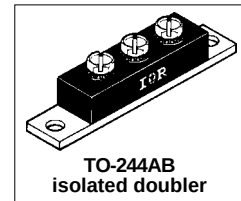


International
IR Rectifier

203DNQ... SERIES

SCHOTTKY RECTIFIER

200 Amp



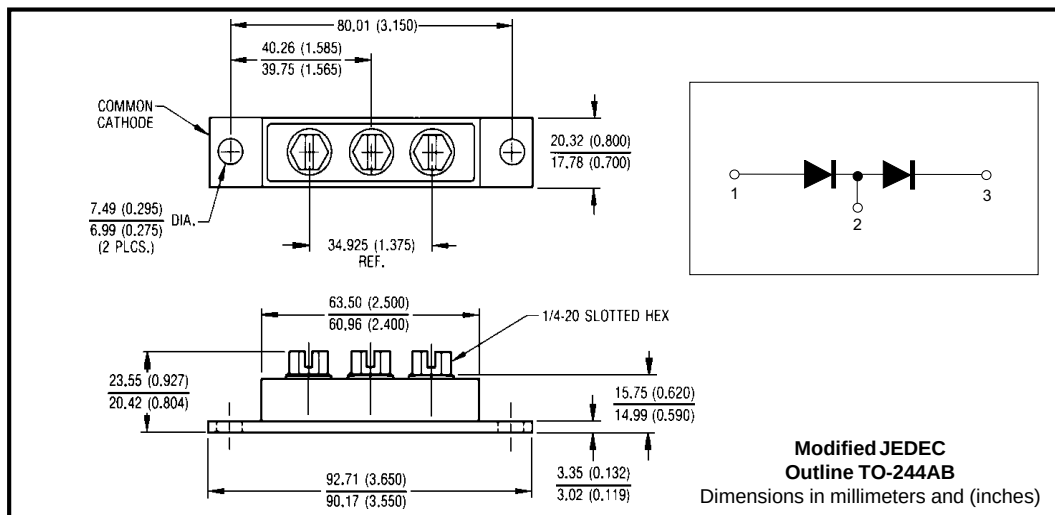
Major Ratings and Characteristics

Characteristics	203DNQ...	Units
$I_{F(AV)}$ Rectangular waveform	200	A
V_{RRM} range	80 to 100	V
I_{FSM} @ $t_p=5\mu s$ sine	16,000	A
V_F @ 100Apk, $T_J=125^\circ C$ (per leg)	0.70	V
T_J range	-55 to 175	$^\circ C$

Description/Features

The 203DNQ Schottky rectifier doubler module series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 $^\circ C$ junction temperature. Typical applications are in high current switching power supplies, plating power supplies, UPS systems, converters, free-wheeling diodes, welding, and reverse battery protection.

- 175 $^\circ C$ T_J operation
- 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



Voltage Ratings

Part number	203DNQ080	203DNQ100
V_R Max. DC Reverse Voltage (V)	80	100
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters		203DNQ	Units	Conditions		
I _{F(AV)}	Max. Average Forward Current *See Fig. 5 (Per Device)	200	A	50% duty cycle @ T _C = 136 °C, rectangular wave form		
I _{FSM}	Max. PeakOneCycleNon-Repetitive Surge Current (Per Leg) *See Fig. 7	16,000	A	5μs Sine or 3μs Rect. pulse	Following any rated load condition and with rated V _{RRM} applied	
		2,100		10ms Sine or 6ms Rect. pulse		
E _{AS}	Non-RepetitiveAvalancheEnergy (Per Leg)	15	mJ	T _J = 25 °C, I _{AS} = 1 Amps, L = 30 mH		
I _{AR}	RepetitiveAvalancheCurrent (Per Leg)	1	A	Currentdecayinglinearlytozeroin1μsec Frequency limited by T _J max. V _A = 1.5 x V _R typical		

Electrical Specifications

Parameters		203DNQ	Units	Conditions	
V _{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.86	V	@ 100A	T _J = 25 °C
		1.03	V	@ 200A	
		0.70	V	@ 100A	T _J = 125 °C
		0.84	V	@ 200A	
I _{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	3	mA	T _J = 25 °C	V _R = rated V _R
		40	mA	T _J = 125 °C	
V _{F(TO)}	Threshold Voltage	0.50	V	T _J = T _J max.	
r _t	Forward Slope Resistance	1.08	mΩ		
C _T	Max. Junction Capacitance (Per Leg)	2,650	pF	V _R = 5V _{DC} (test signal range 100KHz to 1MHz) 25°C	
L _S	Typical Series Inductance (Per Leg)	7.0	nH	From top of terminal hole to mounting plane	
dv/dt	Max. Voltage Rate of Change (Rated V _R)	10000	V/ μs		

