



# THE DATASHEET OF 88CNQ060APBF



**Major Ratings and Characteristics**




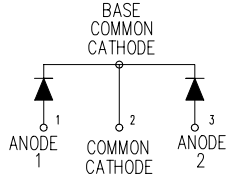
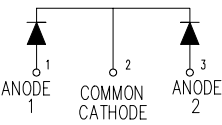
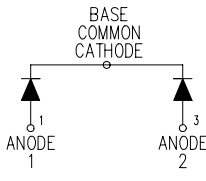
Characteristics	88CNQ...A	Units
$I_{F(AV)}$ Rectangular waveform	80	A
$V_{RRM}$	60	V
$I_{FSM}$ @tp=5 $\mu$ s sine	5000	A
$V_F$ @40Apk, $T_J=125^\circ\text{C}$ (perleg)	0.56	V
$T_J$ range	-55 to 150	$^\circ\text{C}$

**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**

88CNQ...A	88CNQ...ASM	88CNQ...ASL
		
 <p>BASE COMMON CATHODE</p> <p>ANODE 1    COMMON CATHODE    ANODE 2</p> <p>1                    2                    3</p>	 <p>ANODE 1    COMMON CATHODE    ANODE 2</p> <p>1                    2                    3</p>	 <p>BASE COMMON CATHODE</p> <p>ANODE 1    COMMON CATHODE    ANODE 2</p> <p>1                    2                    3</p>
<b>D61-8</b>	<b>D61-8-SM</b>	<b>D61-8-SL</b>

## 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) See Fig. 5 (Per Device)	40 80	A	50% duty cycle @ $T_C = 120^\circ\text{C}$ , rectangular waveform (Rated $V_R$ )
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) See Fig. 7	5000 600	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated $V_R$ applied
$E_{AS}$ 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 $\mu\text{sec}$ 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 $T_J = 25^\circ\text{C}$
	0.77	V	@ 80A
	0.56	V	@ 40A $T_J = 125^\circ\text{C}$
	0.67	V	@ 80A
$I_{RM}$ Typical Reverse Leakage Current (Per Leg) See Fig. 2 (1)	0.64	mA	$T_J = 25^\circ\text{C}$ $V_R = \text{rated } V_R$
	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) $25^\circ\text{C}$
$L_S$ 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/ $\mu\text{s}$	

(1) Pulse Width < 300 $\mu\text{s}$ , 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)	

