

SCHOTTKY RECTIFIER

80Amp

Major Ratings and Characteristics

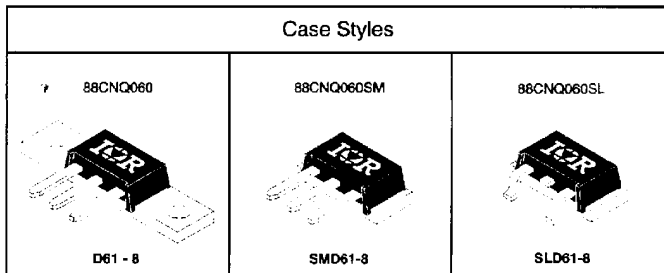
| Characteristics | 88CNQ060 | Units |
|--|------------|------------|
| $I_{F(AV)}$ Rectangular waveform | 80 | A |
| V_{RRM} | 60 | V |
| I_{FSM} @ $t_p = 5\mu s$ sine | 7000 | A |
| V_f @ 40Apk, $T_J = 125^\circ C$ (per leg) | 0.56 | V |
| T_J | -55 to 175 | $^\circ C$ |

Description/Features

The 88CNQ060 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 $175^\circ C$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- $175^\circ C$ 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
- Low profile, small footprint, high current package

Case Styles



88CNQ060



Voltage Ratings

| Part number | | 88CNQ060 |
|-------------|---------------------------------------|----------|
| 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. Average Forward Current See Fig. 5 | 80 | A | 50% duty cycle @ $T_C = 95^\circ\text{C}$, rectangular waveform |
| I_{FSM} Max. Peak One Cycle Non - Repetitive Surge Current (Per Leg) See Fig. 7 | 7300 | A | 5 μs Sine or 3 μs Rect. pulse 10ms Sine Or 5ms Rect. pulse |
| | 800 | | |
| E_{AS} Non - Repetitive Avalanche Energy (Per Leg) | 75 | mJ | $T_J = 25^\circ\text{C}$, $I_{AS} = 1.0\text{A}$, $L = 0.57\text{mH}$ |
| 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) See Fig. 1 \ominus | 0.58 | V | @ 40A $T_J = 25^\circ\text{C}$ |
| | 0.77 | V | @ 83A |
| | 0.56 | V | @ 40A $T_J = 125^\circ\text{C}$ |
| | 0.67 | V | @ 80A |
| I_{RM} Max. Reverse Leakage Current (Per Leg) See Fig. 2 \ominus | 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 | $V_R = 5\text{Voc}$, (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) | 10,000 | V/ μs | |

Thermal-Mechanical Specifications

| Parameters | 88CNQ | Units | Conditions |
|--|--------------|--------------------|--------------------------------------|
| T_J Max. Junction Temperature Range | -55 to 175 | $^\circ\text{C}$ | |
| T_{SG} Max. Storage Temperature Range | -55 to 175 | $^\circ\text{C}$ | |
| $R_{\theta JC}$ Max. Thermal Resistance, Junction to Case (Per Leg) | 0.85 | $^\circ\text{C/W}$ | DC operation See Fig. 4 |
| $R_{\theta PC}$ Max. Thermal Resistance, Junction to Case (Per Package) | 0.42 | $^\circ\text{C/W}$ | DC operation |
| $R_{\theta CS}$ Typical Thermal Resistance, Case to Heat-sink (D61 - 8 Only) | 0.30 | $^\circ\text{C/W}$ | Mounting surface, smooth and greased |
| wt Approximate Weight | 7.8 (0.28) | g (oz.) | |
| T Mounting Torque | Min. 40 (35) | Kg-cm (lb-in) | |
| | Max. 58 (50) | | |

\ominus Pulse Width < 300 μs , Duty Cycle < 2%

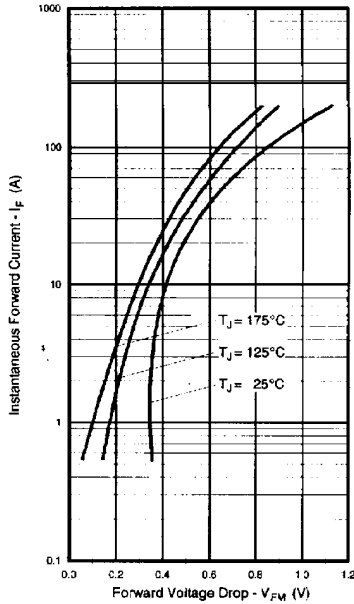


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

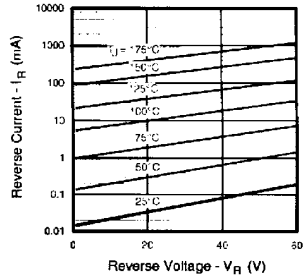


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage (Per Leg)

