

International
IOR Rectifier

PD-2.275 rev. A 12/97

125NQ015

SCHOTTKY RECTIFIER

120 Amp

Major Ratings and Characteristics

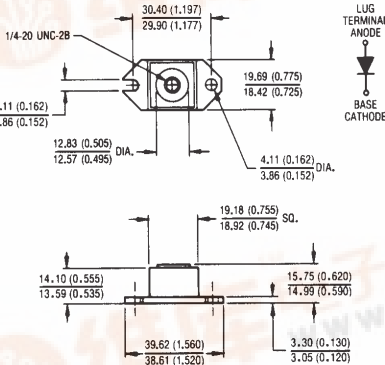
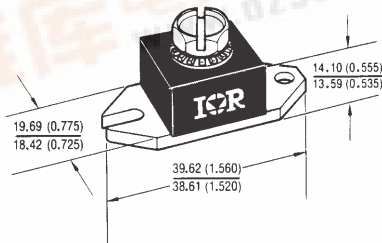
Characteristics	125NQ015	Units
$I_{F(AV)}$ Rectangular waveform	120	A
V_{RRM}	15	V
I_{FSM} @ $t_p = 5 \mu s$ sine	10,800	A
V_F @ 120 Apk, $T_j = 75^\circ C$	0.33	V
T_j range	-55 to 100	$^\circ C$

Description/Features

The 125NQ015 high current Schottky rectifier module has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to $100^\circ C$ junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- $100^\circ C$ T_j operation
- Unique high power, Half-Pak module
- Optimized for OR-ing applications
- Ultra low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance

CASE STYLE AND DIMENSIONS



Outline HALF PAK Module

Dimensions in millimeters and inches



125NQ015

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Voltage Ratings

Part number	125NQ015
V_R Max. DC Reverse Voltage (V)	15
V_{RWM} Max. Working Peak Reverse Voltage (V)	25

Absolute Maximum Ratings

Parameters	125NQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	120	A	50% duty cycle @ $T_C = 71^\circ\text{C}$, rectangular waveform
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	10,800	A	5 μs Sine or 3 μs Rect. pulse
	1700		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy	9	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 2\text{ Amps}$, $L = 4.5\text{ mH}$
I_{AR} Repetitive Avalanche Current	2	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 3 \times V_R$ typical

Electrical Specifications

Parameters	125NQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1) * See Fig. 1	0.39	V	@ 120A
	0.52	V	@ 240A
	0.33	V	@ 120A
	0.45	V	@ 240A
I_{RM} Max. Reverse Leakage Current (1) * See Fig. 2	40	mA	$T_J = 25^\circ\text{C}$
	2000	mA	$T_J = 100^\circ\text{C}$
	1780	mA	$T_J = 100^\circ\text{C}$
	1080	mA	$T_J = 100^\circ\text{C}$
C_T Max. Junction Capacitance	7700	pF	$V_R = 5V_{DC}$, (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance	7.0	nH	From top of terminal hole to mounting plane
dv/dt Max. Voltage Rate of Change (Rated V_R)	10,000	V/ μs	

Thermal-Mechanical Specifications

(1) Pulse Width < 300 μs , Duty Cycle < 2%

Parameters			125NQ	Units	Conditions
T _J	Max. Junction Temperature Range		-55to100	°C	
T _{stg}	Max. Storage Temperature Range		-55to100	°C	
R _{thJC}	Max. Thermal Resistance Junction to Case		0.40	°C/W	DCoperation * See Fig. 4
R _{thCS}	Typical Thermal Resistance, Case to Heatsink		0.15	°C/W	Mounting surface , smooth and greased
wt	Approximate Weight		25.6(0.9)	g(oz.)	
T	Mounting Torque	Min.	40(35)	Kg-cm (lbf-in)	Non-lubricated threads
		Max.	58(50)		
	Terminal Torque	Min.	58(50)		
		Max.	86(75)		
Case Style			HALF PAK Module		

