

International IOR Rectifier

PD-2.251 rev. A 12/97

150CMQ... SERIES

SCHOTTKY RECTIFIER

150 Amp

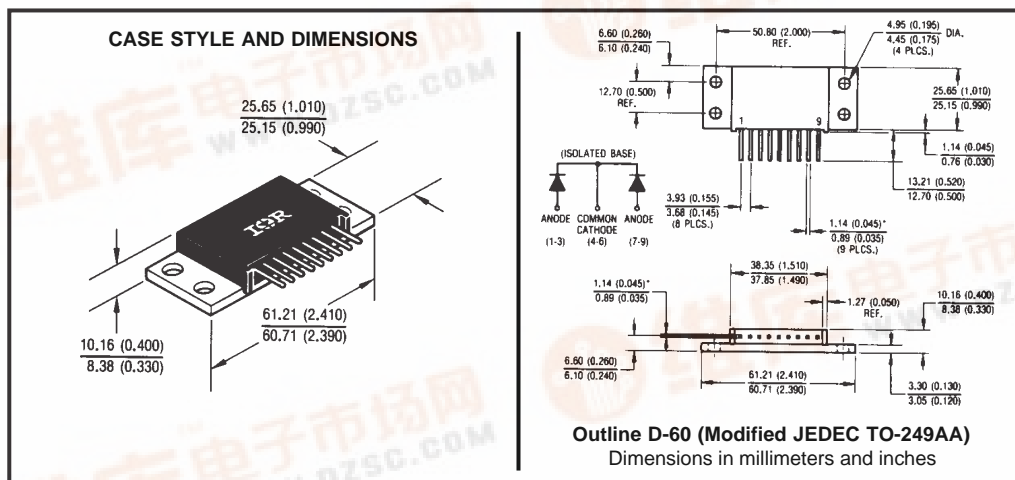
Major Ratings and Characteristics

Characteristics	150CMQ...	Units
$I_{F(AV)}$ Rectangular waveform	150	A
V_{RRM} range	35 to 45	V
I_{FSM} @ $t_p = 5 \mu s$ sine	6600	A
V_F @ 75 Apk, $T_J = 125^\circ C$ (per leg)	0.60	V
T_J range	-55 to 150	$^\circ C$

Description/Features

The 150CMQ isolated, 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 $150^\circ C$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- $150^\circ C$ T_J operation
- Isolated heatsink
- Center tap module
- Multiple leads per terminal for high frequency, high current PC board mounting
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Low profile, high current package



Voltage Ratings

Part number	150CMQ035	150CMQ040	150CMQ045
V_R Max. DC Reverse Voltage (V)	35	40	45
V_{RWM} Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

Parameters	150CMQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	150	A	50% duty cycle @ $T_C = 71^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	6600	A	Following any rated load condition and with rated V_{RWM} applied
	800		
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	101	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 15$ Amps, $L = 0.9$ mH
I_{AR} Repetitive Avalanche Current (Per Leg)	15	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	150CMQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.64	V	@ 75A
	0.87	V	@ 150A
	0.60	V	@ 75A
	0.79	V	@ 150A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	5	mA	$T_J = 25^\circ\text{C}$
	200	mA	$T_J = 125^\circ\text{C}$
C_T Max. Junction Capacitance (Per Leg)	2600	pF	$V_R = 5V_{DC}$, (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance (Per Leg)	9.2	nH	Measured lead to lead 5mm from package body
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	150CMQ	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	1.0	$^\circ\text{C/W}$	DC operation * See Fig. 4
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.50	$^\circ\text{C/W}$	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.10	$^\circ\text{C/W}$	Mounting surface, smooth and greased
wt Approximate Weight	56 (2.0)	g (oz.)	
T Mounting Torque	Min.	40 (35)	Kg-cm (lbf-in)
	Max.	58 (50)	
Case Style	D-60 (TO-249AA)		Modified JEDEC

