

International
IR Rectifier

PD-2.253 rev. A 12/97

153CMQ... SERIES

SCHOTTKY RECTIFIER

150 Amp

Major Ratings and Characteristics

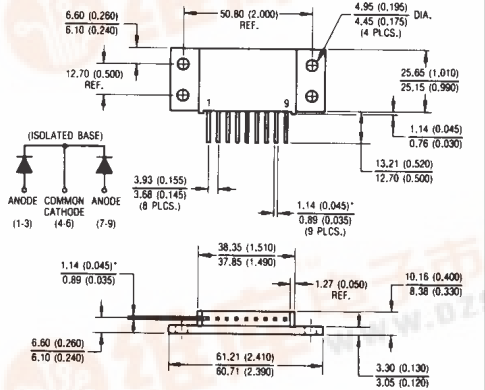
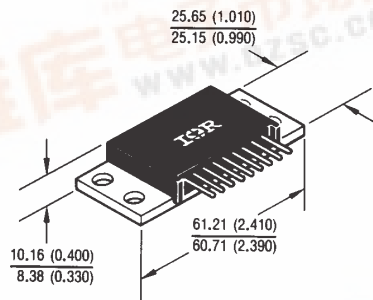
Characteristics	153CMQ...	Units
$I_{F(AV)}$ Rectangular waveform	150	A
V_{RRM} range	80 to 100	V
I_{FSM} @ $t_p = 5 \mu s$ sine	7000	A
V_F @ 75Apk, $T_J = 125^\circ C$ (per leg)	0.80	V
T_J range	-55 to 175	$^\circ C$

Description/Features

The 153CMQ isolated, 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° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175 °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
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Low profile, high current package

CASE STYLE AND DIMENSIONS



Outline D-60 (Modified JEDEC TO-249AA)
Dimensions in millimeters and inches



Voltage Ratings

Part number	153CMQ080	153CMQ100
V_R Max. DC Reverse Voltage (V)	80	100
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters		153CMQ	Units	Conditions		
I _{F(AV)}	Max. Average Forward Current * See Fig. 5	150	A	50% duty cycle @ T _C = 90 °C, rectangular wave form		
I _{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) *See Fig. 7	7000	A	5μs Sine or 3μs Rect. pulse	Following any rated load condition and with rated V _{RRM} applied	
		720		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 × V _R typical		

Electrical Specifications

Parameters		153CMQ	Units	Conditions	
V _{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.96	V	@ 75A	T _J = 25 °C
		1.19	V	@ 150A	
		0.80	V	@ 75A	T _J = 125 °C
		0.99	V	@ 150A	
I _{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	1.5	mA	T _J = 25 °C	V _R = rated V _R
		20	mA	T _J = 125 °C	
C _T	Max. Junction Capacitance (Per Leg)	1400	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		153CMQ	Units	Conditions	
T _j	Max. Junction Temperature Range		-55 to 175	°C	
T _{stg}	Max. Storage Temperature Range		-55 to 175	°C	
R _{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)		1.0	°C/W	DC operation * See Fig. 4
R _{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		0.50	°C/W	DC operation
R _{thCS}	Typical Thermal Resistance, Case to Heatsink		0.10	°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	

