Bulletin PD-20631 rev. B 02/03

International
IOR Rectifier

113CNQ100A SERIES

SCHOTTKY RECTIFIER 110 Amp

New GenIII D-61 Package

Major Ratings and Characteristics

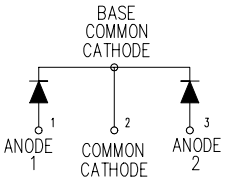
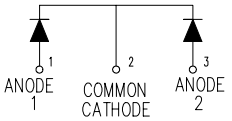
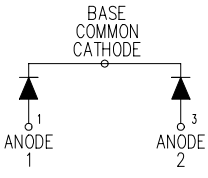
Characteristics		113CNQ	Units
$I_{F(AV)}$	Rectangular waveform	110	A
V_{RRM}		100	V
I_{FSM}	@ tp = 5 µs sine	7000	A
V_F	@55Apk, T_J=125°C (per leg)	0.67	V
T_J	range	-55 to 175	°C

Description/Features

The 113CNQ100A center tap Schottky rectifier module series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 °C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175 °C T_J operation
- Center tap module
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- *New fully transfer-mold low profile, small footprint, high current package*

Case Styles

113CNQ100A	113CNQ100ASM	113CNQ100ASL
		
		
D61-8	**D61-8-SM**	**D61-8-SL**

Voltage Ratings

	Part number	113CNQ100A
V_R	Max. DC Reverse Voltage (V)	100
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	113CNQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward (Per Leg)	55	A	50% duty cycle @ T_C = 150 °C, rectangular wave form	
	Current * See Fig. 5 (Per Device)	110			
I_{FSM}	Max. Peak One Cycle Non-Repetitive	7000	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current (Per Leg) * See Fig. 7	720		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	15	mJ	T_J = 25 °C, I_{AS} = 1 Amps, L = 30 mH	
I_{AR}	Repetitive Avalanche Current (Per Leg)	1	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	113CNQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.81	V	@ 55A	T_J = 25 °C
		1.00	V	@ 110A	
		0.66	V	@ 55A	T_J = 125 °C
		0.79	V	@ 110A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	1.0	mA	T_J = 25 °C	V_R = rated V_R
		32	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance (Per Leg)	1960	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		113CNQ	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 * 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 < 5mls
wt	Approximate Weight		7.8 (0.28)	g (oz.)	
T	Mounting Torque	Min.	12 (10)	Kg-cm (lbf-in)	(*)
	(D61-8 Only)	Max.	24 (20)		

