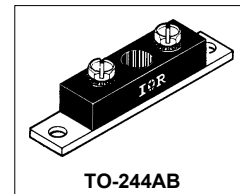


International IOR Rectifier

444CNQ... SERIES

SCHOTTKY RECTIFIER

440 Amp



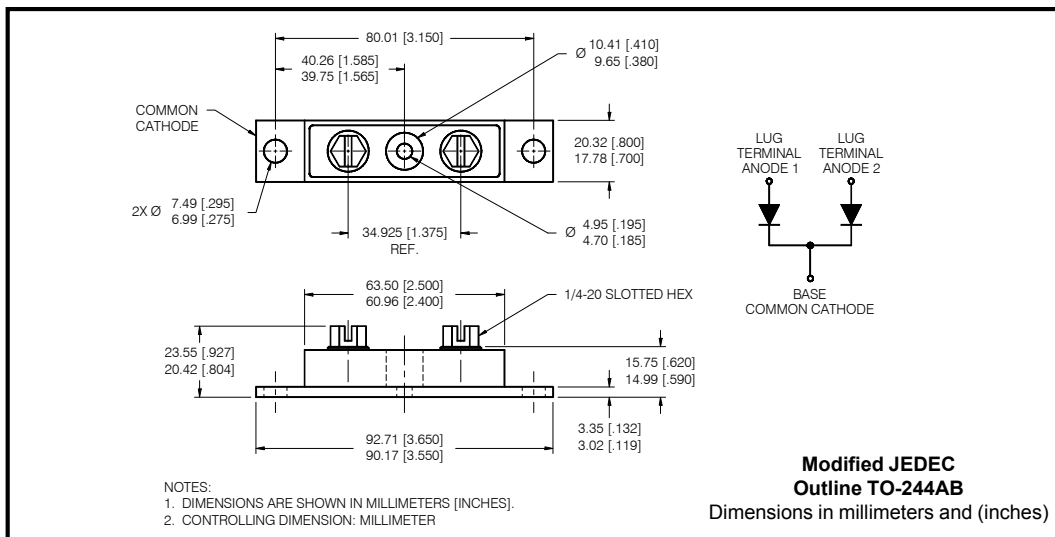
Major Ratings and Characteristics

Characteristics	444CNQ...	Units
$I_{F(AV)}$ Rectangular waveform	440	A
V_{RRM} range	35 to 45	V
I_{FSM} @tp = 5 μ s sine	35,000	A
V_F @220Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.51	V
T_J range	-55 to 125	$^\circ\text{C}$

Description/Features

The 444CNQ 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 125 $^\circ\text{C}$ junction temperature. Typical applications are in high current switching power supplies, plating power supplies, UPS systems, converters, free-wheeling diodes, welding, and reverse battery protection.

- 125 $^\circ\text{C}$ T_J operation
- 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



444CNQ... Series

PD-2.243 rev. A 12/97



Voltage Ratings

Part number	444CNQ035	444CNQ040	444CNQ045
V _R Max. DC Reverse Voltage (V)	35	40	45
V _{RWM} Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

Parameters	444CNQ	Units	Conditions
I _{F(AV)} Max. Average Forward Current * See Fig. 5	440	A	50% duty cycle @ T _C = 81 °C, rectangular wave form
I _{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	35,000	A	5µs Sine or 3µs Rect. pulse Following any rated load condition and with rated V _{RRM} applied
	3800		
E _{AS} Non-Repetitive Avalanche Energy (Per Leg)	270	mJ	T _J = 25 °C, I _{AS} = 40 Amps, L = 0.34 mH
I _{AR} Repetitive Avalanche Current (Per Leg)	40	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	444CNQ	Units	Conditions
V _{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.53	V	@ 220A T _J = 25 °C
	0.69	V	@ 440A
	0.51	V	@ 220A T _J = 100 °C
	0.68	V	@ 440A
I _{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	20	mA	T _J = 25 °C
	2400	mA	T _J = 125 °C V _R = rated V _R
C _T Max. Junction Capacitance (Per Leg)	10,300	pF	V _R = 5V _{DC} , (test signal range 100Khz to 1Mhz) 25°C
L _S Typical Series Inductance (Per Leg)	5.0	nH	From top of terminal hole to mounting plane
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	444CNQ	Units	Conditions
T _J Max. Junction Temperature Range	-55 to 125	°C	
T _{stg} Max. Storage Temperature Range	-55 to 125	°C	
R _{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	0.20	°C/W	DC operation * See Fig. 4
R _{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.10	°C/W	DC operation
R _{thCS} Typical Thermal Resistance, Case to Heatsink	0.10	°C/W	Mounting surface, smooth and greased
wt Approximate Weight	79 (2.80)	g (oz.)	
T Mounting Torque	Base	Min.	40 (35)
		Max.	58 (50)
	Center Hole	Typ.	17 (15)
	Terminal	Min.	58 (50)
		Max.	86 (75)
Case Style	TO - 244AB		Modified JEDEC

