



83CNQ...APbF 83CNQ...ASMPbF

SCHOTTKY RECTIFIER New GenIII D-61 Package

80 Amp

Major Ratings and Characteristics

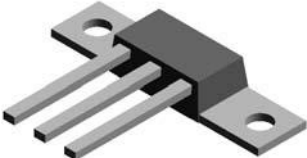
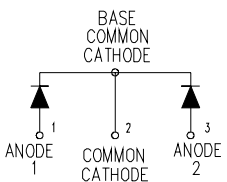
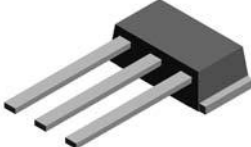
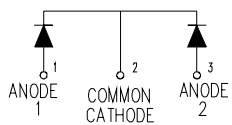
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	80	A
V_{RRM} range	80, 100	V
I_{FSM} @tp = 5 μ s sine	7000	A
V_F @40 Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.67	V
T_J range	-55 to 175	$^\circ\text{C}$

Description/ Features

The center tap Schottky rectifier module series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 $^\circ\text{C}$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175 $^\circ\text{C}$ 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*
- Through-hole versions are currently available for use in Lead-Free applications ("PbF" suffix)

Case Styles

<p>83CNQ...APbF</p>   <p>D61-8</p>	<p>83CNQ...ASMPbF</p>   <p>D61-8-SM</p>
---	--

Voltage Ratings

Part number	83CNQ080A..	83CNQ100A..
V_R Max. DC Reverse Voltage (V)	80	100
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters	83CNQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	80	A	50% duty cycle @ $T_C = 132^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	7000	A	5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse
	720		
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	15	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 1$ Amps, $L = 30$ mH
I_{AR} Repetitive Avalanche Current (Per Leg)	1	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	83CNQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.81	V	@ 40A $T_J = 25^\circ\text{C}$
	1.00	V	@ 80A
	0.67	V	@ 40A $T_J = 125^\circ\text{C}$
	0.82	V	@ 80A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	1.5	mA	$T_J = 25^\circ\text{C}$
	35	mA	$T_J = 125^\circ\text{C}$ $V_R = \text{rated } V_R$
C_T Max. Junction Capacitance (Per Leg)	1400	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/ μs	

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

Thermal-Mechanical Specifications

Parameters	83CNQ	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 175	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-55 to 175	$^\circ\text{C}$	
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 Device flatness < 5 mils
wt Approximate Weight	7.8 (0.28)	g (oz.)	
T Mounting Torque (D61-8 Only)	Min.	12 (10)	Kg-cm (*) (lbf-in)
	Max.	24 (20)	