(*) Recommended hardware 3M stainless screw

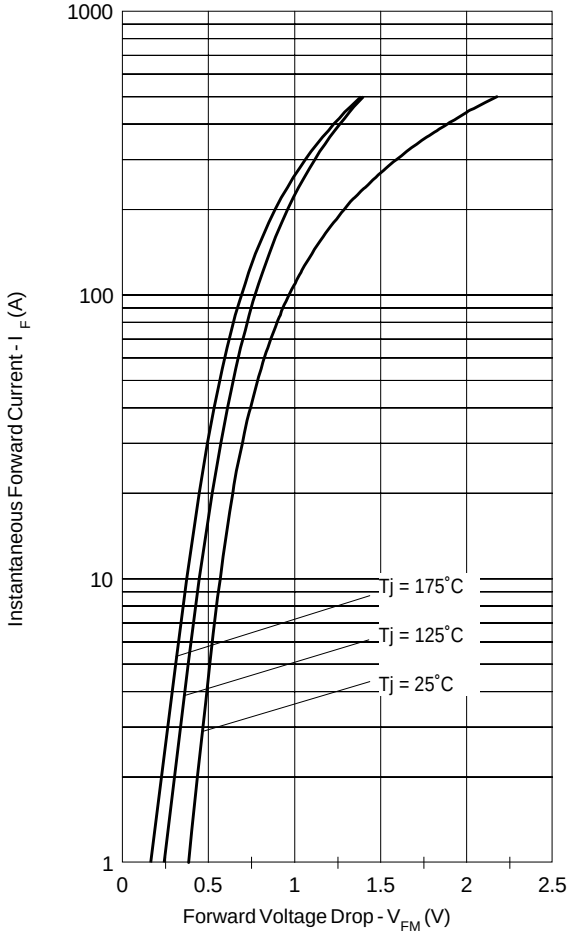


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

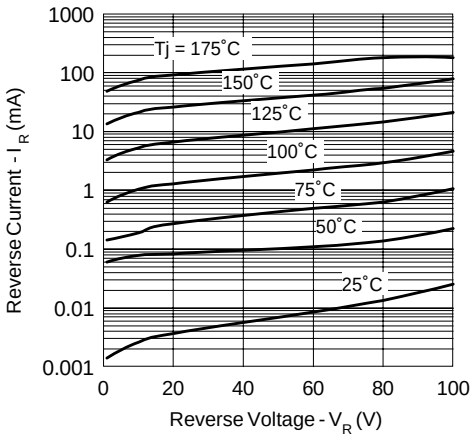


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

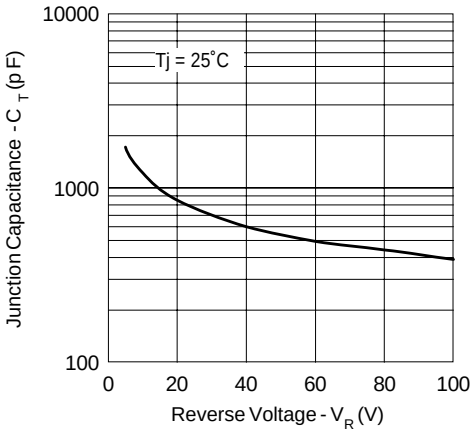


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

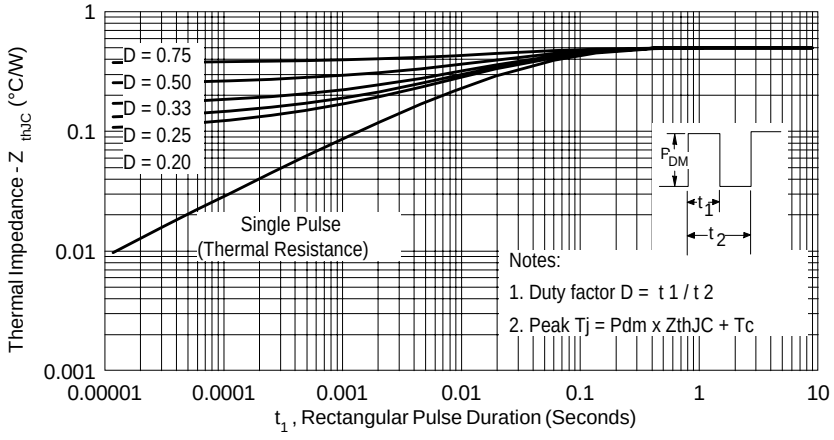


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

