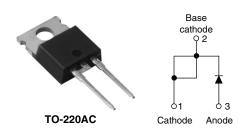


Vishay High Power Products

Schottky Rectifier, 15 A



PRODUCT SUMMARY				
I _{F(AV)} 15 A				
V_{R}	60 V			

FEATURES

- 150 °C T_J operation
- · Very low forward voltage drop
- · High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Designed and qualified for industrial level

DESCRIPTION

The 15TQ060 Schottky rectifier 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.

MAJOR RATINGS AND CHARACTERISTICS					
SYMBOL	CHARACTERISTICS	VALUES	UNITS		
I _{F(AV)}	Rectangular waveform	15	Α		
V _{RRM}		60	V		
I _{FSM}	t _p = 5 μs sine	1000	Α		
V _F	15 Apk, T _J = 125 °C	0.56	V		
T _J	Range	- 55 to 150	°C		

VOLTAGE RATINGS				
PARAMETER	SYMBOL	15TQ060	UNITS	
Maximum DC reverse voltage	V _R	60	V	
Maximum working peak reverse voltage	V_{RWM}	- 60 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 = 104 °C, rectangular waveform		15		
Maximum peak one cycle	-repetitive surge current	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	1000	A
See fig. 7		10 ms sine or 6 ms rect. pulse		260	
Non-repetitive avalanche energy	E _{AS}	$T_J = 25 ^{\circ}\text{C}, I_{AS} = 1.50 \text{A}, L = 11.5 \text{mH}$		6	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		1.50	Α

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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	V _{FM} ⁽¹⁾	15 A	T _J = 25 °C	0.62	V
		30 A		0.82	
		15 A	T _J = 125 °C	0.56	
		30 A		0.71	
Maximum reverse leakage curent	1 (1)	T _J = 25 °C	V _B = Rated V _B	0.80	mA
See fig. 2	T _J = 125 °C	VR = nateu VR	45		
Maximum junction capacitance	C _T	$V_R = 5 V_{DC}$, (test signal range 100 kHz to 1 MHz) 25 °C		720	pF
Typical series inductance	L _S	Measured lead to lead 5 mm from package body		8	nΗ
Maximum voltage rate of change	dV/dt	Rated V _R 10 000 V/		V/µs	

Note

 $^{^{(1)}}$ Pulse width < 300 μ s, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS						
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum junction and stortemperature range	age	T _J , T _{Stg}		- 55 to 150	°C	
Maximum thermal resistant junction to case	ce,	R _{thJC}	DC operation See fig. 4	3.25	°C/W	
Typical thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased	0.50	C/VV	
Approximate weight				2	g	
				0.07	OZ.	
Mounting torque -	minimum			6 (5)	kgf · cm	
	maximum			12 (10)	(lbf · in)	
Marking device			Case style TO-220AC (JEDEC)	15TQ060		



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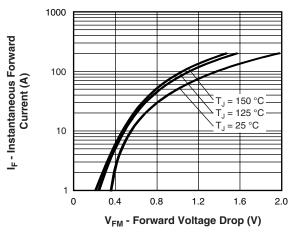


Fig. 1 - Maximum Forward Voltage Drop Characteristics

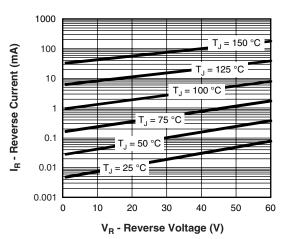


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

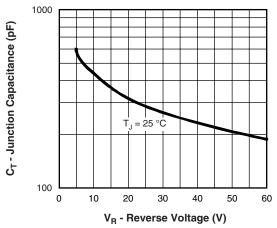


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

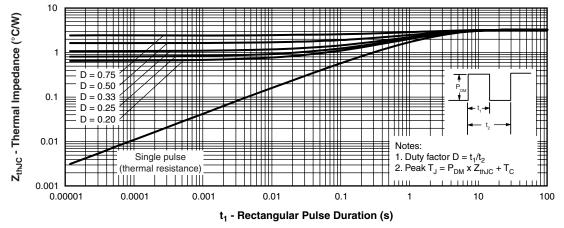


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

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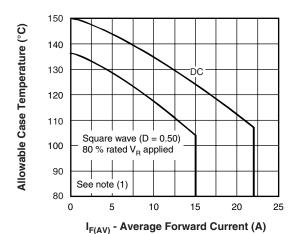


Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current

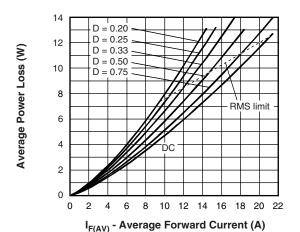


Fig. 6 - Forward Power Loss Characteristics

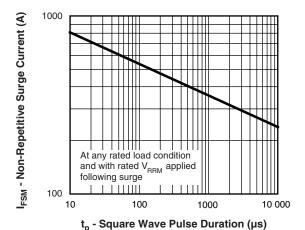


Fig. 7 - Maximum Non-Repetitive Surge Current

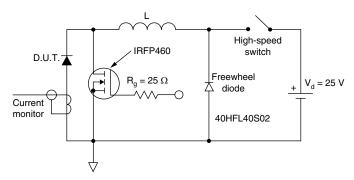


Fig. 8 - Unclamped Inductive Test Circuit

Note

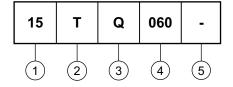
 $^{(1)}$ Formula used: T_C = T_J - (Pd + Pd_{REV}) x R_{th,JC}; Pd = Forward power loss = I_{F(AV)} x V_{FM} at (I_{F(AV)}/D) (see fig. 6); Pd_{REV} = Inverse power loss = V_{R1} x I_R (1 - D); I_R at V_{R1} = 80 % rated V_R



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ORDERING INFORMATION TABLE

Device code



- 1 Current rating (15 = 15 A)
- 2 Package:

T = TO-220

- 3 Schottky "Q" series
- 4 Voltage rating (060 = 60 V)
- 5 • None = Standard production
 - PbF = Lead (Pb)-free

Tube standard pack quantity: 50 pieces

LINKS TO RELATED DOCUMENTS			
Dimensions http://www.vishay.com/doc?95221			
Part marking information	http://www.vishay.com/doc?95224		

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