

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

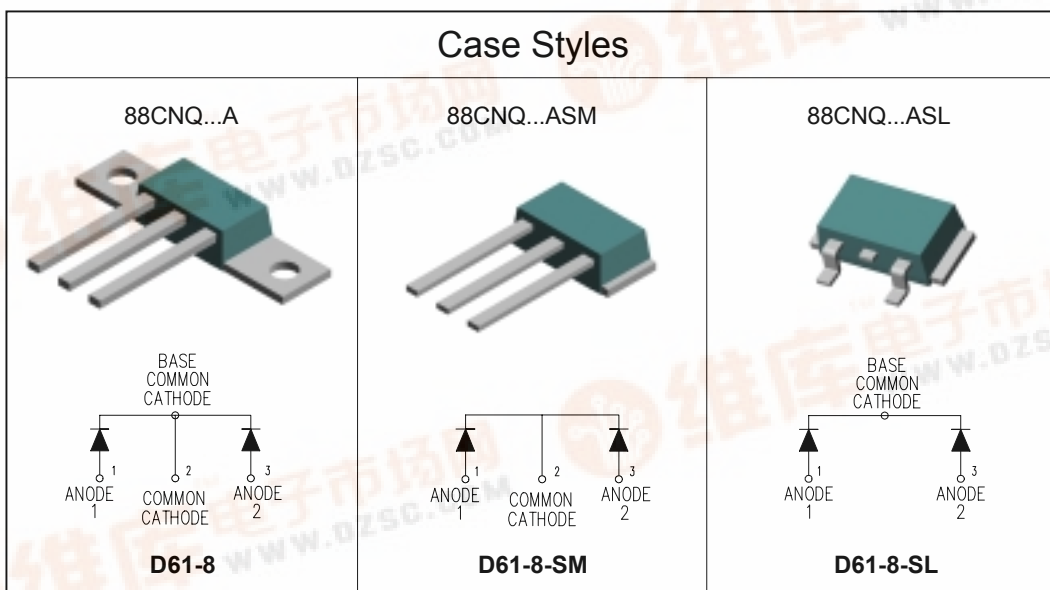
Characteristics	88CNQ...A	Units
$I_{F(AV)}$ Rectangular waveform	80	A
V_{RRM}	60	V
I_{FSM} @tp=5 μ s sine	5000	A
V_F @40Apk, $T_J=125^\circ\text{C}$ (perleg)	0.56	V
T_J range	-55 to 150	$^\circ\text{C}$

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 $^\circ\text{C}$ junction temperature. Typical applications are in switching power supplies, converters, free wheeling diodes, and reverse battery protection.

- 150 $^\circ\text{C}$ 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



Voltage Ratings

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

Absolute Maximum Ratings

Parameters	88CNQ	Units	Conditions
$I_{F(AV)}$ Max. Av. Forward Current (Per Leg) See Fig. 5 (Per Device)	40	A	50% duty cycle @ $T_C = 120^\circ\text{C}$, rectangular waveform (Rated V_R)
	80		
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) See Fig. 7	5000	A	5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated V_r applied
	600		
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	75	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 1$ 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 $T_{J,max}$. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	88CNQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) (1)	0.58	V	@ 40A
	0.77	V	@ 80A
	0.56	V	@ 40A
	0.67	V	@ 80A
I_{RM} Typical Reverse Leakage Current (Per Leg) See Fig. 2 (1)	0.64	mA	$T_J = 25^\circ\text{C}$
	240	mA	$T_J = 125^\circ\text{C}$
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 < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	88CNQ	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	0.85	$^\circ\text{C}/\text{W}$	DC operation
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.42	$^\circ\text{C}/\text{W}$	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink (D61-8 Only)	0.30	$^\circ\text{C}/\text{W}$	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)	

