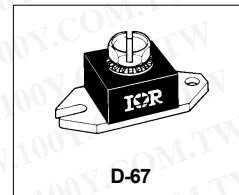


# International IOR Rectifier

## 125NQ015 (R)

### SCHOTTKY RECTIFIER

120 Amp



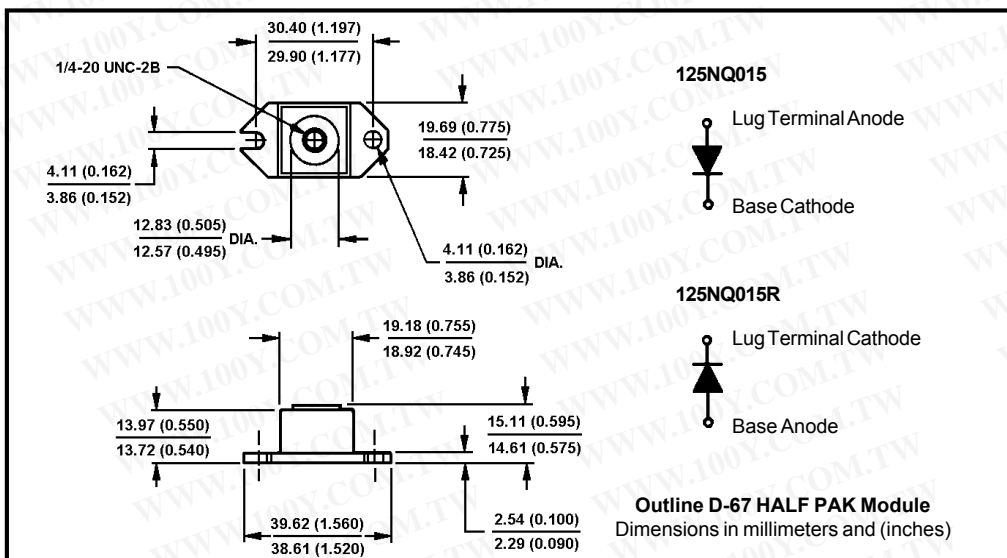
#### Major Ratings and Characteristics

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

International  
**IRF** Rectifier

## 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 @ $T_C = 71^\circ\text{C}$ , rectangular wave form
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	10,800	A	5 $\mu$ s Sine or 3 $\mu$ s Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated $V_{RRM}$ applied
	1700		
$E_{AS}$ Non-Repetitive Avalanche Energy	9	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 2$ Amps, $L = 4.5$ mH
$I_{AR}$ Repetitive Avalanche Current	2	A	Current decaying linearly to zero in 1 $\mu$ 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 $T_J = 25^\circ\text{C}$
	0.52	V	@ 240A
	0.33	V	@ 120A $T_J = 75^\circ\text{C}$
	0.45	V	@ 240A
$I_{RM}$ Max. Reverse Leakage Current (1) * See Fig. 2	40	mA	$T_J = 25^\circ\text{C}$ $V_R = \text{rated } V_R$
	2000	mA	$T_J = 100^\circ\text{C}$
	1780	mA	$T_J = 100^\circ\text{C}$ $V_R = 12\text{V}$
	1080	mA	$T_J = 100^\circ\text{C}$ $V_R = 5\text{V}$
$C_T$ Max. Junction Capacitance	7700	pF	$V_R = 5V_{DC}$ , (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$
$L_S$ 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/ $\mu$ s	

(1) Pulse Width < 300 $\mu$ s, Duty Cycle < 2%

## Thermal-Mechanical Specifications

Parameters	125NQ	Units	Conditions	
$T_J$ Max. Junction Temperature Range	-55 to 125	$^\circ\text{C}$		
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$		
$R_{thJC}$ Max. Thermal Resistance Junction to Case	0.40	$^\circ\text{C/W}$	DC operation * See Fig. 4	
$R_{thCS}$ Typical Thermal Resistance, Case to Heatsink	0.15	$^\circ\text{C/W}$	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			

