

International  
**IR** Rectifier

**85CNQ015APbF**  
**85CNQ015ASMPbF**

**SCHOTTKY RECTIFIER**  
*New GenIII D-61 Package*

**80 Amp**

#### Major Ratings and Characteristics

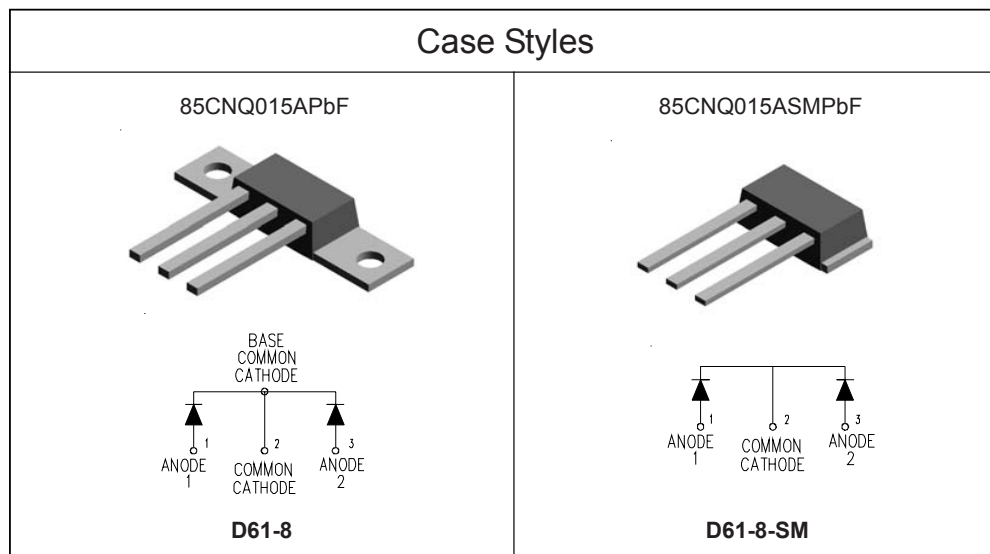
| Characteristics                              | Values     | Units      |
|--|------------|------------|
| $I_{F(AV)}$ Rectangular waveform             | 80         | A          |
| $V_{RRM}$                                    | 15         | V          |
| $I_{FSM}$ @ $t_p = 5 \mu s$ sine             | 5200       | A          |
| $V_F$ @ 40 Apk, $T_J = 75^\circ C$ (per leg) | 0.32       | V          |
| $T_J$ range                                  | -55 to 100 | $^\circ C$ |

#### Description/ Features

The center tap Schottky rectifier module has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125  $^\circ C$  junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125 $^\circ C$   $T_J$  operation ( $V_R < 5V$ )
- Center tap module
- Optimized for OR-ing applications
- Ultra low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- *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                                     | 85CNQ015A.. |
|---|-------------|
| $V_R$ Max. DC Reverse Voltage (V)               | 15          |
| $V_{RWM}$ Max. Working Peak Reverse Voltage (V) | 25          |

## Absolute Maximum Ratings

| Parameters  | 85CNQ | Units | Conditions   |
|---|-------|-------|--|
| $I_{F(AV)}$ Max. Average Forward Current<br>* See Fig. 5                          | 80    | A     | 50% duty cycle @ $T_C = 78^\circ\text{C}$ , rectangular waveform   |
| $I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7 | 5200  | A     | 5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse<br>10ms Sine or 6ms Rect. pulse<br>Following any rated load condition and with rated $V_{RRM}$ applied |
|   | 850   |       |  |
| $E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)                                | 9     | mJ    | $T_J = 25^\circ\text{C}$ , $I_{AS} = 2$ Amps, $L = 4.50$ mH  |
| $I_{AR}$ Repetitive Avalanche Current (Per Leg)                                   | 2     | A     | Current decaying linearly to zero in 1 $\mu\text{sec}$<br>Frequency limited by $T_J$ max. $V_A = 3 \times V_R$ typical                                     |

