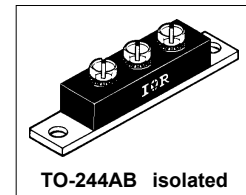


International IOR Rectifier

203CMQ... SERIES

SCHOTTKY RECTIFIER

200 Amp



Major Ratings and Characteristics

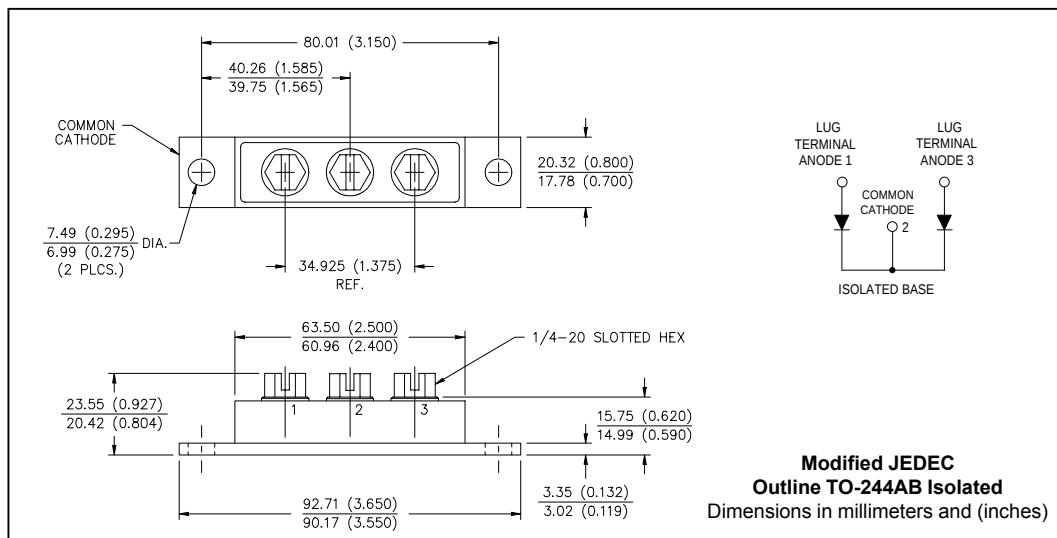
Characteristics	203CMQ...	Units
$I_{F(AV)}$ Rectangular waveform	200	A
V_{RRM} range	80 to 100	V
I_{FSM} @ $t_p = 5 \mu s$ sine	16,000	A
V_F @ 100A pk, $T_J = 125^\circ C$ (per leg)	0.70	V
T_J range	-55 to 175	$^\circ C$

Description/ Features

The 203CMQ high current Schottky rectifier module series has been optimized for low reverse leakage at high temperature.

The proprietary barrier technology allows for reliable operation up to $175^\circ C$ 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
- Center tap module - Isolated Base
- 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



203CMQ... Series

Bulletin PD-20565 rev. B 08/01

International
IR Rectifier

Voltage Ratings

Part number	203CMQ080	203CMQ100
V_R Max. DC Reverse Voltage (V)	80	100
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters		203CMQ	Units	Conditions		
I _{F(AV)}	Max. Average Forward (Per Leg)	100	A	50% duty cycle @ T _C = 110 °C, rectangular wave form		
	Current *See Fig. 5 (Per Device)	200				
I _{FSM}	Max. Peak One Cycle Non-Repetitive	16,000	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	2,100		10ms Sine or 6ms Rect. pulse		
E _{AS}	Non-Repetitive Avalanche Energy (Per Leg)	15	mJ	T _J = 25 °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 x V _R typical		

Electrical Specifications

Parameters		203CMQ	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	10000	V/ μs	(Rated V _R)	
V _{RMS}	Insulation Voltage	1000	V		

Thermal-Mechanical Specifications

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

Parameters	203CMQ	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	$^\circ\text{C/W}$	DC operation * See Fig. 4
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.35	$^\circ\text{C/W}$	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

