

153CMQ... SERIES

SCHOTTKY RECTIFIER

150 Amp

Major Ratings and Characteristics

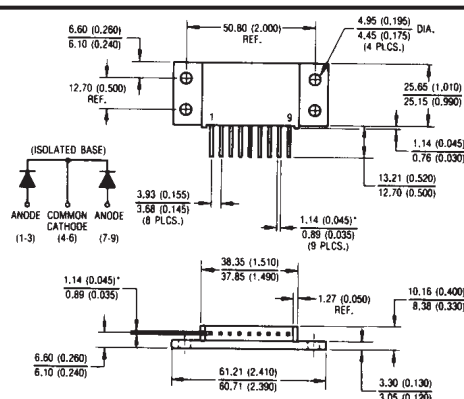
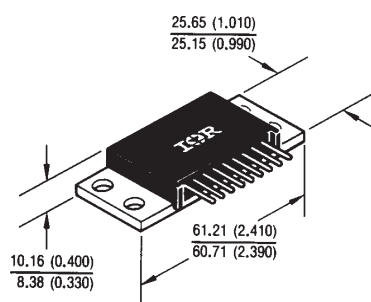
Characteristics	153CMQ...	Units
$I_{F(AV)}$ Rectangular waveform	150	A
V_{RRM} range	80 to 100	V
I_{FSM} @ $t_p = 5 \mu s$ sine	7000	A
V_F @ 75Apk, $T_J = 125^\circ C$ (per leg)	0.80	V
T_J range	-55 to 175	$^\circ C$

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 $175^\circ C$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- $175^\circ C$ 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
- 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	