## Electrical Specifications

| Parameters   | 85CNQ | Units            | Conditions  |
|--|-------|------------------|---|
| $V_{FM}$ Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)    | 0.36  | V                | @ 40A<br>$T_J = 25^\circ\text{C}$                                       |
|  | 0.45  | V                | @ 80A   |
|  | 0.32  | V                | @ 40A<br>$T_J = 75^\circ\text{C}$                                       |
|  | 0.42  | V                | @ 80A   |
| $I_{RM}$ Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1) | 20    | mA               | $T_J = 25^\circ\text{C}$<br>$V_R = \text{rated } V_R$                   |
|  | 1000  | mA               | $T_J = 100^\circ\text{C}$   |
|  | 890   | mA               | $T_J = 100^\circ\text{C}$<br>$V_R = 12\text{V}$                         |
|  | 540   | mA               | $T_J = 100^\circ\text{C}$<br>$V_R = 5\text{V}$                          |
| $C_T$ Max. Junction Capacitance (Per Leg)                        | 3600  | 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   | 85CNQ                      | Units                     | Conditions   |
|--|----------------------------|---------------------------|--|
| $T_J$ Max. Junction Temperature Range                                | -55 to 125                 | $^\circ\text{C}$          |  |
| $T_{stg}$ 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 * See Fig. 4  |
| $R_{thJC}$ 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<br>Device flatness < 5 mils |
| wt Approximate Weight  | 7.8(0.28)                  | g(oz.)                    |  |
| T Mounting Torque  | Min. 40(35)<br>Max. 58(50) | Kg-cm<br>(lbf-in)         |  |

