Bulletin PD-2.275 rev. B 02/01

International
IOR Rectifier

125NQ015 (R)

SCHOTTKY RECTIFIER 120 Amp

D-67

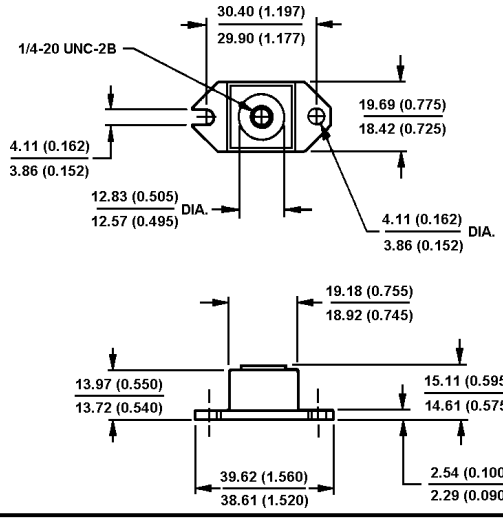
Major Ratings and Characteristics

Characteristics	125NQ015(R)	Units
$I_{F(AV)}$ Rectangular waveform	120	A
V_{RRM}	15	V
I_{FSM} @ tp = 5 µs sine	10,800	A
V_F @120Apk, T_J=75°C	0.33	V
T_J range	-55 to 125	°C

Description/Features

The 125NQ015(R) 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 125 °C junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125°C T_J operation (V_R < 5V)
- 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



125NQ015

Lug Terminal Anode

Base Cathode

125NQ015R

Lug Terminal Cathode

Base Anode

Outline D-67 HALF PAK Module
Dimensions in millimeters and (inches)

Voltage Ratings

	Part number	125NQ015(R)
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° C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	10,800	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		1700		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	9	mJ	T_J = 25 °C, I_{AS} = 2 Amps, L = 4.5 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 x V_R typical	

Electrical Specifications

	Parameters	125NQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1) * See Fig. 1	0.39	V	@ 120A	T_J = 25 °C
		0.52	V	@ 240A	
		0.33	V	@ 120A	T_J = 75 °C
		0.45	V	@ 240A	
I_{RM}	Max. Reverse Leakage Current (1) * See Fig. 2	40	mA	T_J = 25 °C	V_R = rated V_R
		2000	mA	T_J = 100 °C	
		1780	mA	T_J = 100 °C	V_R = 12V
		1080	mA	T_J = 100 °C	V_R = 5V
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		

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

Thermal-Mechanical Specifications

	Parameters		125NQ	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 125	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 150	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case		0.40	°C/W	DC operation * 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		

