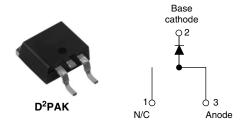


Vishay High Power Products

Schottky Rectifier, 20 A



PRODUCT SUMMARY				
I _{F(AV)} 20 A				
V _R	15 V			
I _{RM}	600 mA at 100 °C			

FEATURES

- 125 °C T_J operation ($V_R < 5 V$)
- · Single diode configuration
- · Optimized for OR-ing applications
- Ultra low 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 Q101 level

DESCRIPTION

The 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 °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	20	Α		
V_{RRM}		15	V		
I _{FSM}	$t_p = 5 \mu s sine$	700	Α		
V _F	19 Apk, T _J = 125 °C (typical)	0.25	V		
T _J	Range	- 55 to 125	°C		

VOLTAGE RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	20L15TS	UNITS
Maximum DC reverse voltage	V_R	T _{.1} = 100 °C	15	V
Maximum working peak reverse voltage	V_{RWM}	1J = 100 C	15	V

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 5	I _{F(AV)}	I _{F(AV)} 50 % duty cycle at T _C = 85 °C, rectangular waveform		20	
Maximum peak one cycle non-repetitive surge current	I=0	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated	700	Α
See fig. 7	I _{FSM}	10 ms sine or 6 ms rect. pulse	V _{RRM} applied	330	
Non-repetitive avalanche energy	E _{AS}	T _J = 25 °C, I _{AS} = 2 A, L = 6 mH		10	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		Α	

Document Number: 93954 Revision: 22-Aug-08

Vishay High Power Products Schottky Rectifier, 20 A



ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		TYP.	MAX.	UNITS
		19 A	T _J = 25 °C	-	0.41	V
Forward voltage drop	V _{FM} ⁽¹⁾	40 A		-	0.52	
See fig. 1	V FM (1)	19 A	T _J = 125 °C	0.25	0.33	
		40 A		0.37	0.50	
Reverse leakage current	I _{RM} ⁽¹⁾	$T_J = 25 ^{\circ}C$	V _R = Rated V _R	-	10	mA
See fig. 2	'RM \''	T _J = 100 °C		-	600	IIIA
Threshold voltage	$V_{F(TO)}$	$T_{.1} = T_{.1}$ maximum	0.1	82	V	
Forward slope resistance	r _t	rj = rj maximum	7.6		mΩ	
Maximum junction capacitance	C _T	V_R = 5 V_{DC} , (test signal range 100 kHz to 1 MHz) 25 °C		-	2000	pF
Typical series inductance	L _S	Measured lead to lead 5 mm from package body		8	-	nH
Maximum voltage rate of change	dV/dt	Rated V _R	10	000	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	TJ		- 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	1.5	
Typical thermal resistance, case to heatsink	R _{thCS}	Mounting surface, smooth and greased (For TO-220)	0.50	°C/W
Maximum thermal resistance, junction to ambient	R _{thJA}	DC operation	40	
Approximate weight			2	g
Approximate weight			0.07	OZ.
Mounting torque		Non-lubricated threads	6 (5)	kgf · cm
Mounting torque maximum		Non-iubricateu tilleaus	12 (10)	(lbf · in)
Marking device		Case style D ² PAK 20L15T3		



Schottky Rectifier, 20 A Vishay High Power Products

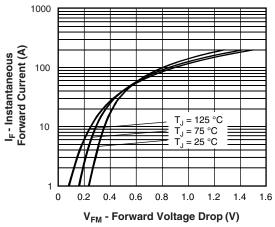


Fig. 1 - Maximum Forward Voltage Drop Characteristics

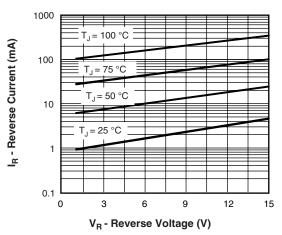


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

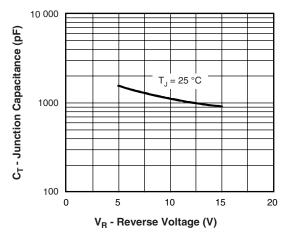


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

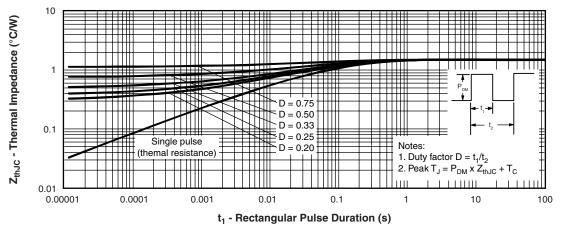


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

Vishay High Power Products Schottky Rectifier, 20 A



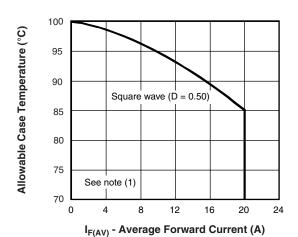


Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current

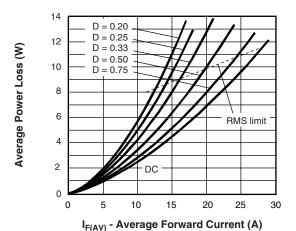


Fig. 6 - Forward Power Loss Characteristics

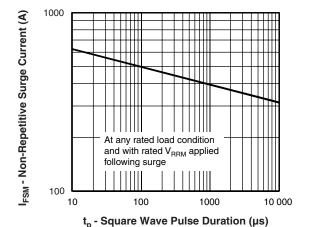


Fig. 7 - Maximum Non-Repetitive Surge Current

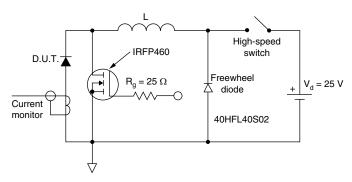


Fig. 8 - Unclamped Inductive Test Circuit

Note

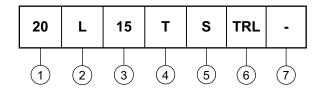
 $\begin{array}{l} \text{(1)} \ \ \text{Formula used:} \ T_C = T_J - (Pd + Pd_{REV}) \times R_{th,JC}; \\ Pd = \text{Forward power loss} = I_{F(AV)} \times V_{FM} \ \text{at} \ (I_{F(AV)}/D) \ \text{(see fig. 6)}; \\ Pd_{REV} = \text{Inverse power loss} = V_{R1} \times I_R \ \text{(1 - D)}; \ I_R \ \text{at} \ V_{R1} = 80 \ \% \ \text{rated} \ V_R \\ \end{array}$



Schottky Rectifier, 20 A Vishay High Power Products

ORDERING INFORMATION TABLE

Device code



- 1 Current rating (20 A)
- 2 L = Low V_F
- 3 Voltage rating (15 = 15 V)
- T = Schottky series
- 5 S = D²PAK
- 6 • None = Tube (50 pieces)
 - TRL = Tape and reel (left oriented)
 - TRR = Tape and reel (right oriented)
- 7 • None = Standard production
 - PbF = Lead (Pb)-free

LINKS TO RELATED DOCUMENTS			
Dimensions http://www.vishay.com/doc?95014			
Part marking information	http://www.vishay.com/doc?95008		
Packaging information	http://www.vishay.com/doc?95032		

Document Number: 93954 Revision: 22-Aug-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.

Document Number: 91000 Revision: 18-Jul-08