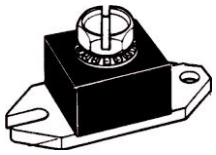
Schottky Rectifier, 240 A



HALF-PAK (D-67) Reverse

FEATURES

- 125 °C T_J operation (V_R < 5 V)
- Unique high power, HALF-PAK module
- Optimized for OR-ing applications
- Ultralow 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
- Compliant to RoHS directive 2002/95/EC

RoHS COMPLIANT

PRODUCT SUMMARY	
$I_{F(AV)}$	240 A
V_R	15 V

DESCRIPTION

The 245NQ015R high current Schottky rectifier module has been optimized for ultralow 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.

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	240	A
V_{RRM}		15	V
I_{FSM}	t_p = 5 µs sine	20 000	A
V_F	240 Apk, T_J = 75 °C	0.34	V
T_J	Range	- 55 to 125	°C

VOLTAGE RATINGS			
PARAMETER	SYMBOL	245NQ015R	UNITS
Maximum DC reverse voltage	V_R	15	V
Maximum working peak reverse voltage	V_{RWM}	25	

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 5	$I_{F(AV)}$	50 % duty cycle at T_C = 70 °C, rectangular waveform		240	A
Maximum peak one cycle non-repetitive surge current See fig. 7	I_{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	20 000	
		10 ms sine or 6 ms rect. pulse		3000	
Non-repetitive avalanche energy	E_{AS}	T_J = 25 °C, I_{AS} = 2 A, L = 4.5 mH		9	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 µs Frequency limited by T_J maximum V_A = 3 x V_R typical		2	A

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	V_{FM} (1)	240 A	T_J = 25 °C	0.40	V
		480 A		0.51	
		240 A	T_J = 75 °C	0.34	
		480 A		0.44	
Maximum reverse leakage current See fig. 2	I_{RM} (1)	T_J = 25 °C	V_R = Rated V_R	80	mA
		T_J = 100 °C		4000	
		T_J = 100 °C	V_R = 12 V	3560	
		T_J = 100 °C	V_R = 5 V	2160	
Maximum junction capacitance	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHz), 25 °C		15 800	pF
Typical series inductance	L_S	From top of terminal hole to mounting plane		5.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/µs

Note

(1) Pulse width < 300 µs, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS

PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction temperature range		T_J		- 55 to 125	°C
Maximum storage temperature range		T_{Stg}		- 55 to 150	
Maximum thermal resistance, junction to case		R_{thJC}	DC operation See fig. 4	0.20	°C/W
Typical thermal resistance, case to heatsink		R_{thCS}	Mounting surface, smooth and greased	0.15	
Approximate weight				25.6	g
				0.9	oz.
Mounting torque	minimum		Non-lubricated threads	40 (35)	kgf · cm (lbf · in)
	maximum			58 (50)	
Terminal torque	minimum			58 (50)	
	maximum			86 (75)	
Case style				D-67 HALF-PAK Reverse	

