Bulletin PD-20058 rev. B 01/02

International
IOR Rectifier

88CNQ060A Series

SCHOTTKY RECTIFIER
New GenIII D-61 Package

80 Amp

Major Ratings and Characteristics

Characteristics		88CNQ...A	Units
$I_{F(AV)}$	Rectangular waveform	80	A
V_{RRM}		60	V
I_{FSM}	@tp = 5 µs sine	5000	A
V_F	@40Apk, T_J = 125°C (perleg)	0.56	V
T_J	range	-55 to 150	°C

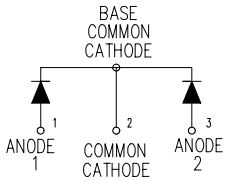
Description/Features

The 88CNQ060A 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
- 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*

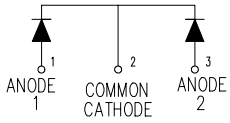
Case Styles

88CNQ...A



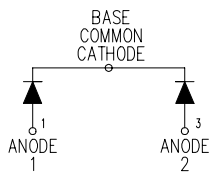
D61-8

88CNQ...ASM



D61-8-SM

88CNQ...ASL



D61-8-SL

Voltage Ratings

	Part number	88CNQ060A
V_R	Max. DC Reverse Voltage (V)	60
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	88CNQ	Units	Conditions	
$I_{F(AV)}$	Max. Av. Forward Current (Per Leg)	40	A	50% duty cycle @ T_C = 120°C, rectangular wave form	
	See Fig. 5 (Per Device)	80		(Rated V_R)	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	5000	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated Vr applied
	Surge Current (Per Leg) See Fig. 7	600		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	75	mJ	T_J = 25 °C, I_{AS} = 1 Amps, L = 0.57 mH	
I_{AR}	Repetitive Avalanche Current (Per Leg)	1.0	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	88CNQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) (1)	0.58	V	@ 40A	T_J = 25 °C
		0.77	V	@ 80A	
		0.56	V	@ 40A	T_J = 125 °C
		0.67	V	@ 80A	
I_{RM}	Typical Reverse Leakage Current (Per Leg) See Fig. 2 (1)	0.64	mA	T_J = 25 °C	V_R = rated V_R
		240	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance (Per Leg)	5200	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		88CNQ	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)		0.85	°C/W	DC operation
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		0.42	°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)		

