

RoHS

COMPLIANT

Vishay High Power Products

Schottky Rectifier, 1 A



SMB

PRODUCT SUMMARY			
I _{F(AV)}	1.0 A		
V _R	100 V		

FEATURES

- 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 industrial level

DESCRIPTION

The 10BQ100PbF surface mount Schottky rectifier has been designed for applications requiring low forward drop and very small foot prints on PC boards. 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	1.0	А		
V _{RRM}		100	V		
I _{FSM}	t _p = 5 μs sine	780	А		
V _F	1.0 Apk, T _J = 125 °C	0.62	V		
TJ	Range	- 55 to 175	°C		

VOLTAGE RATINGS				
PARAMETER	SYMBOL	10BQ100PbF	UNITS	
Maximum DC reverse voltage	V _R		V	
Maximum working peak reverse voltage	V _{RWM}	100	v	

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current	I _{F(AV)}	50 % duty cycle at T _L = 152 °C, rectangular waveform		1.0	А
Maximum peak one cycle non-repetitive surge current	1	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	780	A
	IFSM	10 ms sine or 6 ms rect. pulse		38	
Non-repetitive avalanche energy	E _{AS}	T _J = 25 °C, I _{AS} = 0.5 A, L = 8 mH		1.0	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		А	

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

Document Number: 94114 Revision: 15-Apr-08

10BQ100PbF

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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	V _{FM} ⁽¹⁾	1 A	T _J = 25 °C	0.78	v
		2 A		0.89	
		1 A	- T _J = 125 °C	0.62	
		2 A		0.72	
Maximum reverse leakage current	1 (1)	T _J = 25 °C	V_{R} = Rated V_{R}	0.5	mA
See fig. 2	IRM (''	T _J = 125 °C		1	
Typical junction capacitance	CT	$V_{\rm R}$ = 5 $V_{\rm DC}$, (test signal range 100 kHz to 1 MHz) 25 °C		42	pF
Typical series inductance	L _S	Measured lead to lead 5 mm from package body		2.0	nH
Maximum voltage rate of charge	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 and storage temperature range	T _J ⁽¹⁾ , T _{Stg}		- 55 to 175	°C
Maximum thermal resistance, junction to lead	R _{thJL} ⁽²⁾	DC operation	36	°C/W
Maximum thermal resistance, junction to ambient	R _{thJA}		80	°C/w
Approximate weight			0.10	g
		0.003	OZ.	
Marking device		Case style SMB (similar DO-214AA)	V	1J

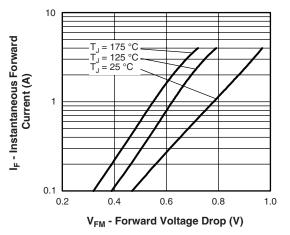
Notes

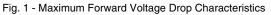
(1) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{thJA}}$ thermal runaway condition for a diode on its own heatsink

(2) Mounted 1" square PCB



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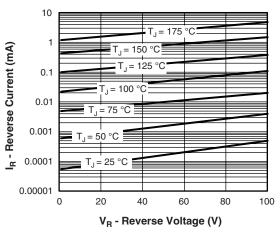


Fig. 2 - Typical Peak Reverse Current vs. Reverse Voltage

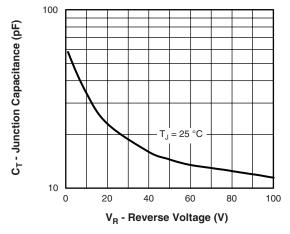


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

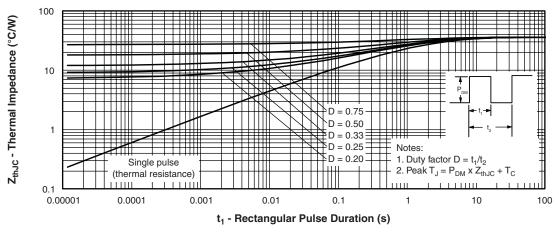


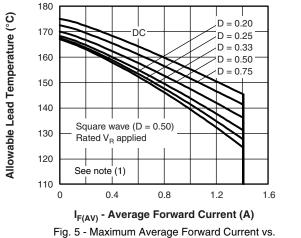
Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

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10BQ100PbF

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g. 5 - Maximum Average Forward Current v Allowable Lead Temperature

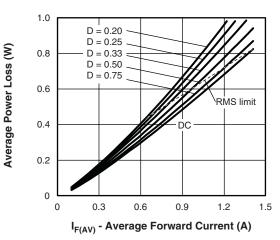
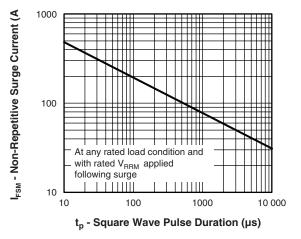
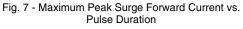


Fig. 6 - Maximum Average Forward Dissipation vs. Average Forward Current



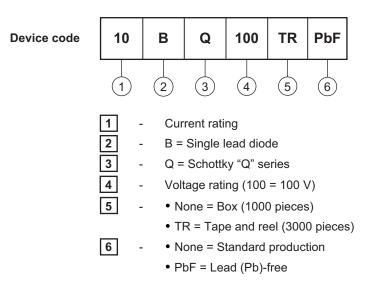


Note



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ORDERING INFORMATION TABLE



LINKS TO RELATED DOCUMENTS			
Dimensions http://www.vishay.com/doc?95017			
Part marking information	http://www.vishay.com/doc?95029		
Packaging information	http://www.vishay.com/doc?95034		
SPICE model	http://www.vishay.com/doc?95276		



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