PD-2.216 rev. C 01/99

International Rectifier

80CNQ... SERIES

SCHOTTKY RECTIFIER

80 Amp

Major Ratings and Characteristics

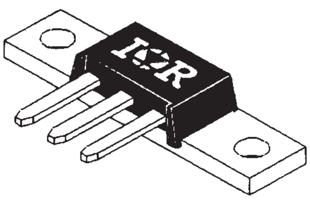
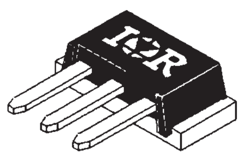
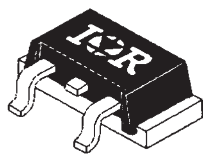
Characteristics	80CNQ...	Units
$I_{F(AV)}$ Rectangular waveform	80	A
V_{RRM} range	35 to 45	V
I_{FSM} @ tp = 5 µs sine	5800	A
V_F @ 40 Apk, T_J = 125°C (per leg)	0.47	V
T_J range	-55 to 150	°C

Description/Features

The 80CNQ center tap Schottky rectifier module series 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
- Very low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Low profile, small footprint, high current package

Case Styles

80CNQ...	80CNQ...SM	80CNQ...SL
		
D61-8	**D61-8-SM**	**D61-8-SL**

Voltage Ratings

	Part number	80CNQ035	80CNQ040	80CNQ045
V_R	Max. DC Reverse Voltage (V)	35	40	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

	Parameters	80CNQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward (Per Leg)	40	A	50% duty cycle @ T_C = 114 °C, rectangular wave form	
	Current * See Fig. 5 (Per Device)	80			
I_{FSM}	Max. Peak One Cycle Non-Repetitive	5800	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current (Per Leg) * See Fig. 7	750		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	54	mJ	T_J = 25 °C, I_{AS} = 8 Amps, L = 1.7 mH	
I_{AR}	Repetitive Avalanche Current (Per Leg)	8	A	Current decaying linearly to zero in 1 µsec Frequency limited by T_J max. V_A = 1.5 x V_R typical	

Electrical Specifications

	Parameters	80CNQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop	0.52	V	@ 40A	T_J = 25 °C
	(Per Leg) * See Fig. 1 (1)	0.66	V	@ 80A	
		0.47	V	@ 40A	T_J = 125 °C
		0.61	V	@ 80A	
I_{RM}	Max. Reverse Leakage Current	5	mA	T_J = 25 °C	V_R = rated V_R
	(Per Leg) * See Fig. 2 (1)	250	mA	T_J = 125 °C	
$V_{F(TO)}$	Threshold Voltage	0.26	V	T_J = T_J max.	
r_t	Forward Slope Resistance	3.93	mΩ		
C_T	Max. Junction Capacitance (Per Leg)	2600	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)	10,000	V/ µs		

(1) Pulse Width < 300µs, Duty Cycle <2%

Thermal-Mechanical Specifications

	Parameters		80CNQ	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 150	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 150	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)		0.85	°C/W	DC operation * See Fig. 4
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		0.42	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance, Case to Heatsink **(D61-8 Only)**		0.30	°C/W	Mounting surface, smooth and greased
wt	Approximate Weight		7.8 (0.28)	g (oz.)	
T	Mounting Torque	Min.	40 (35)	Kg-cm (Ibf-in)	
	(D61-8 Only)	Max.	58 (50)		

