

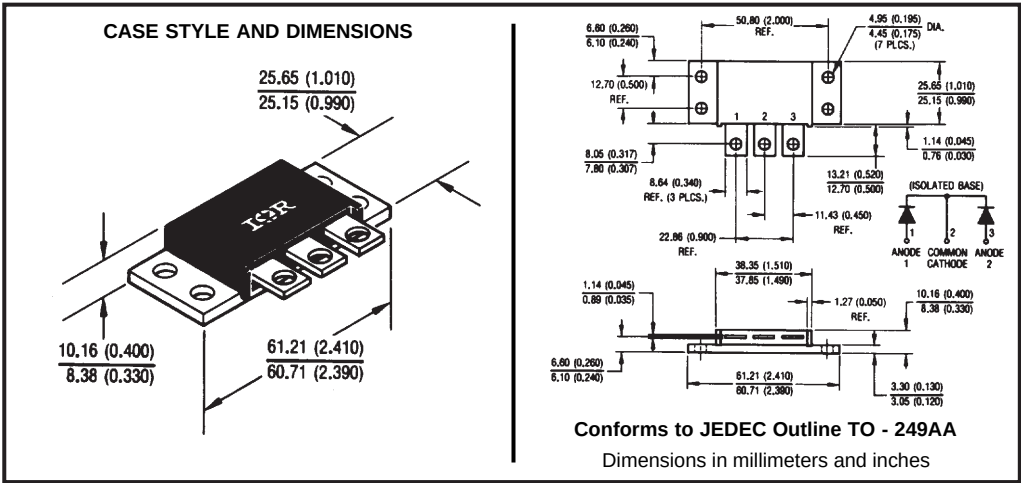
Major Ratings and Characteristics

Characteristics	163CMQ...	Units
$I_{F(AV)}$ Rectangular waveform	160	A
V_{RRM} range	80 to 100	V
I_{FSM} @ tp = 5 μ s sine	9000	A
V_F @ 80 Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.80	V
T_J range	-55 to 175	$^\circ\text{C}$

Description/Features

The 163CMQ 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 $^\circ\text{C}$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175 $^\circ\text{C}$ T_J operation
- Isolated heatsink
- Center tap module
- 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



163CMQ... Series

PD-2.255 rev. A 12/97

Voltage Ratings

Part number	163CMQ080	163CMQ100
V_R Max. DC Reverse Voltage (V)	80	100
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters		163CMQ	Units	Conditions		
$I_{F(AV)}$	Max. Average Forward Current * See Fig. 5	160	A	50% duty cycle @ $T_C = 87^\circ\text{C}$, rectangular wave form		
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	9000	A	5 μs Sine or 3 μs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied	
		800		10ms Sine or 6ms Rect. pulse		
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	15	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 1\text{ Amps}$, $L = 30\text{ mH}$		
I_{AR}	Repetitive Avalanche Current (Per Leg)	1	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		163CMQ	Units	Conditions	
V _{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.98	V	@ 80A	T _J = 25 °C
		1.17	V	@ 160A	
		0.80	V	@ 80A	T _J = 125 °C
		0.96	V	@ 160A	
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)	8.0	nH	Measured from terminal hole to terminal hole	
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		163CMQ	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	58 (2.0)	g (oz.)		
T	Mounting Torque	Min.	40 (35)	Kg-cm (lbf-in)	
		Max.	58 (50)		
Case Style		TO - 249AA		JEDEC	