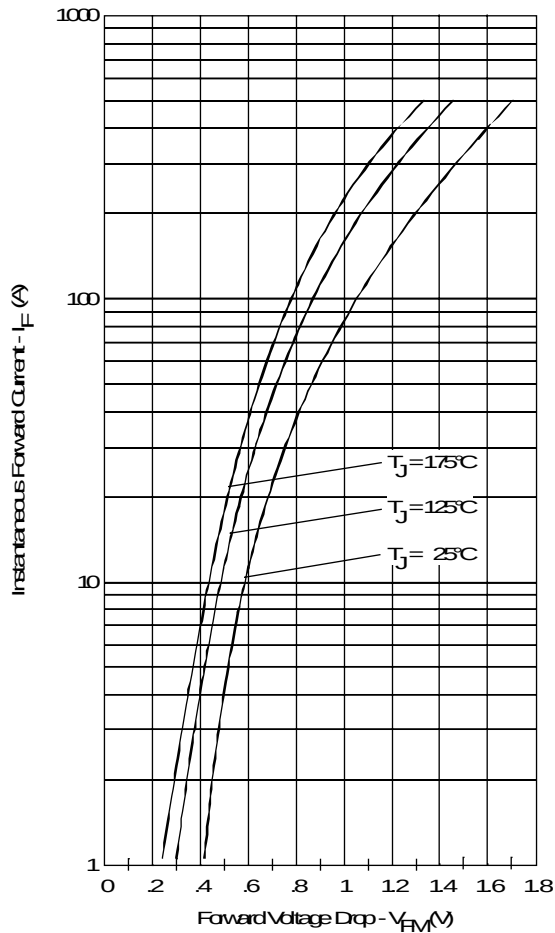


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

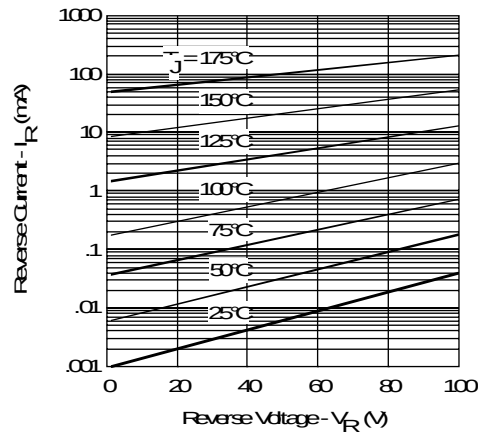


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

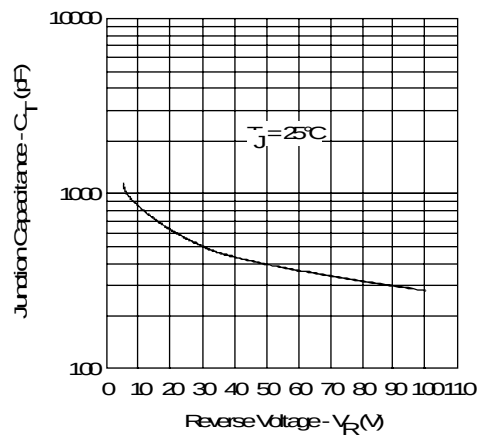


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

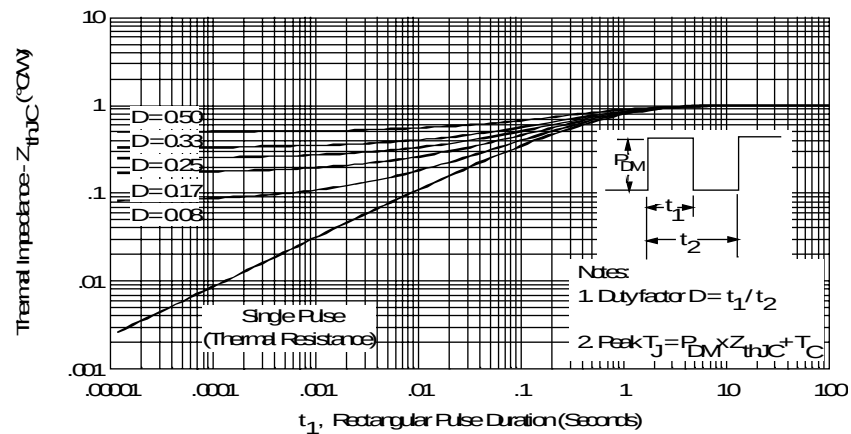


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

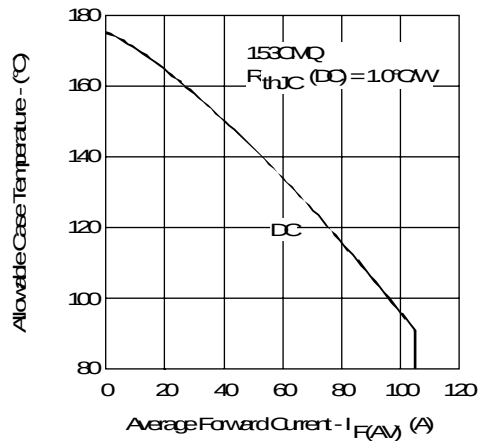


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

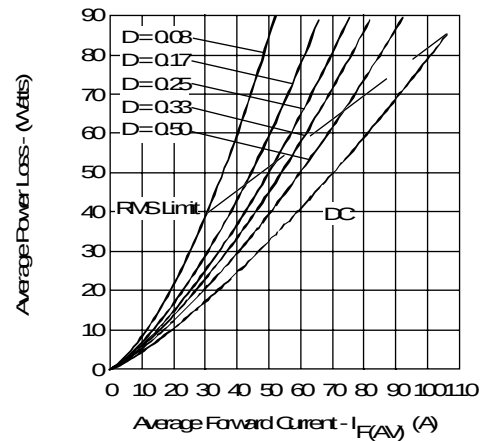


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

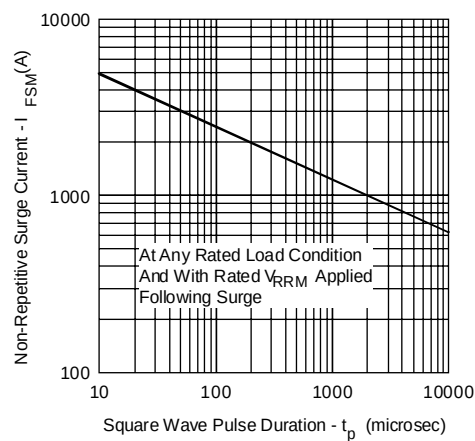


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

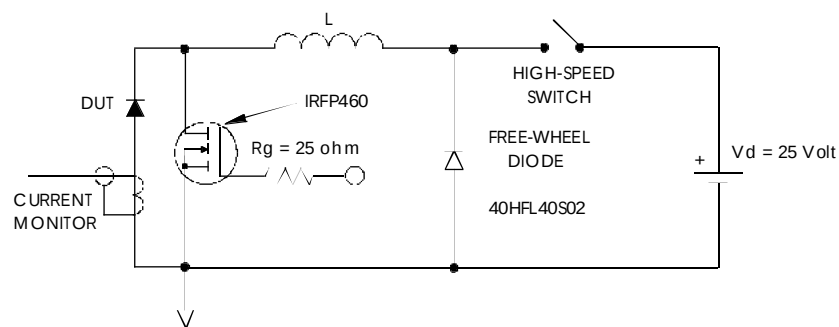


Fig. 8 - Unclamped Inductive Test Circuit