PD-2.276 rev. A 12/97

International
IOR Rectifier

152CMQ030

SCHOTTKY RECTIFIER 150 Amp

Major Ratings and Characteristics

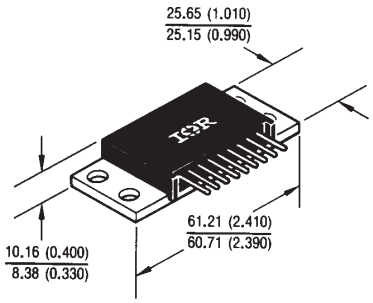
Characteristics		152CMQ030	Units
$I_{F(AV)}$	Rectangular waveform	150	A
V_{RRM}		30	V
I_{FSM}	@ tp = 5 µs sine	7800	A
V_F	@ 75Apk, T_J = 125°C (per leg)	0.47	V
T_J	range	-55 to 150	°C

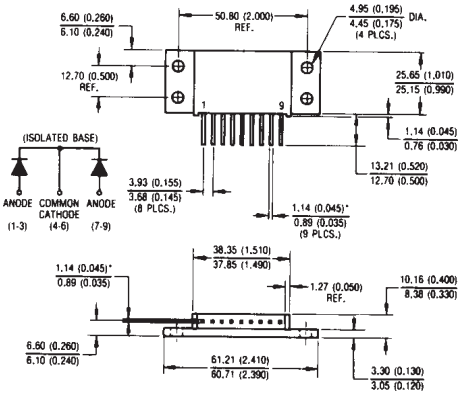
Description/Features

The 152CMQ030 isolated, center tap Schottky rectifier module has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150 °C T_J operation
- Isolated heatsink
- Center tap module
- Multiple leads per terminal fpr 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

CASE STYLE AND DIMENSIONS





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

Voltage Ratings

Part number		152CMQ030
V_R	Max. DC Reverse Voltage (V)	30
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters		152CMQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current *See Fig. 5	150	A	50% duty cycle @ T_C = 85 °C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) *See Fig. 7	7800	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		1000		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	68	mJ	T_J = 25 °C, I_{AS} = 15 Amps, L = 0.6 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 x V_R typical	

Electrical Specifications

Parameters		152CMQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.55	V	@ 75A	T_J = 25 °C
		0.69	V	@ 150A	
		0.47	V	@ 75A	T_J = 125 °C
		0.66	V	@ 150A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	5	mA	T_J = 25 °C	V_R = rated V_R
		280	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance (Per Leg)	3700	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 < 300µs, Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters			152CMQ	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 150	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 150	°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