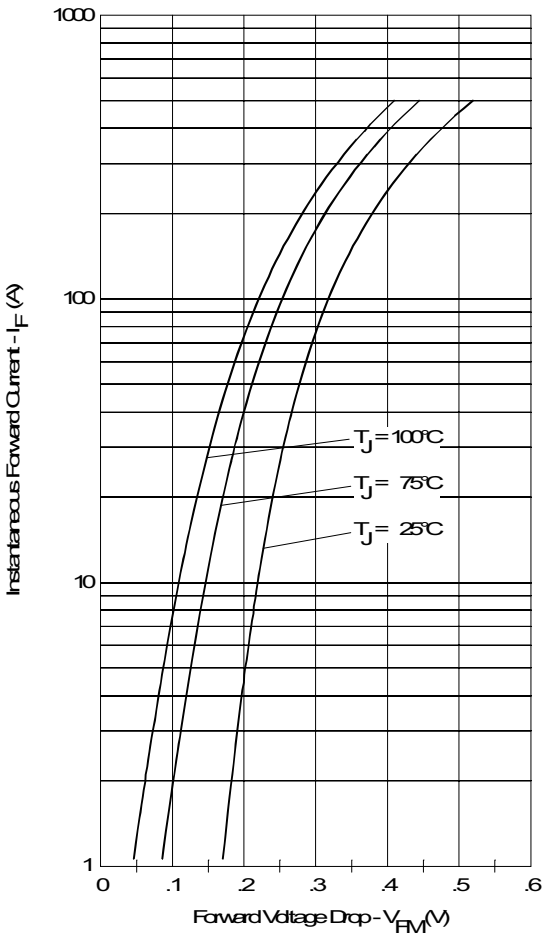


Fig. 1 - Maximum Forward Voltage Drop Characteristics

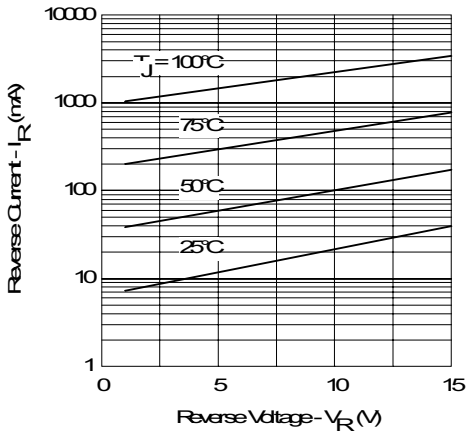


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

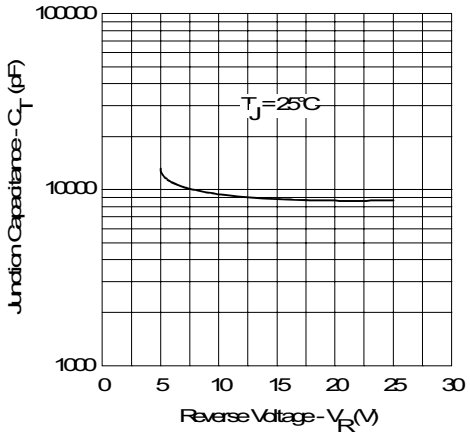


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

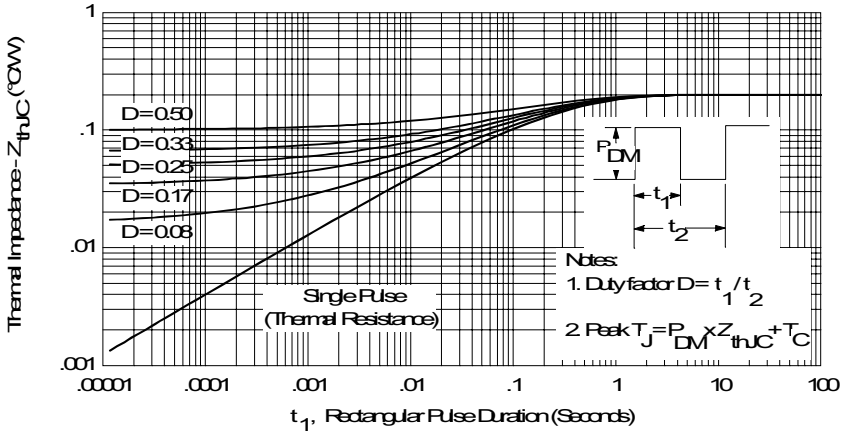


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

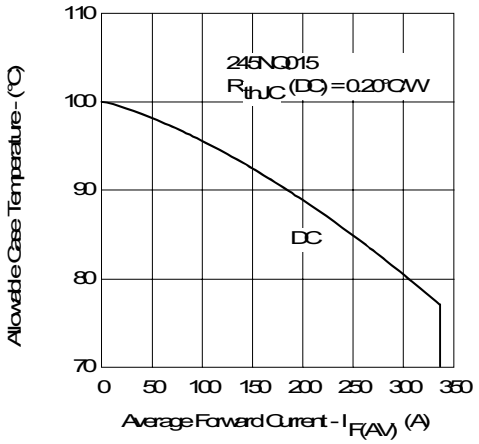


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

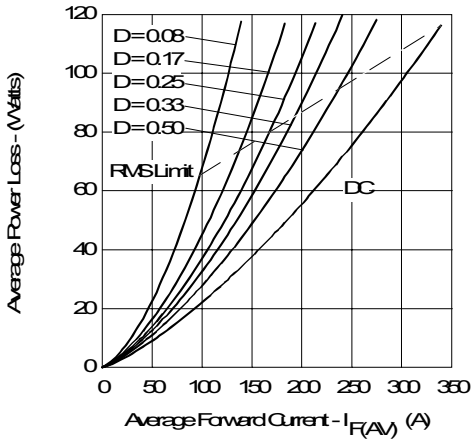


Fig. 6 - Forward Power Loss Characteristics

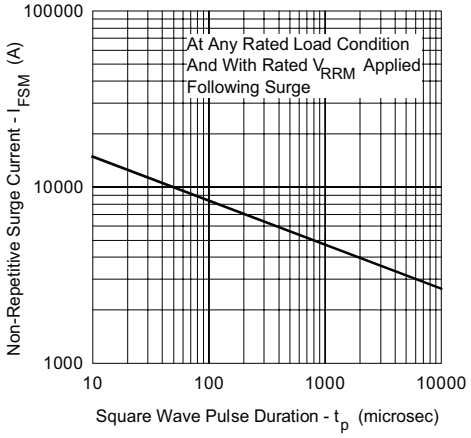


Fig. 7 - Maximum Non-Repetitive Surge Current

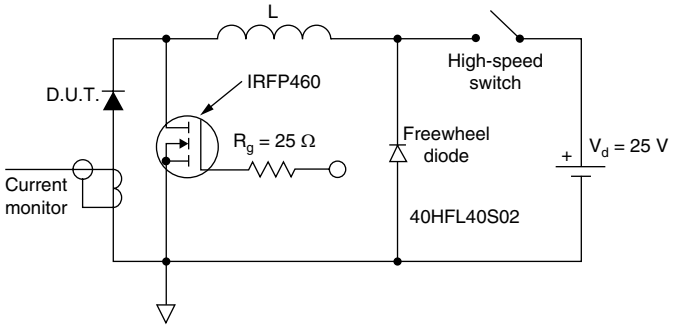


Fig. 8 - Unclamped Inductive Test Circuit

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95378

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