High Performance Schottky Rectifier, 1.0 A



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SMB

PRODUCT SUMMARY				
Package	SMB			
I _{F(AV)}	1.0 A			
V _R	30 V			
V _F at I _F	0.420 V			
I _{RM} max.	15 mA at 125 °C			
T _J max.	150 °C			
Diode variation	Single die			
E _{AS}	3.0 mJ			

FEATURES

- · Small foot print, surface mountable
- · Very low forward voltage drop
- High frequency operation



HALOGEN

- · Guard ring for enhanced ruggedness and long FREE term reliability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

DESCRIPTION

The VS-10BQ030-M3 surface mount Schottky rectifier has been designed for applications requiring low forward drop and 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	CHARACTERISTICS VALUES UNITS					
I _{F(AV)}	Rectangular waveform	1.0	А				
V _{RRM}		30	V				
I _{FSM}	t _p = 5 ms sine	430	А				
V _F	1.0 A _{pk} , T _J = 125 °C	0.30	V				
TJ	Range	-55 to +150	°C				

VOLTAGE RATINGS						
PARAMETER	SYMBOL	VS-10BQ030-M3	UNITS			
Maximum DC reverse voltage	V _R	- 30	V			
Maximum working peak reverse voltage	V _{RWM}		v			

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDI	TEST CONDITIONS		UNITS
Maximum average forward current	I _{F(AV)}	50 % duty cycle at T_L = 106 °C, rectangular waveform		1.0	
Maximum peak one cycle non-repetitive surge current			Following any rated load condition and with	430	А
See fig. 6	IFSM	10 ms sine or 6 ms rect. pulse	rated V _{RRM} applied	90	
Non-repetitive avalanche energy	E _{AS}	T _J = 25 °C, I _{AS} = 1 A, L = 6 mH		3.0	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 _B typical		1.0	А

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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CO	VALUES	UNITS	
		1 A	T 05.00	0.420	V
Maximum forward voltage drop	V (1)	2 A	T _J = 25 °C	0.470	
Maximum forward voltage drop	V _{FM} ⁽¹⁾	1 A	T 105 %C	0.300	
		2 A	T _J = 125 °C	0.370	
				0.5	
Maximum reverse leakage current	I _{RM} ⁽¹⁾	T _J = 100 °C	$V_R = Rated V_R$	5.0	mA
		T _J = 125 °C		15	
Maximum junction capacitance	CT	$V_R = 5 V_{DC}$ (test signal range	200	pF	
Typical series inductance	Ls	Measured lead to lead 5 mm from package body 2.0		2.0	nH
Maximum voltage rate of change	dV/dt	Rated V _R 10 000 V/µ			V/µs

Note

⁽¹⁾ Pulse width < 300 μ s, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	SYMBOL TEST CONDITIONS		UNITS
Maximum junction and storage temperature range	T _J ⁽¹⁾ , T _{Stg}		-55 to +150	°C
Maximum thermal resistance, junction to lead	R _{thJL} ⁽²⁾	DC operation	25	°C/W
Maximum thermal resistance, junction to ambient	R _{thJA}		80	C/W
Approximate weight			0.10	g
Approximate weight			0.003	oz.
Marking device		Case style SMB (similar DO-214AA)	1	E

Notes

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

(2) Mounted 1" square PCB

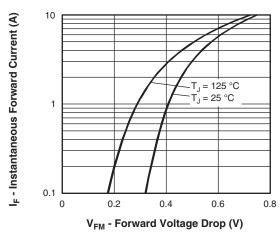


Fig. 1 - Maximum Forward Voltage Drop Characteristics

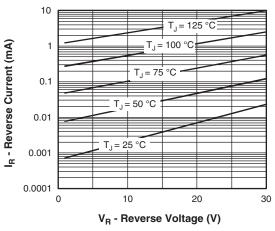


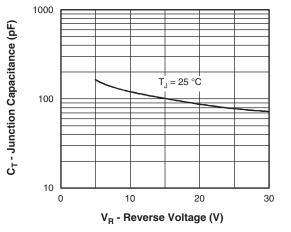
Fig. 2 - Typical Peak Reverse Current vs. Reverse Voltage

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Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

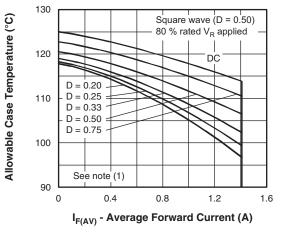


Fig. 4 - Maximum Average Forward Current vs. Allowable Lead Temperature

Note

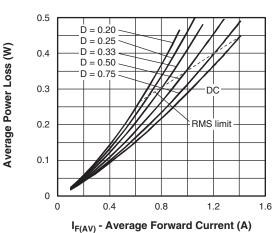
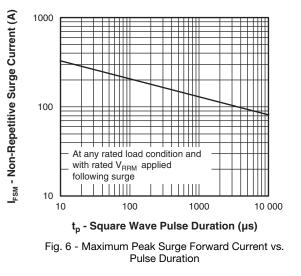


Fig. 5 - Maximum Average Forward Dissipation vs.

Average Forward Current



terminations lead (Pb)-free

ORDERING INFORMATION TABLE

Device code	VS-	10	В	Q	030	-M3
		2	3	4	5	6
	1 ·	- Visl	hay Sem	niconduo	ctors pro	oduct
	2 - Current rating					
	3 - B = single lead diode					
	4 -	- Q =	Schottk	ky "Q" se	eries	
	5 -	- Vol	tage rati	ng (030	= 30 V))
	6		ironmer = halog	0		complia

ORDERING INFORMATION (Example)						
PREFERRED P/N	PREFERRED PACKAGE CODE MINIMUM ORDER QUANTITY PACKAGING DESCRIPTION					
VS-10BQ030-M3/5BT	5BT	3200	13" diameter plastic tape and reel			

LINKS TO RELATED DOCUMENTS				
Dimensions www.vishay.com/doc?95401				
Part marking information	www.vishay.com/doc?95403			
Packaging information	www.vishay.com/doc?95404			



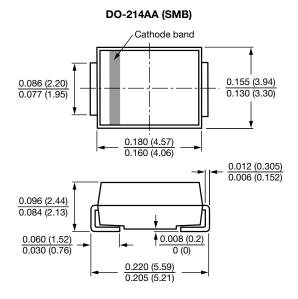


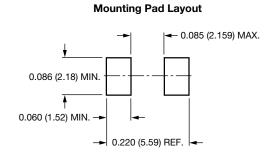
Outline Dimensions

Vishay Semiconductors

SMB

DIMENSIONS in inches (millimeters)







Vishay

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