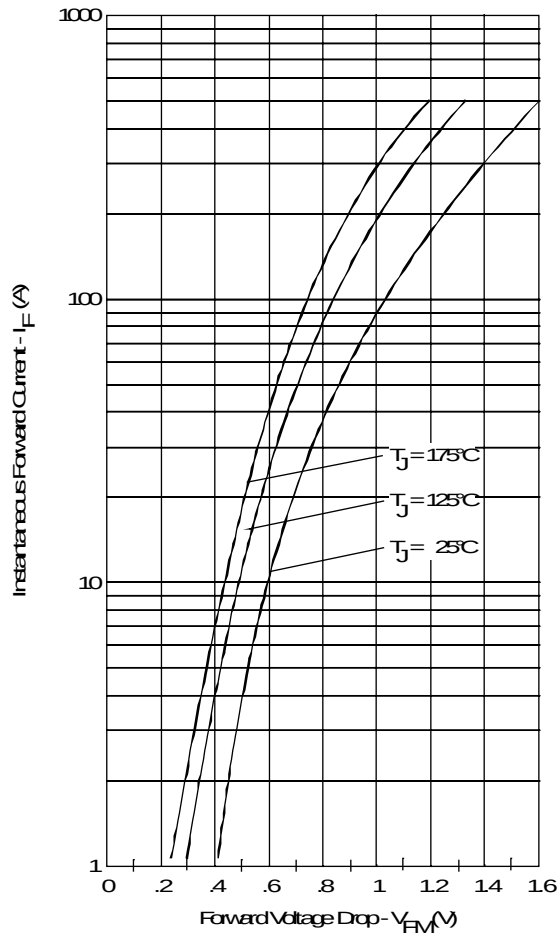


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

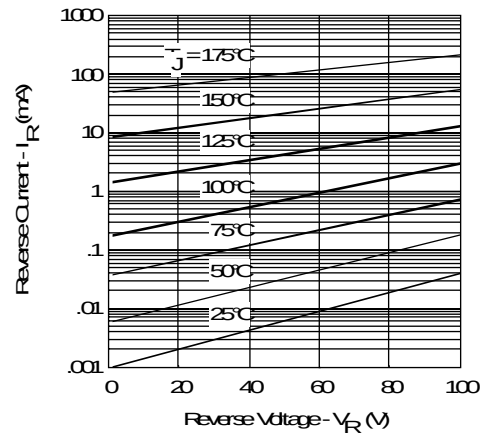


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

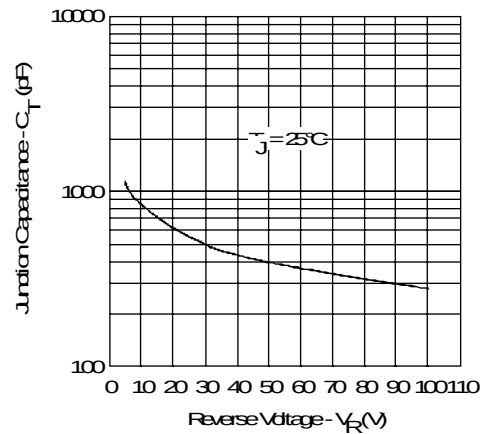
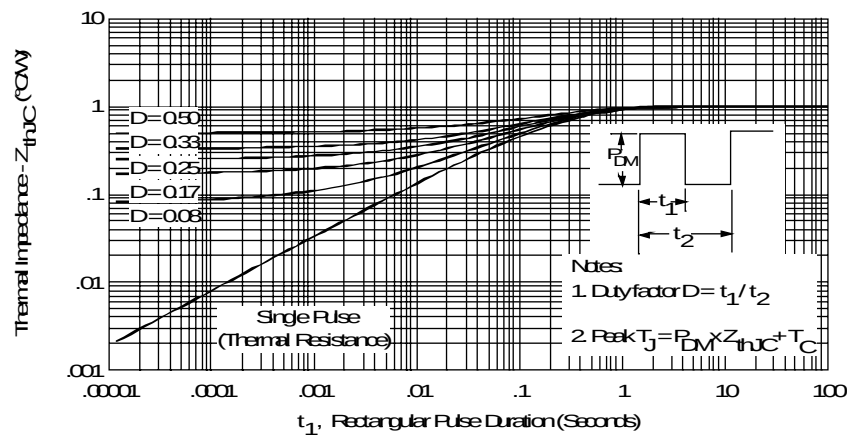


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

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

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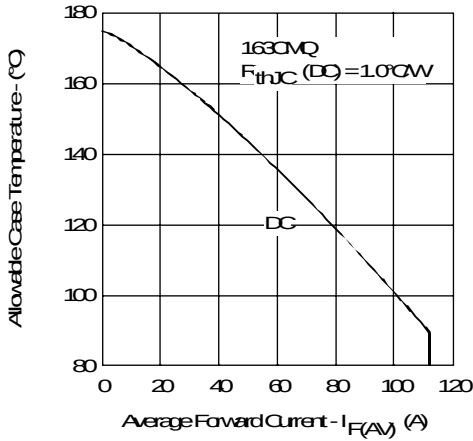


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

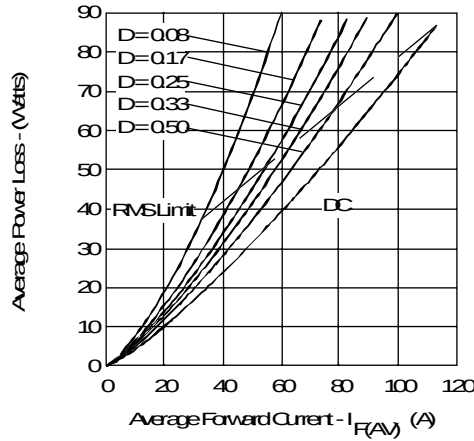


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

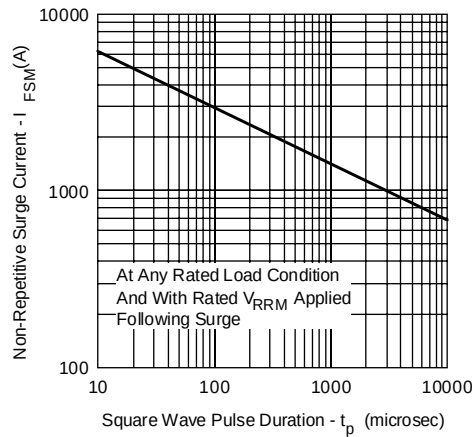


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

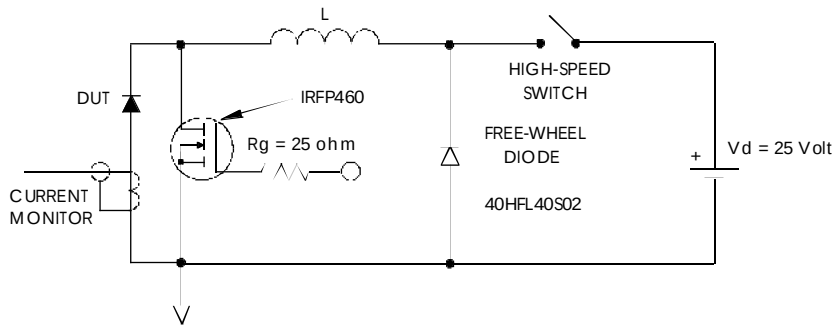


Fig. 8 - Unclamped Inductive Test Circuit