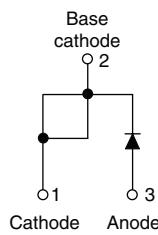


## Schottky Rectifier, 20 A



### 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 industrial 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.

PRODUCT SUMMARY	
$I_{F(AV)}$	20 A
$V_R$	15 V
$I_{RM}$	600 mA at 100 °C

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	20	A
$V_{RRM}$		15	V
$I_{FSM}$	$t_p = 5$ µs sine	700	A
$V_F$	19 Apk, $T_J = 125$ °C (typical)	0.25	V
$T_J$	Range	- 55 to 125	°C

VOLTAGE RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	20L15T	UNITS
Maximum DC reverse voltage	$V_R$			
Maximum working peak reverse voltage	$V_{RWM}$	$T_J = 100$ °C	15	V

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 5	$I_{F(AV)}$	50 % duty cycle at $T_C = 85$ °C, rectangular waveform		20	A
Maximum peak one cycle non-repetitive surge current See fig. 7	$I_{FSM}$	5 µs sine or 3 µs rect. pulse		700	
		10 ms sine or 6 ms rect. pulse Following any rated load condition and with rated $V_{RRM}$ 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 µs Frequency limited by $T_J$ maximum $V_A = 1.5 \times V_R$ typical		2	A

**ELECTRICAL SPECIFICATIONS**

PARAMETER	SYMBOL	TEST CONDITIONS		TYP.	MAX.	UNITS	
Forward voltage drop See fig. 1	$V_{FM}^{(1)}$	19 A	$T_J = 25 \text{ }^\circ\text{C}$	-	0.41	V	
		40 A		-	0.52		
		19 A	$T_J = 125 \text{ }^\circ\text{C}$	0.25	0.33		
		40 A		0.37	0.50		
Reverse leakage current See fig. 2	$I_{RM}^{(1)}$	$T_J = 25 \text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	-	10	mA	
		$T_J = 100 \text{ }^\circ\text{C}$		-	600		
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.182		V	
Forward slope resistance	$r_t$			7.6		$\text{m}\Omega$	
Maximum junction capacitance	$C_T$	$V_R = 5 \text{ V}_{\text{DC}}$ , (test signal range 100 kHz to 1 MHz) $25 \text{ }^\circ\text{C}$		-	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/ $\mu$ s	

**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	$T_{Stg}$			- 50 to 150	
Maximum thermal resistance, junction to case	$R_{thJC}$	DC operation See fig. 4		1.5	°C/W
Typical thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth and greased (For TO-220)		0.50	
Maximum thermal resistance, junction to ambient	$R_{thJA}$	DC operation (For D <sup>2</sup> PAK)		40	
Approximate weight				2	g
				0.07	
Mounting torque	minimum maximum	Non-lubricated threads		6 (5)	kgf · cm (lbf · in)
				12 (10)	
Marking device		Case style TO-220AC		20L15T	