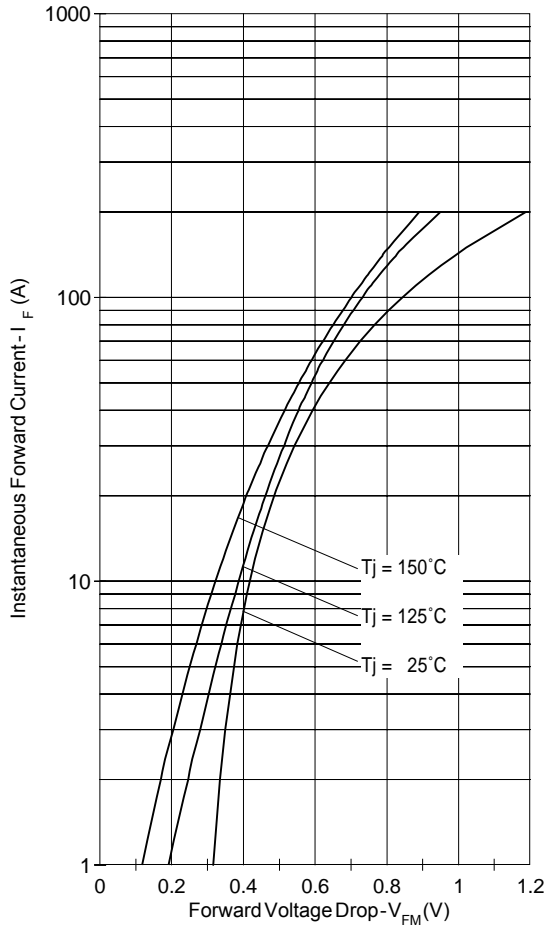


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

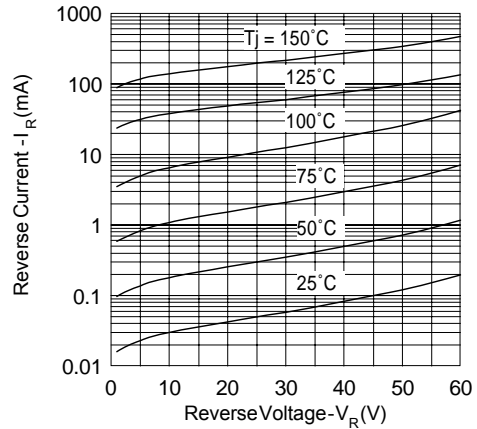


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

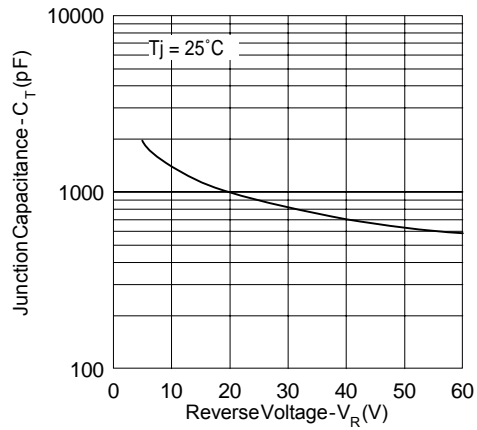


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

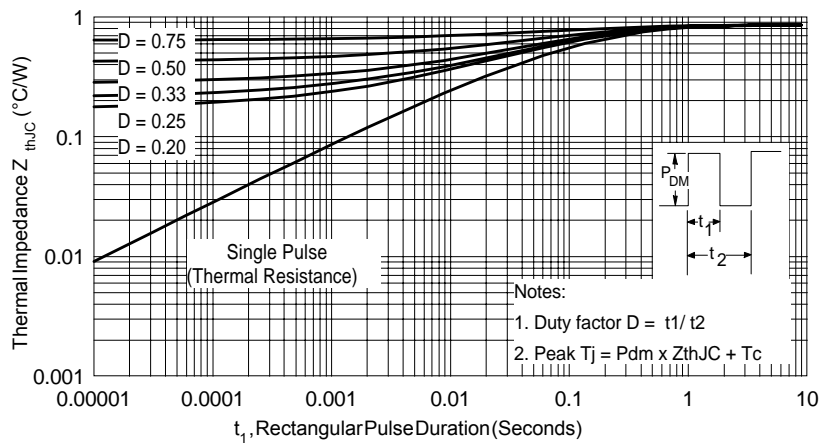


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

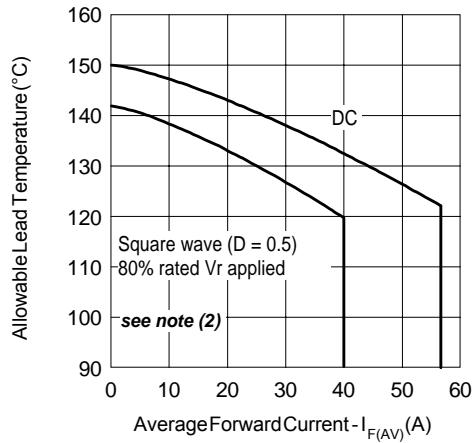


Fig. 5 - Maximum Average Forward Current Vs. Allowable Lead Temperature

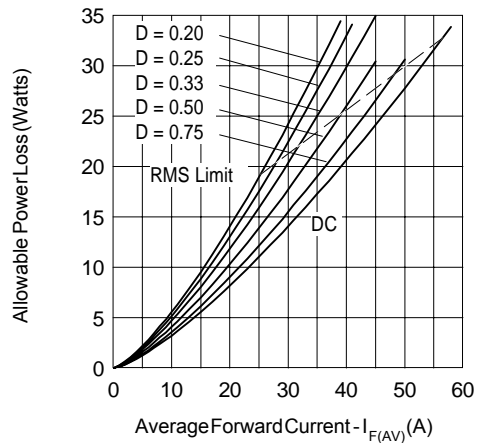


Fig. 6 - Maximum Average Forward Dissipation Vs. Average Forward Current

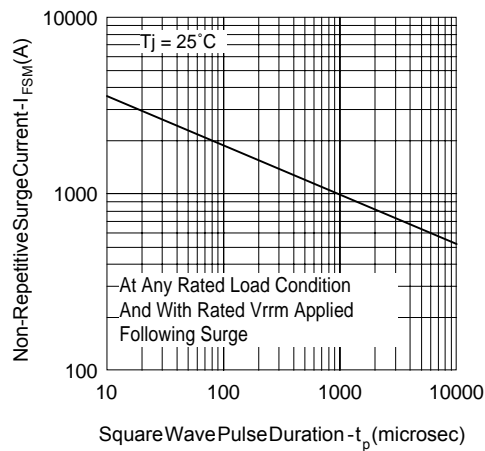
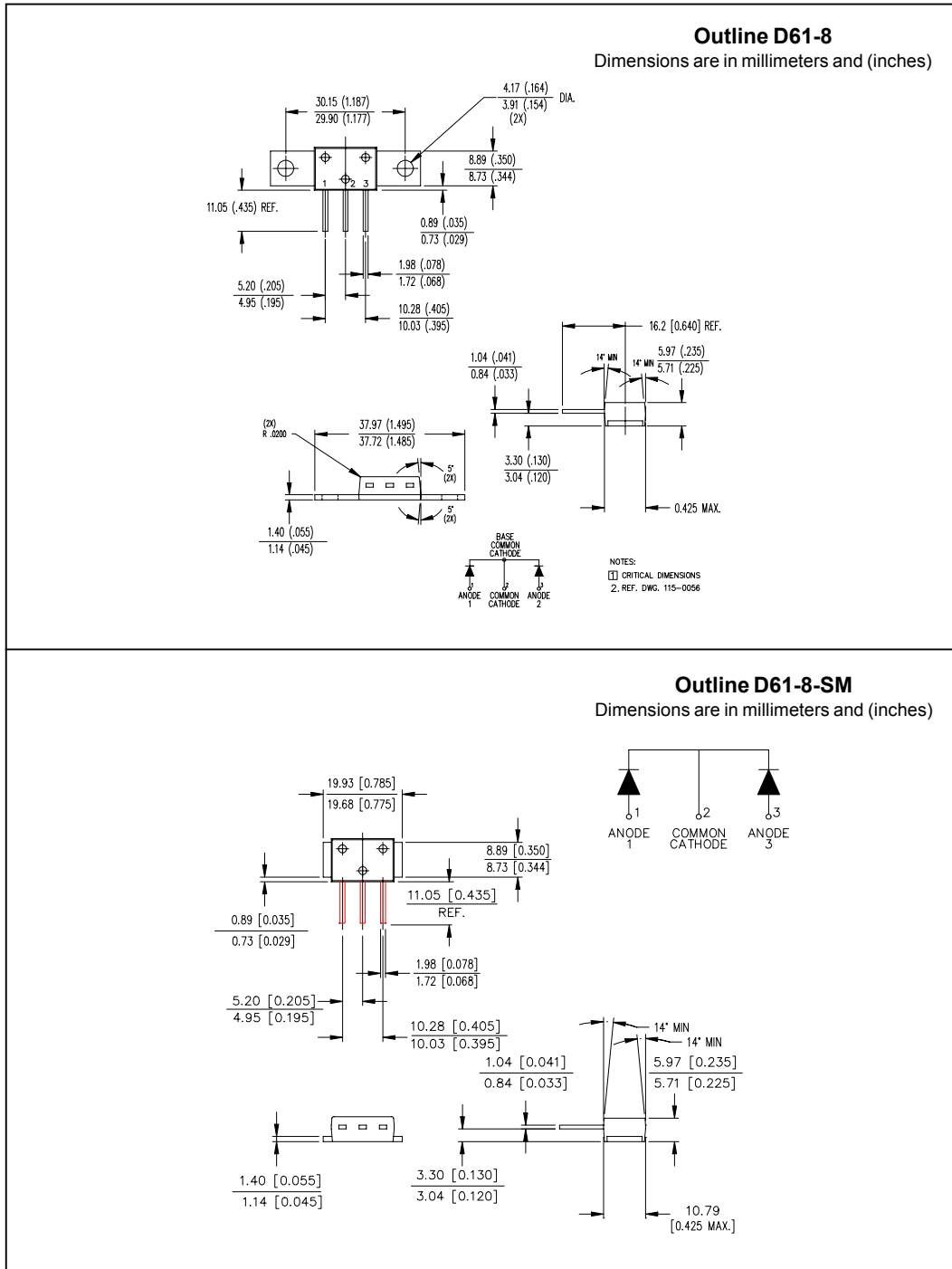