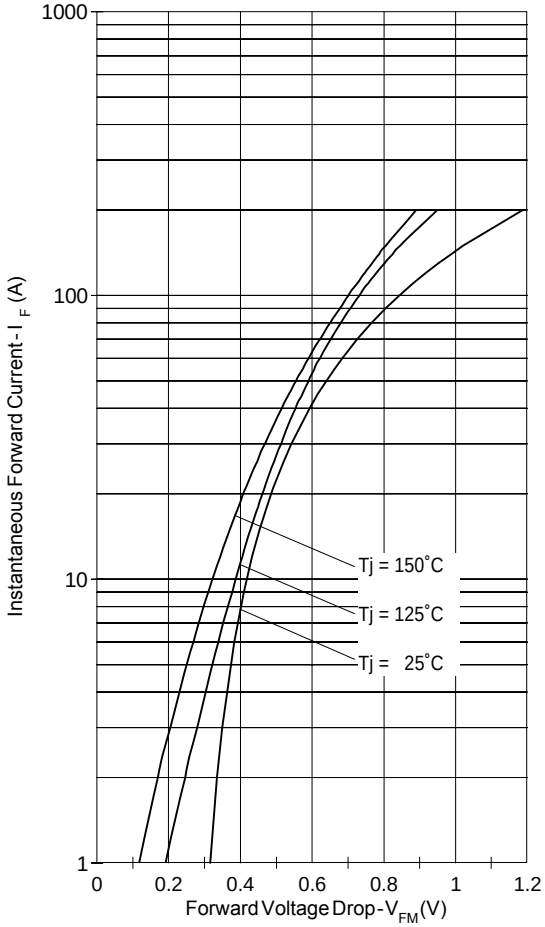


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

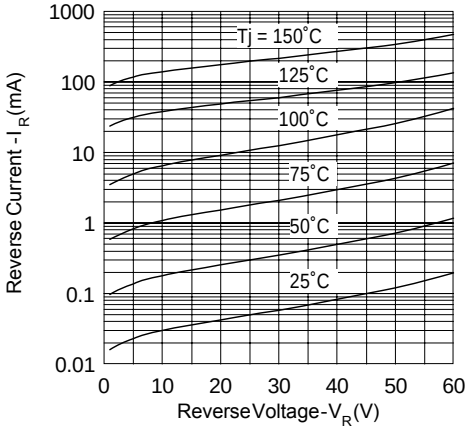


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

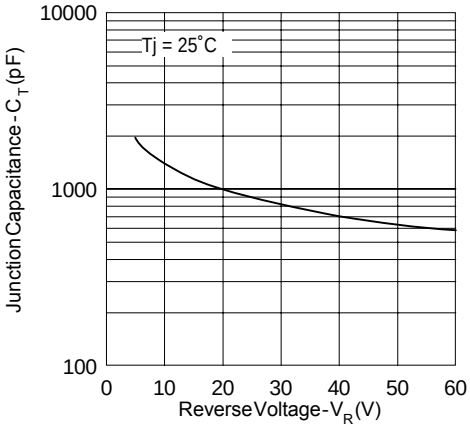


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

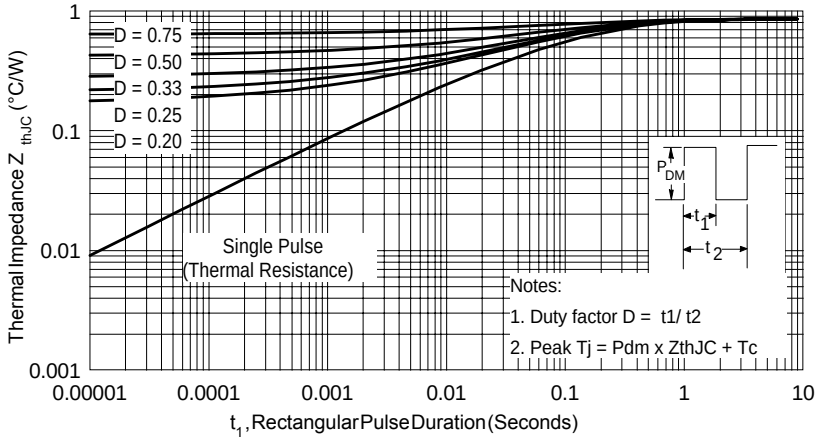


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

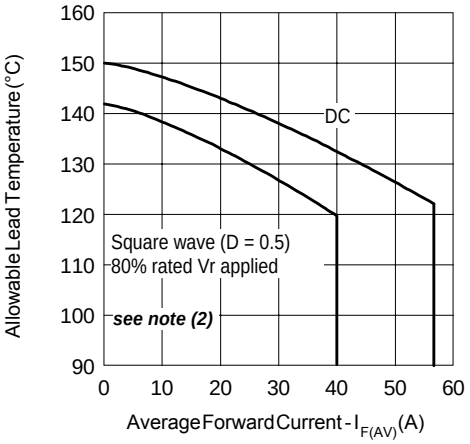


