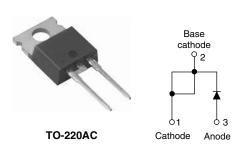


Vishay High Power Products

Schottky Rectifier, 10 A



PRODUCT SUMMARY				
I _{F(AV)} 10 A				
V_{R}	35/45 V			

FEATURES

- 175 °C T_J operation
- · 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 10TQ... Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 °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	10	Α		
V _{RRM}		35/45	V		
I _{FSM}	t _p = 5 μs sine	1050	Α		
V _F	10 Apk, T _J = 125 °C	0.49	V		
T _J	Range	- 55 to 175	°C		

VOLTAGE RATINGS				
PARAMETER	SYMBOL	10TQ035	10TQ045	UNITS
Maximum DC reverse voltage	V _R	35	45	V
Maximum working peak reverse voltage	V_{RWM}	35	45	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 = 151 °C	C, rectangular waveform	10	
Maximum peak one cycle non-repetitive surge current	Isou	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	1050	Α
See fig. 7	IFSM	10 ms sine or 6 ms rect. pulse		280	
Non-repetitive avalanche energy	E _{AS}	$T_J = 25 ^{\circ}\text{C}, I_{AS} = 2 \text{A}, L = 6.5 \text{mH}$		13	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	Α

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10TQ... Series

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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	V _{FM} ⁽¹⁾	10 A	T _J = 25 °C	0.57	V
		20 A		0.67	
		10 A	T _J = 125 °C	0.49	
		20 A		0.61	
Maximum reverse leakage current	I _{DM} (!)	T _J = 25 °C	V _R = Rated V _R	2	mA
See fig. 2		T _J = 125 °C		15	IIIA
Maximum junction capacitance	C _T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C		900	pF
Typical series inductance	L _S	Measured lead to lead 5 mm from package body		8.0	nH
Maximum voltage rate of change	dV/dt	Rated V _R 10 000 V/µs		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	e	T _J , T _{Stg}		- 55 to 175	°C	
Maximum thermal resistar junction to case	ice,	R _{thJC}	DC operation See fig. 4	2.0	°C/W	
Typical thermal resistance case to heatsink	,	R _{thCS}	Mounting surface, smooth and greased	0.50	C/W	
Accounting the contribute				2	g	
Approximate weight				0.07	OZ.	
Mounting torque —	minimum			6 (5)	kgf · cm	
	maximum			12 (10)	(lbf \cdot in)	
Marking device			Consisted TO 000AC	10TC	10TQ035	
			Case style TO-220AC	10TC	10TQ045	



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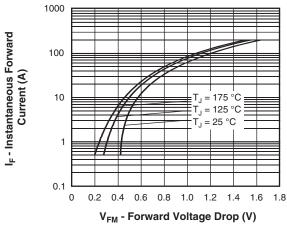


Fig. 1 - Maximum Forward Voltage Drop Characteristics

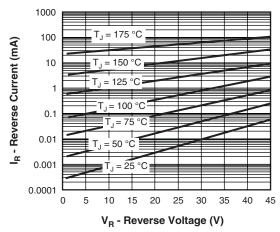


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

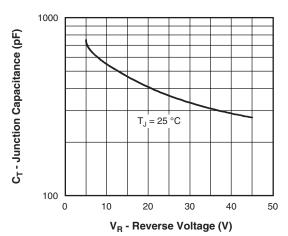


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

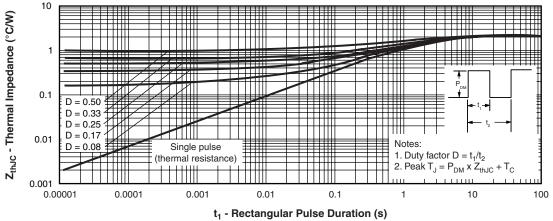
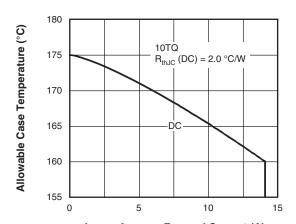


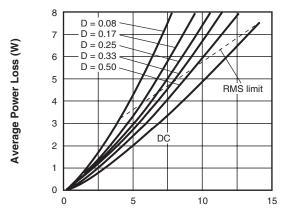
Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

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I_{F(AV)} - Average Forward Current (A)
Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current



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

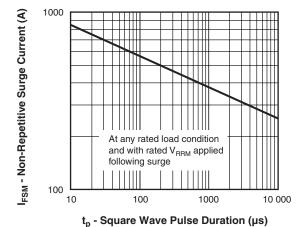


Fig. 7 - Maximum Non-Repetitive Surge Current

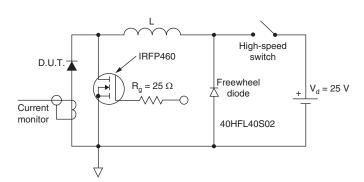
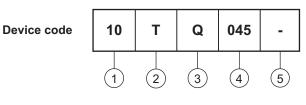


Fig. 8 - Unclamped Inductive Test Circuit



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ORDERING INFORMATION TABLE



- Current rating (10 = 10 A)

Package:

T = TO-220

3 - Schottky "Q" series

Voltage ratings 035 = 35 V 045 = 45 V

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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