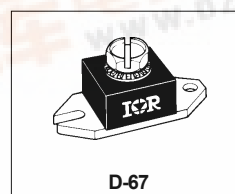


International IOR Rectifier

125NQ015 (R)

SCHOTTKY RECTIFIER

120 Amp



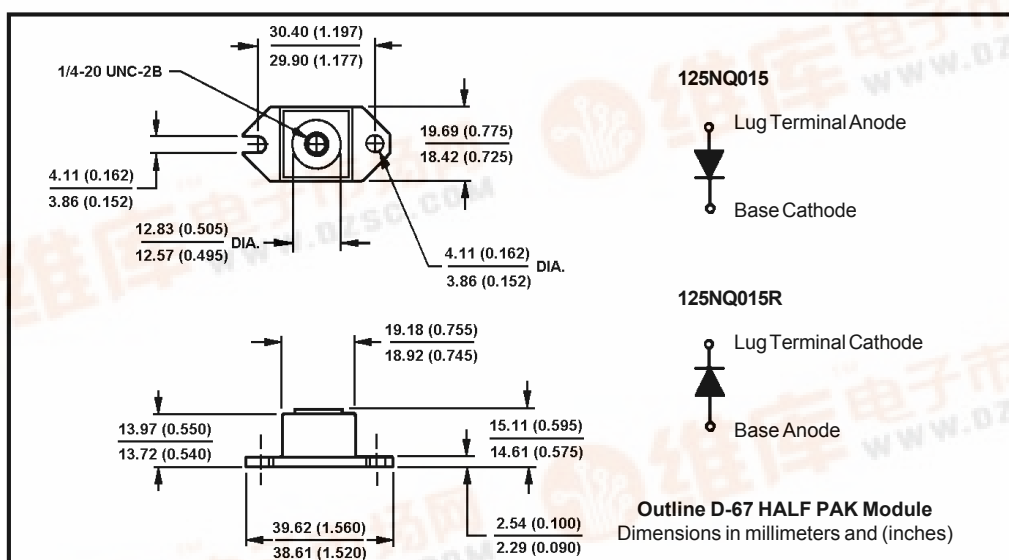
Major Ratings and Characteristics

Characteristics	125NQ015(R)	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 @ 120Apk, $T_J = 75^\circ C$	0.33	V
T_J range	-55 to 125	$^\circ C$

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 $^\circ C$ junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125 $^\circ C$ 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(R)

Bulletin PD-2.275 rev. B 02/01



Voltage Ratings

Partnumber	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 @ $T_C = 71^\circ C$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	10,800	A	Following any rated load condition and with rated V_{RRM} applied
	1700		
E_{AS} Non-Repetitive Avalanche Energy	9	mJ	$T_J = 25^\circ C$, $I_{AS} = 2$ Amps, $L = 4.5$ mH
I_{AR} Repetitive Avalanche Current	2	A	Current decaying linearly to zero in 1 μ sec 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 $T_J = 25^\circ C$
	0.52	V	@ 240A
	0.33	V	@ 120A $T_J = 75^\circ C$
	0.45	V	@ 240A
I_{RM} Max. Reverse Leakage Current (1) * See Fig. 2	40	mA	$T_J = 25^\circ C$ $V_R = \text{rated } V_R$
	2000	mA	$T_J = 100^\circ C$
	1780	mA	$T_J = 100^\circ C$ $V_R = 12V$
	1080	mA	$T_J = 100^\circ C$ $V_R = 5V$
C_T Max. Junction Capacitance	7700	pF	$V_R = 5V_{DC}$, (test signal range 100Khz to 1Mhz) $25^\circ C$
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/ μ s	

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

Thermal-Mechanical Specifications

Parameters	125NQ	Units	Conditions	
T_J Max. Junction Temperature Range	-55 to 125	$^\circ C$		
T_{stg} Max. Storage Temperature Range	-55 to 150	$^\circ C$		
R_{thJC} Max. Thermal Resistance Junction to Case	0.40	$^\circ C/W$	DC operation * See Fig. 4	
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.15	$^\circ C/W$	Mounting surface, smooth and greased	
wt Approximate Weight	25.6 (0.9)	g (oz.)		
T Mounting Torque	Min.	40 (35)	Non-lubricated threads	
	Max.	58 (50)		
	Terminal Torque	Min.		58 (50)
		Max.		86 (75)
Case Style	HALF PAK Module			