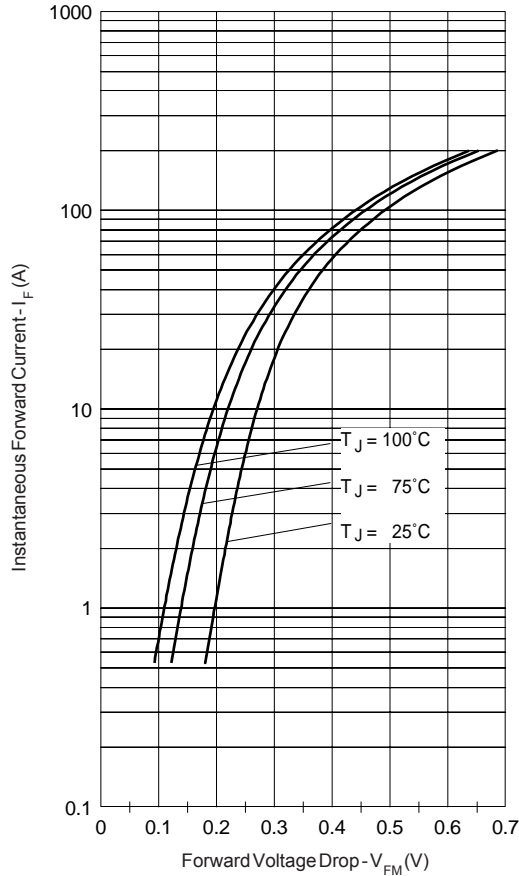


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

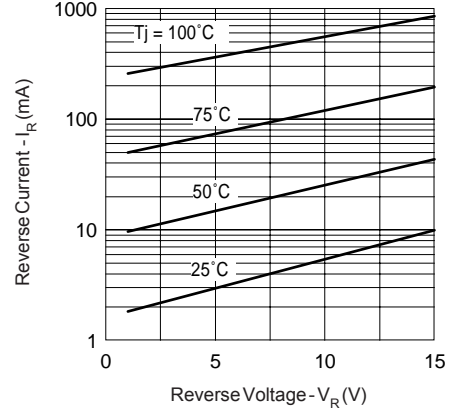


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

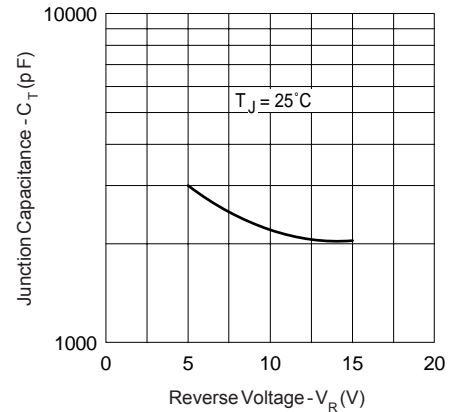


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

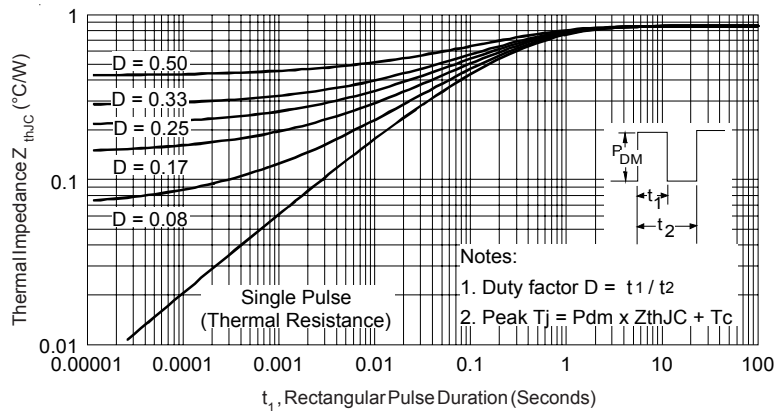


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

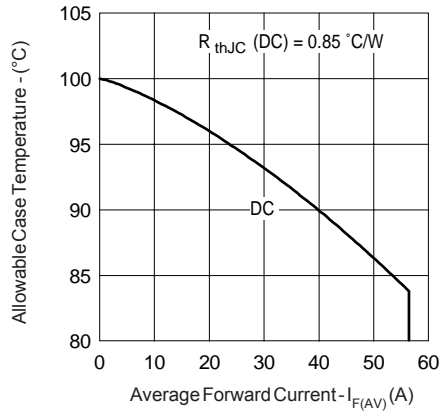


Fig. 5- Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

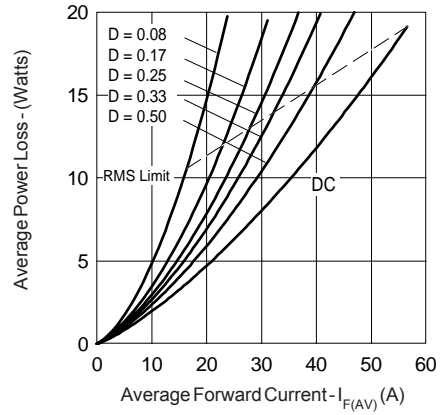


Fig. 6- Forward Power Loss Characteristics (Per Leg)

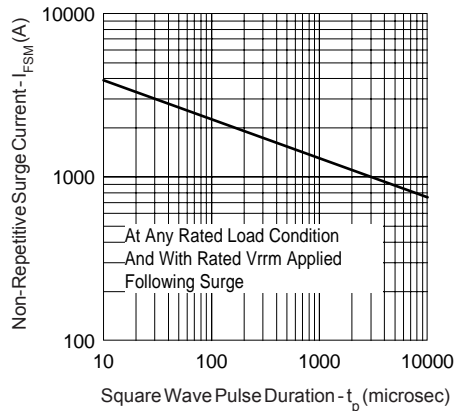


Fig. 7- Max. Non-Repetitive Surge Current (Per Leg)

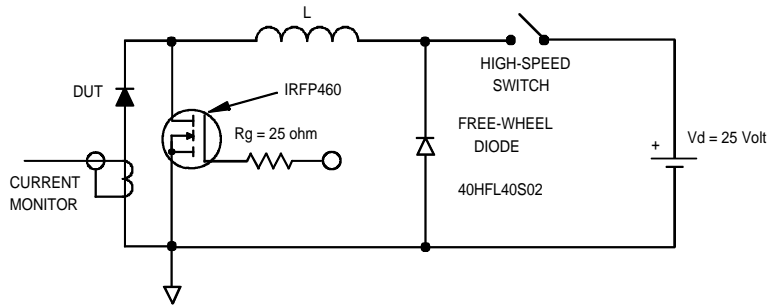
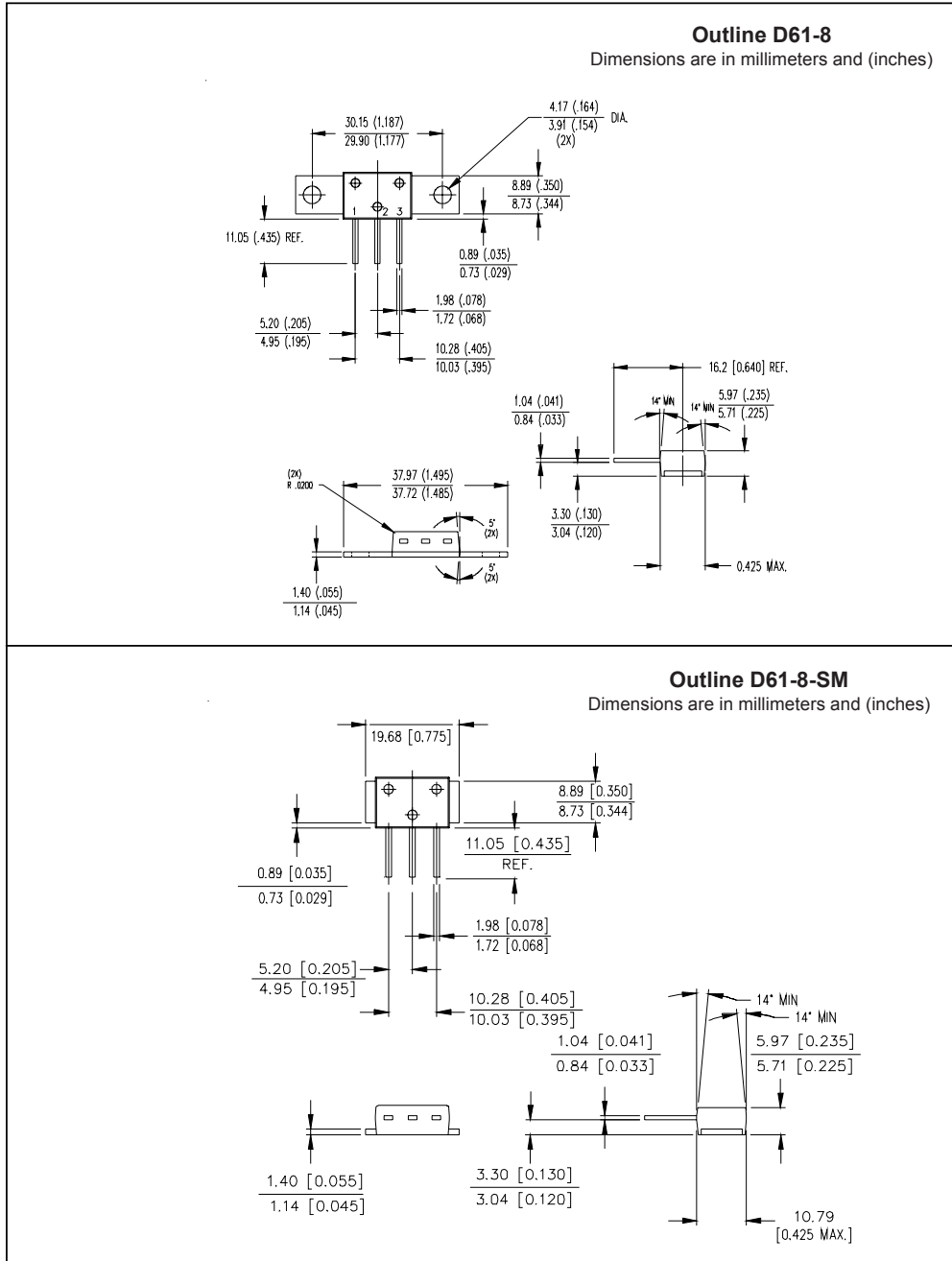