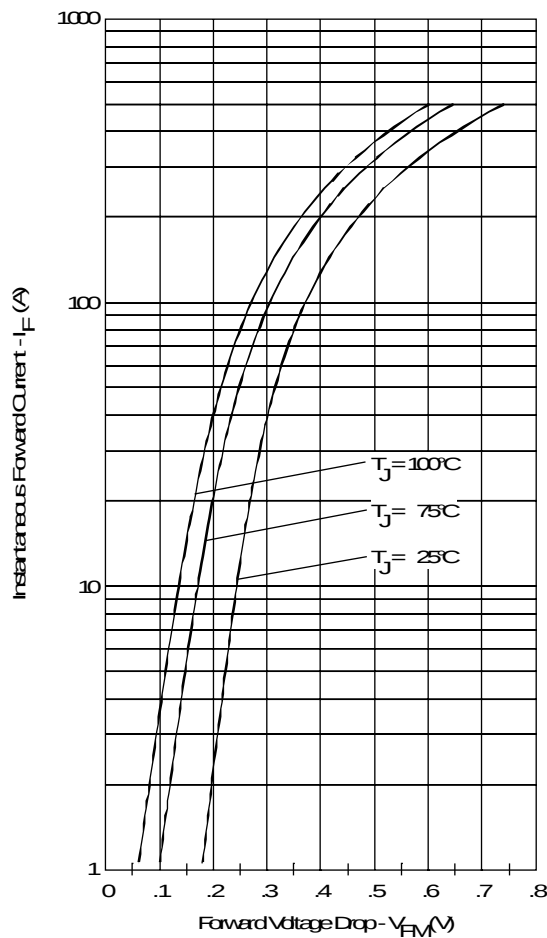


Fig. 1 - Maximum Forward Voltage Drop Characteristics

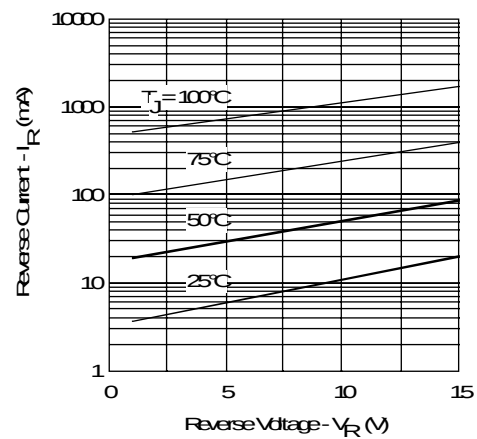


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

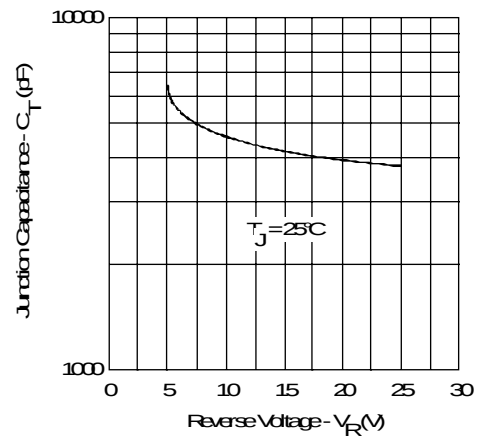


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

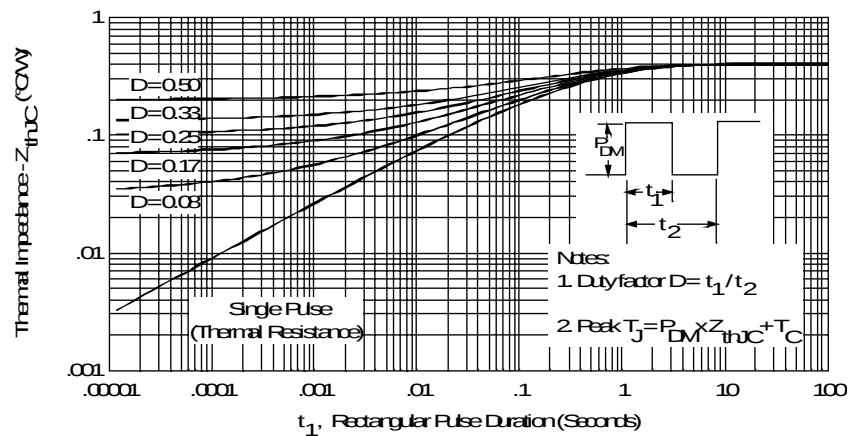


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

