

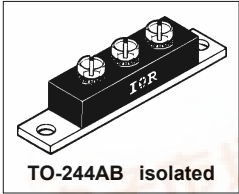
Bulletin PD-2.400 rev. B 08/01

International
IR Rectifier

201CMQ... SERIES

SCHOTTKY RECTIFIER

200 Amp



Major Ratings and Characteristics

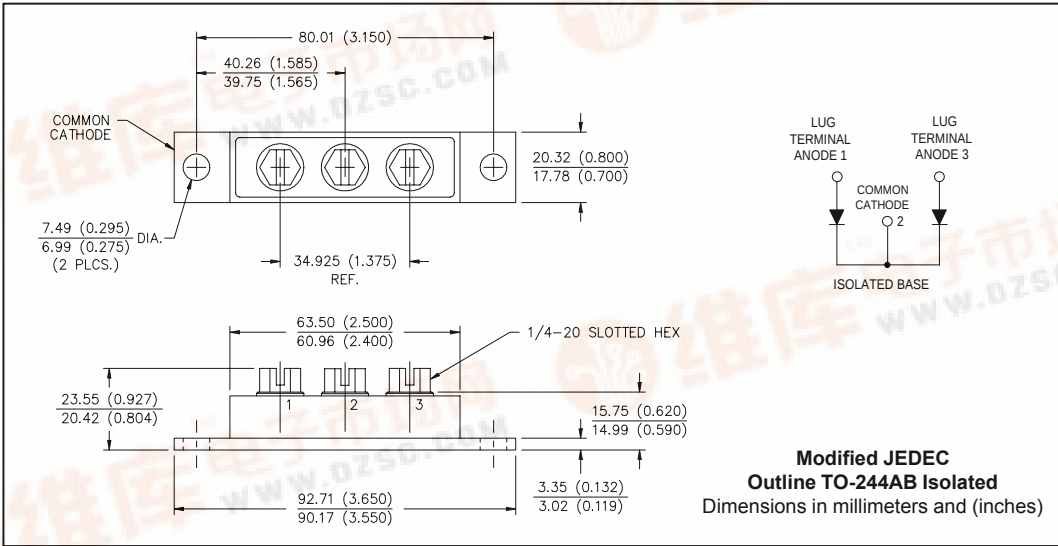
Characteristics	201CMQ...	Units
$I_{F(AV)}$ Rectangular waveform	200	A
V_{RRM}	35 to 45	V
I_{FSM} @ $t_p=5\mu s$ sine	16,000	A
V_F @100Apk, $T_J=125^\circ C$ (per leg)	0.58	V
T_J range	-55 to 175	$^\circ C$

Description/Features

The 201CMQ 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



201CMQ... Series

Bulletin PD-2.400 rev. B 08/01

International
IRF Rectifier

Voltage Ratings

Part number	201CMQ035	201CMQ040	201CMQ045
V_R Max. DC Reverse Voltage (V)	35	40	45
V_{RWM} Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

Parameters	201CMQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current (Per Leg) * See Fig. 5 (Per Device)	100 200	A	50% duty cycle @ $T_C = 121^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	16,000 3200	A	5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated V_{RRM} applied
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	135	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 20$ Amps, $L = 0.67$ mH
I_{AR} Repetitive Avalanche Current (Per Leg)	20	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	201CMQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.67	V	@ 100A $T_J = 25^\circ\text{C}$
	0.81	V	@ 200A
	0.58	V	@ 100A $T_J = 125^\circ\text{C}$
	0.71	V	@ 200A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	10	mA	$T_J = 25^\circ\text{C}$
	90	mA	$T_J = 125^\circ\text{C}$ $V_R = \text{rated } V_R$
C_T Max. Junction Capacitance (Per Leg)	5200	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	

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

Thermal-Mechanical Specifications

Parameters	201CMQ	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)		
	Max. 46 (40)		
Case Style	TO-244AB Isolated		Modified JEDEC