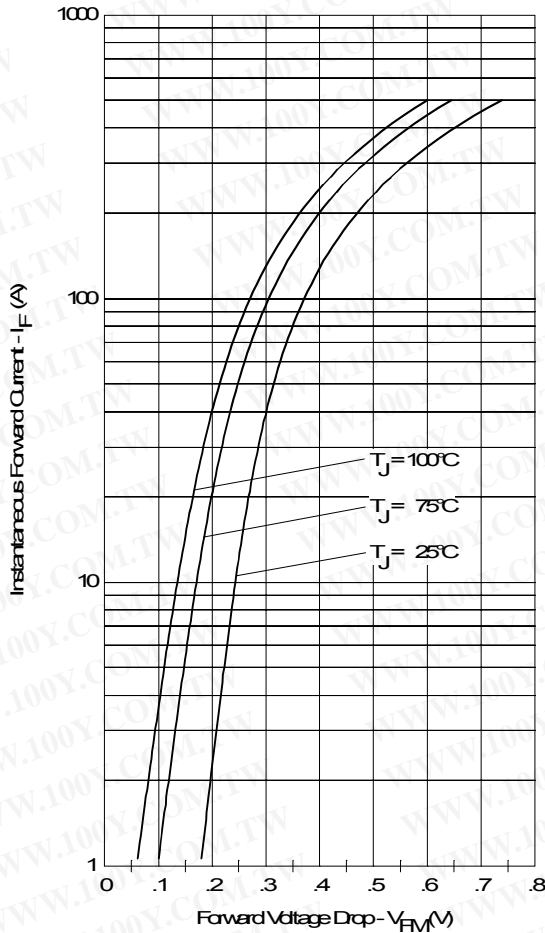


Fig. 1 - Maximum Forward Voltage Drop Characteristics

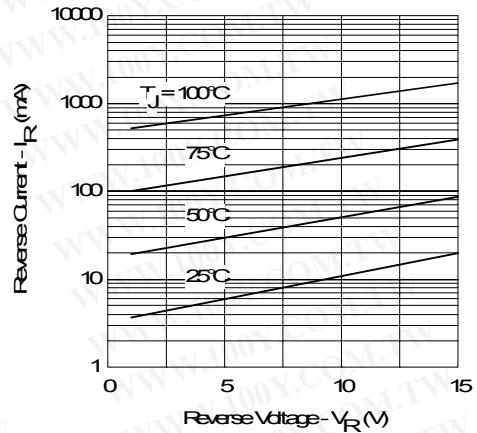


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

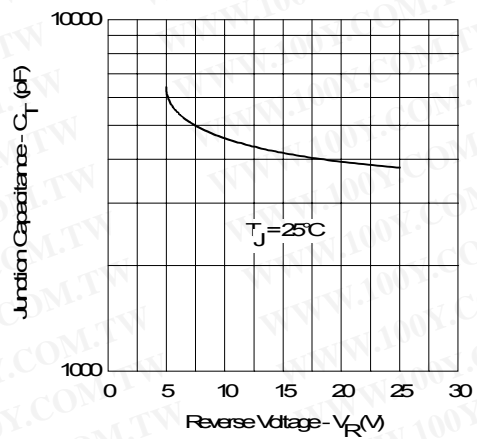


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

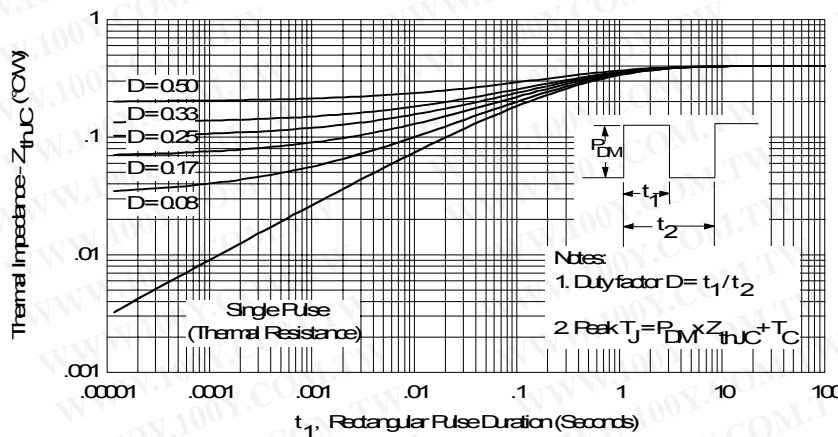


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

125NQ015(R)