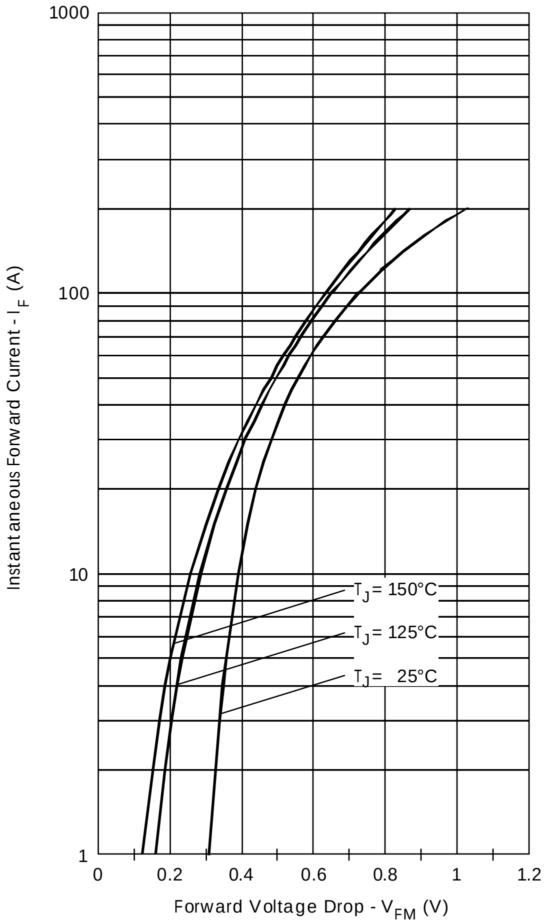


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

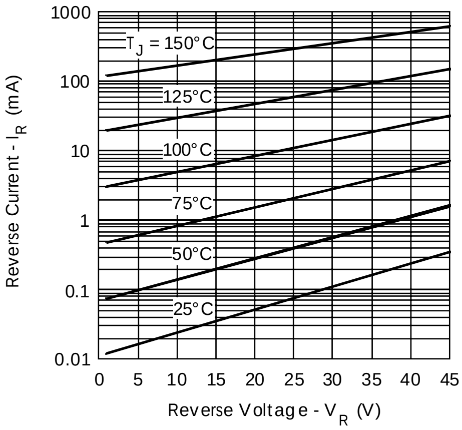


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

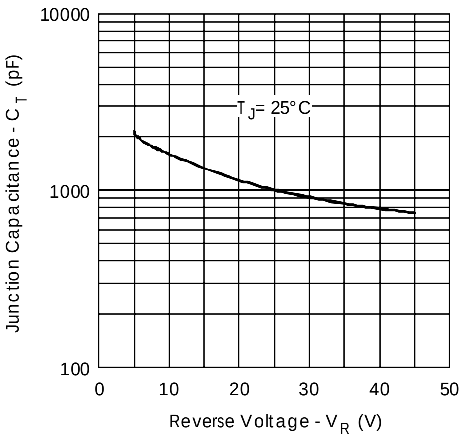


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

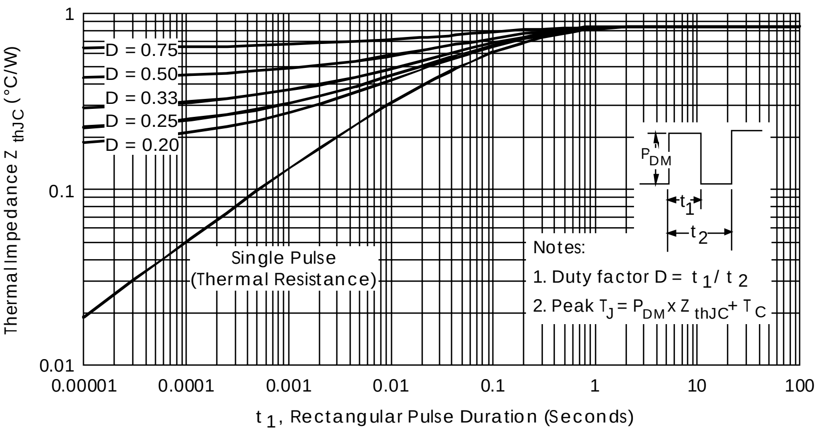


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