(*) Recommended hardware 3M stainless screw

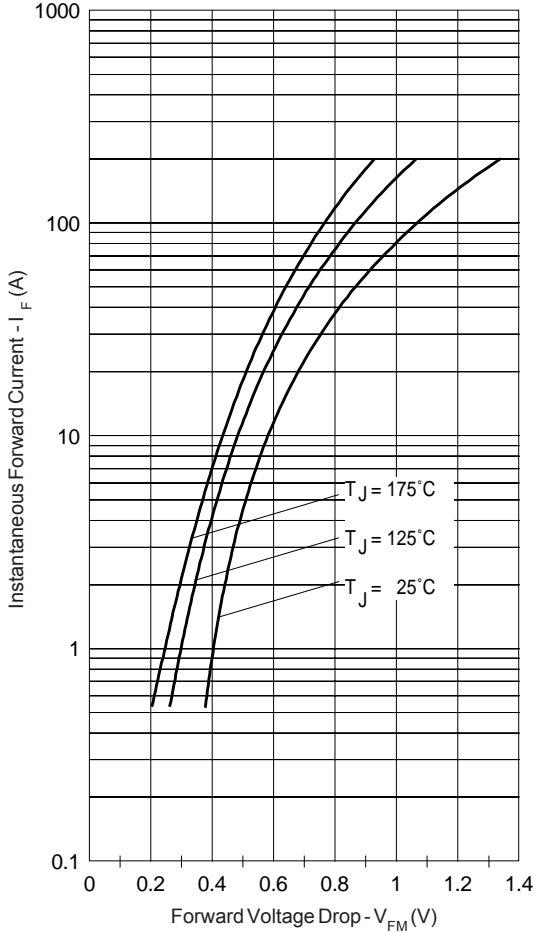


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

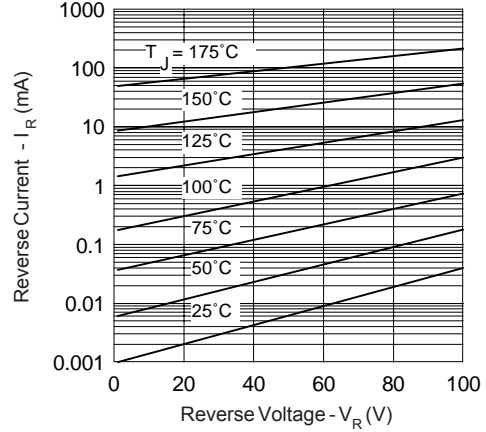


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

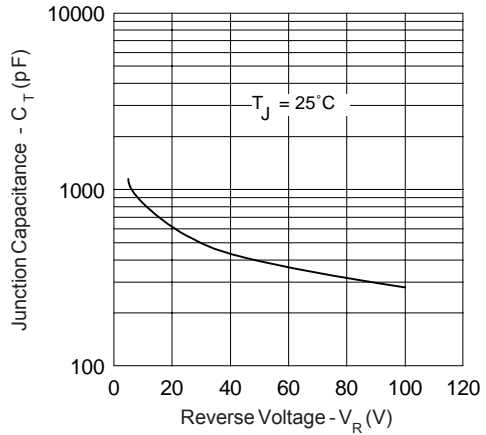


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

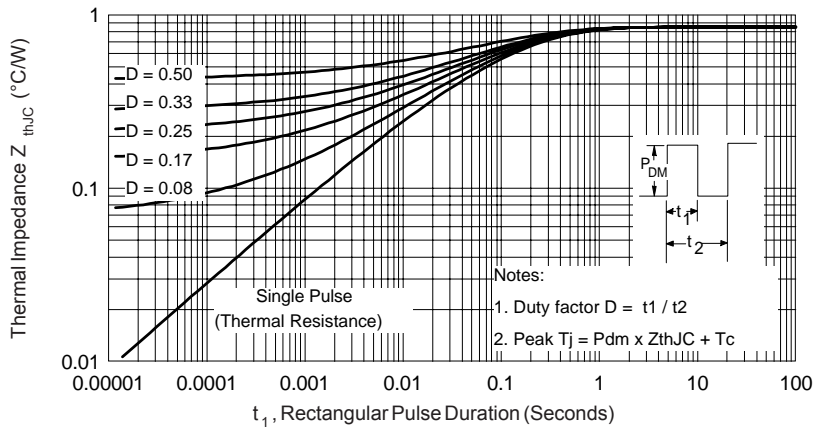