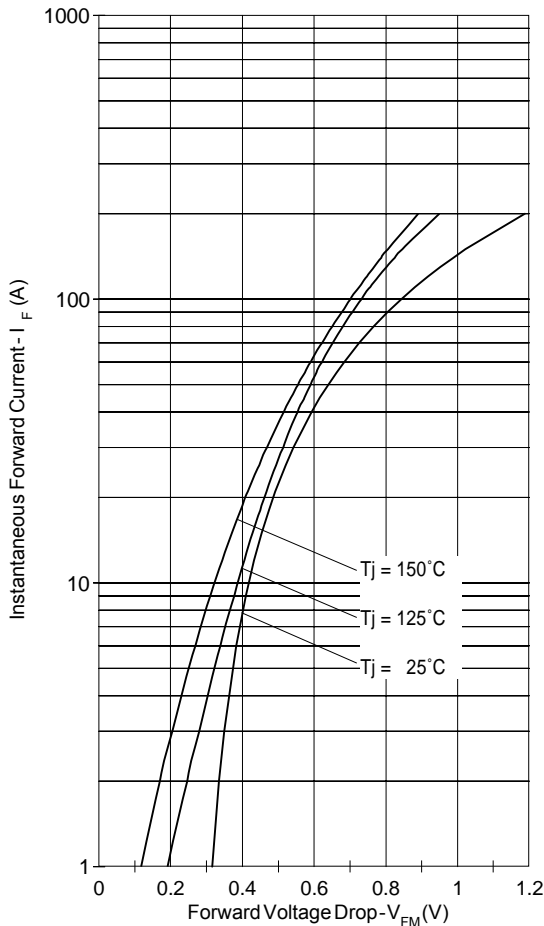


Fig. 1 - Max. Forward Voltage Drop Characteristics (PerLeg)

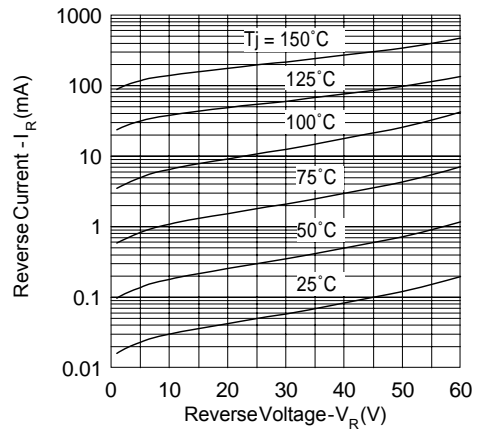


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (PerLeg)

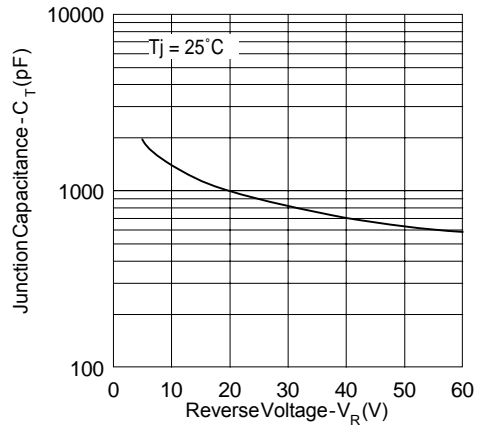


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (PerLeg)

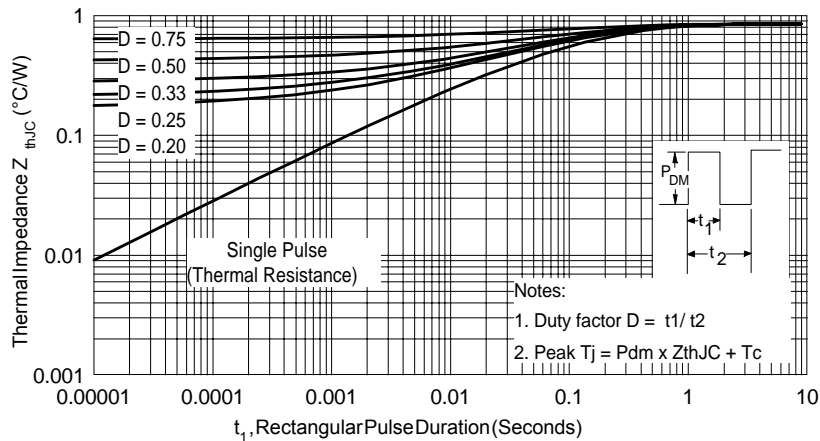


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (PerLeg)