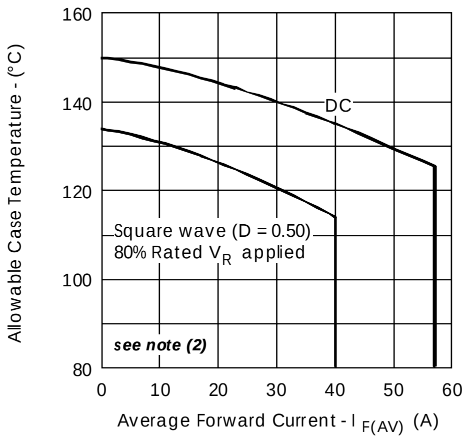


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

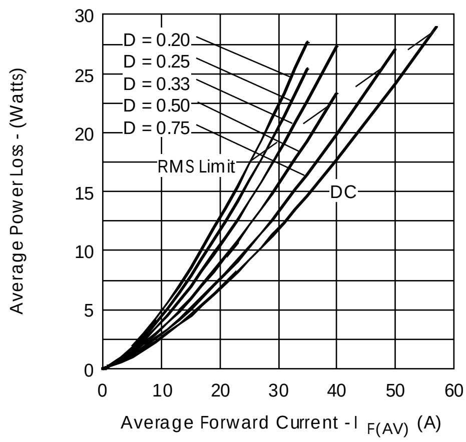


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

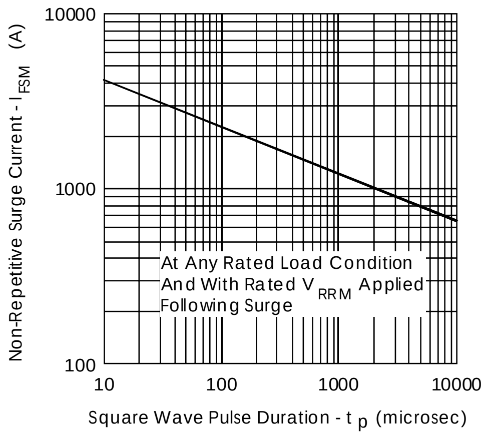


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

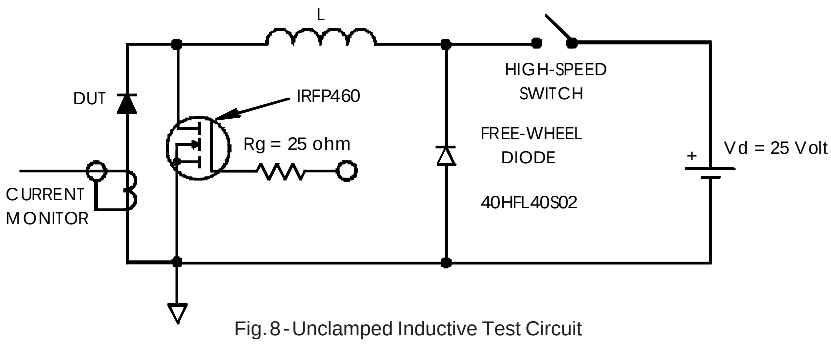


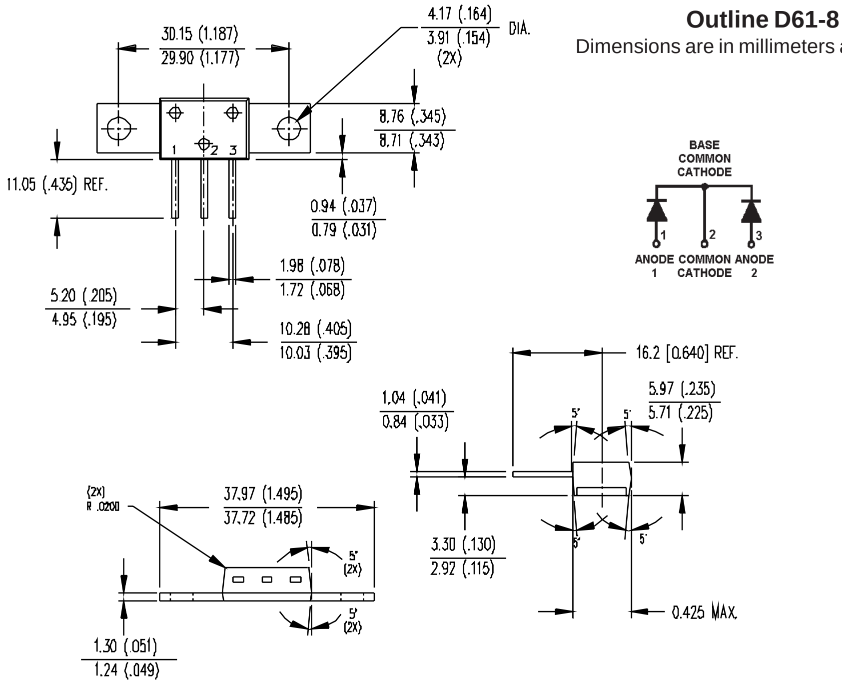
Fig. 8 - Unclamped Inductive Test Circuit

