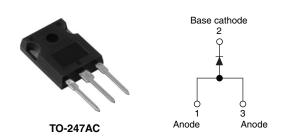


Vishay High Power Products

Schottky Rectifier, 65 A



PRODUCT SUMMARY			
I _{F(AV)}	65 A		
V _R	15 V		
I _{RM}	870 mA at 100 °C		

FEATURES

- TO-247 package
- 125 °C T_J operation (V_R < 5 V)
- · Single diode configuration
- · Optimized for OR-ing applications
- · Ultralow forward voltage drop
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Designed and qualified for industrial level

DESCRIPTION

The 65PQ015 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	65	A	
V _{RRM}		15	V	
I _{FSM}	t _p = 5 μs sine	1500	A	
V _F	65 Apk, T _J = 125 °C	0.46	V	
T _J	Range	- 55 to 125	°C	

VOLTAGE RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS	65PQ015	UNITS	
Maximum DC reverse voltage	V	T _J = 100 °C	15	V	
	V _R	T _J = 125 °C	5	V	

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current	I _{F(AV)}	50 % duty cycle at T _C = 83 °C, rectangular waveform 65			
Maximum peak one cycle non-repetitive surge current	I _{FSM}	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	1500	Α
		10 ms sine or 6 ms rect. pulse		400	
Non-repetitive avalanche energy	E _{AS}	$T_J = 25 ^{\circ}\text{C}, I_{AS} = 2 \text{A}, L = 4.5 \text{mH}$		9	mJ
Repetitive avalanche current	I _{AR}	Current decaying linearly to zero in 1 μ s Frequency limited by T _J maximum V _A = 1.5 x V _R typical		2	А

Document Number: 93382 Revision: 12-Sep-08

Vishay High Power Products Schottky Rectifier, 65 A



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Forward voltage drop	V _{FM} ⁽¹⁾	65 A	- T _J = 25 °C	0.50	V
		130 A		0.71	
		65 A	- T _J = 125 °C	0.46	
		130 A		0.76	
Reverse leakage current	I _{RM} ⁽¹⁾	T _J = 125 °C	V _R = 5 V	1.2	Α
		T _J = 25 °C	- V _R = Rated V _R	18	- mA
		T _J = 100 °C		870	
Threshold voltage	V _{F(TO)}	$T_{J} = T_{J} \text{ maximum} $ 0.137 4.9		0.137	mV
Forward slope resistance	r _t			mΩ	
Maximum junction capacitance	C _T	V _R = 5 V _{DC} (test signal range 100 kHz to 1 MHz) 25 °C 4300		pF	
Typical series inductance	L _S	Measured lead to lead 5 mm from package body 8 nH		nH	
Maximum voltage rate of change	dV/dt	Rated V _R 10 000 V/μs		V/µs	

Note

 $^{^{(1)}\,}$ Pulse width < 300 $\mu s,$ 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	0.8	°C/W	
Typical thermal resistance, case to heatsink	R _{thCS}	Mounting surface, smooth and greased	0.3	C/VV	
Approximate weight			6	g	
Approximate weight			0.21	OZ.	
Mounting torque minimum maximum		Non-lubricated threads	6 (5)	kgf ⋅ cm	
		Non-iubricated tireaus	12 (10)	(lbf \cdot in)	
Marking device		Case style TO-247AC (JEDEC)	65PC	Q015	

Document Number: 93382 Revision: 12-Sep-08



Schottky Rectifier, 65 A Vishay High Power Products

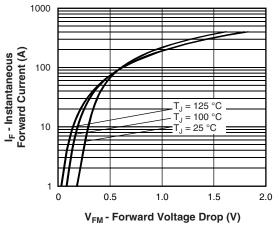


Fig. 1 - Maximum Forward Voltage Drop Characteristics

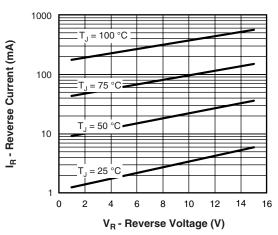


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

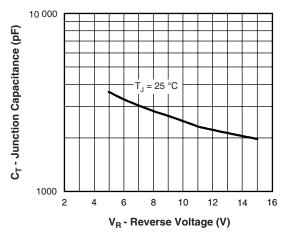


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

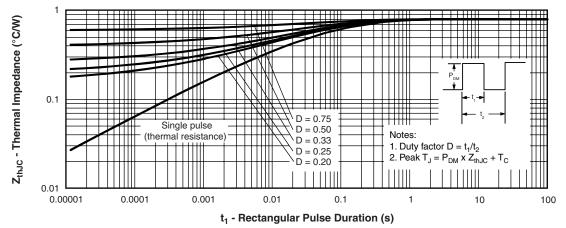


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

Vishay High Power Products Schottky Rectifier, 65 A



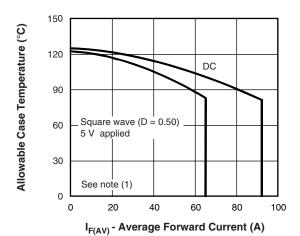
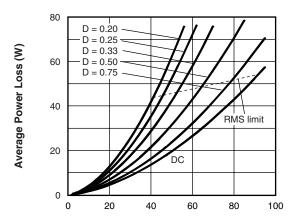


Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current



I_{F(AV)} - Average Forward Current (A)
Fig. 6 - Forward Power Loss Characteristics

At any rated load condition and with rated V_{RRM} applied following surge

Fig. 7 - Maximum Non-Repetitive Surge Current

t_o - Square Wave Pulse Duration (μs)

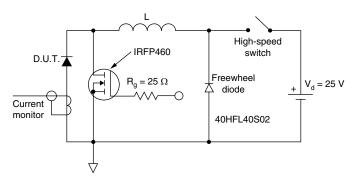


Fig. 8 - Unclamped Inductive Test Circuit

Note

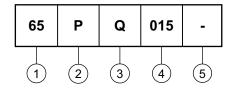
 $\begin{array}{l} \mbox{(1)} \;\; \mbox{Formula used:} \; T_C = T_J - (Pd + Pd_{REV}) \; x \; R_{thJC}; \\ \mbox{Pd} = \mbox{Forward power loss} = I_{F(AV)} \; x \; V_{FM} \; \mbox{at} \; (I_{F(AV)}/D) \; (\text{see fig. 6}); \\ \mbox{Pd}_{REV} = \mbox{Inverse power loss} = V_{R1} \; x \; I_R \; (1 - D); \; I_R \; \mbox{at} \; V_{R1} = 5 \; V \\ \end{array}$



Schottky Rectifier, 65 A Vishay High Power Products

ORDERING INFORMATION TABLE

Device code



- 1 Current rating (65 = 65 A)
- 2 Package:

P = TO-247

- 3 Schottky "Q" series
- 4 Voltage code (015 = 15 V)
- 5 • None = Standard production
 - PbF = Lead (Pb)-free

Tube standard pack quantity: 25 pieces

LINKS TO RELATED DOCUMENTS			
Dimensions http://www.vishay.com/doc?95223			
Part marking information	http://www.vishay.com/doc?95226		
SPICE model	http://www.vishay.com/doc?95306		

Document Number: 93382 Revision: 12-Sep-08



Vishay

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.

Revision: 18-Jul-08

Document Number: 91000 www.vishay.com