



88CNQ060APbF 88CNQ060ASMPbF

SCHOTTKY RECTIFIER
New GenIII D-61 Package

80 Amp

Major Ratings and Characteristics

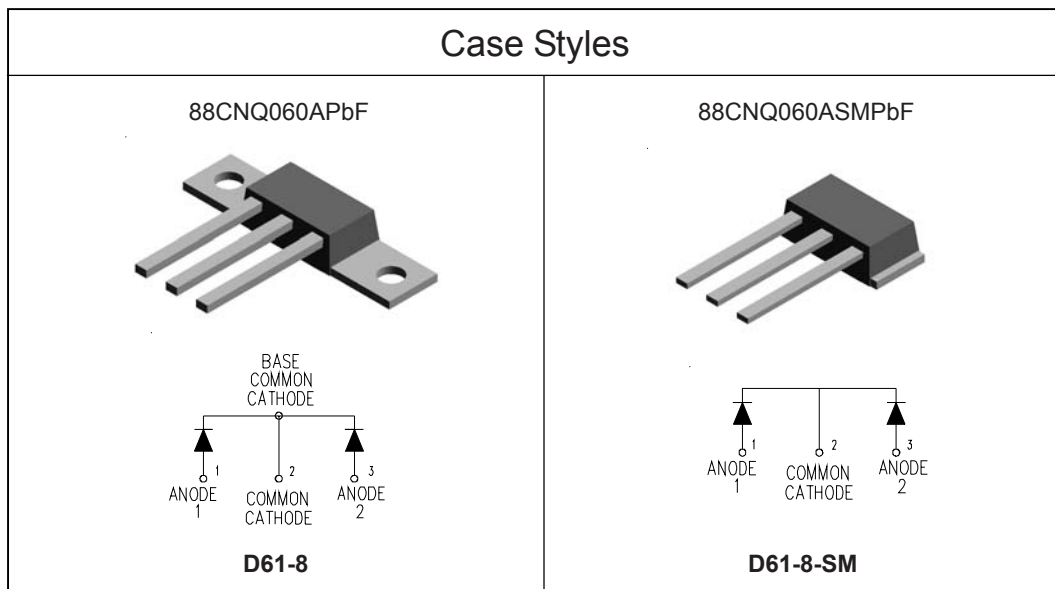
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	80	A
V_{RRM}	60	V
I_{FSM} @tp = 5 μ s sine	5000	A
V_F @40 Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.56	V
T_J range	-55 to 150	$^\circ\text{C}$

Description/ Features

The 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*
- Through-hole versions are currently available for use in Lead-Free applications ("PbF" suffix)

Case Styles



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 wave form (Rated V_R)
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) See Fig. 7	5000 600	A	5 μ s Sine or 3 μ 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 μ 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 0.77 0.56 0.67	V	@ 40A @ 80A @ 40A @ 80A $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$
I_{RM} Typical Reverse Leakage Current (Per Leg) See Fig. 2 (1)	0.64 240	mA	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ $V_R = \text{rated } V_R$
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/ μ s	

(1) Pulse Width < 300 μ 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) Max. 58(50)	Kg-cm (lbf-in)	