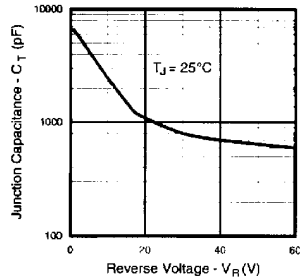
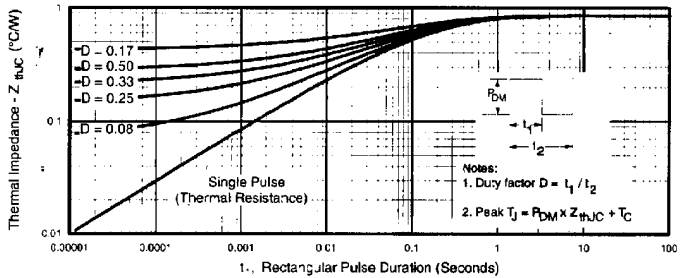


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)


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

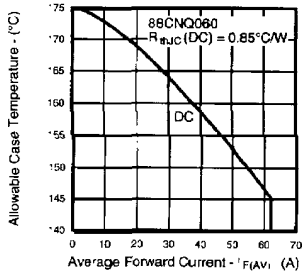


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

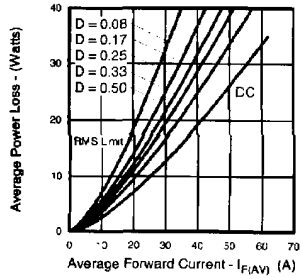


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

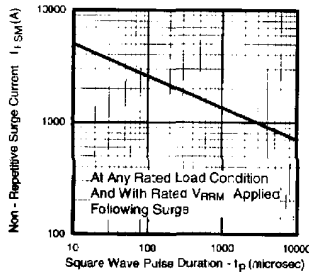


Fig.7 - Max. Non-Repetitive Surge Current (Per Leg)

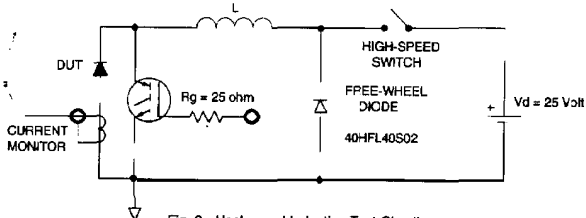
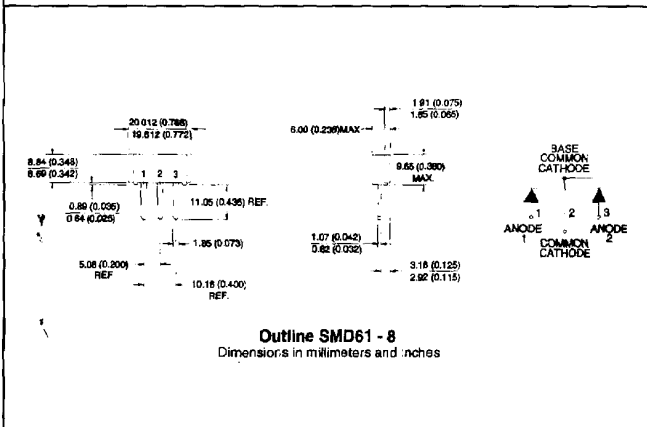
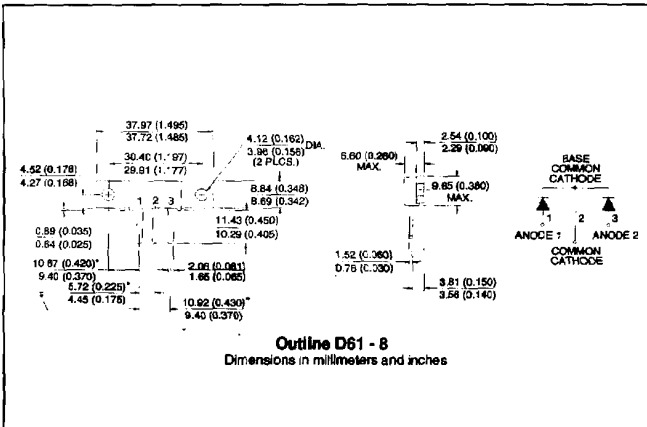
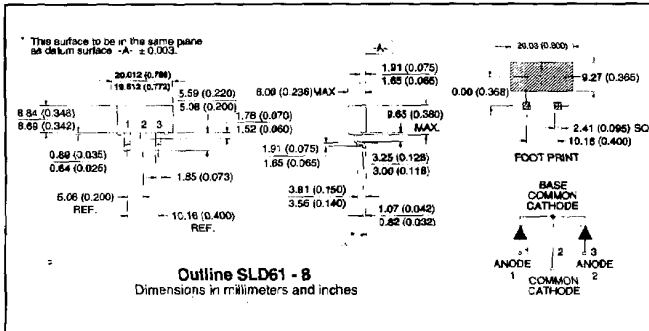


Fig. 8 - Unclamped Inductive Test Circuit





International
IOR Rectifier

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Data and specifications subject to change without notice. 9/95