Fig. 5 - Maximum Average Forward Current Vs. Allowable Lead Temperature

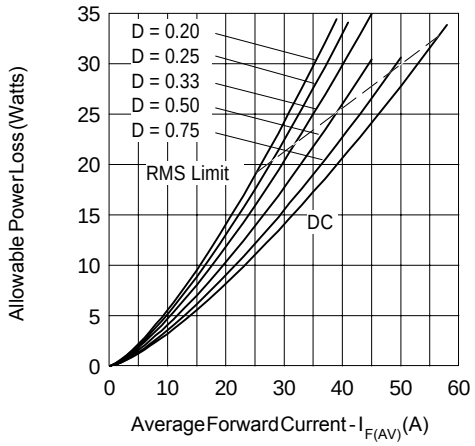


Fig. 6 - Maximum Average Forward Dissipation Vs. Average Forward Current

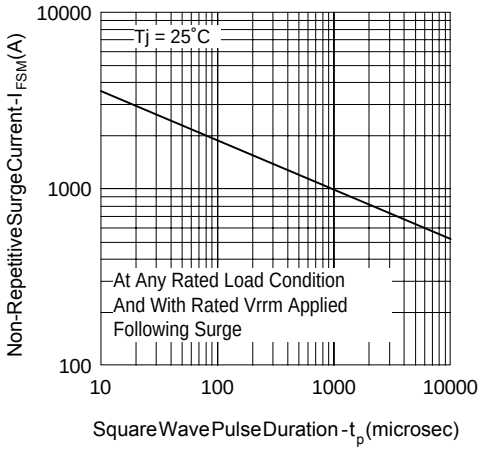


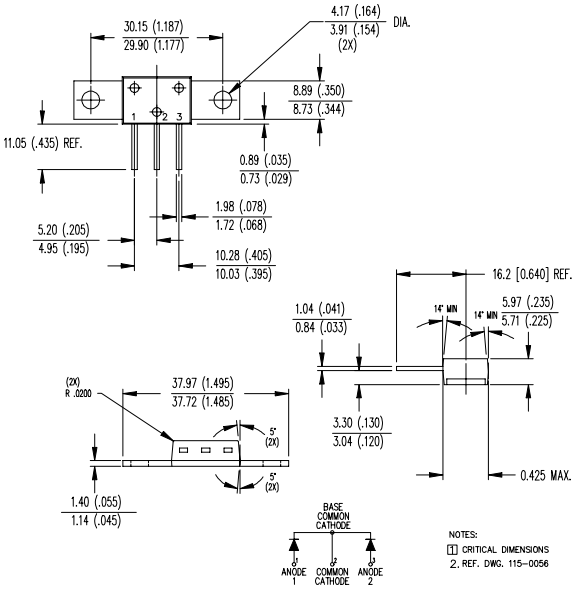
Fig. 7 - Maximum Peak Surge Forward Current Vs. Pulse Duration

(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

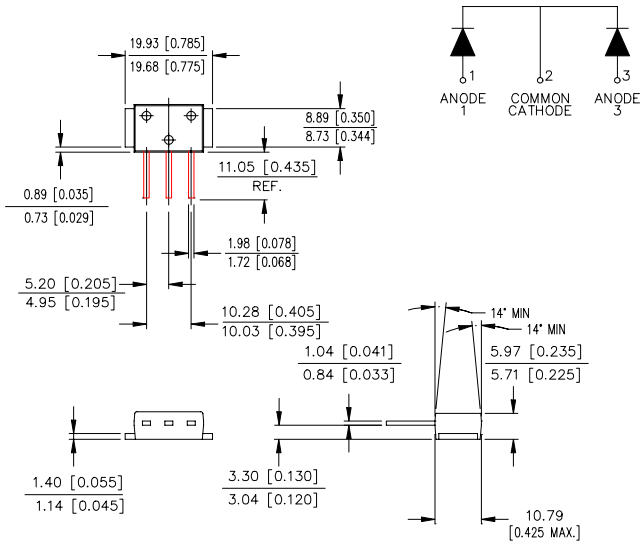
Outline D61-8

Dimensions are in millimeters and (inches)