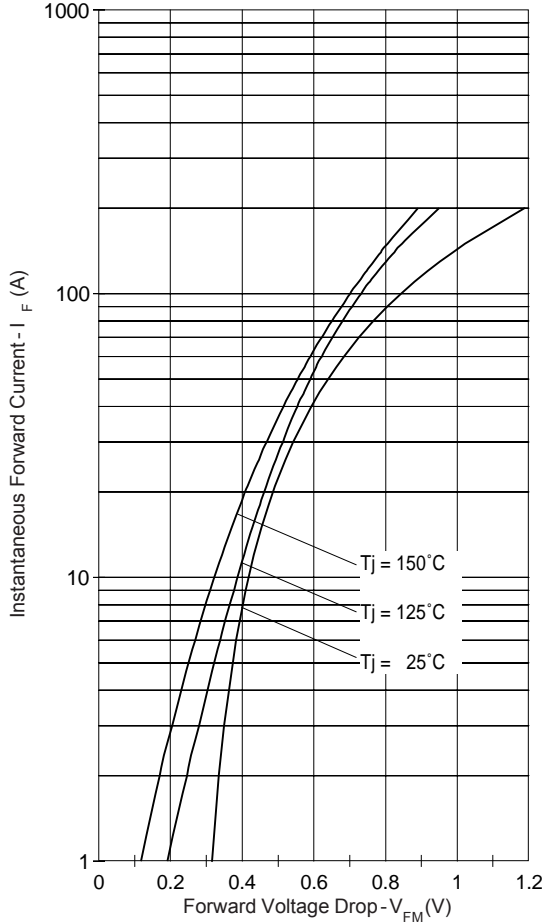


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

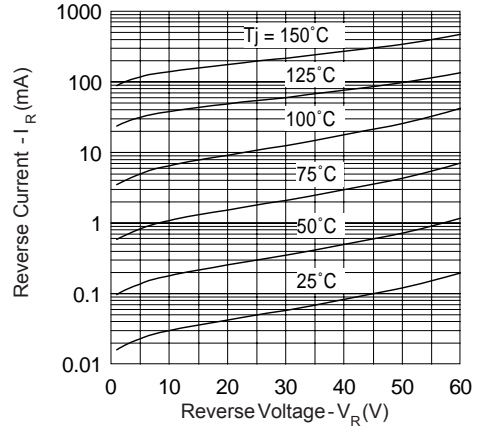


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

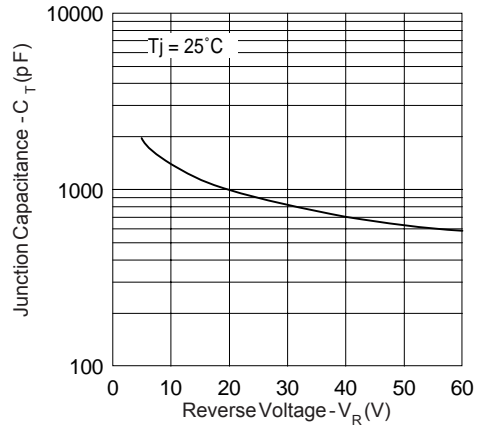


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

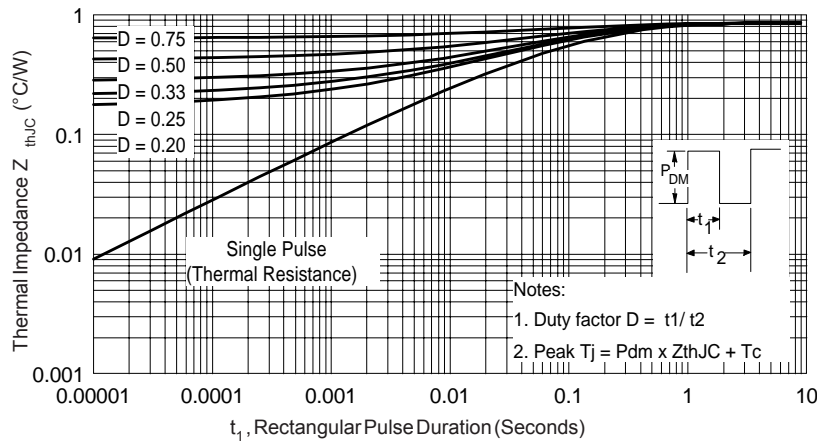