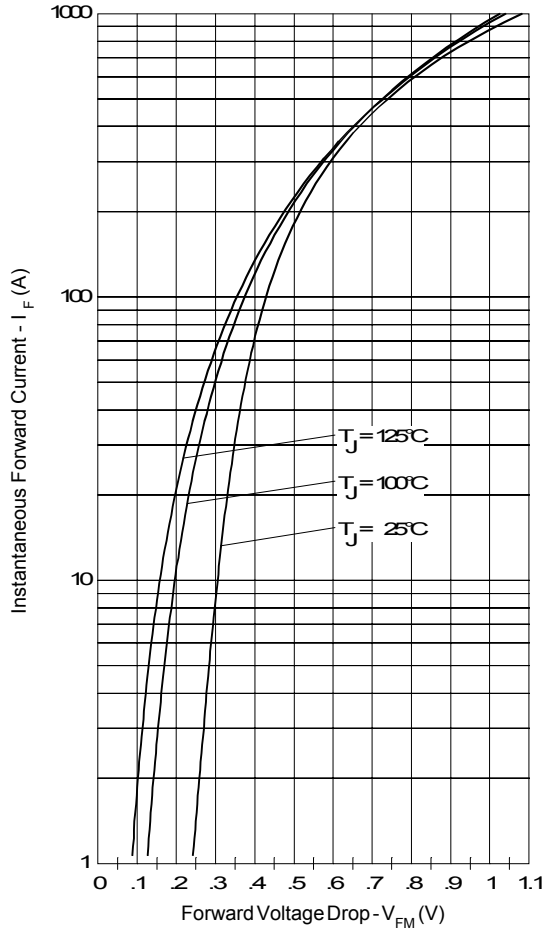


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

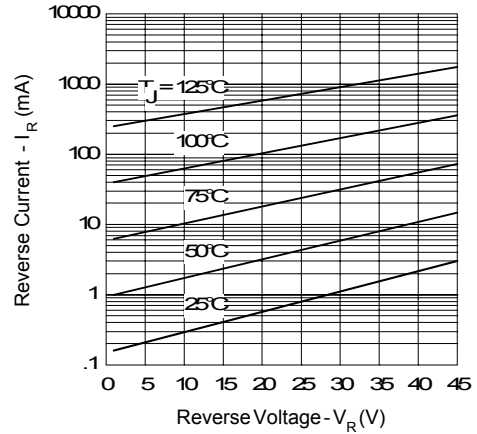


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

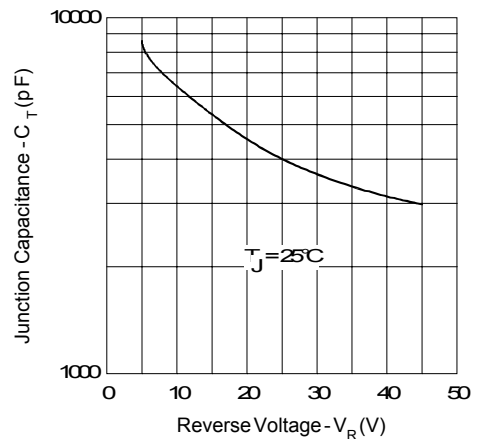


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

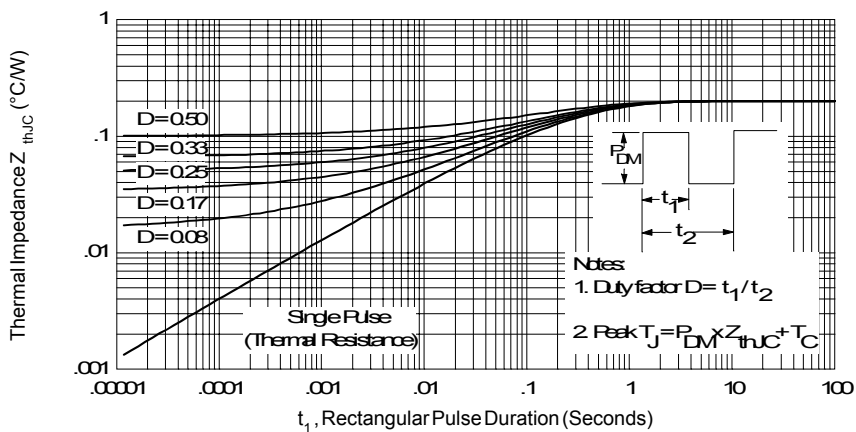


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

444CNQ... Series