Thermal-Mechanical Specifications(1) Pulse Width < 300 μs , Duty Cycle < 2%

Parameters	203DNQ	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)	0.40	$^\circ\text{C/W}$	DC operation * See Fig. 4
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.20	$^\circ\text{C/W}$	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.10	$^\circ\text{C/W}$	Mounting surface, smooth and greased
wt Approximate Weight	79(2.80)	g(oz.)	
T Mounting Torque	Min.	24(20)	Kg-cm (lbf-in)
	Max.	35(30)	
	Typ.	13.5(12)	
	Min.	35(30)	
Terminal Torque	Max.	46(40)	
Case Style	TO-244AB Isolated		Modified JEDEC

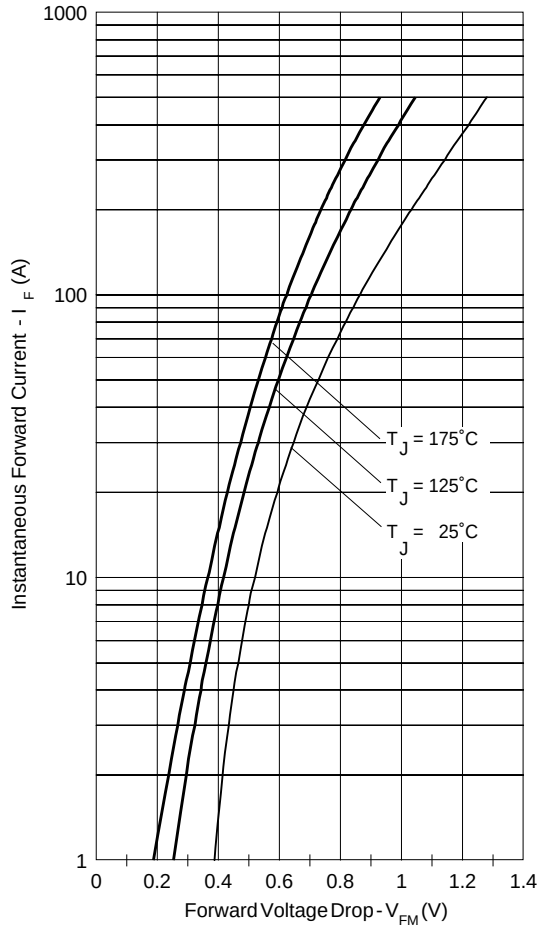


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

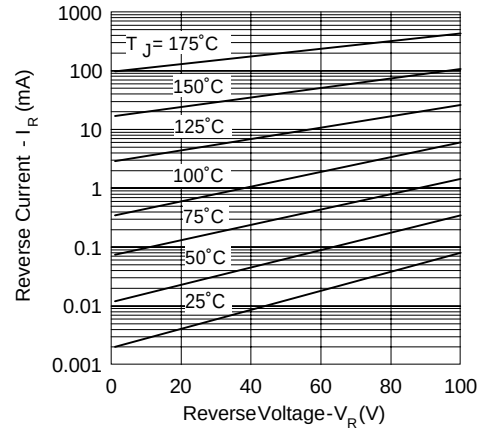


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

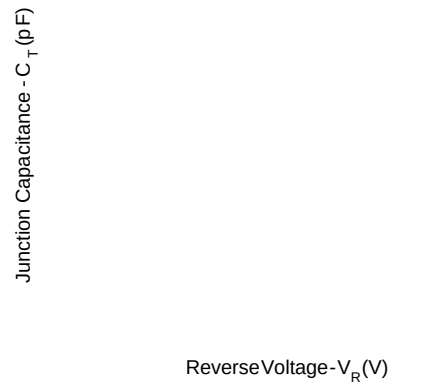