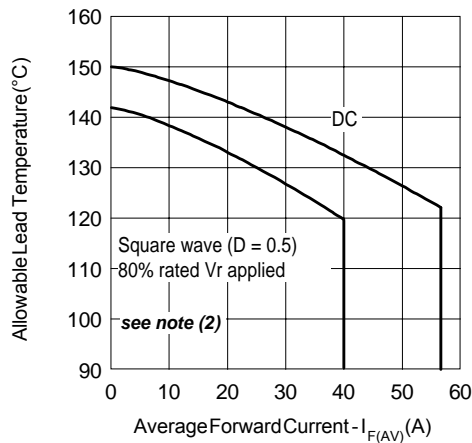


Fig. 5 - Maximum Average Forward Current Vs. Allowable Lead Temperature

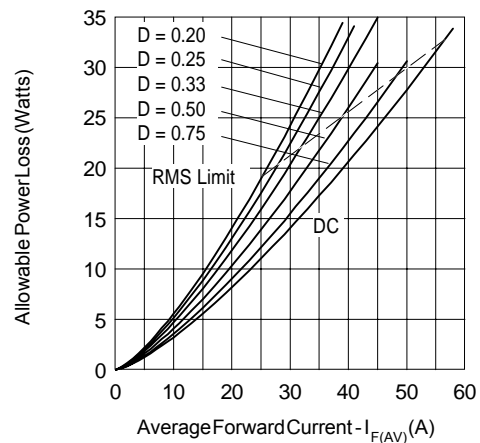


