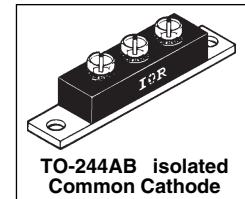


203DMQ... SERIES

SCHOTTKY RECTIFIER

200 Amp



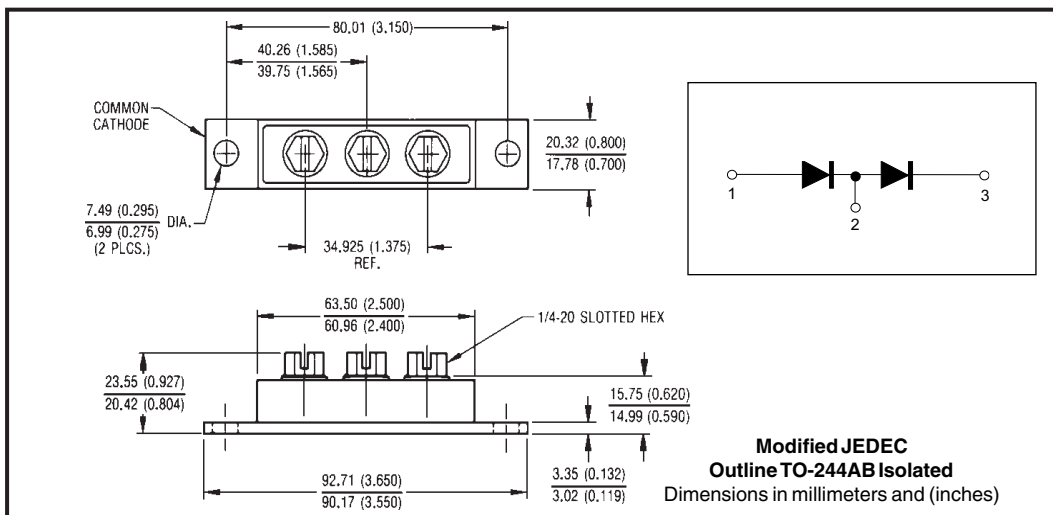
Major Ratings and Characteristics

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

Description/Features

The 203DMQ 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 high current switching power supplies, plating power supplies, UPS systems, converters, free-wheeling diodes, welding, 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



Voltage Ratings

Part number	203DMQ080	203DMQ100
V_R Max. DC Reverse Voltage (V)	80	100
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters	203DMQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5 (Per Device)	200	A	50% duty cycle @ $T_C = 107^\circ\text{C}$, rectangular waveform
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	16,000	A	5 μs Sine or 3 μs Rect. pulse
	2,100		10ms Sine or 6ms Rect. pulse
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	203DMQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.86	V	@ 100A
	1.03	V	@ 200A
	0.70	V	@ 100A
	0.84	V	@ 200A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	3	mA	$T_J = 25^\circ\text{C}$
	40	mA	$T_J = 125^\circ\text{C}$
$V_{F(TO)}$ Threshold Voltage	0.50	V	$T_J = T_J$ max.
r_t Forward Slope Resistance	1.08	m Ω	
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)	10,000	V/ μs	

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

Thermal-Mechanical Specifications

Parameters	203DMQ	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)	0.70	$^\circ\text{C}/\text{W}$	DC operation * See Fig. 4	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.35	$^\circ\text{C}/\text{W}$	DC operation	
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.10	$^\circ\text{C}/\text{W}$	Mounting surface, smooth and greased	
wt Approximate Weight	79(2.80)	g(oz.)		
T Mounting Torque	Min.	40 (35)	Kg-cm (lbf-in)	
	Max.	58 (50)		
	Mounting Torque Center Hole	Typ.		17 (15)
	Terminal Torque	Min.		58 (50)
		Max.		86 (75)
Case Style	TO-244AB Isolated		Modified JEDEC	

