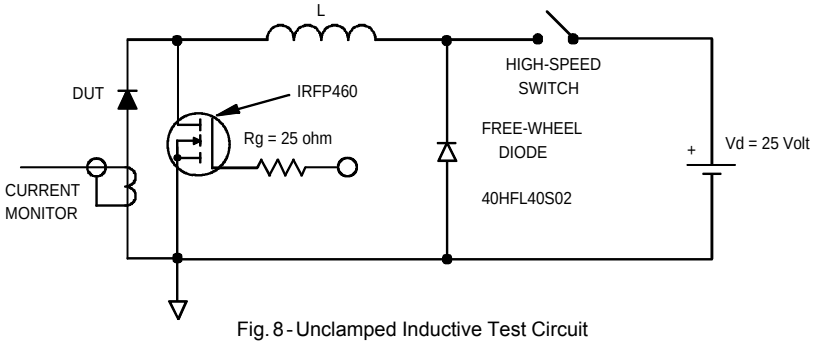
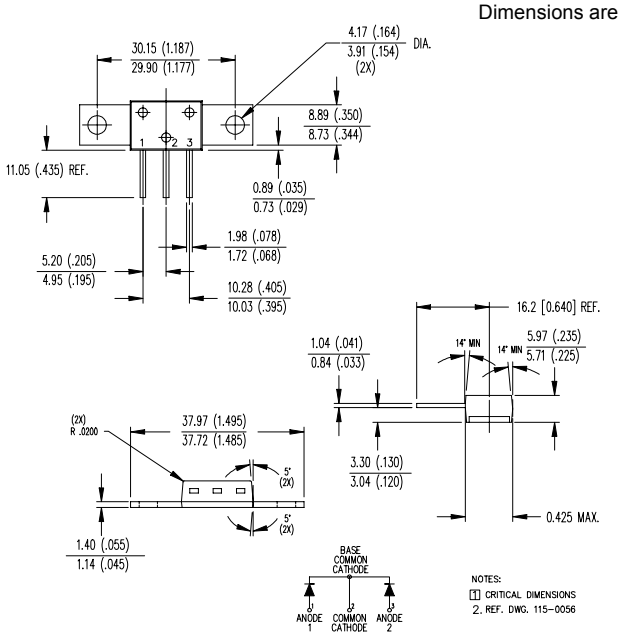


Fig. 8 - Unclamped Inductive Test Circuit

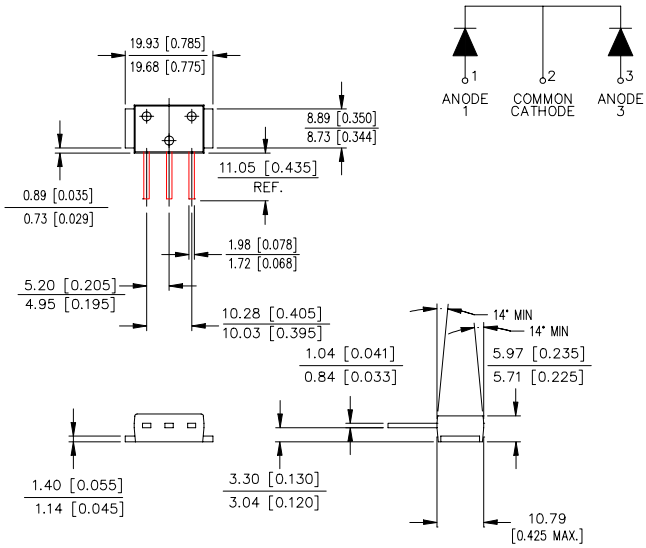
(2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1}$ = 80% rated V_R

Outline Table

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



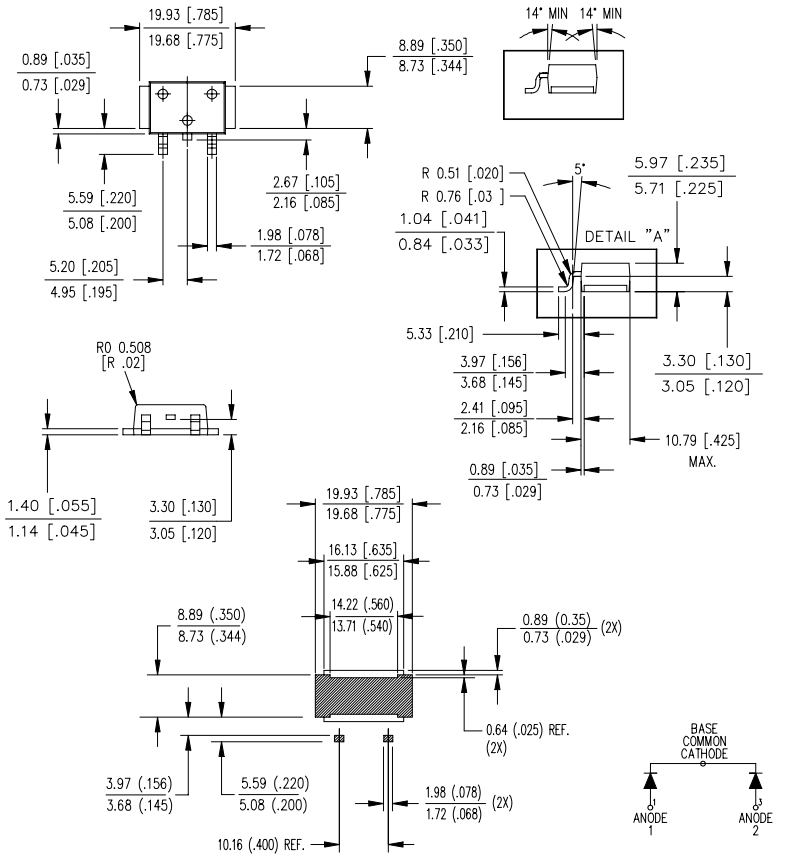
Outline D61-8-SM
Dimensions are in millimeters and (inches)



Outline Table

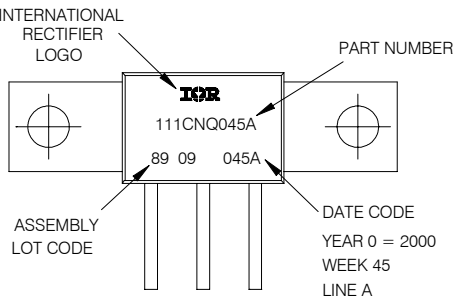
Outline D61-8-SL

Dimensions are in millimeters and (inches)



Marking Information

EXAMPLE: THIS IS A 111CNQ045A 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
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