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

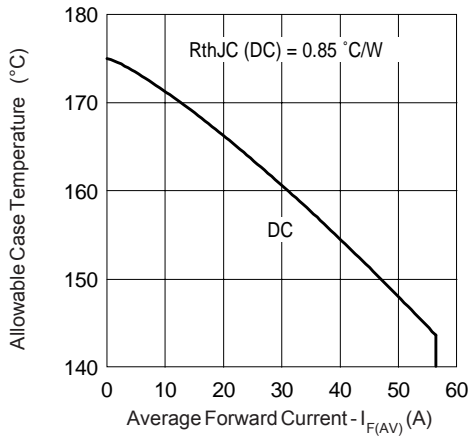


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

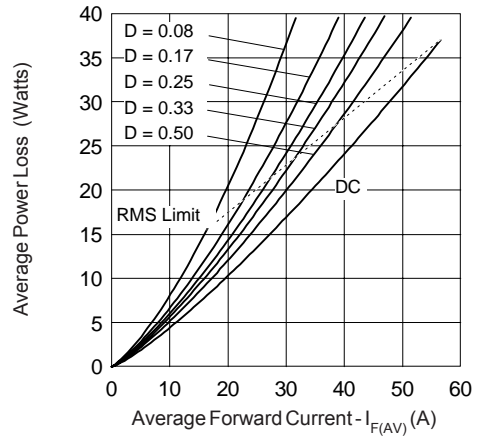


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

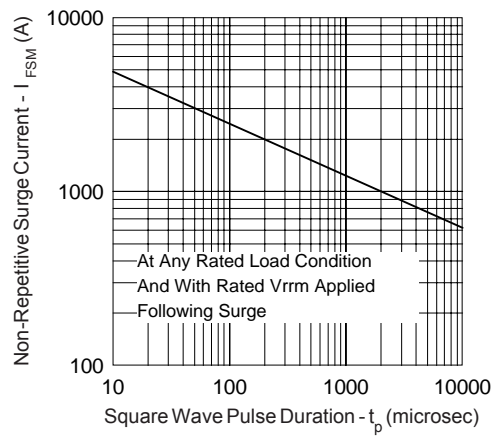


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

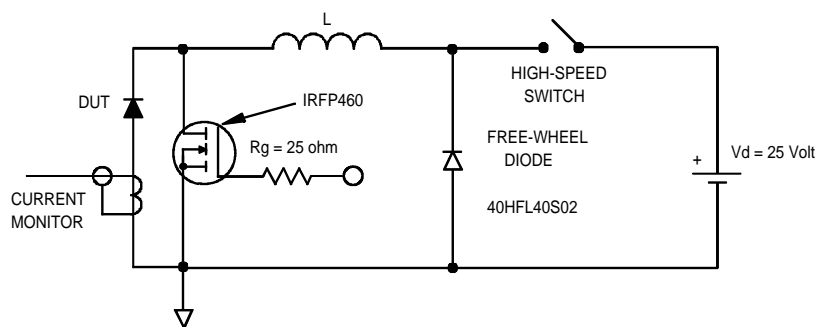
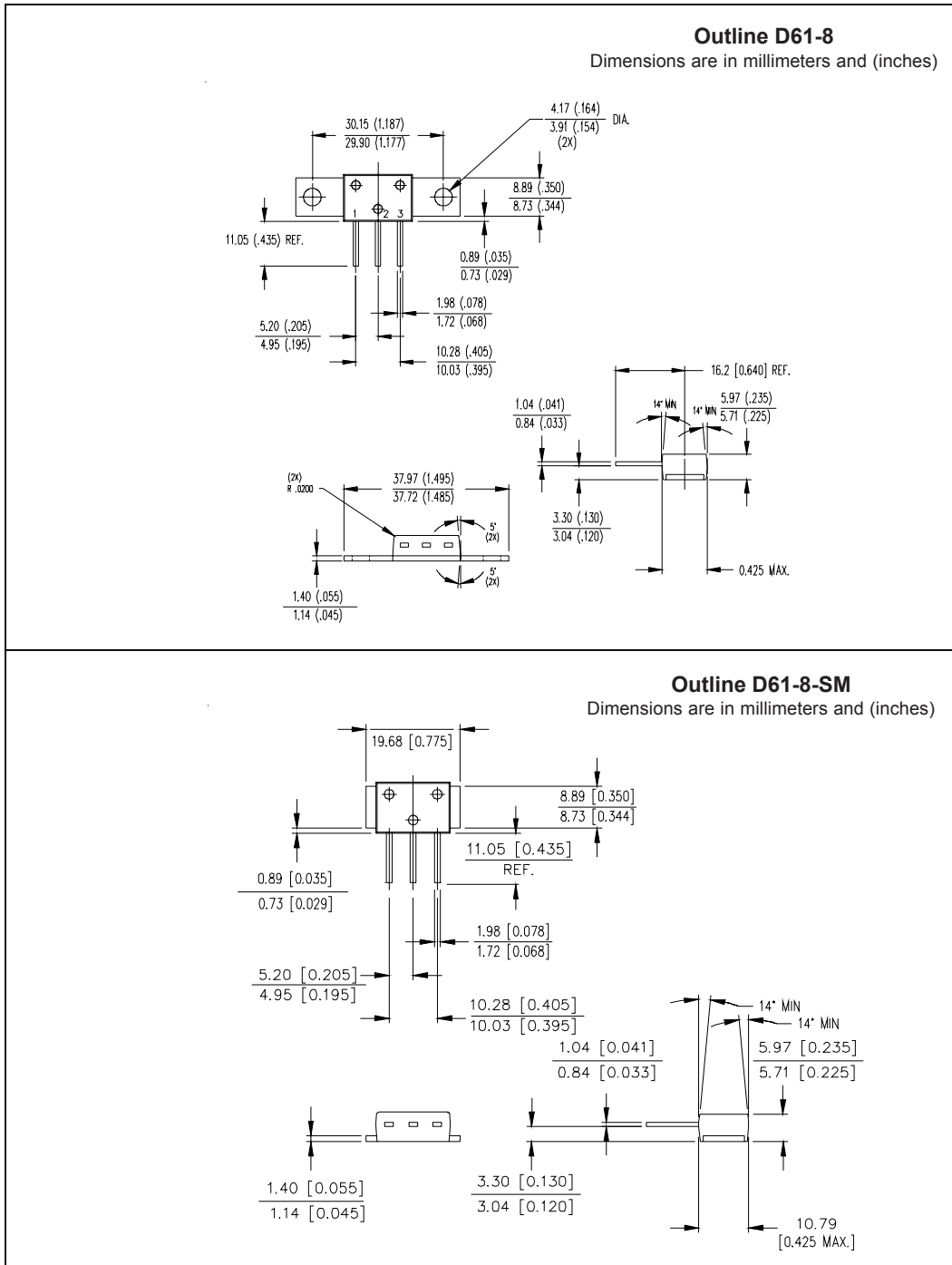