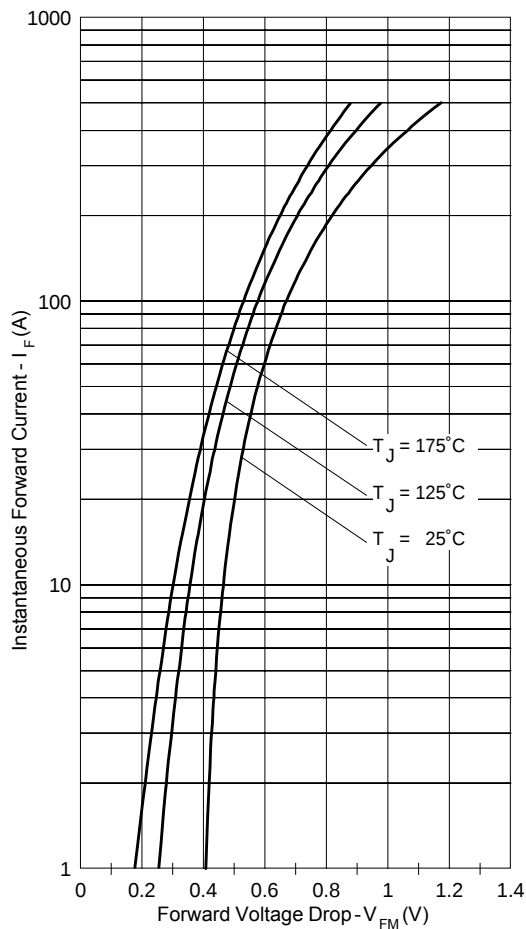


Fig. 1 - Max. Forward Voltage Drop Characteristics

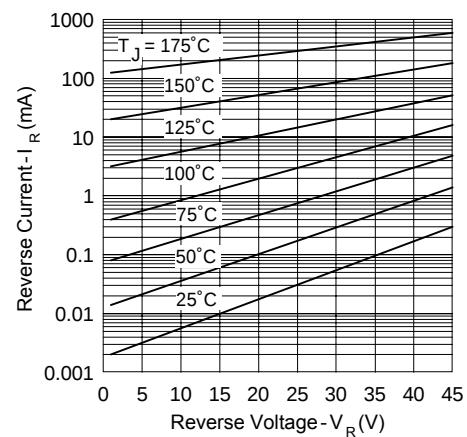


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

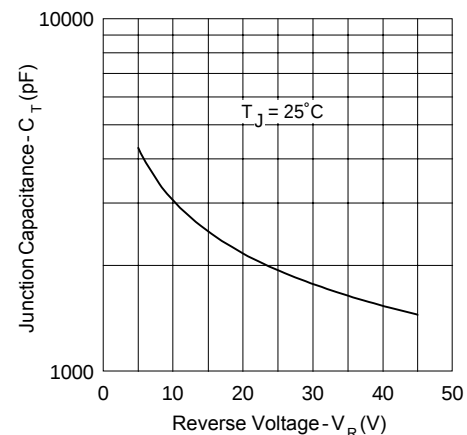


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

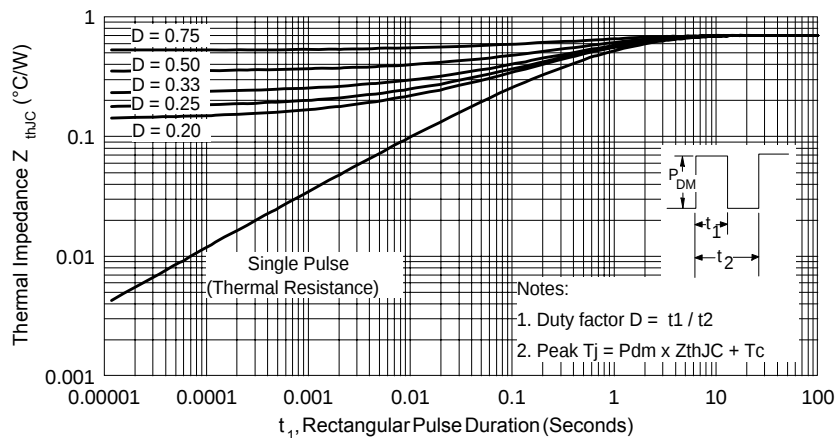


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

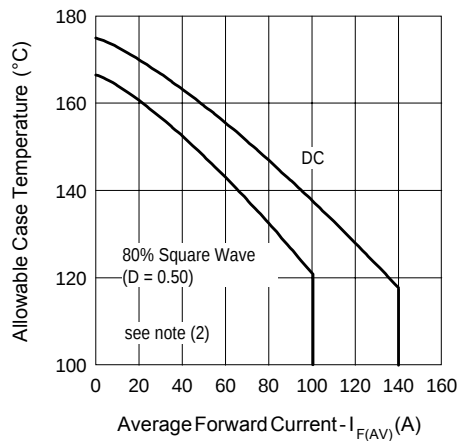


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

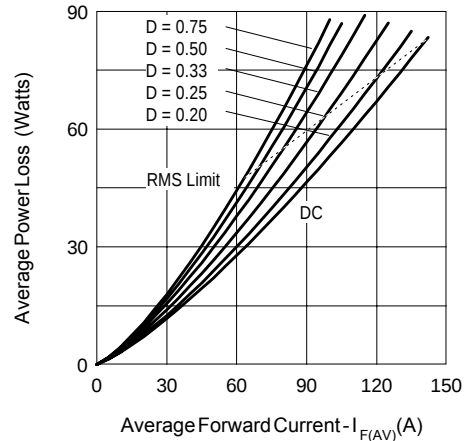


