Bulletin PD-20631 rev. A 09/01

International
IOR Rectifier

113CNQ...A SERIES

SCHOTTKY RECTIFIER
New GenIII D-61 Package

110 Amp

Major Ratings and Characteristics

Characteristics		113CNQ...A	Units
$I_{F(AV)}$	Rectangular waveform	110	A
V_{RRM}	range	80 to 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

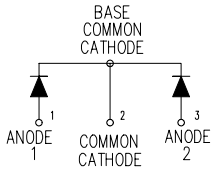
Description/Features

The 113CNQ...A 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*

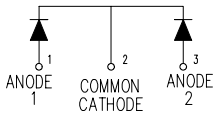
Case Styles

113CNQ...A



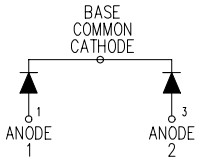
D61-8

113CNQ...ASM



D61-8-SM

113CNQ...ASL



D61-8-SL

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Voltage Ratings

	Part number	113CNQ080A	113CNQ100A
V_R	Max. DC Reverse Voltage (V)	80	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 waveform	
	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

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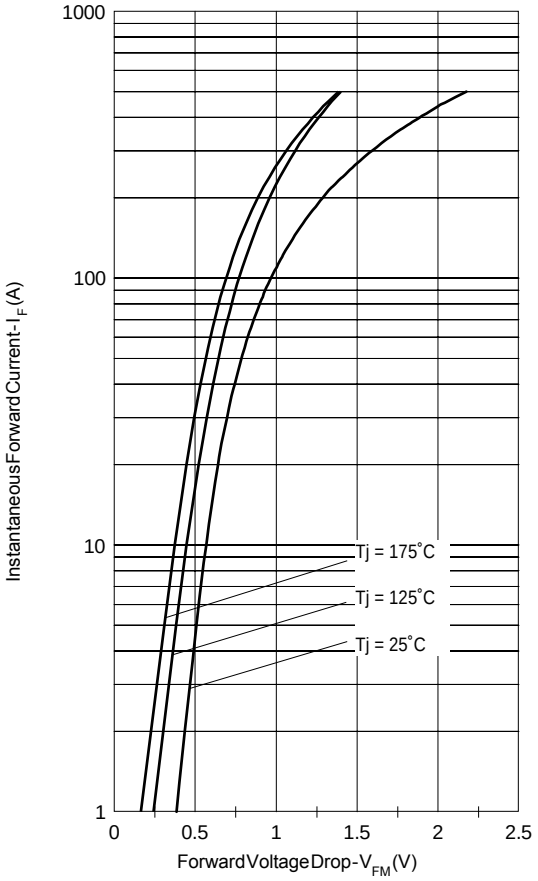

Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

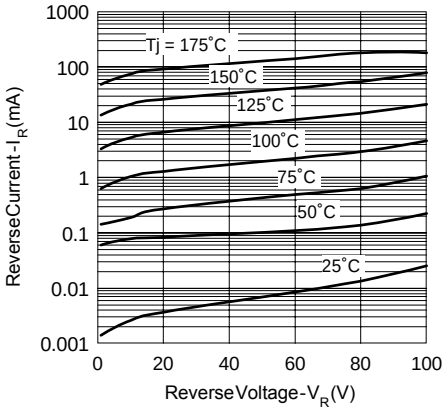

Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

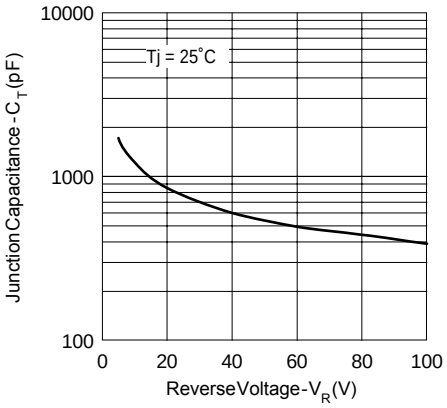

Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

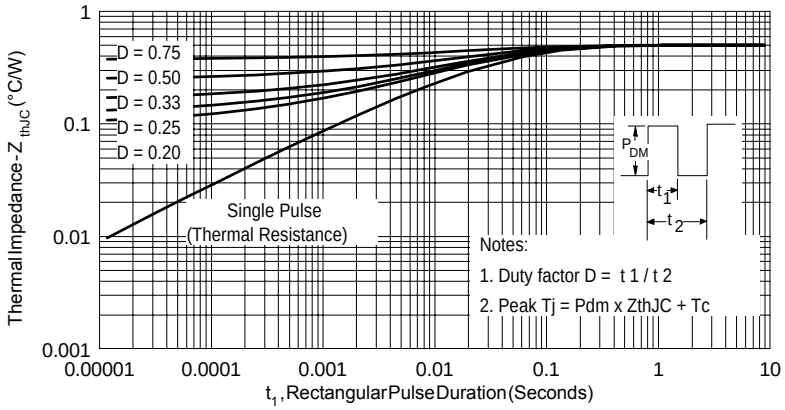

Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

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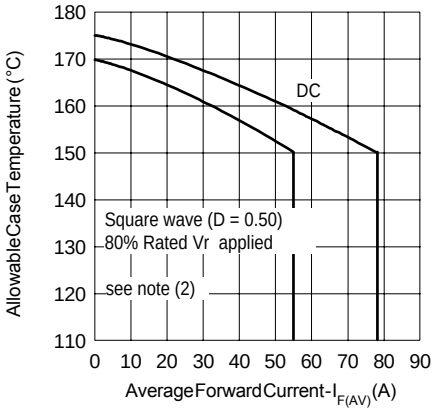

Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

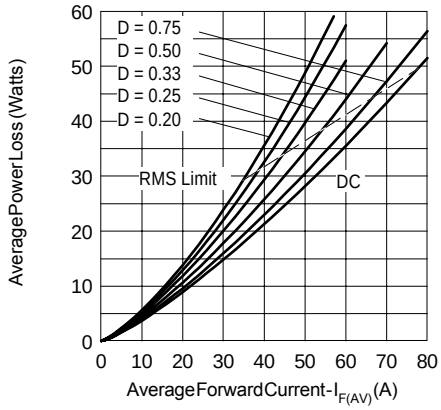

Fig. 6 - Forward Power Loss Characteristics (Per Leg)

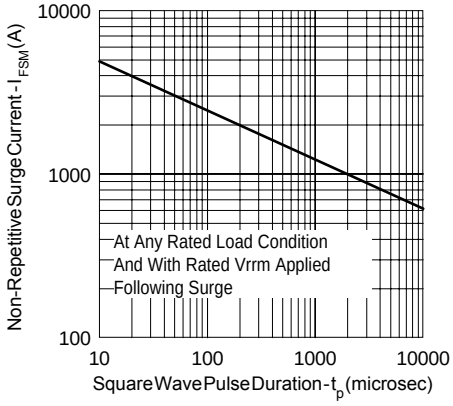

Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

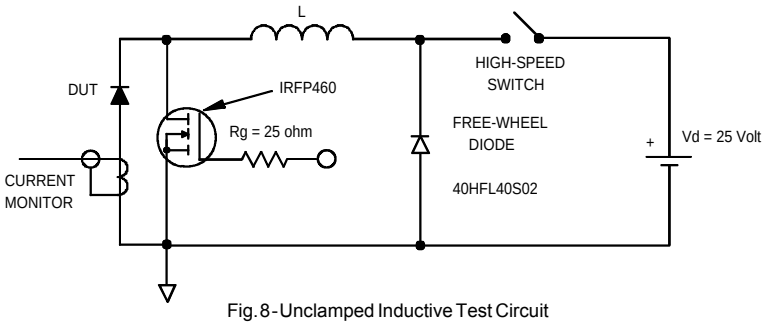

Fig. 8 - Unclamped Inductive Test Circuit

(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

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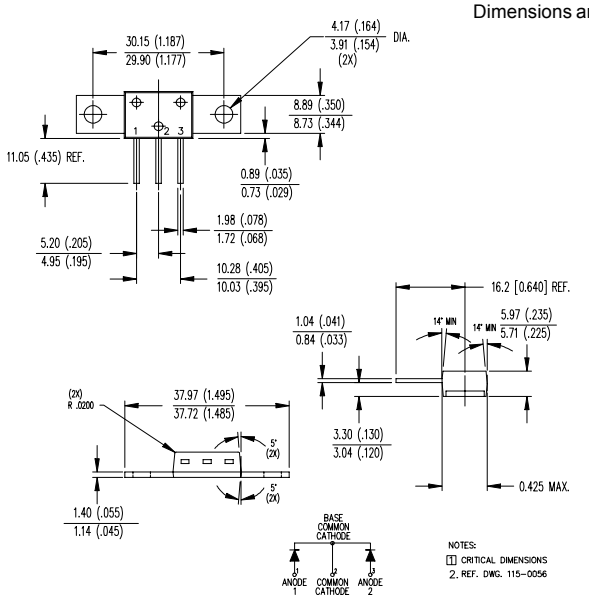
Outline Table

