Bulletin PD-20699 rev. A 12/02

International
IOR Rectifier

80CNT020A

TRENCH SCHOTTKY RECTIFIER
New GenIII D-61 Package

80 Amp

Major Ratings and Characteristics

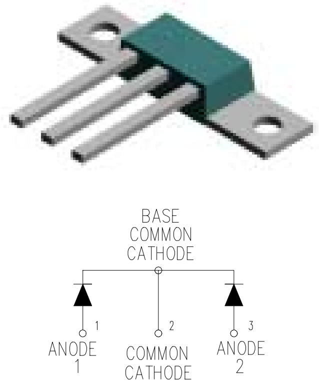
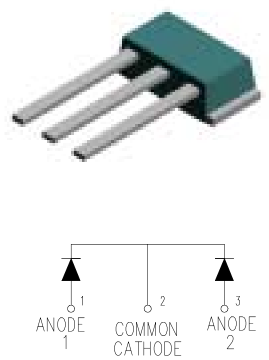
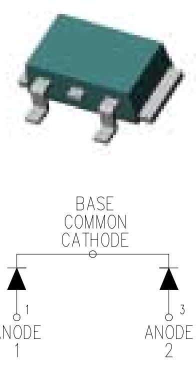
Characteristics		Value	Units
$I_{F(AV)}$	Rectangular waveform	80	A
V_{RRM}	range	20	V
I_{FSM}	@ tp = 5 µs sine	5300	A
V_F	@ 40 Apk, T_J = 150°C (per leg)	0.21	V
T_J	range	- 55 to 150	°C

Description/ Features

The 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
- *New fully transfer-mould low profile, small footprint, high current package*

Case Styles

80CNT...A	80CNT...ASM	80CNT...ASL
		
D61-8	**D61-8-SM**	**D61-8-SL**

Voltage Ratings

	Part number		80CNT020A
V_R	Max. DC Reverse Voltage (V)	@ 125°C	20
		@ 150°C	13

Absolute Maximum Ratings

	Parameters		Values	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current	(Per Leg)	40	A	50% duty cycle @ T_C = 137°C, rectangular wave form	
		(Per Device)	80			
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg)		5300	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
			700		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)		4.5	mJ	T_J = 25 °C, I_{AS} = 1 Amps, L = 4.5 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 x V_R typical	

Electrical Specifications

	Parameters	Typ	Max	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) (1)	0.33	0.37	V	@ 40A	T_J = 25°C
		0.39	0.45		@ 80A	
		0.24	0.27		@ 40A	T_J = 125°C
		0.31	0.36		@ 80A	
		0.21	0.25		@ 40A	T_J = 150°C
		0.29	0.34		@ 80A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) (1)	2.5	5.0	mA	T_J = 25°C	V_R = rated V_R
		640	950		T_J = 125°C	V_R = rated V_R
		480	750		T_J = 125°C	V_R = 3.3V
		530	800		T_J = 125°C	V_R = 5V
		1630	2500		T_J = 150°C	V_R = 10V
C_T	Max. Junction Capacitance (Per Leg)	-	5500	pF	V_R=10V_{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	-	10000	V/µs	(Rated V_R)	

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

Thermal-Mechanical Specifications

	Parameters		80CNT	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 125	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 150	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)		0.50	°C/W	DC operation
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 (lbf-in)	
	(D61-8 Only)	Max.	58 (50)		