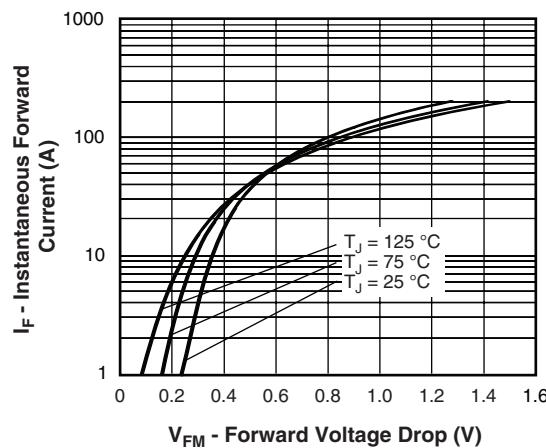


Fig. 1 - Maximum Forward Voltage Drop Characteristics

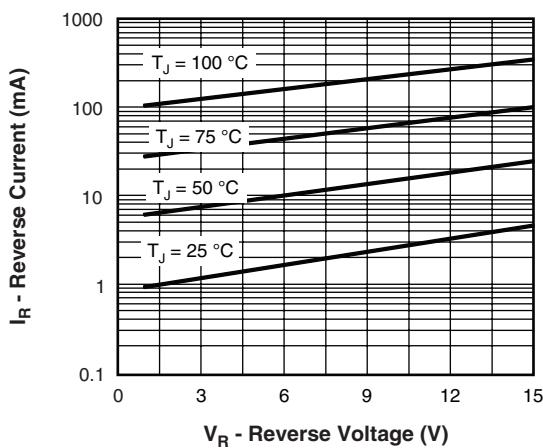


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

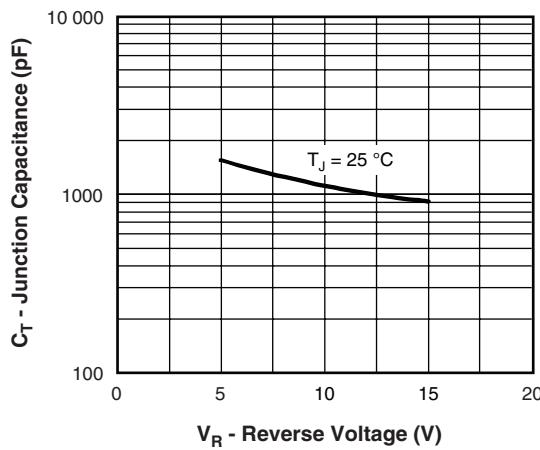
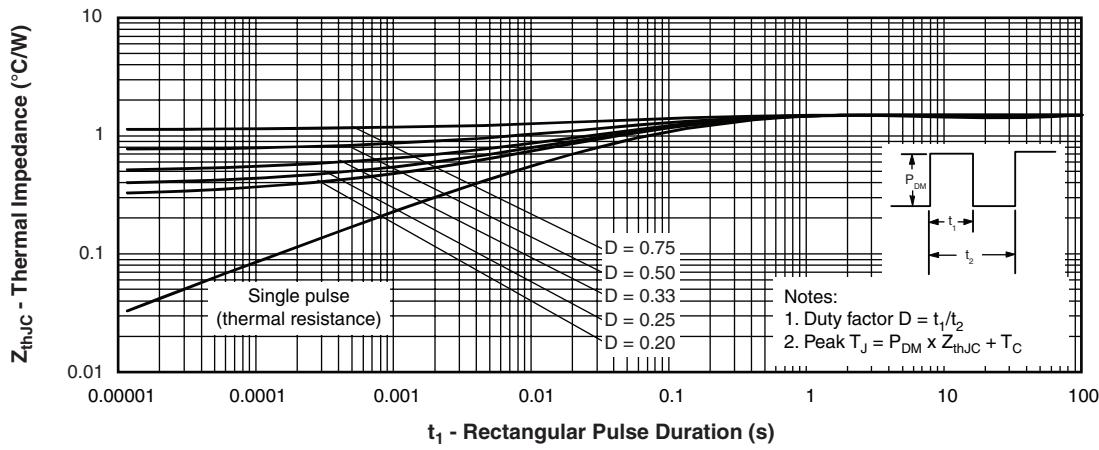


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage


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

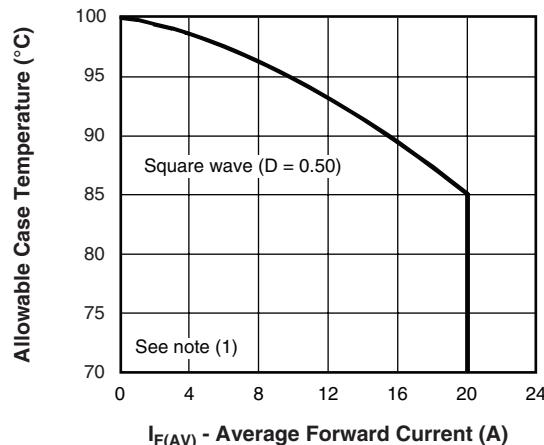


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

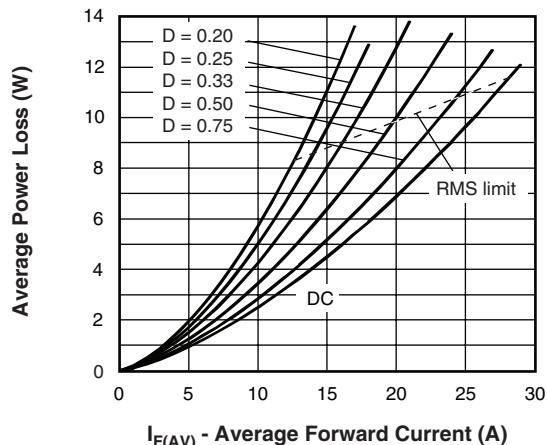


Fig. 6 - Forward Power Loss Characteristics

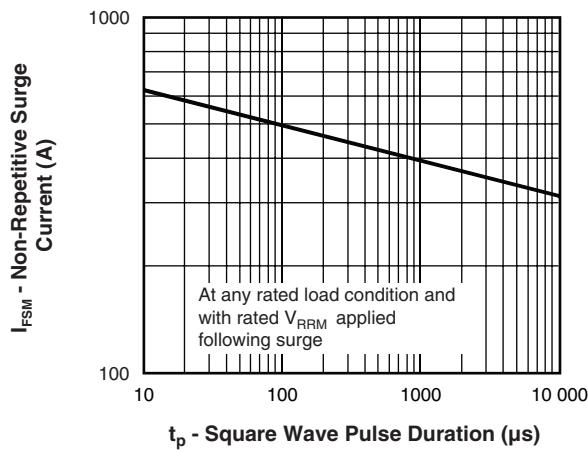


Fig. 7 - Maximum Non-Repetitive Surge Current

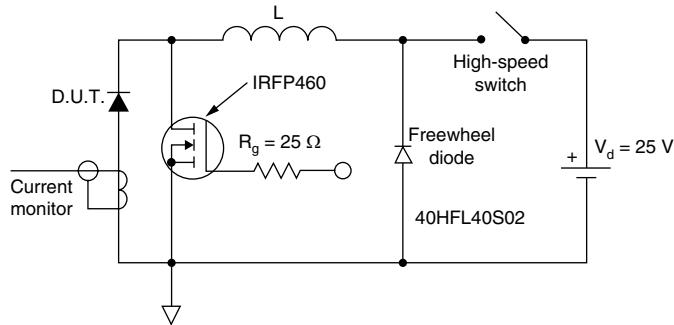


Fig. 8 - Unclamped Inductive Test Circuit

#### Note

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

**ORDERING INFORMATION TABLE**

Device code	20	L	15	T	-
	1	2	3	4	5
	<b>1</b>	-	Current rating (20 = 20 A)		
	<b>2</b>	-	Schottky "L" series		
	<b>3</b>	-	Voltage code (15 = 15 V)		
	<b>4</b>	-	Package		
			T = TO-220		
	<b>5</b>	-	• None = Standard production		
			• PbF = Lead (Pb)-free		

Tube standard pack quantity: 50 pieces

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95221">http://www.vishay.com/doc?95221</a>
Part marking information	<a href="http://www.vishay.com/doc?95224">http://www.vishay.com/doc?95224</a>

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