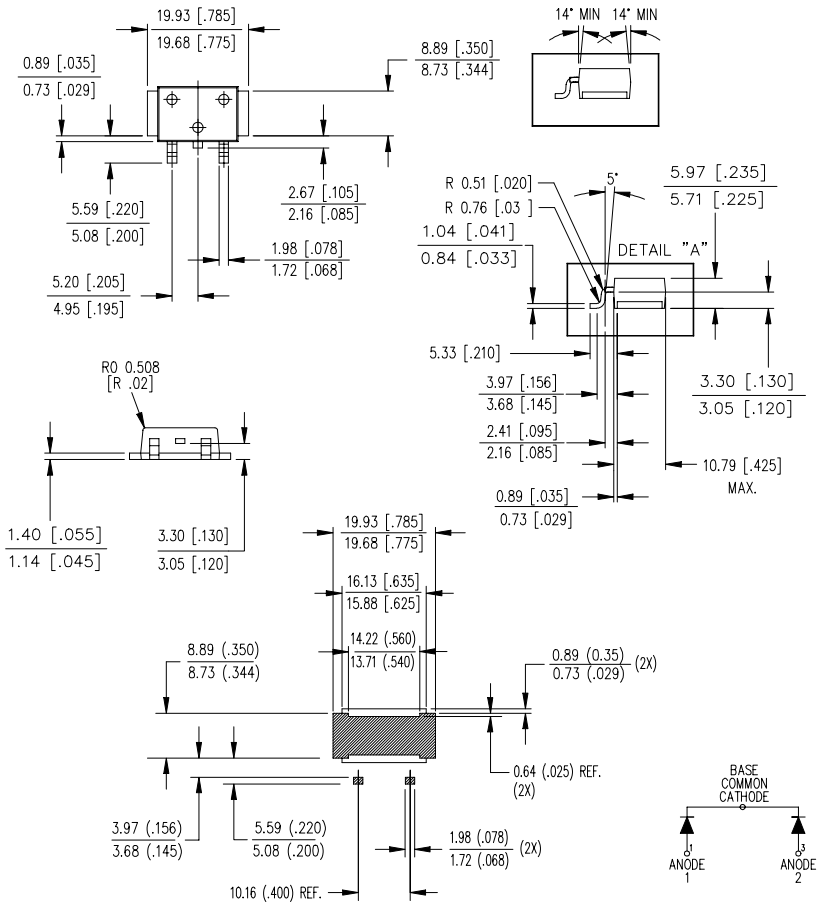
Outline D61-8-SM

Dimensions are in millimeters and (inches)



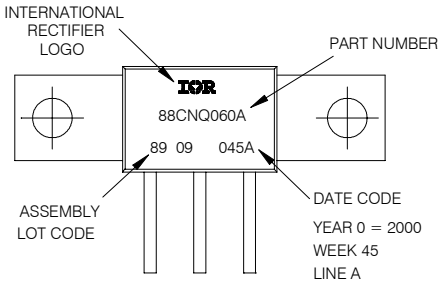
Outline Table

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



Part Marking Information

EXAMPLE: THIS IS A 88CNQ060A WITH
LOT CODE 89 09
ASSEMBLED ON WW 45, 2000
IN THE ASSEMBLY LINE "A"



D61-8

EXAMPLE: THIS IS A 88CNQ060ASM WITH
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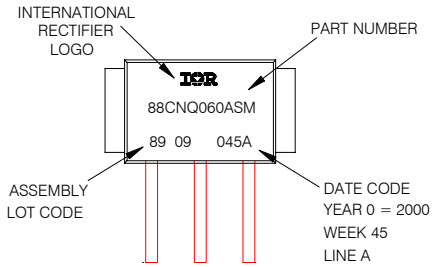

D61-8-SM

EXAMPLE: THIS IS A 88CNQ060ASL WITH
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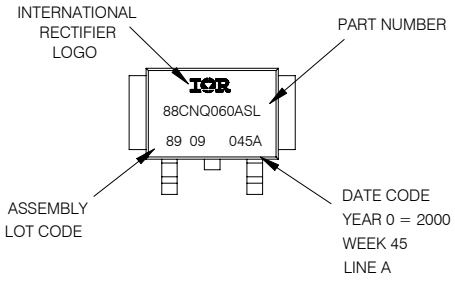

D61-8-SL

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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