Vishay High Power Products

Schottky Rectifier, 5.5 A



- Popular D-PAK outline
- Small foot print, surface mountable
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for AEC Q101 level

DESCRIPTION

The 50WQ10FNPbF surface mount Schottky rectifier has been designed for applications requiring low forward drop and small foot prints on PC board. Typical applications are in disk drives, switching power supplies, converters, freewheeling diodes, battery charging, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS				
SYMBOL	CHARACTERISTICS	VALUES	UNITS	
I _{F(AV)}	Rectangular waveform	5.5	А	
V _{RRM}		100	V	
I _{FSM}	t _p = 5 μs sine	330	А	
V _F	5 Apk, T _J = 125 °C	0.63	V	
TJ	Range	- 40 to 150	°C	

VOLTAGE RATINGS				
PARAMETER	SYMBOL	50WQ10FNPbF	UNITS	
Maximum DC reverse voltage	V _R	100	V	
Maximum working peak reverse voltage	V _{RWM}	100	v	

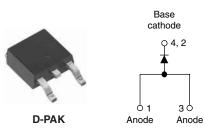
ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 5	I _{F(AV)}	50 % duty cycle at T_C = 135 °C, rectangular waveform		5.5	
Maximum peak one cycle non-repetitive surge current See fig. 7	1	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	330	A
	IFSM	10 ms sine or 6 ms rect. pulse		110	
Non-repetitive avalanche energy	E _{AS}	T _J = 25 °C, I _{AS} = 0.5 A, L = 40 mH		6.0	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 0.5		0.5	А

* Pb containing terminations are not RoHS compliant, exemptions may apply



COMPLIANT





PRODUCT SUMMARY				
I _{F(AV)}	5.5 A			
V _R	100 V			

50WQ10FNPbF

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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS VALUES		UNITS	
Maximum forward voltage drop See fig. 1		5 A	T _J = 25 °C	0.77	
	V _{FM} ⁽¹⁾	10 A		0.91	v
	V FM (1)	5 A	T _J = 125 °C	0.63	
		10 A		0.74	
Maximum reverse leakage current	L (1)	$T_J = 25 \ ^{\circ}C$	V _R = Rated V _R	1	mA
See fig. 2	I _{RM} ⁽¹⁾	T _J = 125 °C		4	
Threshold voltage	V _{F(TO)}	- T _J =T _J maximum		0.47	V
Forward slope resistance	r _t			21.46	mΩ
Typical junction capacitance	CT	$V_{R} = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C 18		183	pF
Typical series inductance	LS	Measured lead to lead 5 mm from package body 5.0		nH	

Note

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

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T _J ⁽¹⁾ , T _{Stg}		- 40 to 150	°C
Maximum thermal resistance, junction to case	R _{thJC}	DC operation See fig. 4	3.0	°C/W
Approximate weight			0.3	g
			0.01	oz.
Marking device		Case style D-PAK (similar to TO-252AA)	50WQ1	I0FN

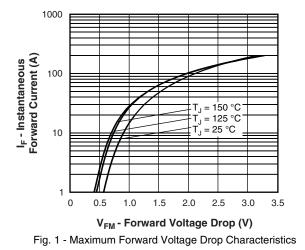
Note

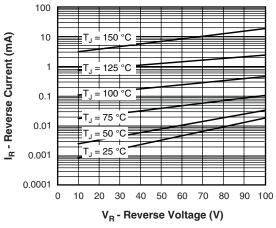
(1) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{thJA}}$ thermal runaway condition for a diode on its own heatsink

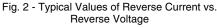


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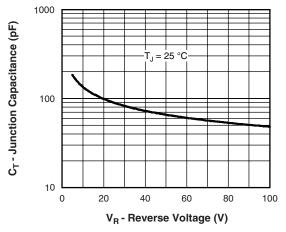


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

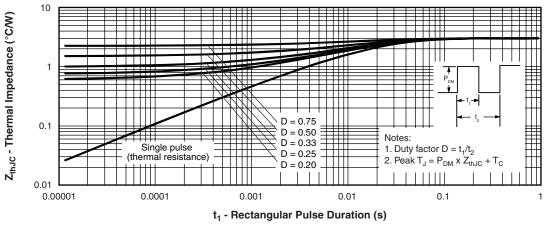
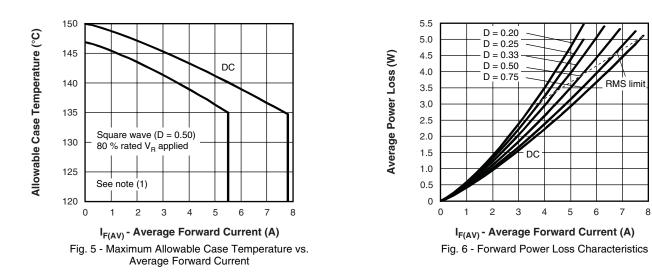
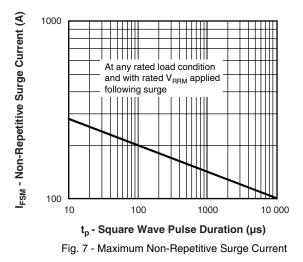


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

50WQ10FNPbF

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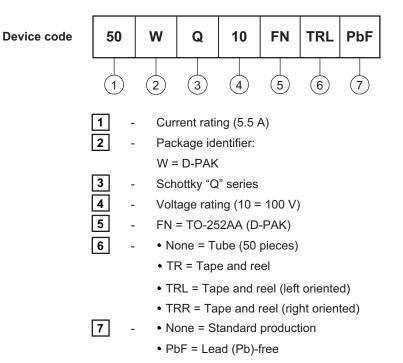
Note



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ORDERING INFORMATION TABLE



LINKS TO RELATED DOCUMENTS			
Dimensions http://www.vishay.com/doc?95016			
Part marking information	http://www.vishay.com/doc?95059		
Packaging information	http://www.vishay.com/doc?95033		



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