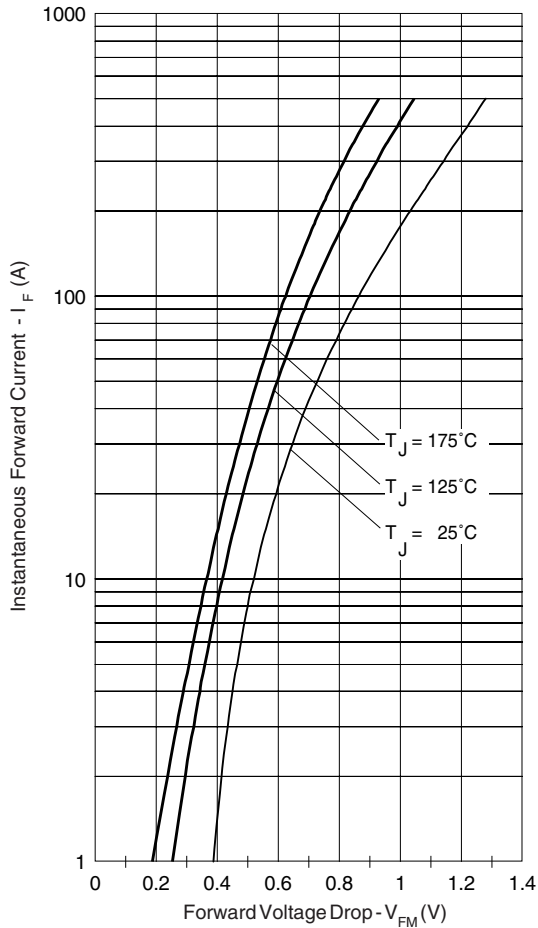


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

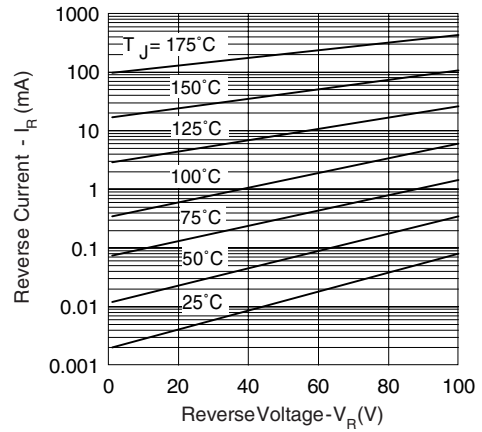


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

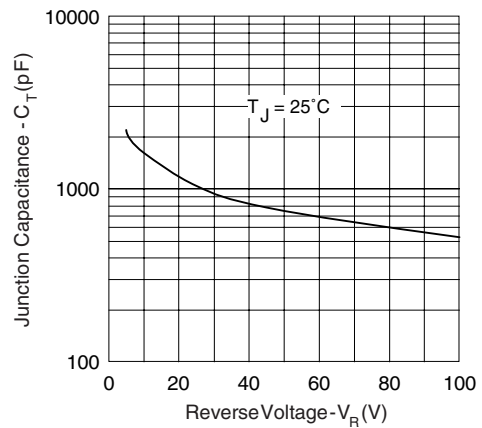


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

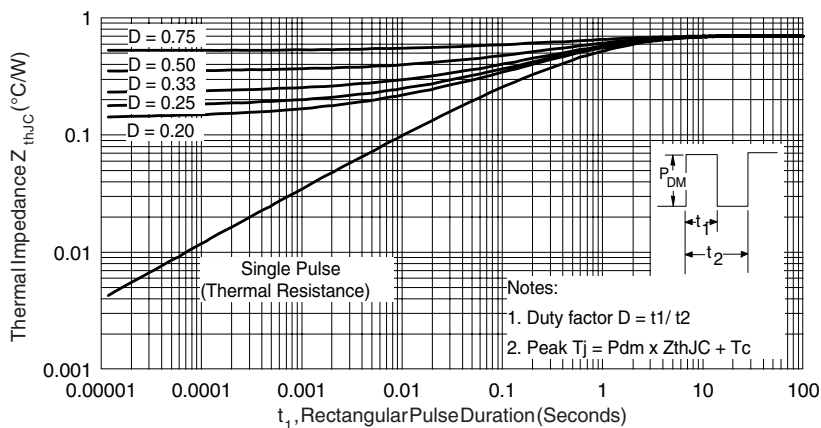


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

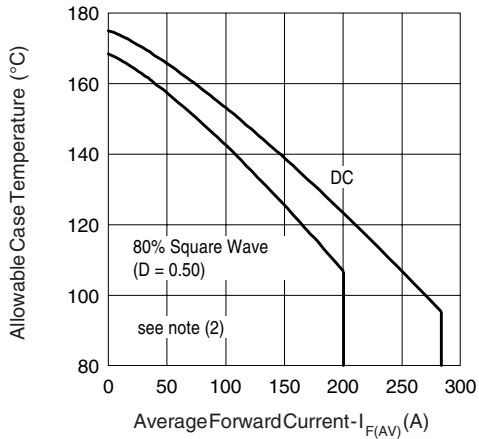


Fig. 5- Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

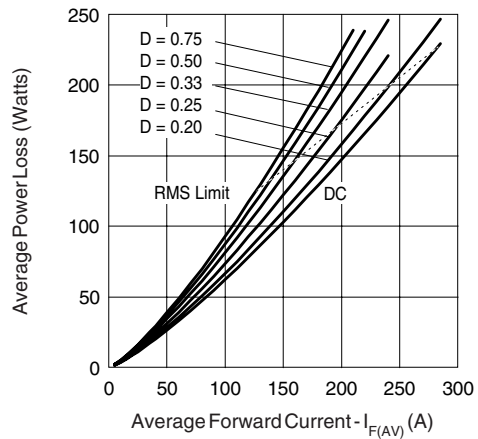


Fig. 6- Forward Power Loss Characteristics (Per Leg)

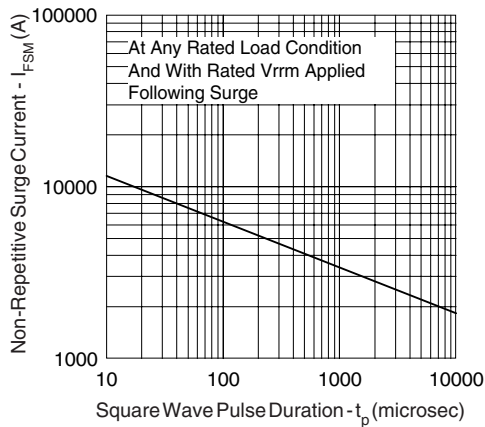


Fig. 7- Max. Non-Repetitive Surge Current (Per Leg)

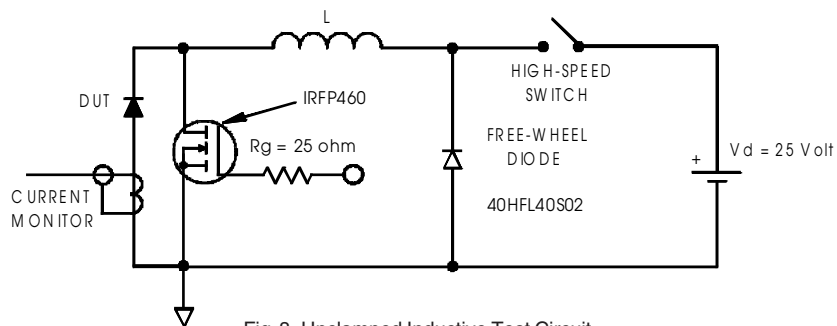


Fig. 8- Unclamped Inductive Test Circuit

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

International
IR Rectifier

WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245 U.S.A. Tel: (310) 322 3331. Fax: (310) 322 3332.
EUROPEAN HEADQUARTERS: Hurst Green, Oxted, Surrey RH8 9BB, U.K. Tel: ++ 44 1883 732020. Fax: ++ 44 1883 733408.
IR CANADA: 15 Lincoln Court, Brampton, Markham, Ontario L6T3Z2. Tel: (905) 453 2200. Fax: (905) 475 8801.
IR GERMANY: Saalburgstrasse 157, 61350 Bad Homburg. Tel: ++ 49 6172 96590. Fax: ++ 49 6172 965933.
IR ITALY: Via Liguria 49, 10071 Borgaro, Torino. Tel: ++ 39 11 4510111. Fax: ++ 39 11 4510220.
IR FAR EAST: K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171. Tel: 81 3 3983 0086.
IR SOUTHEAST ASIA: 1 Kim Seng Promenade, Great World City West Tower, 13-11, Singapore 237994. Tel: ++ 65 838 4630.
IR TAIWAN: 16 Fl. Suite D.207, Sec. 2, Tun Haw South Road, Taipei, 10673, Taiwan. Tel: 886 2 2377 9936.