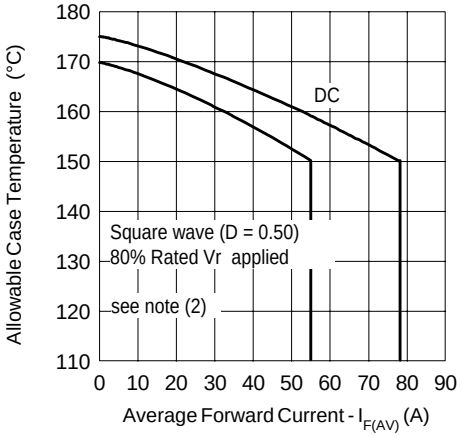


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

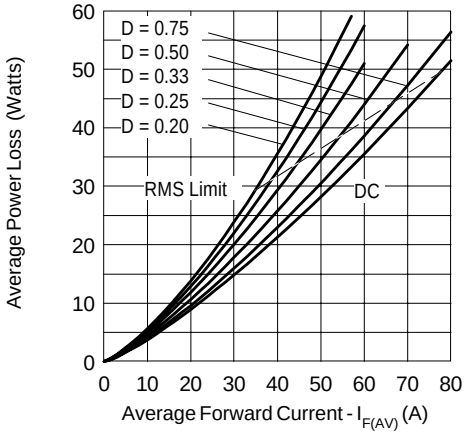


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

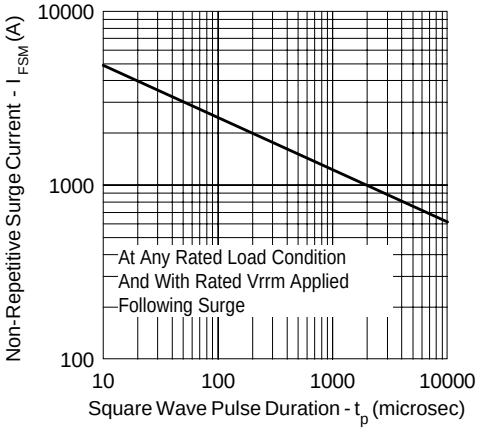


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

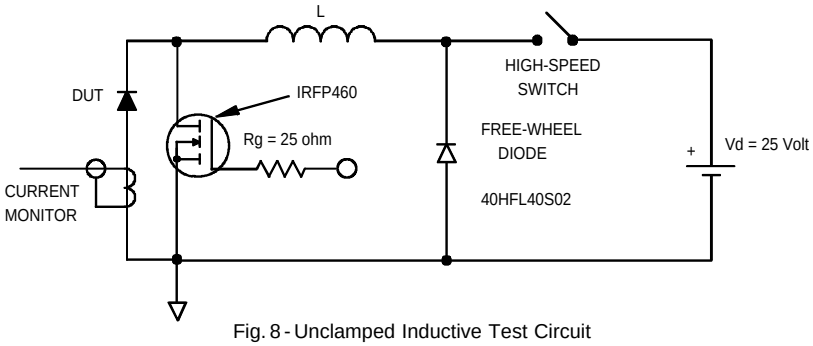


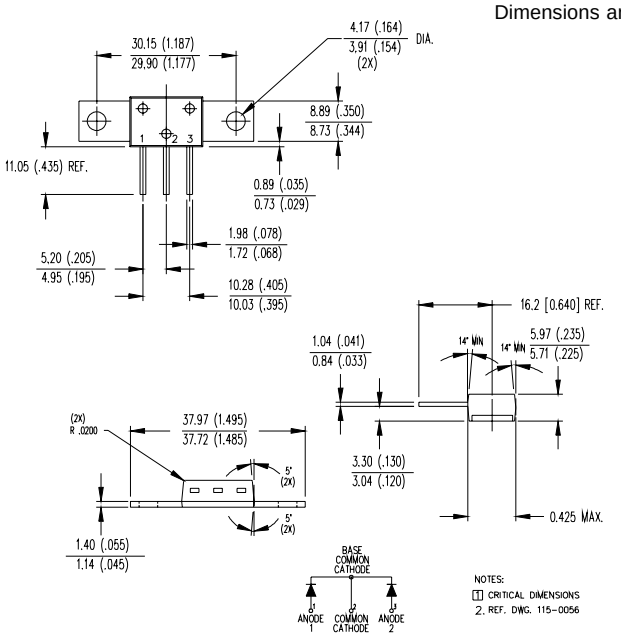
Fig. 8 - Unclamped Inductive Test Circuit