Bulletin PD-2.275 rev. B 02/01

International  
**IR** Rectifier

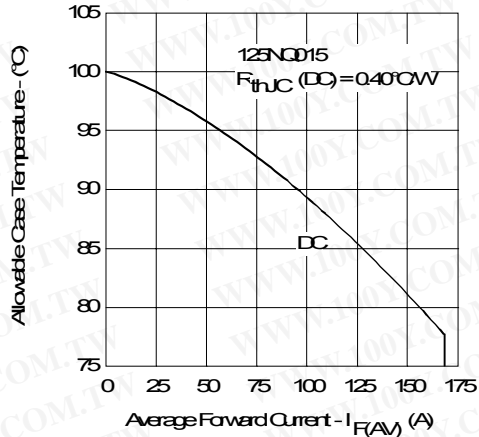


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

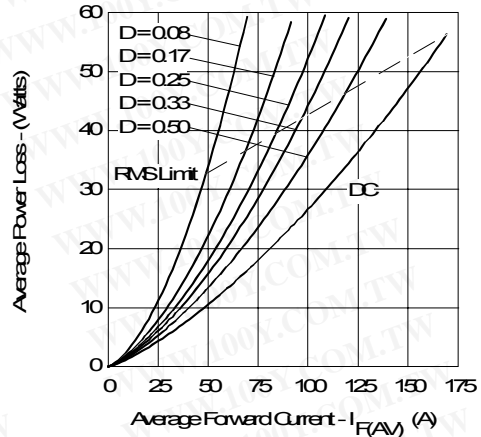


Fig. 6 - Forward Power Loss Characteristics

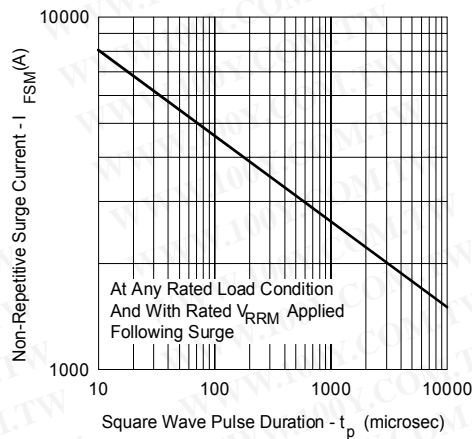


Fig. 7 - Maximum Non-Repetitive Surge Current

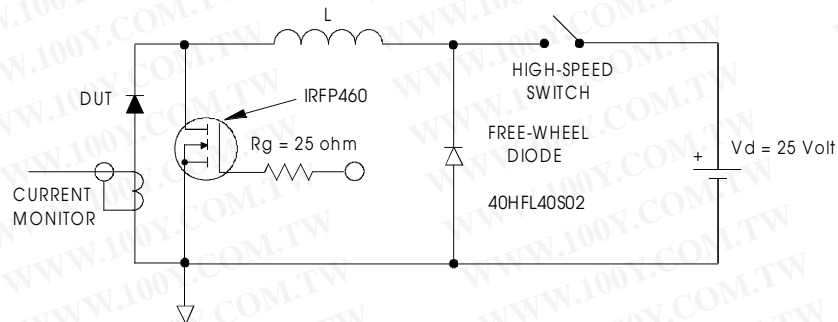


Fig. 8 - Unclamped Inductive Test Circuit