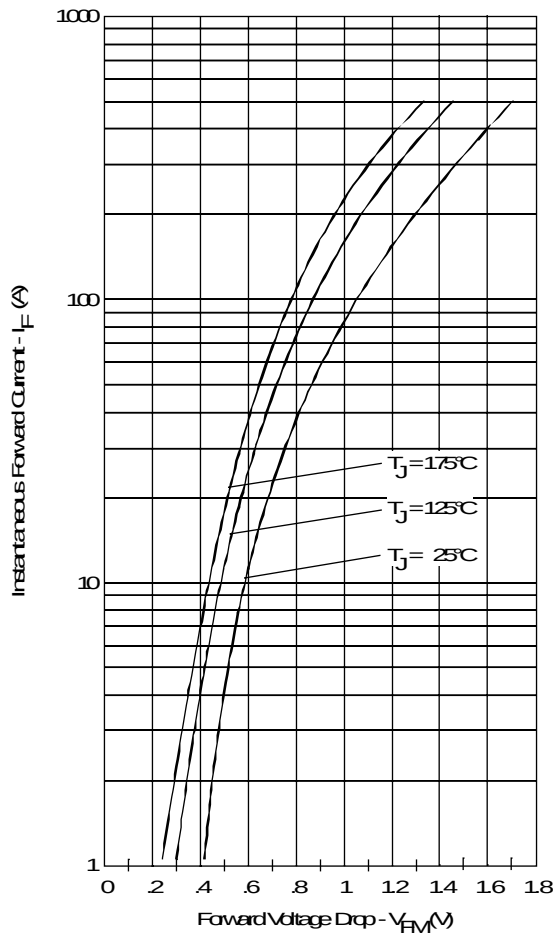


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

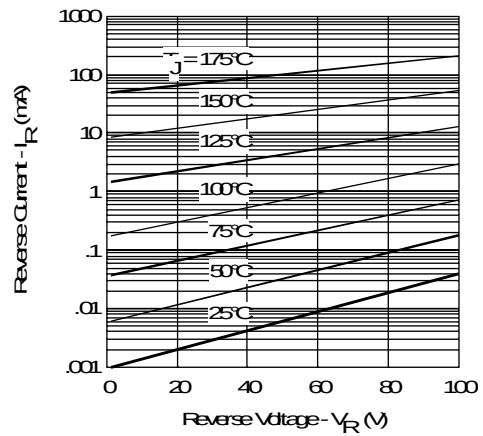


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

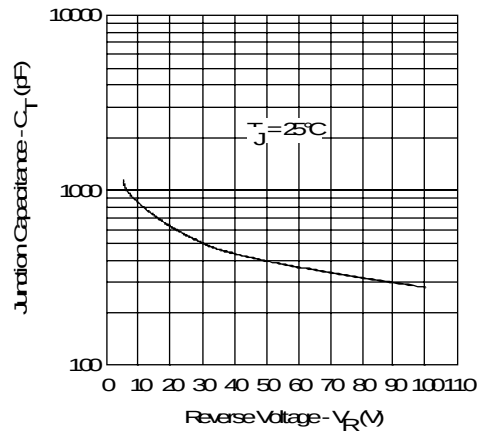


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

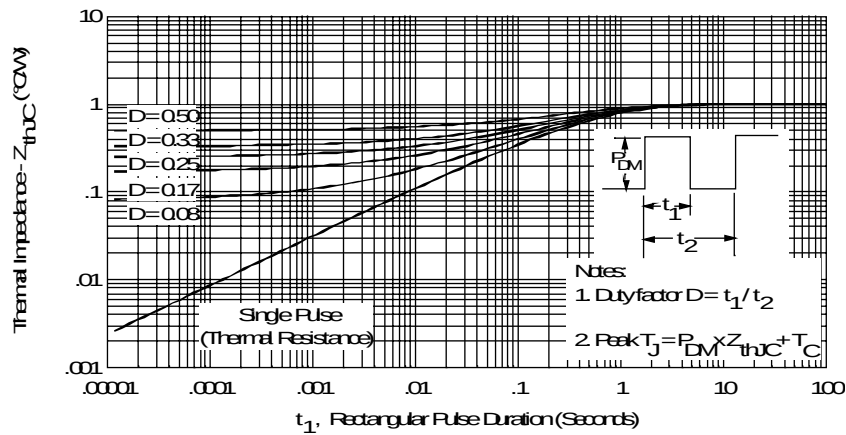


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

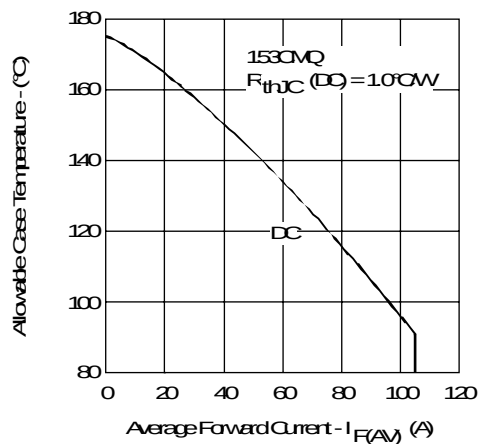


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

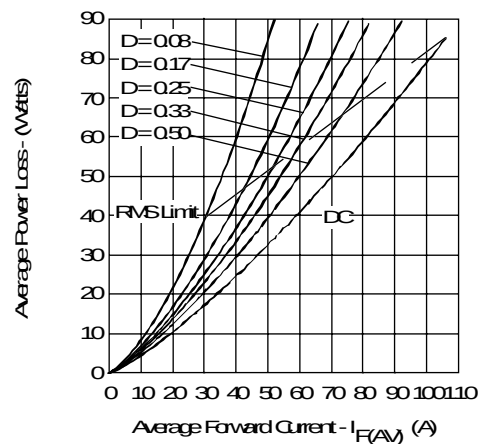


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

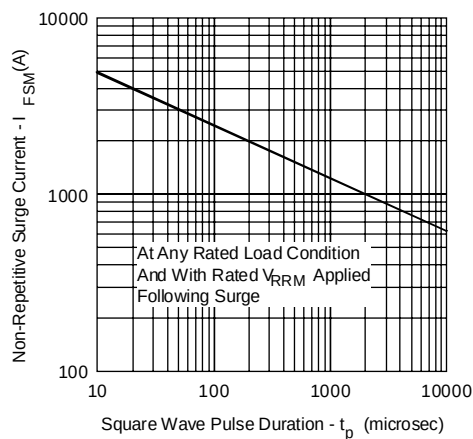


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

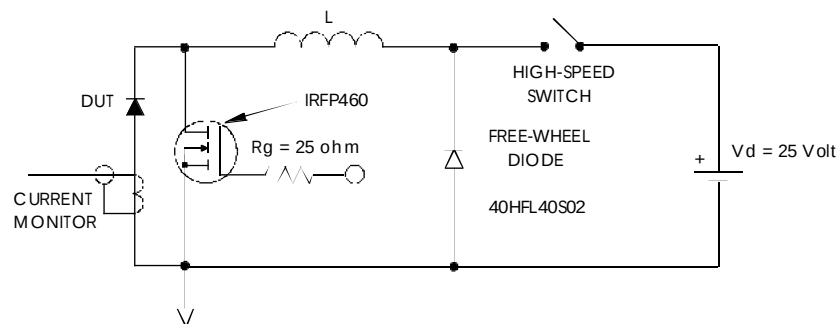


Fig. 8 - Unclamped Inductive Test Circuit