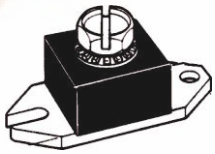
Schottky Rectifier, 240 A



HALF-PAK (D-67) Reverse

FEATURES

- 150 °C T_J operation
- Unique high power, HALF-PAK module
- Replaces four parallel DO-5's
- Easier to mount and lower profile than DO-5's
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Compliant to RoHS directive 2002/95/EC

RoHS COMPLIANT

DESCRIPTION

The 242NQ030R high current Schottky rectifier module has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

PRODUCT SUMMARY	
$I_{F(AV)}$	240 A
V_R	30 V

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	240	A
V_{RRM}		30	V
I_{FSM}	t_p = 5 µs sine	27 000	A
V_F	240 Apk, T_J = 125 °C	0.42	V
T_J	Range	- 55 to 150	°C

VOLTAGE RATINGS			
PARAMETER	SYMBOL	242NQ030R	UNITS
Maximum DC reverse voltage	V_R	30	V
Maximum working peak reverse voltage	V_{RWM}		

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 = 111 °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	27 000	
		10 ms sine or 6 ms rect. pulse		3000	
Non-repetitive avalanche energy	E_{AS}	T_J = 25 °C, I_{AS} = 48 A, L = 0.19 mH		216	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 µs Frequency limited by T_J maximum V_A = 1.5 x V_R typical		48	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	0.51	V
		480 A		0.62	
		240 A	T_J = 125 °C	0.42	
		480 A		0.54	
Maximum reverse leakage current See fig. 2	I_{RM} (1)	T_J = 25 °C	V_R = Rated V_R	20	mA
		T_J = 125 °C		1120	
Maximum junction capacitance	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHz), 25 °C		14 800	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 and storage temperature range		T_J, T_{Stg}		- 55 to 150	°C
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	