PD-2.243 rev. A 12/97

International
IR Rectifier

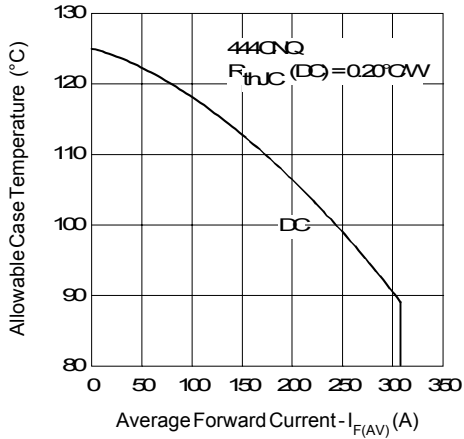


Fig. 5- Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

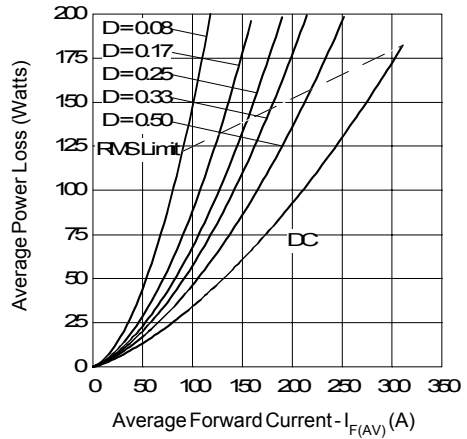


Fig. 6- Forward Power Loss Characteristics (Per Leg)

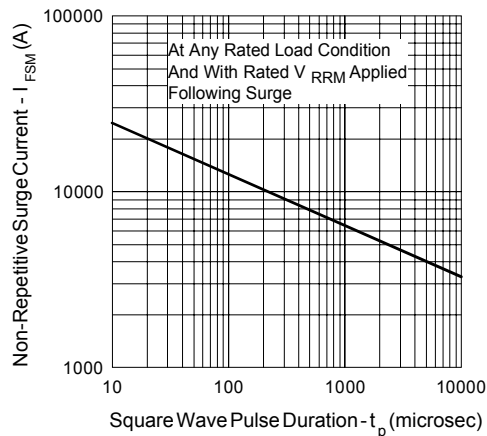


Fig. 7- Max. Non-Repetitive Surge Current (Per Leg)

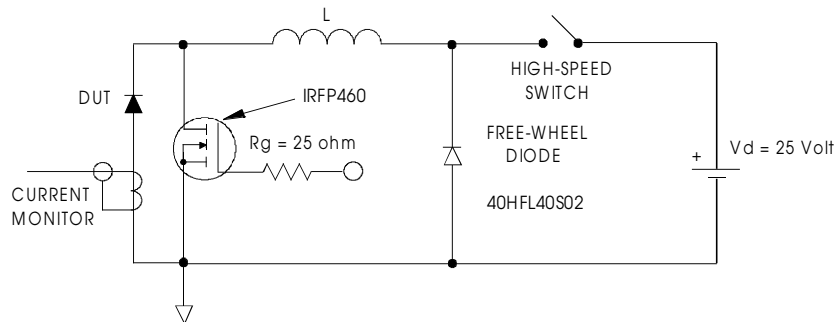


Fig. 8- Unclamped Inductive Test Circuit