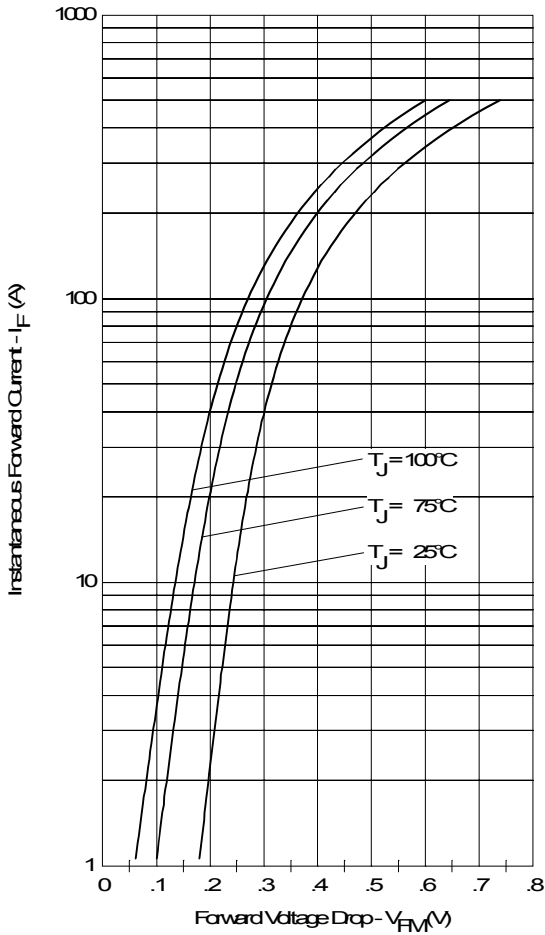


Fig. 1 - Maximum Forward Voltage Drop Characteristics

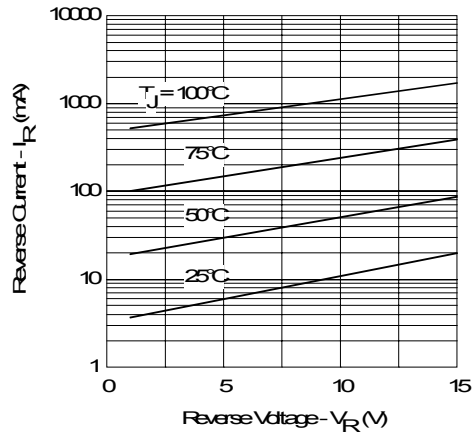


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

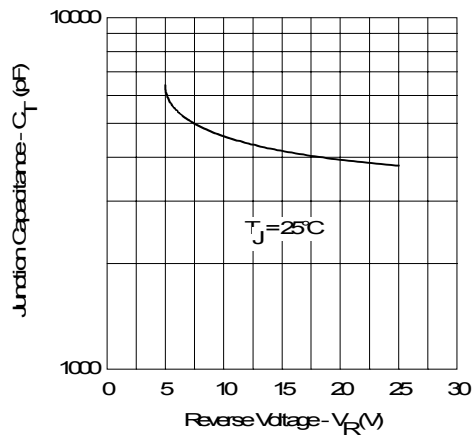


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

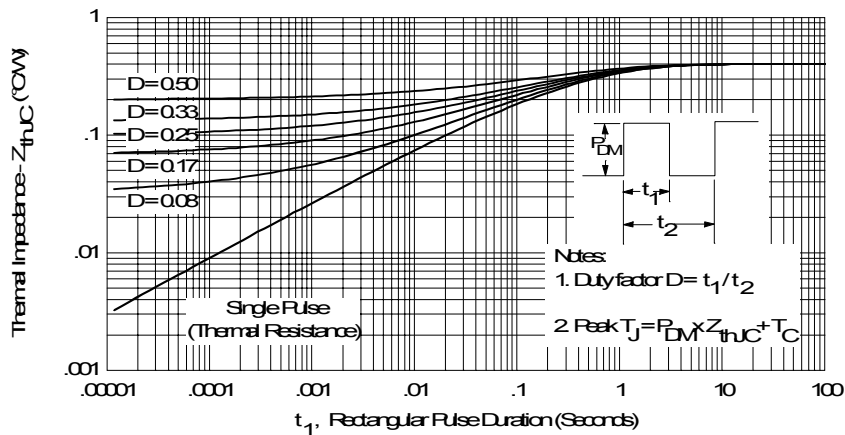


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

125NQ015(R)