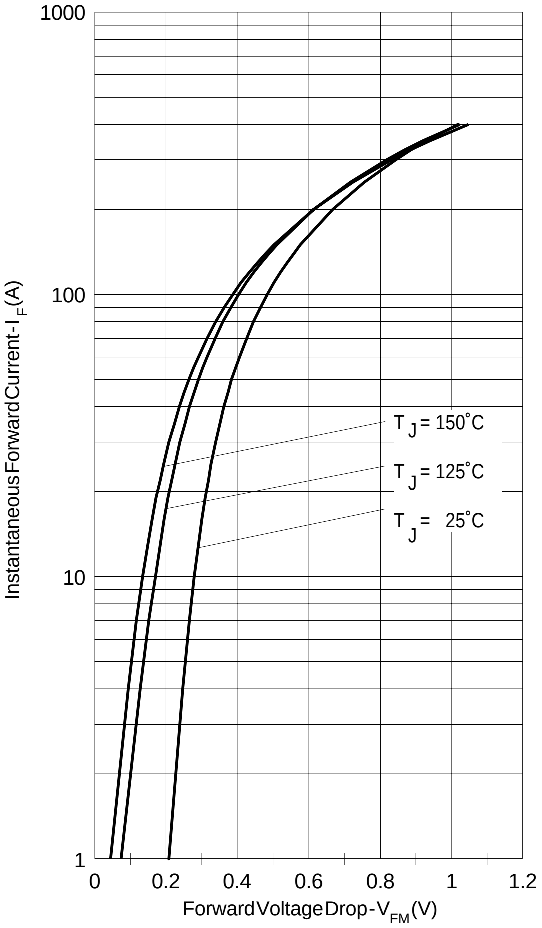


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

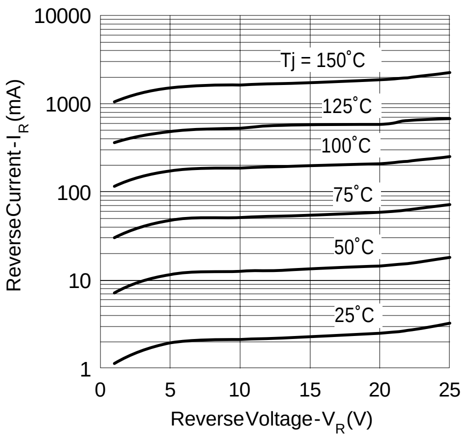


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

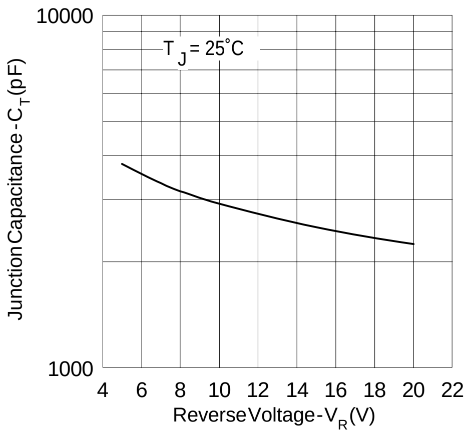


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

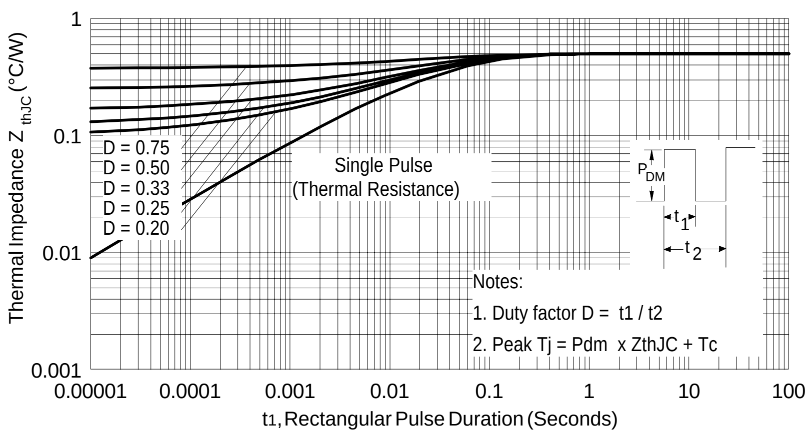


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

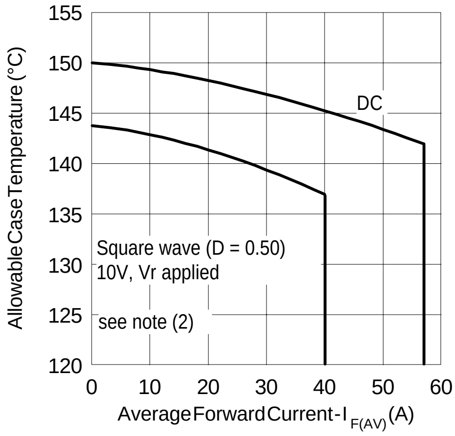


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

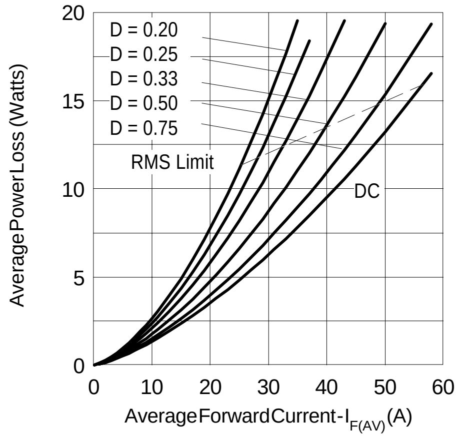


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

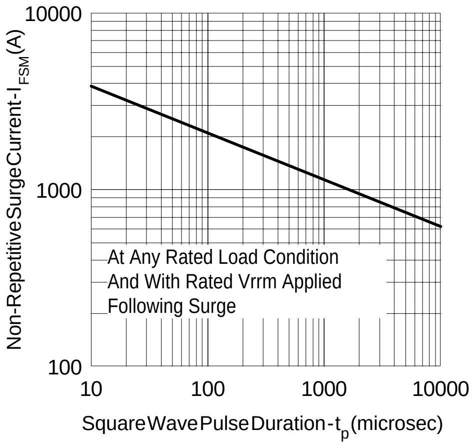


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

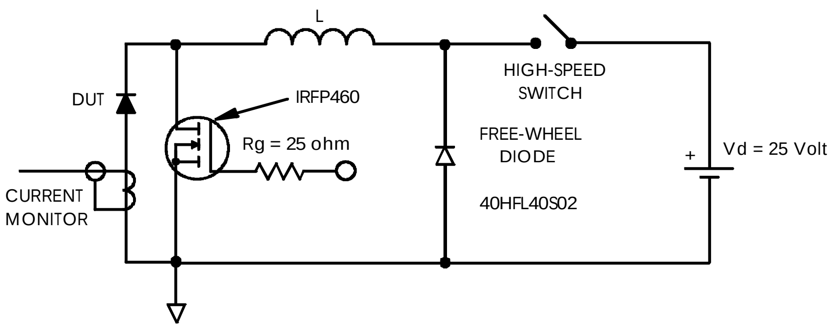


Fig. 8 - Unclamped Inductive Test Circuit

(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 @ 10V, V_R applied

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

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