Fig. 6 - Maximum Average Forward Dissipation Vs. Average Forward Current

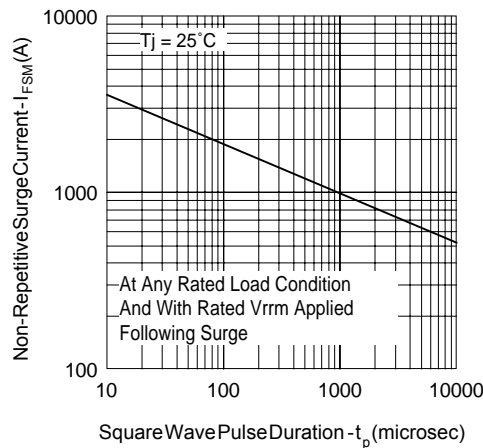
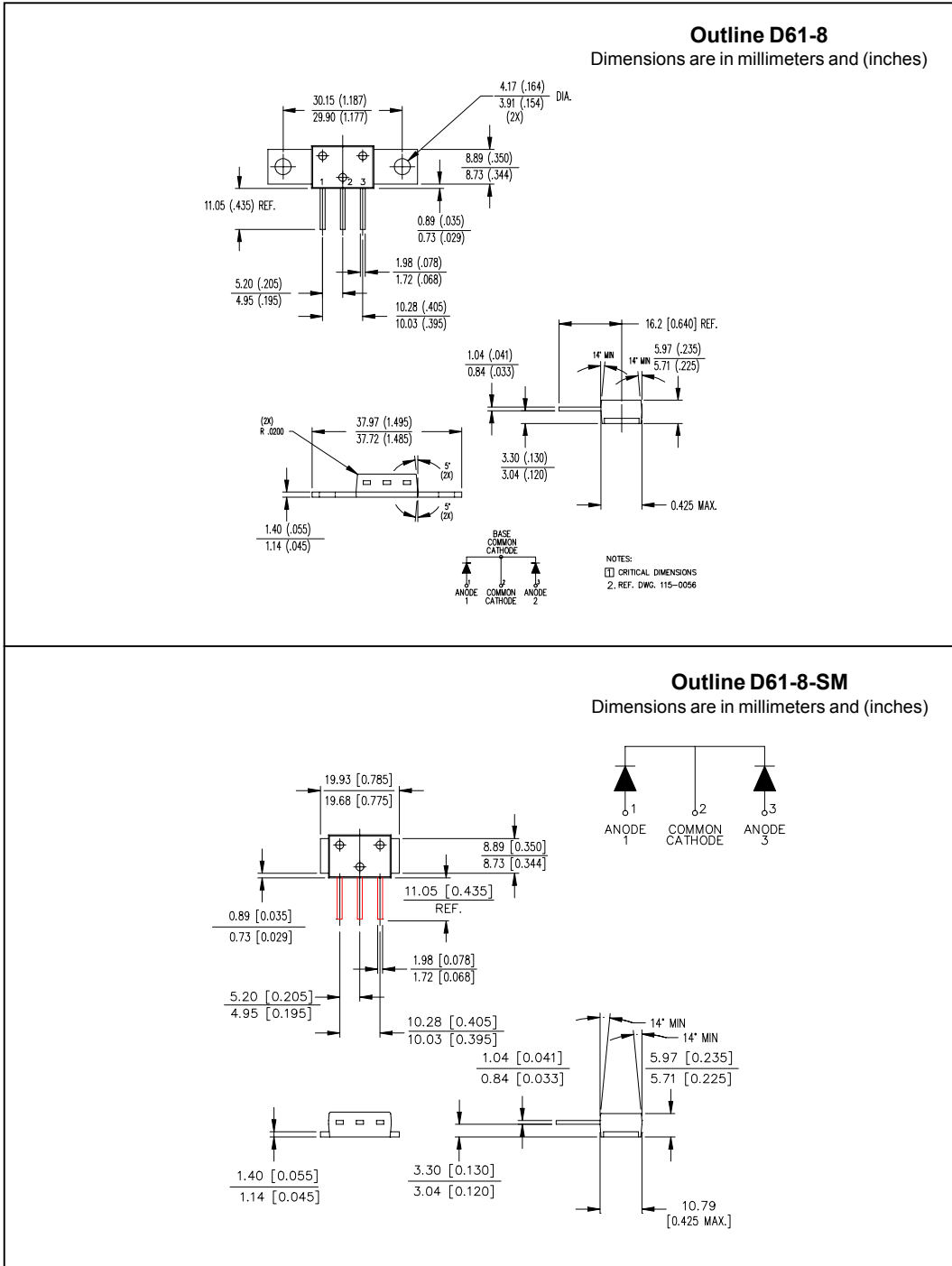