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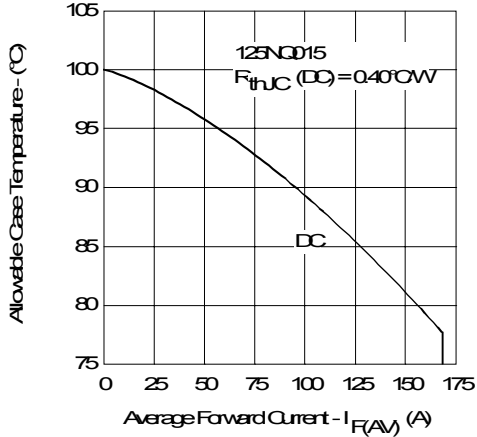


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

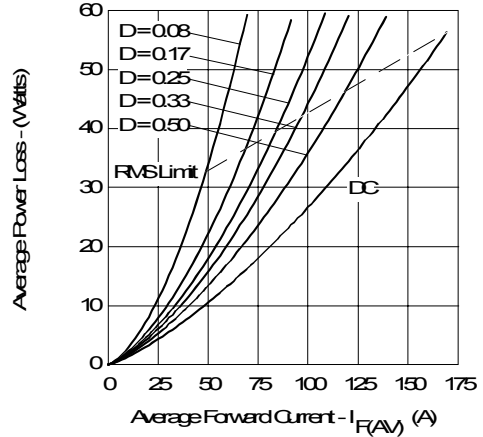


Fig. 6 - Forward Power Loss Characteristics

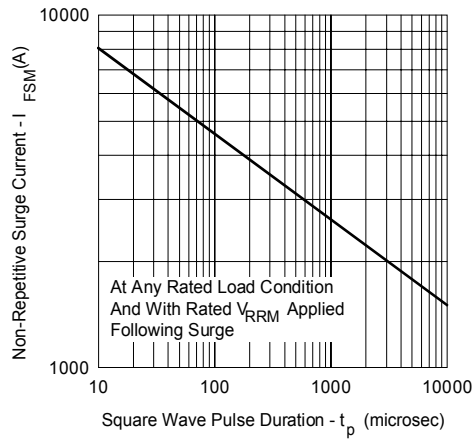


Fig. 7 - Maximum Non-Repetitive Surge Current

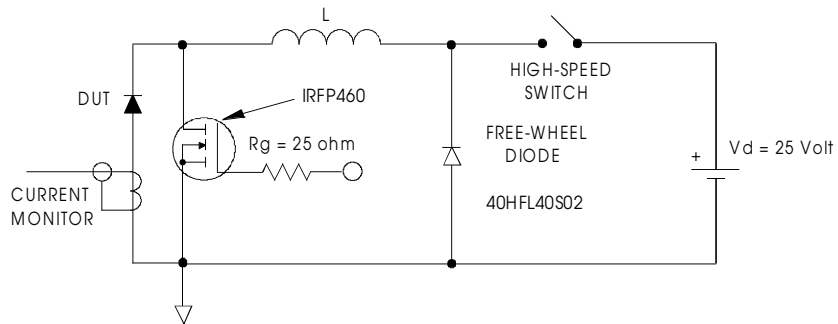


Fig. 8 - Unclamped Inductive Test Circuit