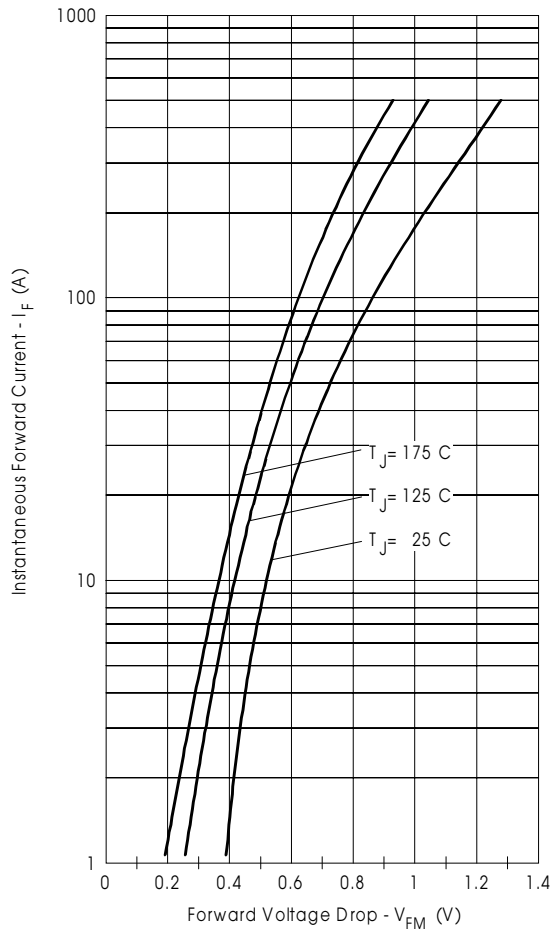


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

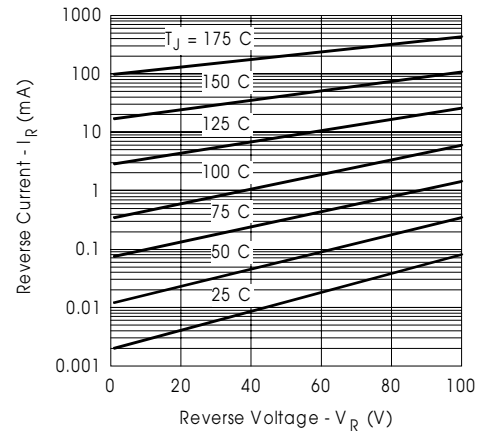


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

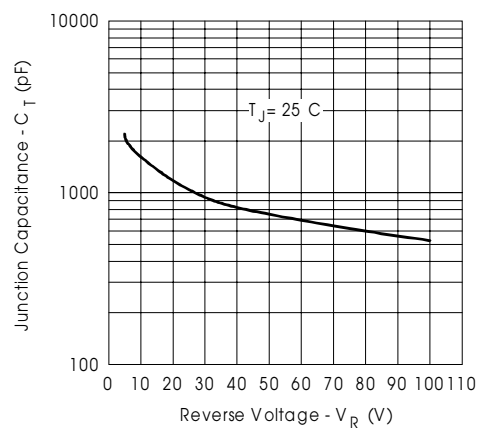


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

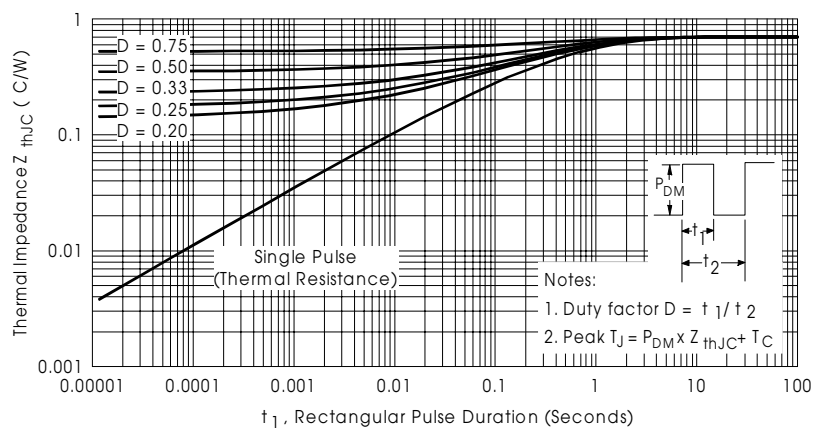


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

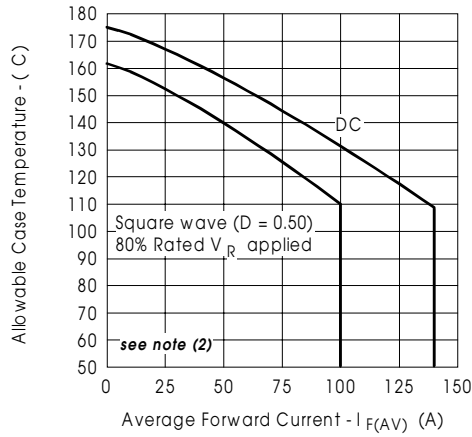


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

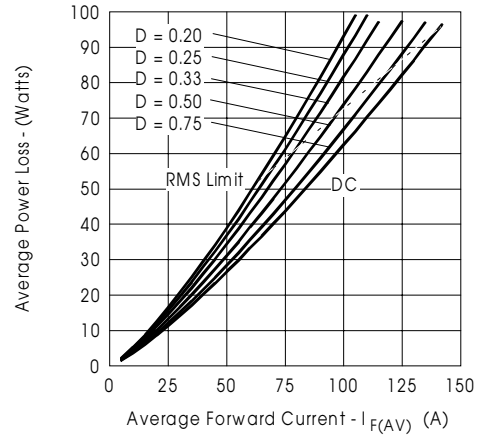


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

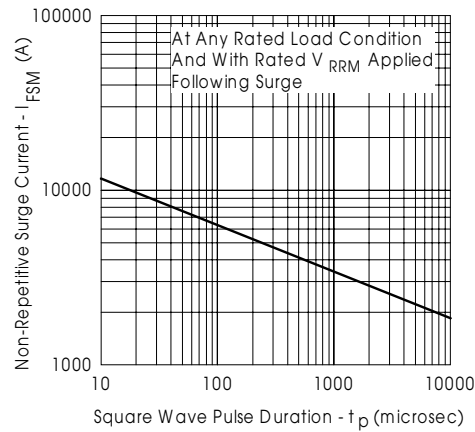