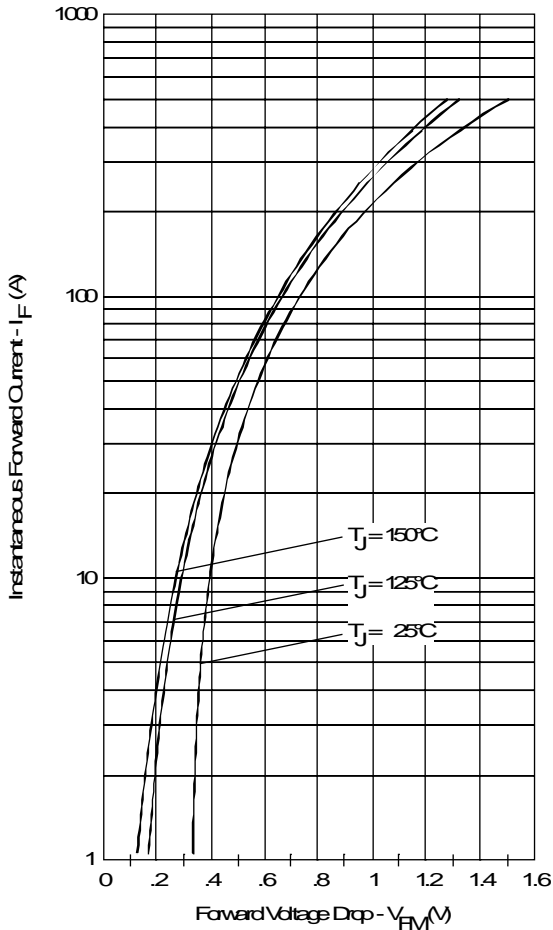


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

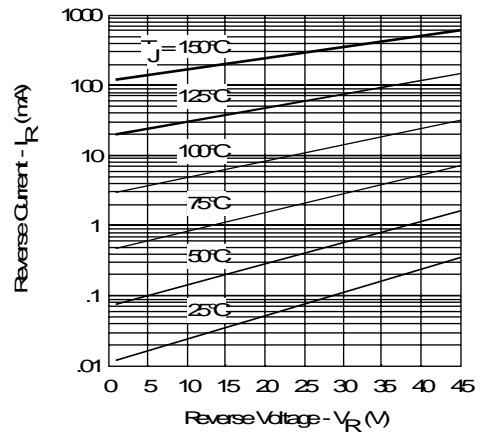


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

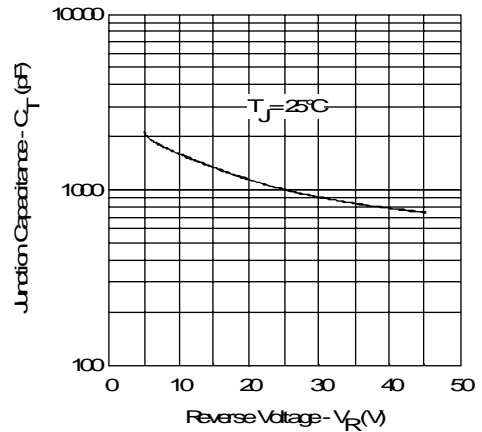


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

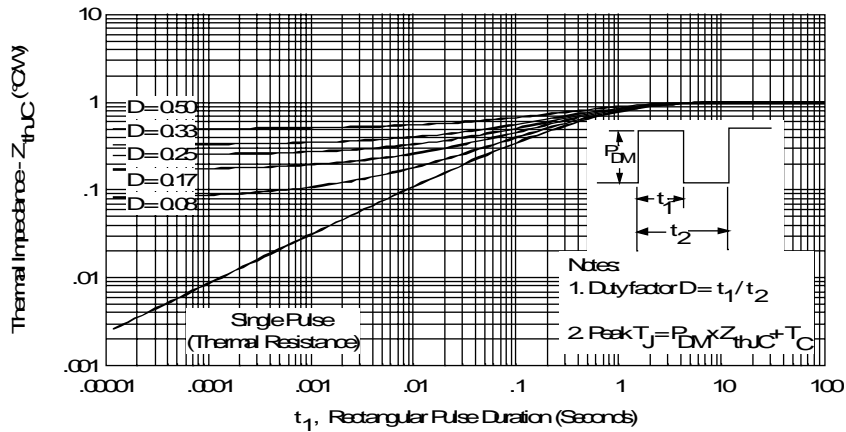


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

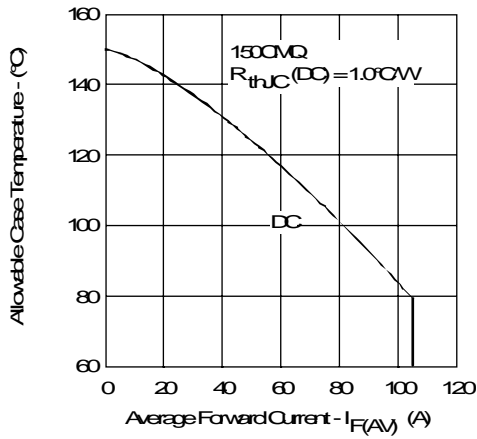


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

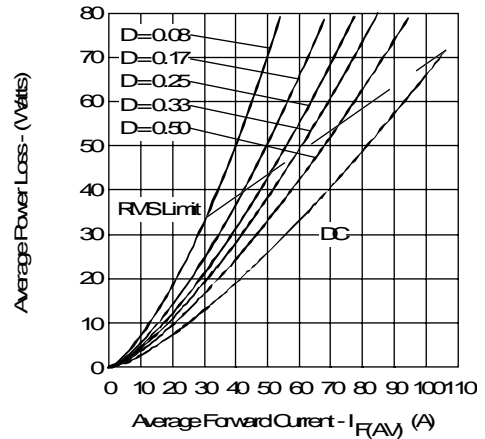


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

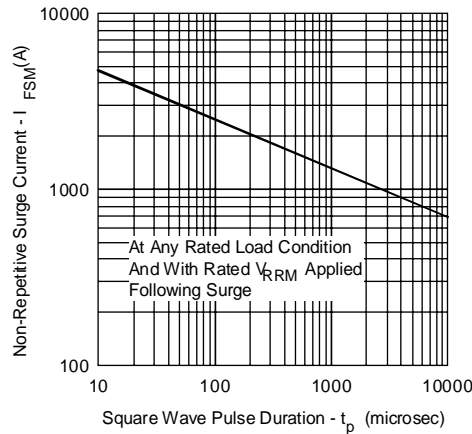


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

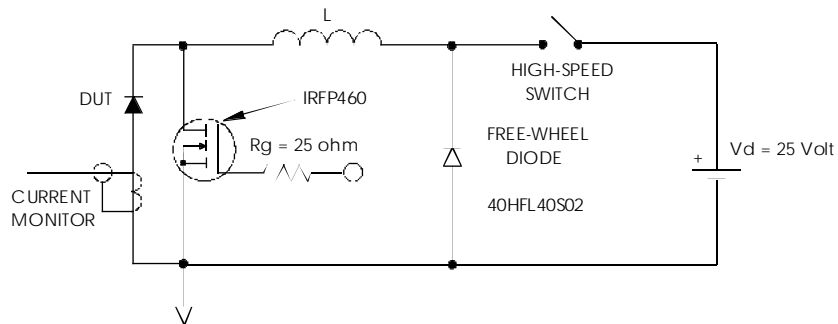


Fig. 8 - Unclamped Inductive Test Circuit