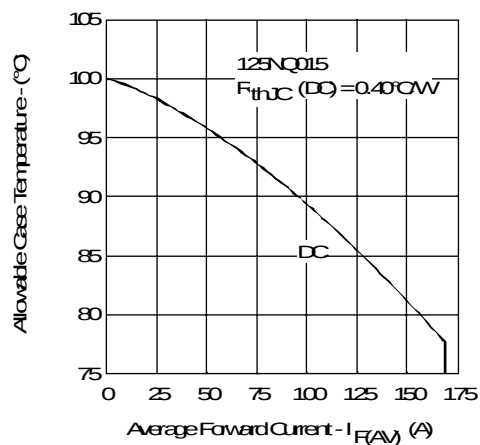


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

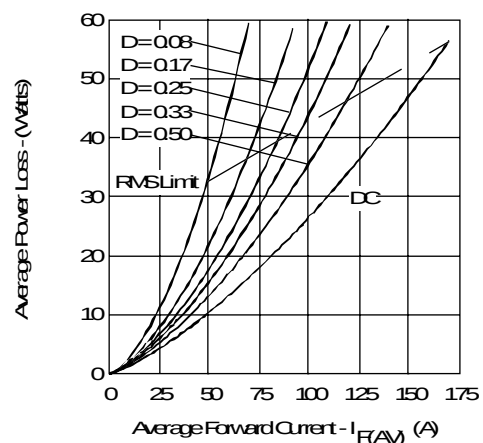


Fig. 6 - Forward Power Loss Characteristics

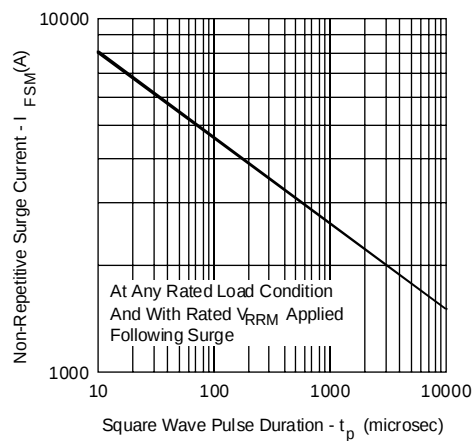


Fig. 7 - Maximum Non-Repetitive Surge Current

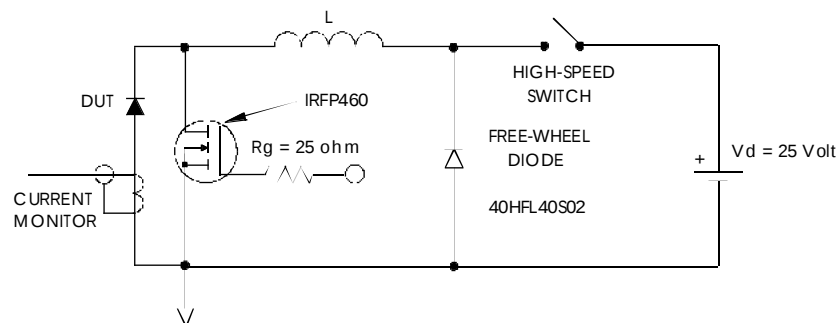


Fig. 8 - Unclamped Inductive Test Circuit