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

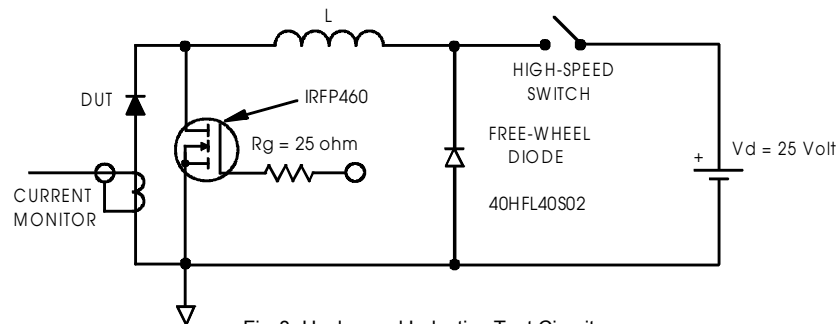


Fig. 8 - Unclamped Inductive Test Circuit

(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 = $V_{R1} \times I_{R1} (1 - D)$; $I_{R1} @ V_{R1} = 80\% \text{ rated } V_R$

Ordering Information Table

Device Code				
203	C	M	Q	100
①	②	③	④	⑤
1	-	Current Rating: 200A		
2	-	Common Cathode		
3	-	Module		
4	-	Schottky Q Series		
5	-	Voltage Rating:		
				080 = 80V 100 = 100V

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.

International
IR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 08/01