Fig. 7 - Maximum Peak Surge Forward Current Vs. Pulse Duration

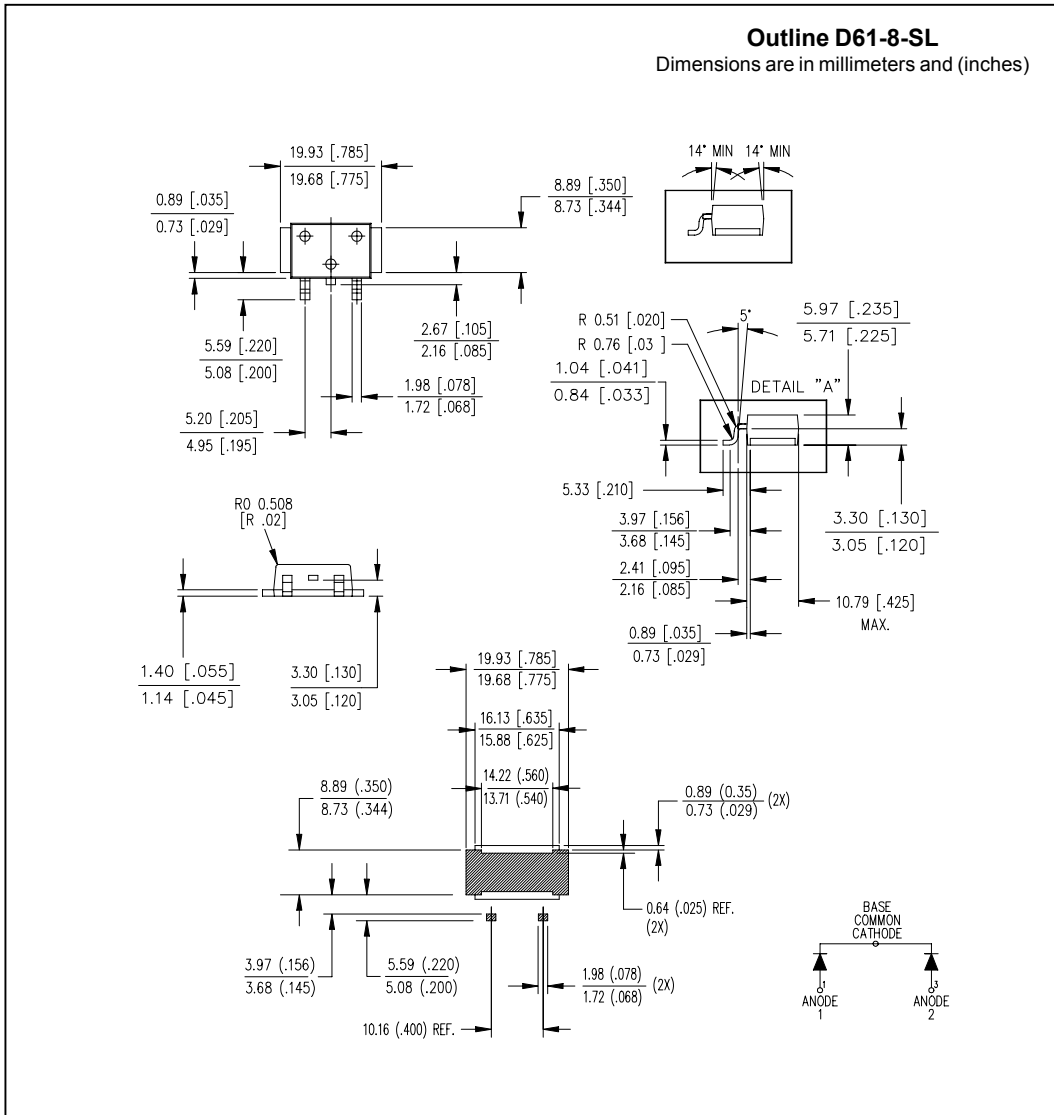
- (2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
 $Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D); I_R @ V_{R1} = 80\% \text{ rated } V_R$

Outline Table



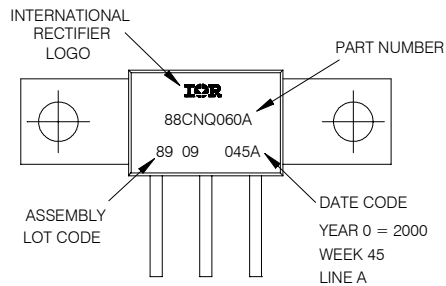
Outline D61-8-SM
 Dimensions are in millimeters and (inches)

Outline Table



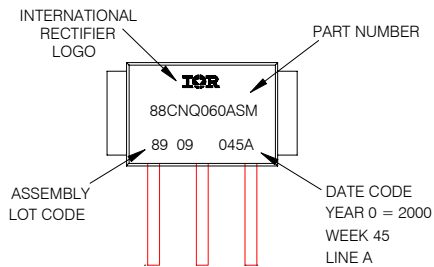
Part Marking Information

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



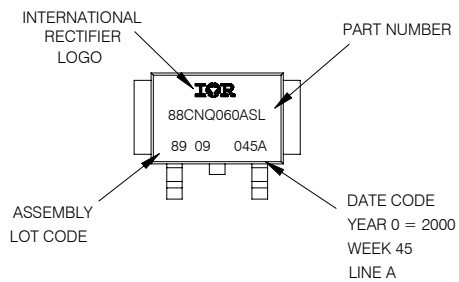
D61-8

EXAMPLE: THIS IS A 88CNQ060ASM WITH
 LOT CODE 89 09
 ASSEMBLED ON WW 45, 2000
 IN THE ASSEMBLY LINE "A"



D61-8-SM

EXAMPLE: THIS IS A 88CNQ060ASL WITH
 LOT CODE 89 09
 ASSEMBLED ON WW 45, 2000
 IN THE ASSEMBLY LINE "A"



D61-8-SL

88CNQ060A Series

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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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