Fig. 8- Unclamped Inductive Test Circuit

Outline Table

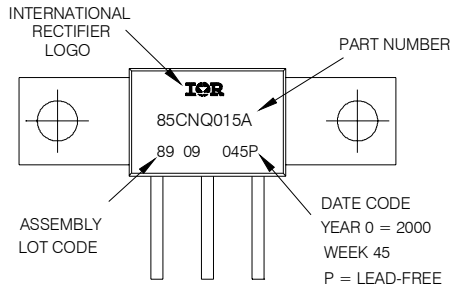


Marking Information

**Outline D61-8**

EXAMPLE: THIS IS A 85CNQ015 WITH  
LOT CODE 89 09  
ASSEMBLED ON WW 45, 2000

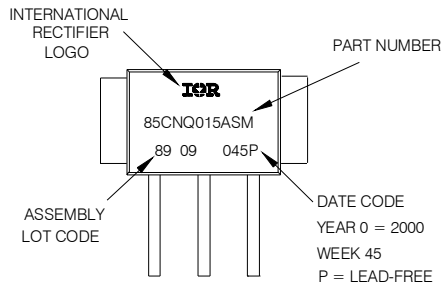
Note: "P" in assembly line  
position indicates "Lead-Free"



**Outline D61-8-SM**

EXAMPLE: THIS IS A 85CNQ015ASM WITH  
LOT CODE 89 09  
ASSEMBLED ON WW 45, 2000

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



Ordering Information Table

| Device Code  |   |
|--|---|
| <b>85</b>  | <b>C</b>  |
| ①  | ②   |
| <b>N</b>   | <b>Q</b>  |
| ③  | ④   |
| <b>015</b>   | <b>A</b>  |
| ⑤  | ⑥   |
| <b>PbF</b>   | ⑦   |
| <b>1</b>   | - Current Rating (80A)  |
| <b>2</b>   | - Circuit Configuration<br>C = Common Cathode                   |
| <b>3</b>   | - Package<br>N = D-61   |
| <b>4</b>   | - Schottky "Q" Series   |
| <b>5</b>   | - Voltage Rating (015 = 15V)                                    |
| <b>6</b>   | - • A = D-61-8 package style<br>• ASM = D-61-8-SM package style |
| <b>7</b>   | - • none = Standard Production<br>• PbF = Lead-Free             |
| Standard pack quantity: A = 10 pieces<br>ASM = 20 pieces |   |

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.