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



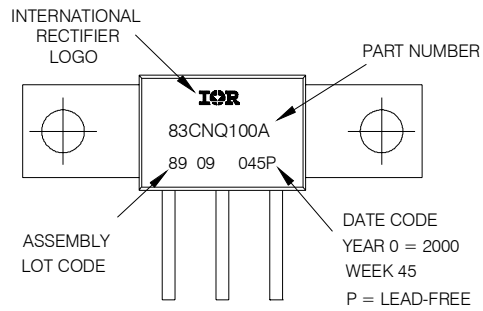
Outline D61-8-SM
 Dimensions are in millimeters and (inches)

Marking Information

Outline D61-8

EXAMPLE: THIS IS A 83CNQ100 WITH
LOT CODE 89 09
ASSEMBLED ON WW 45, 2000

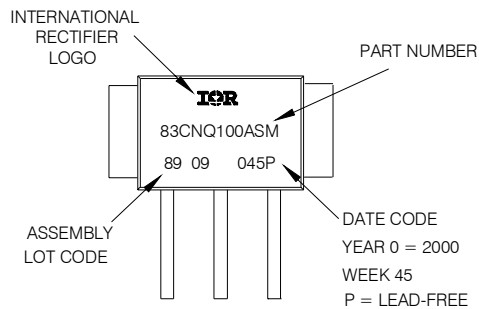
Note: "P" in assembly line
position indicates "Lead-Free"



Outline D61-8-SM

EXAMPLE: THIS IS A 83CNQ100ASM WITH
LOT CODE 89 09
ASSEMBLED ON WW 45, 2000

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



```

83CNQ100A
*****
* This model has been developed by *
* Wizard SPICE MODEL GENERATOR (1999) *
* (International Rectifier Corporation) *
* contains Proprietary Information *
*****
* SPICE Model Diode is composed by a *
* simple diode plus paralalled VCG2T *
*****
.SUBCKT 83CNQ100A ANO CAT
D1 ANO 1 DMOD (0.20831)
*Define diode model
.MODEL DMOD D(IS=3.91765102575707E-04A,N=1.6412007115037,BV=110V,
+ IBV=1.66611874283115A,RS= 0.001083212,CJO=1.31909764291715E-08,
+ VJ=1.04145964983498,XTI=2, EG=0.757359996913038)
*****
*Implementation of VCG2T
VX 1 2 DC 0V
R1 2 CAT TRES 1E-6
.MODEL TRES RES(R=1,TC1=-5.06642501757023)
GP1 ANO CAT VALUE={-ABS(I(VX))*(EXP((((2.558893E-02/-5.066425)*((V(2,CAT)*1E6)/(I(VX)+1E-6)-
1))+1)*3.120336E-03*ABS(V(ANO,CAT)))-1)}
*****
.ENDS 83CNQ100A

Thermal Model Subcircuit
.SUBCKT 83CNQ100A 5 1

CTHERM1 5 4 8.75E-04
CTHERM2 4 3 1.99E+00
CTHERM3 3 2 2.04E+01
CTHERM4 2 1 2.41E+02

R THERM1 5 4 1.00E-07
R THERM2 4 3 4.51E-01
R THERM1 3 2 3.08E-01
R THERM1 2 1 7.27E-02

.ENDS 83CNQ100A

```

Ordering Information Table

Device Code						
83	C	N	Q	100	A	PbF
①	②	③	④	⑤	⑥	⑦
1	- Current Rating (80A)					
2	- Circuit Configuration C = Common Cathode					
3	- Package N = D-61					
4	- Schottky "Q" Series					
5	- Voltage Ratings					
6	<ul style="list-style-type: none"> • A = D-61-8 package style • ASM = D-61-8-SM package style 					
7	<ul style="list-style-type: none"> • none = Standard Production • PbF = Lead-Free 					
Standard pack quantity: A = 10 pieces ASM = 20 pieces						

080 = 80V
100 = 100V

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.



Notice

The products described herein were acquired by Vishay Intertechnology, Inc., as part of its acquisition of International Rectifier's Power Control Systems (PCS) business, which closed in April 2007. Specifications of the products displayed herein are pending review by Vishay and are subject to the terms and conditions shown below.

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.

International Rectifier®, IR®, the IR logo, HEXFET®, HEXSense®, HEXDIP®, DOL®, INTERO®, and POWIRTRAIN® are registered trademarks of International Rectifier Corporation in the U.S. and other countries. All other product names noted herein may be trademarks of their respective owners.