Fig. 6 - Forward Power Loss Characteristics

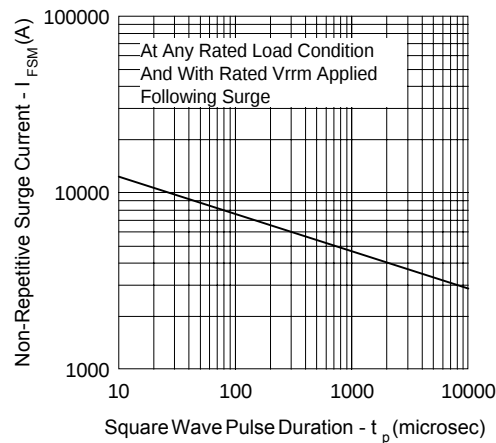


Fig. 7 - Max. Non-Repetitive Surge Current

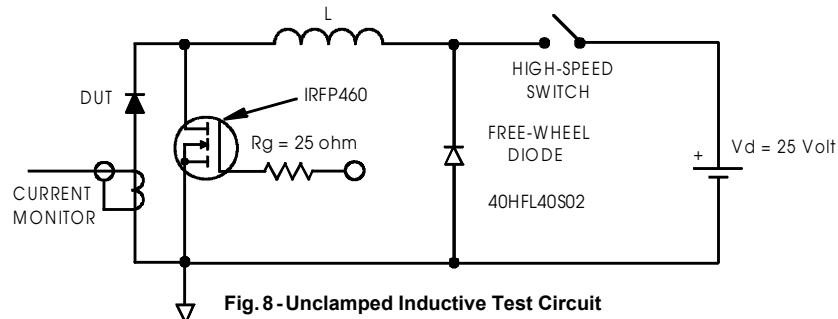


Fig. 8 - Unclamped Inductive Test Circuit

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

Ordering Information Table

Device Code				
201	C	M	Q	045
①	②	③	④	⑤
1	-	Current Rating: 200A		
2	-	Common Cathode		
3	-	Module		
4	-	Schottky Q Series		
5	-	Voltage Rating:		
				035 = 35V 040 = 40V 045 = 45V

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.