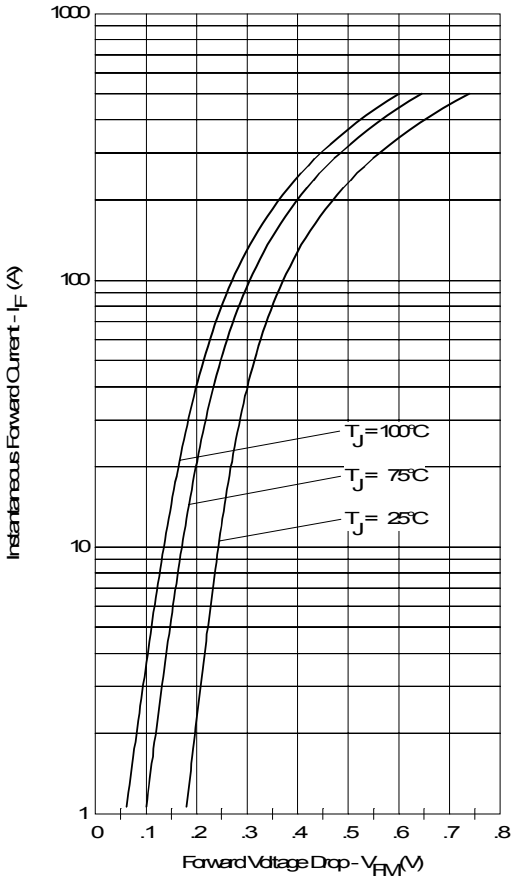


Fig. 1 - Maximum Forward Voltage Drop Characteristics

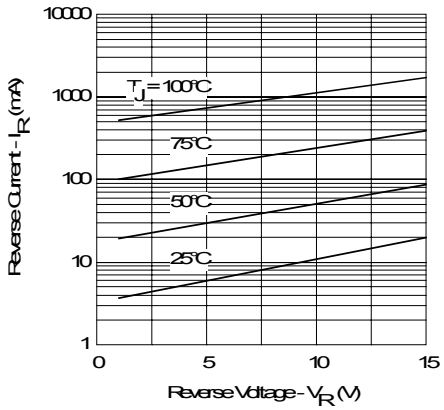


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

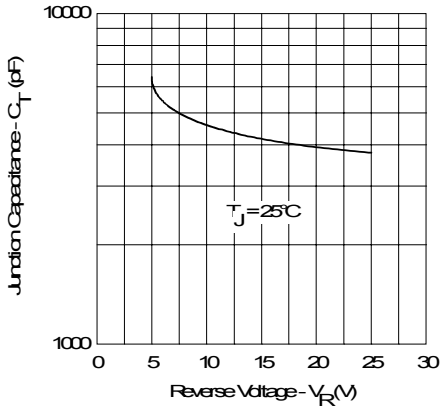


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

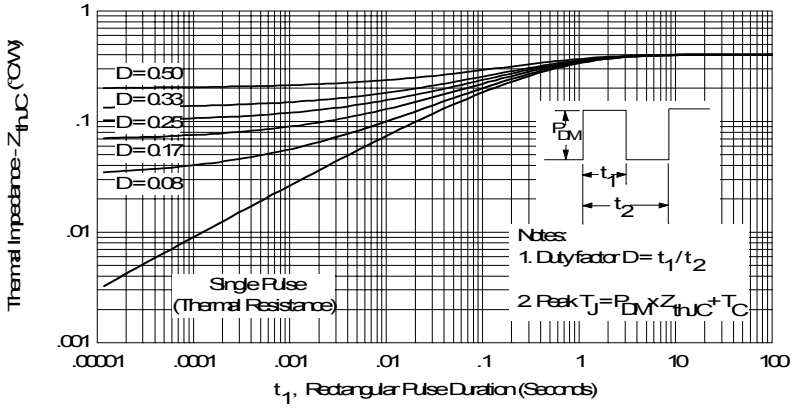


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

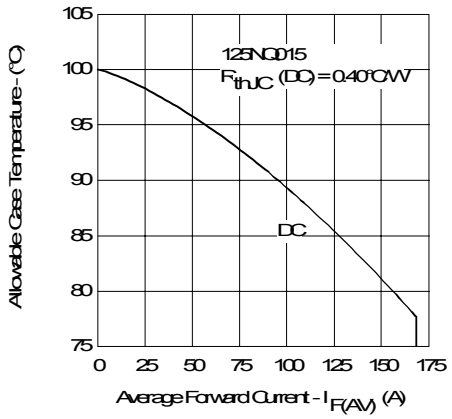


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

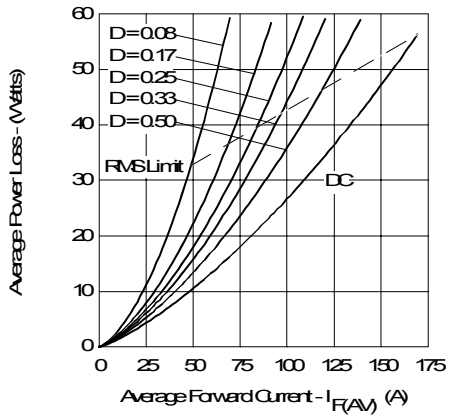


Fig. 6 - Forward Power Loss Characteristics

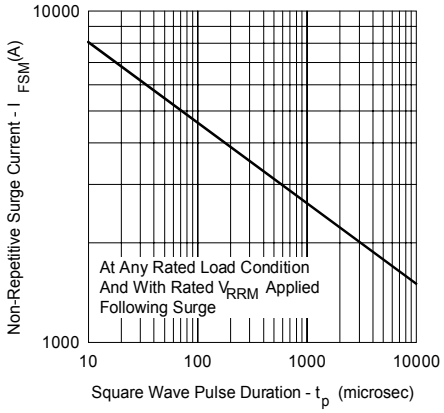


Fig. 7 - Maximum Non-Repetitive Surge Current

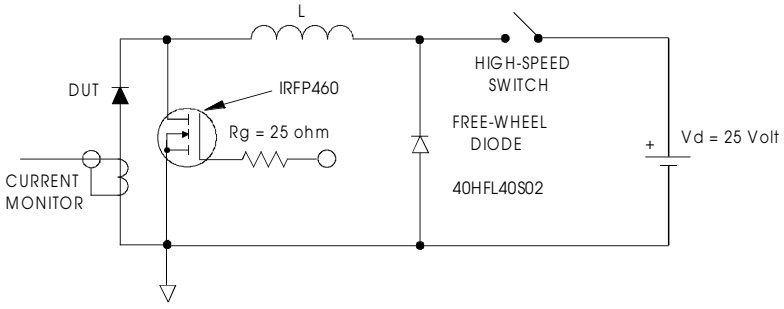


Fig. 8 - Unclamped Inductive Test Circuit