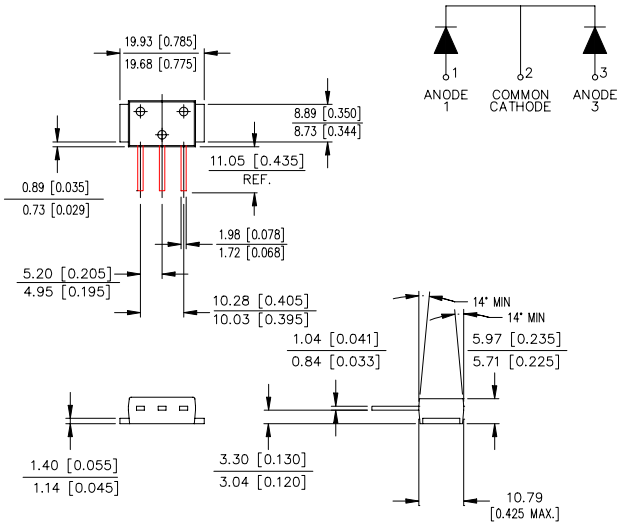
Outline D61-8

Dimensions are in millimeters and (inches)



Outline D61-8-SM

Dimensions are in millimeters and (inches)



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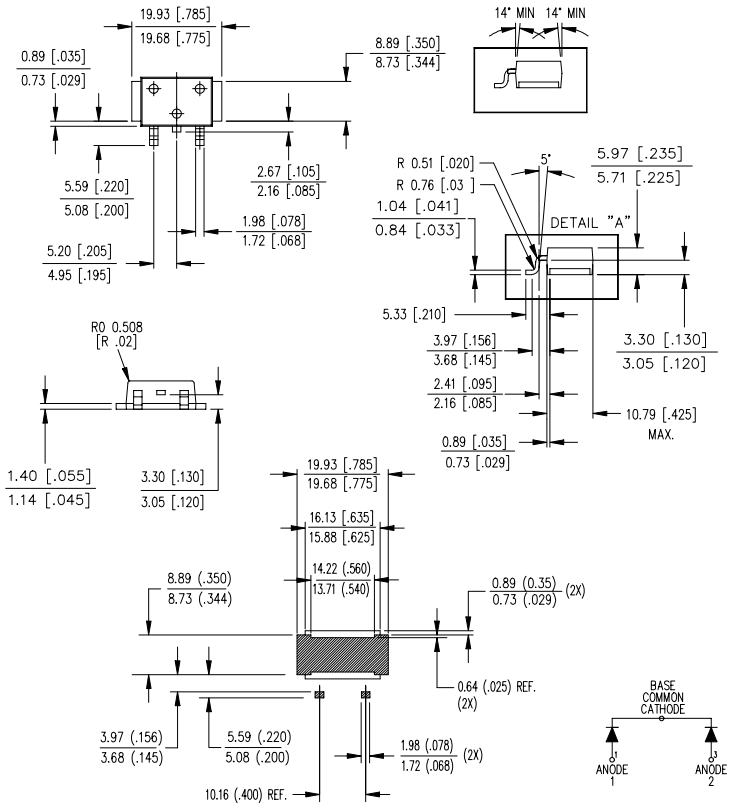
Outline Table

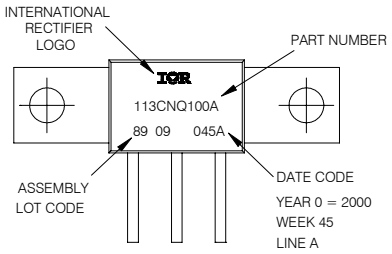
Outline D61-8-SL

Dimensions are in millimeters and (inches)



Marking Information

EXAMPLE: THIS IS A 113CNQ100A WITH
LOT CODE 89 09
ASSEMBLED ON WW 45, 2000
IN THE ASSEMBLY LINE "A"



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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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