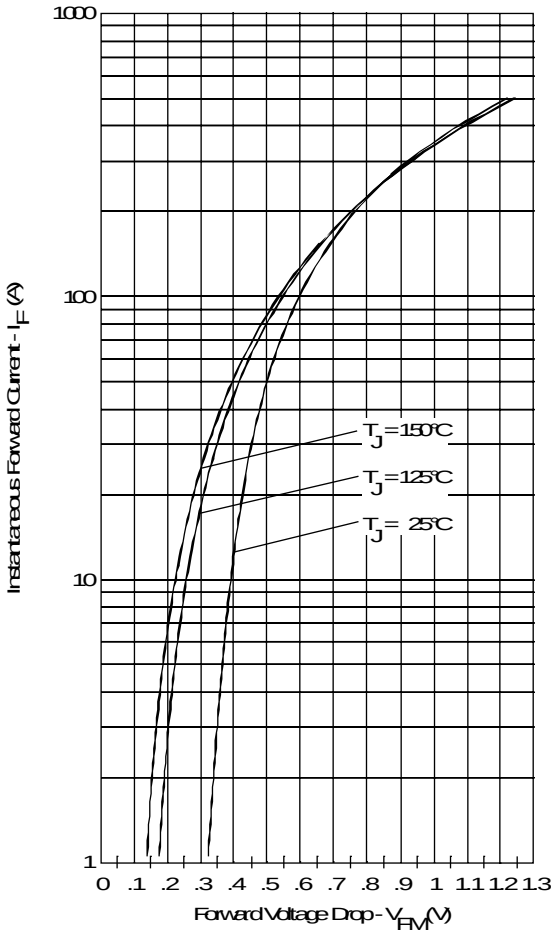


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

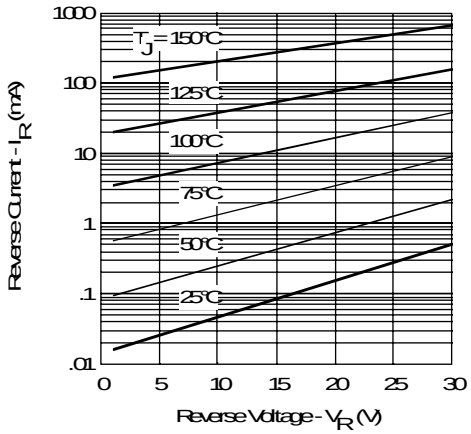


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

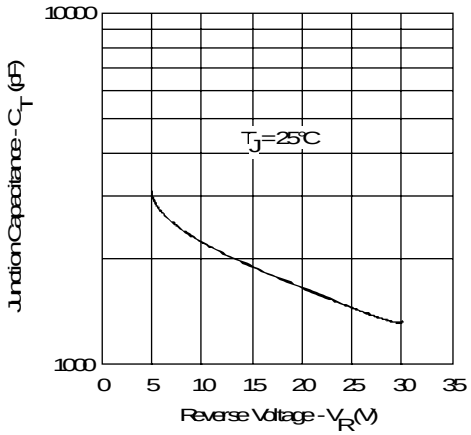


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

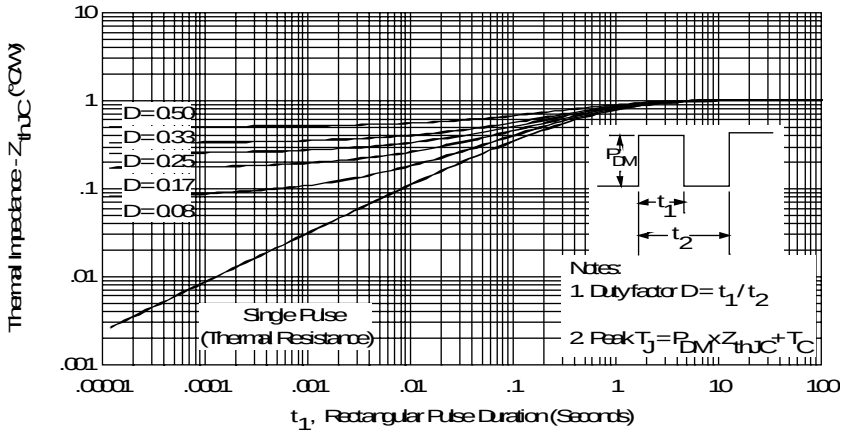


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

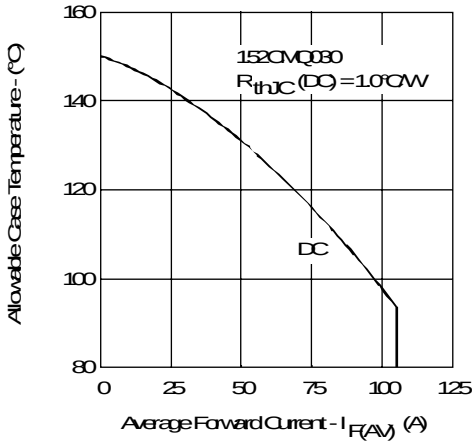


Fig. 5 - Max. Allowable Case Temperature
Vs. Average Forward Current (Per Leg)

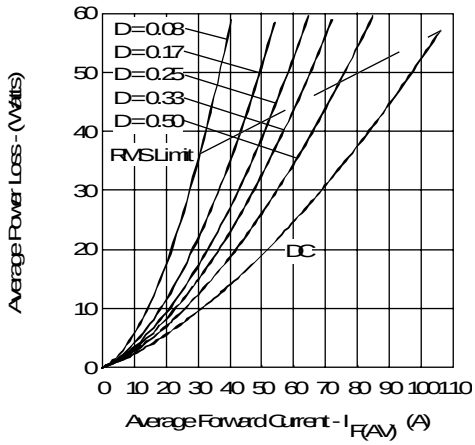


Fig. 6 - Forward Power Loss Characteristics
(Per Leg)

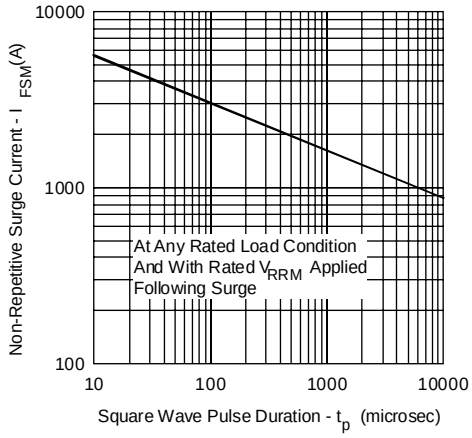


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

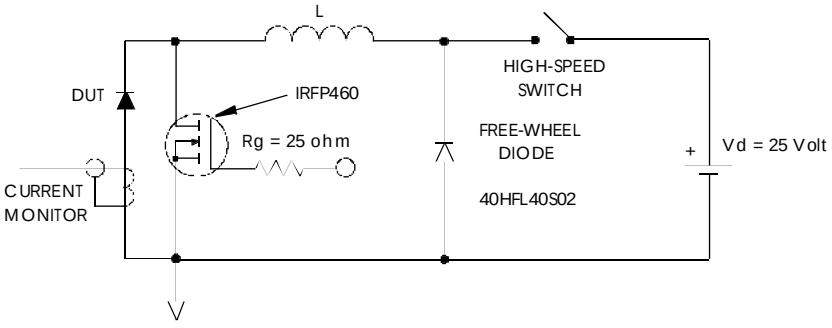


Fig. 8 - Unclamped Inductive Test Circuit