For technical questions, contact: indmodules@vishay.com

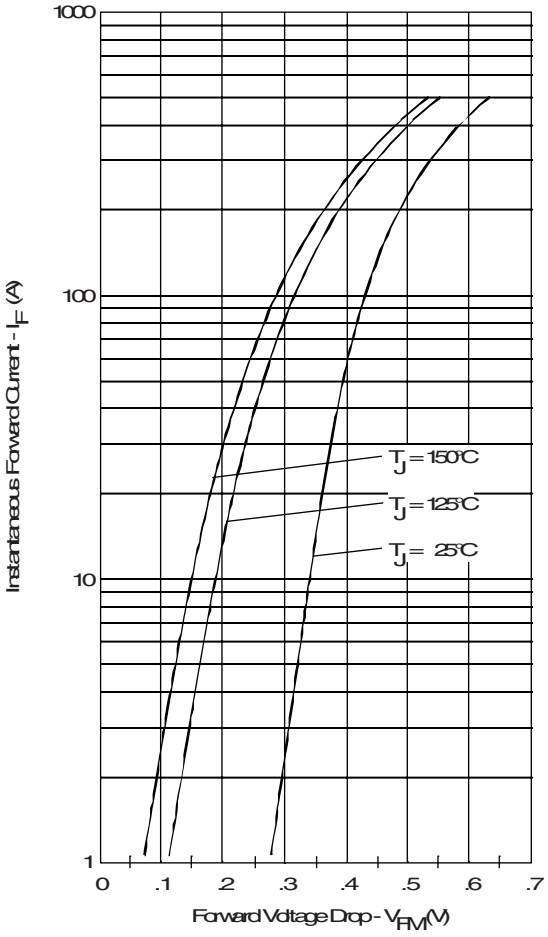


Fig. 1 - Maximum Forward Voltage Drop Characteristics

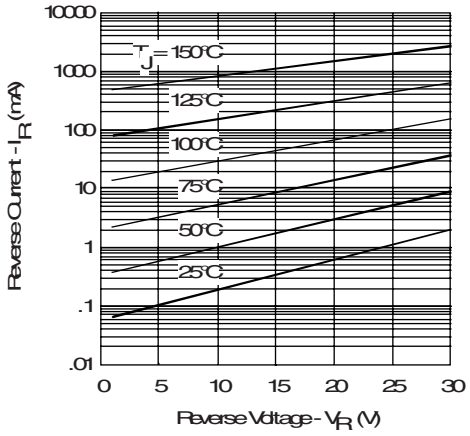


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

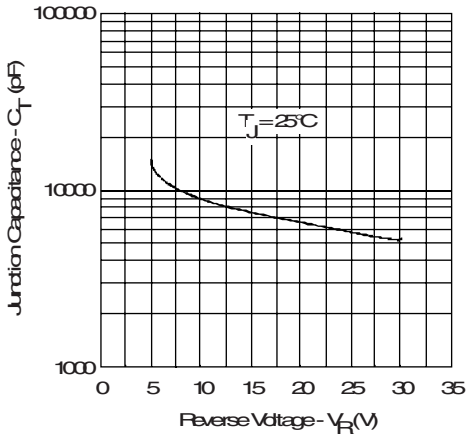


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

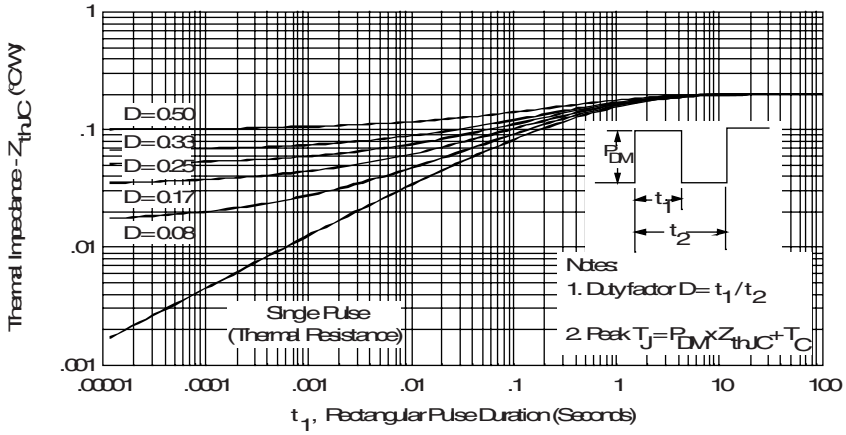


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

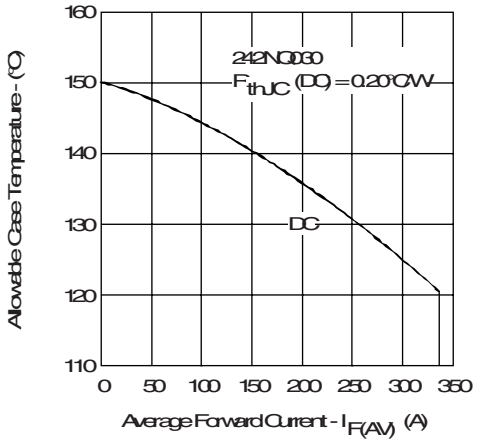


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

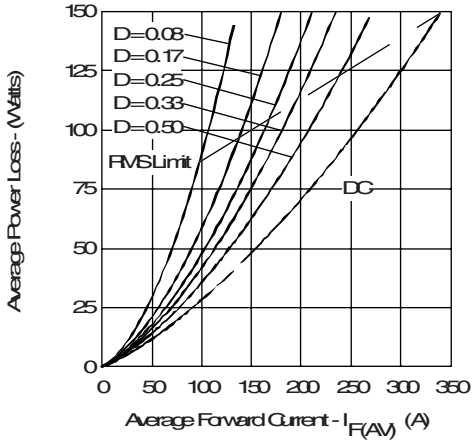


Fig. 6 - Forward Power Loss Characteristics

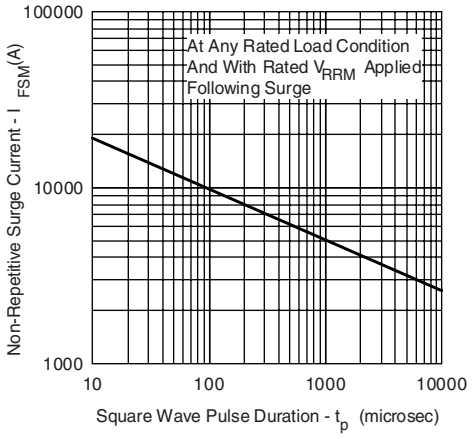


Fig. 7 - Maximum Non-Repetitive Surge Current

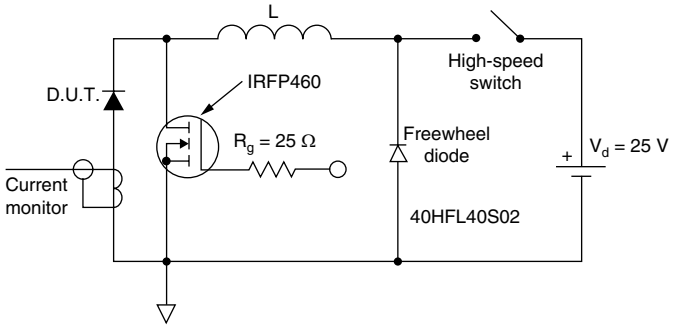


Fig. 8 - Unclamped Inductive Test Circuit

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

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