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

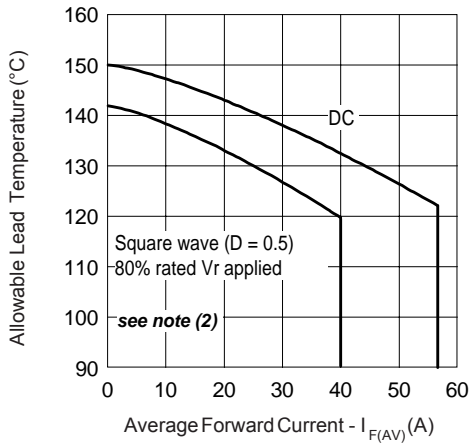


Fig. 5 - Maximum Average Forward Current Vs. Allowable Lead Temperature

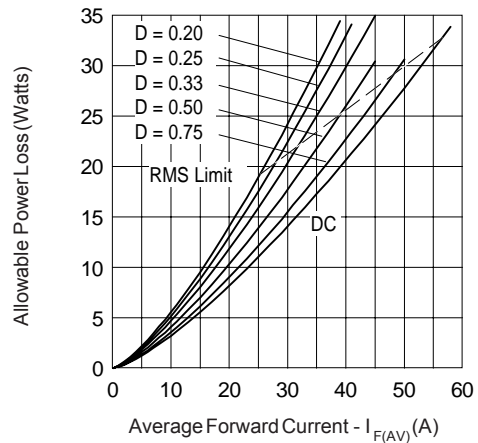


Fig. 6 - Maximum Average Forward Dissipation Vs. Average Forward Current

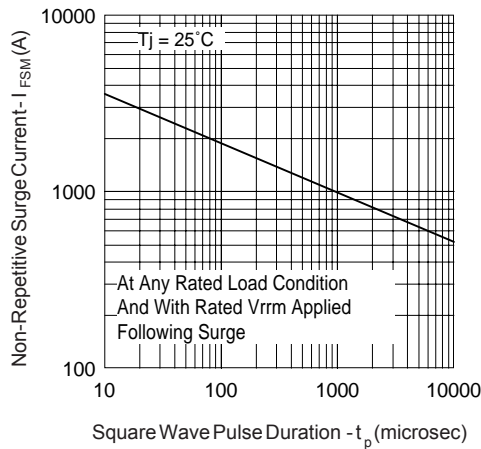
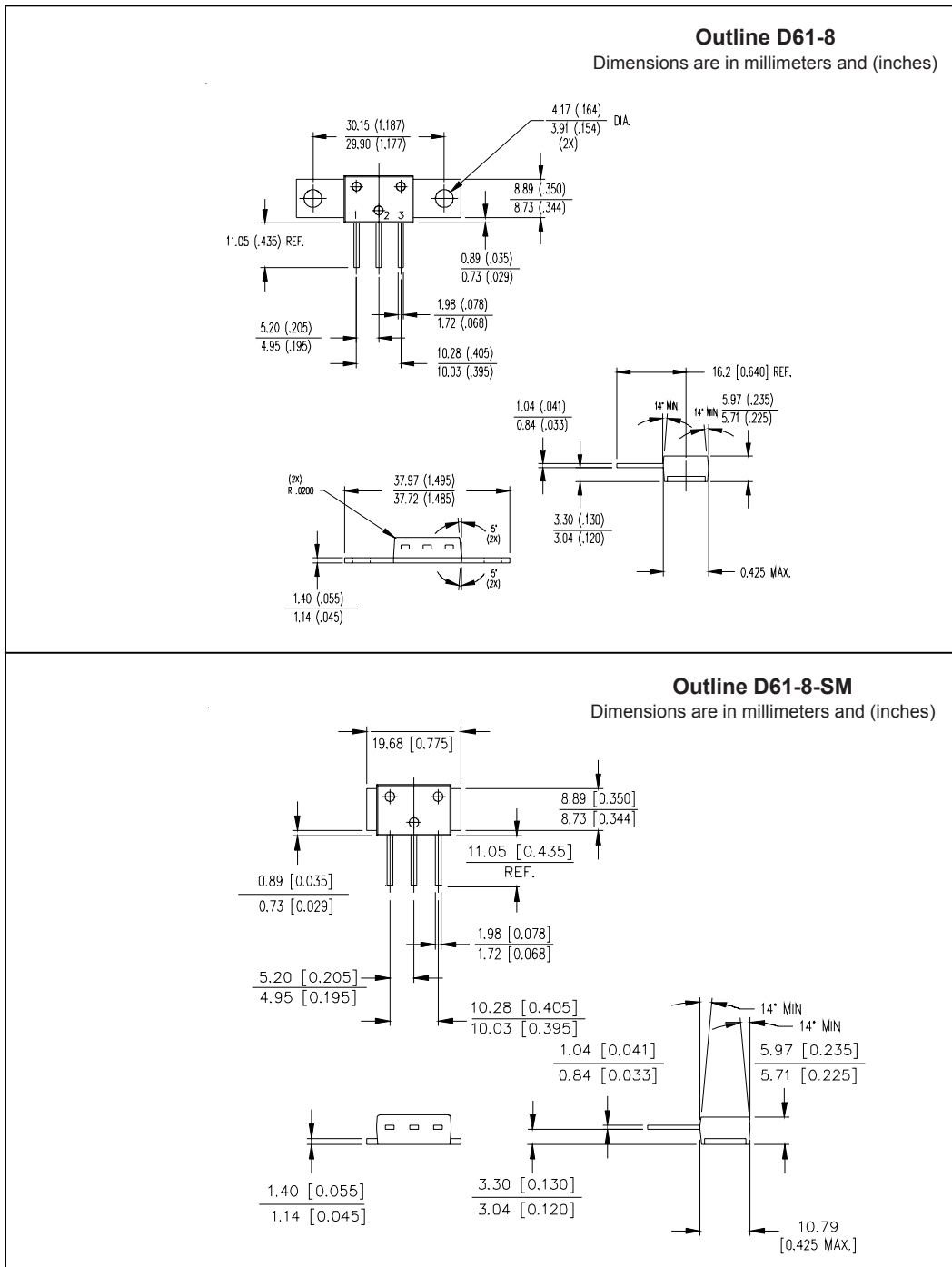