(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

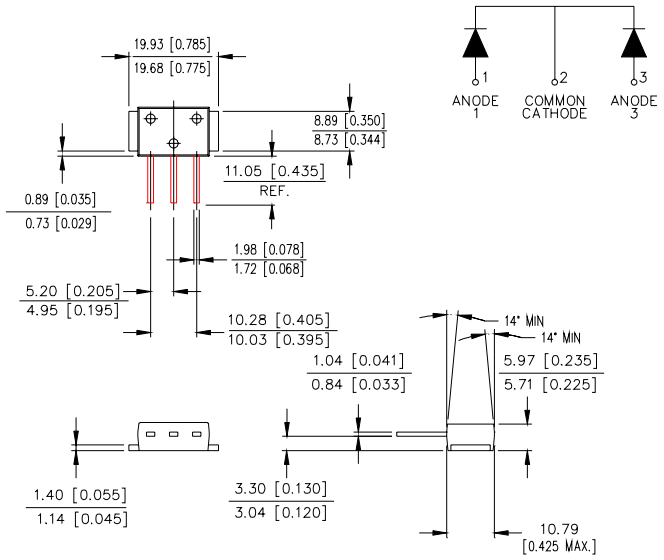
Outline D61-8

Dimensions are in millimeters and (inches)



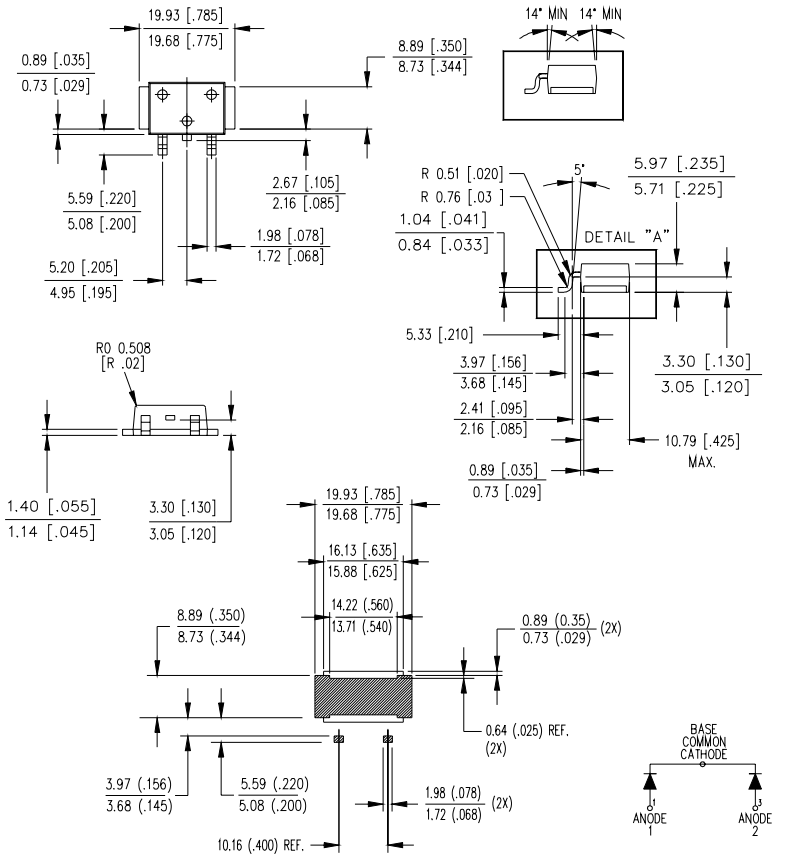
Outline D61-8-SM

Dimensions are in millimeters and (inches)

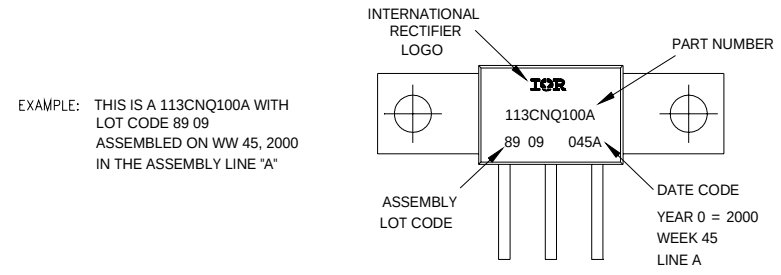


Outline Table

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



Marking Information



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.

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