Fig. 7 - Maximum Peak Surge Forward Current Vs. Pulse Duration

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

Outline Table

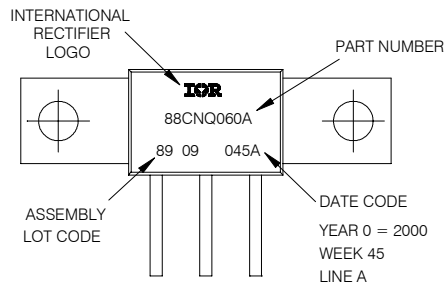


**Outline D61-8-SM**  
 Dimensions are in millimeters and (inches)



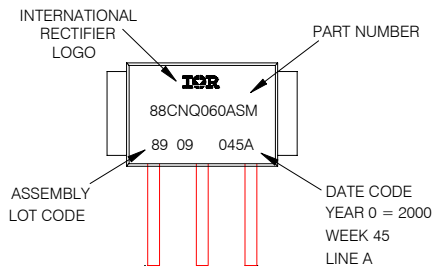
Part Marking Information

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



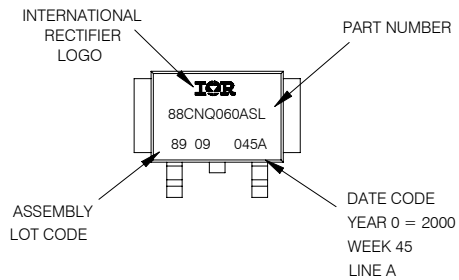
D61-8

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

Bulletin PD-20058 rev. B 01/02

International  
**IOR** Rectifier

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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.

International  
**IOR** Rectifier

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