Fig. 7 - Maximum Peak Surge Forward Current Vs. Pulse Duration

(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);
 $P_{d_{REV}} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\%$ rated V_R

Outline Table



Part Marking Information

D61-8

EXAMPLE: THIS IS A 88CNQ060A WITH
LOT CODE 89 09
ASSEMBLED ON WW 45, 2000

Note: "P" in assembly line
position indicates "Lead-Free"

The diagram shows a component with the following markings: **IR** (International Rectifier Logo), **88CNQ060A** (Part Number), **89 09** (Assembly Lot Code), and **045P** (Date Code). The date code is broken down as: YEAR 0 = 2000, WEEK 45, P = LEAD-FREE.

D61-8-SM

EXAMPLE: THIS IS A 88CNQ060ASM WITH
LOT CODE 89 09
ASSEMBLED ON WW 45, 2000

Note: "P" in assembly line
position indicates "Lead-Free"

The diagram shows a component with the following markings: **IR** (International Rectifier Logo), **88CNQ060ASM** (Part Number), **89 09** (Assembly Lot Code), and **045P** (Date Code). The date code is broken down as: YEAR 0 = 2000, WEEK 45, P = LEAD-FREE.

Ordering Information Table

Device Code	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 5px; text-align: center;">88</td> <td style="padding: 5px; text-align: center;">C</td> <td style="padding: 5px; text-align: center;">N</td> <td style="padding: 5px; text-align: center;">Q</td> <td style="padding: 5px; text-align: center;">060</td> <td style="padding: 5px; text-align: center;">A</td> <td style="padding: 5px; text-align: center;">PbF</td> </tr> </table>	88	C	N	Q	060	A	PbF														
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	<p>Standard pack quantity: A = 10 pieces ASM = 20 pieces</p>																					

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level and Lead-Free.
Qualification Standards can be found on IR's Web site.