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

Outline Table

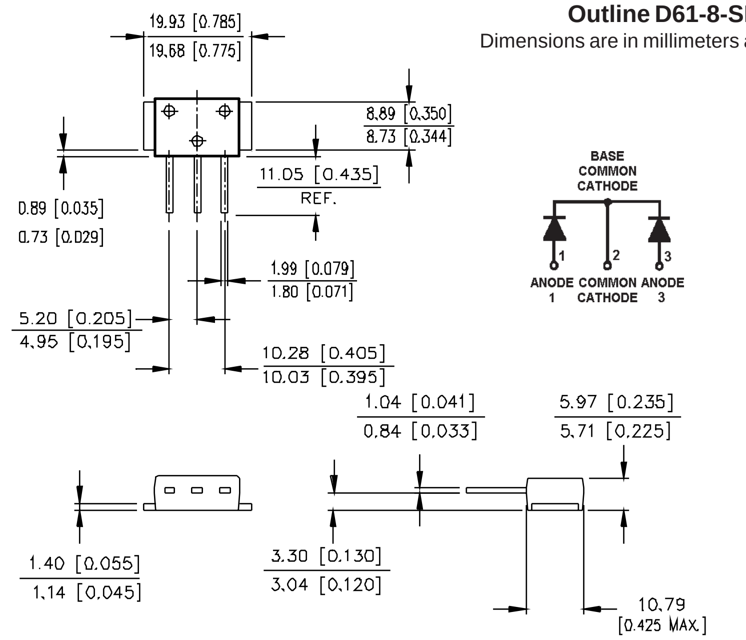
Outline D61-8

Dimensions are in millimeters and (inches)



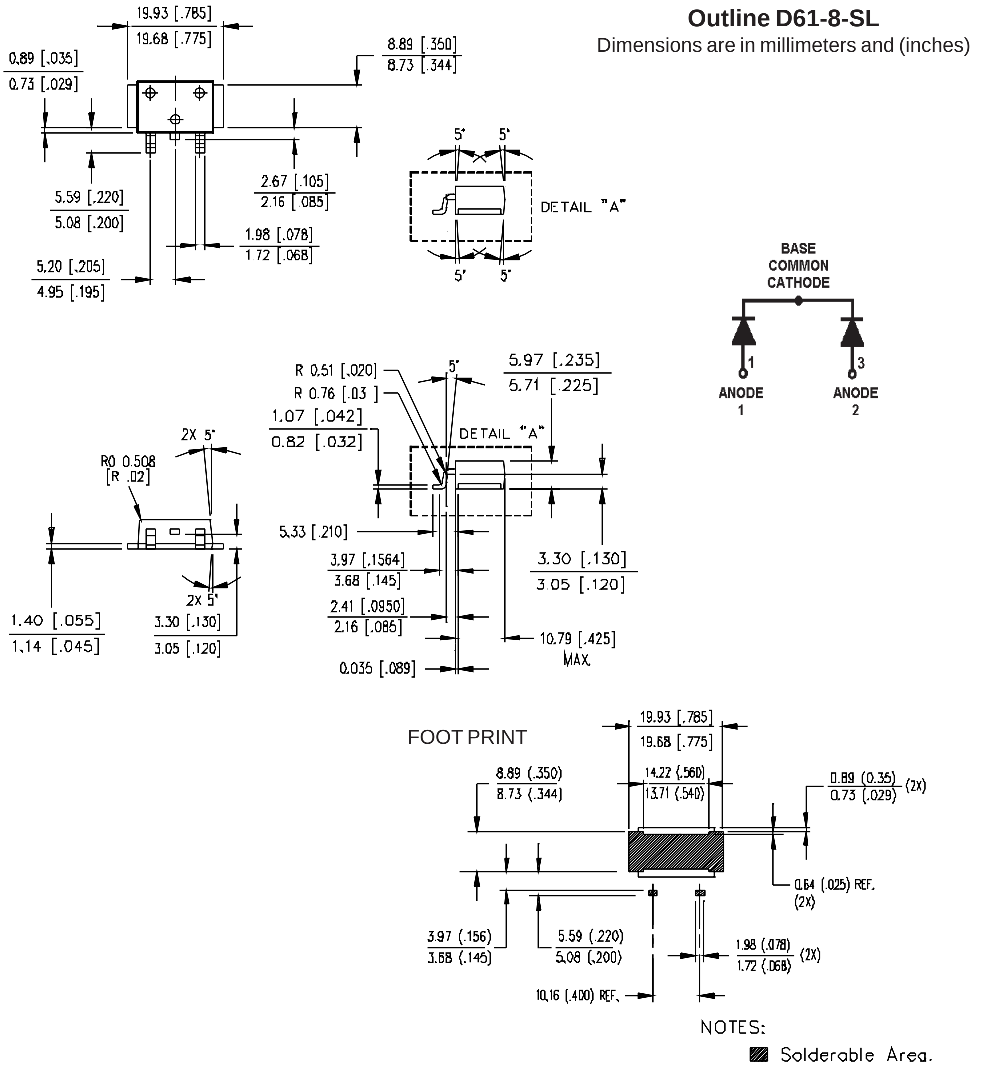
Outline D61-8-SM

Dimensions are in millimeters and (inches)



Outline Table

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



International
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