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

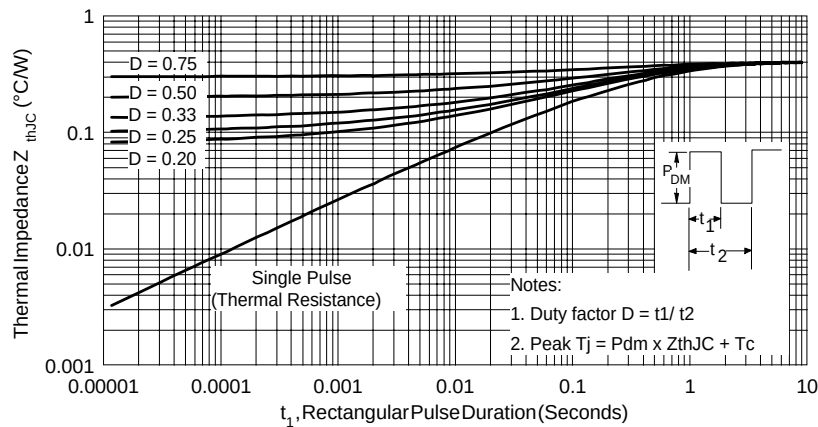


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

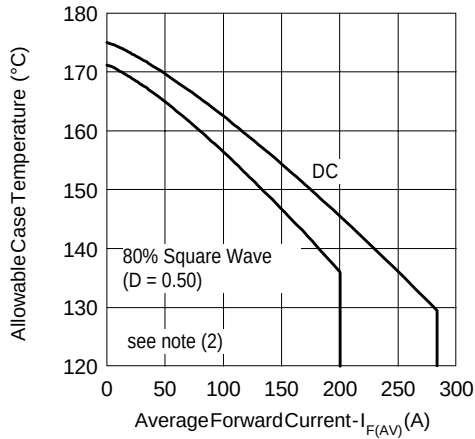


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

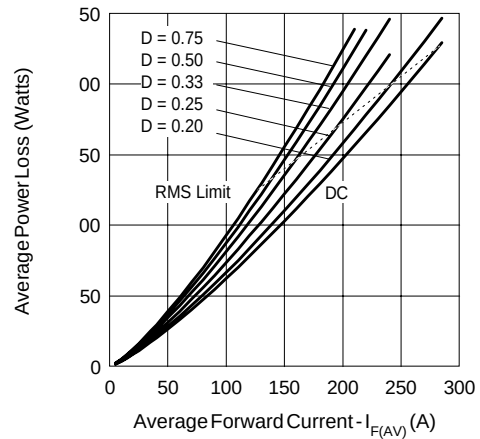


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

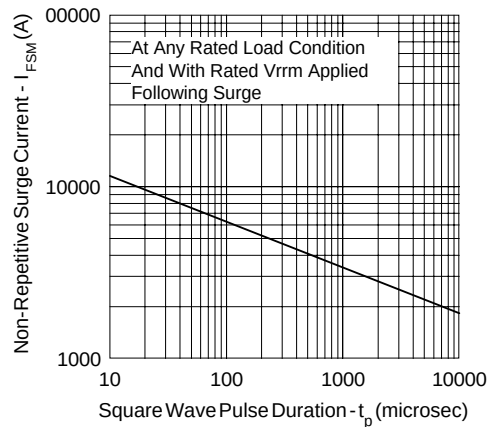


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

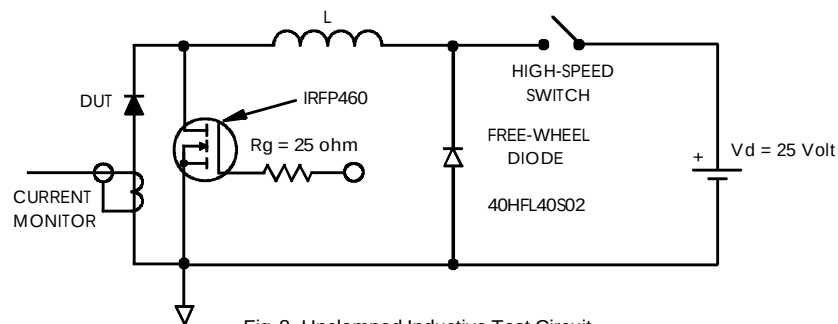


Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;

P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM}$ @ $(I_{F(AV)} / D)$ (see Fig. 6);

$P_{d_{REV}}$ = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; I_R @ $V_{R1} = 80\%$ rated V_R

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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