

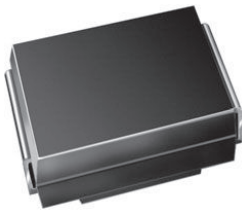


**THE DATASHEET OF
VS-MBRS130-M3/5BT**





High Performance Schottky Rectifier, 1.0 A



SMB (DO-214AA)



FEATURES

- Small foot print, surface mountable
• Very low forward voltage drop
• High frequency operation
• Guard ring for enhanced ruggedness and long 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



RoHS COMPLIANT HALOGEN FREE

Table with 2 columns: Characteristic and Value. Includes I_F(AV), V_R, V_F at I_F, I_RM max., T_J max., E_AS, Package, and Circuit configuration.

DESCRIPTION / APPLICATIONS

The VS-MBRS130-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.

Table with 4 columns: Symbol, Characteristics, Values, and Units. Lists major ratings and characteristics like I_F(AV), V_R, I_FSM, V_F, and T_J.

Table with 4 columns: Parameter, Symbol, VS-MBRS130-M3, and Units. Lists voltage ratings such as Maximum DC reverse voltage and Maximum working peak reverse voltage.

Table with 5 columns: Parameter, Symbol, Test Conditions, Values, and Units. Lists absolute maximum ratings like Maximum average forward current, Maximum peak one cycle non-repetitive surge current, Non-repetitive avalanche energy, and Repetitive avalanche current.



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}^{(1)}$	1 A	$T_J = 25\text{ }^\circ\text{C}$	0.420	V
		2 A		0.470	
		1 A	$T_J = 125\text{ }^\circ\text{C}$	0.300	
		2 A		0.370	
Maximum reverse leakage current	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	0.5	mA
		$T_J = 100\text{ }^\circ\text{C}$		5.0	
		$T_J = 125\text{ }^\circ\text{C}$		15	
Maximum junction capacitance	C_T	$V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^\circ\text{C}$		200	pF
Typical series inductance	L_S	Measured lead to lead 5 mm from package body		2.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/ μs

Note(1) Pulse width < 300 μs , duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction temperature range	$T_J^{(1)}$			-55 to +125	$^\circ\text{C}$
Maximum storage temperature range	T_{Stg}			-55 to +150	
Maximum thermal resistance, junction to lead	$R_{thJL}^{(2)}$	DC operation		25	$^\circ\text{C}/\text{W}$
Maximum thermal resistance, junction to ambient	R_{thJA}			80	
Approximate weight				0.10	g
				0.003	oz.
Marking device		Case style SMB (DO-214AA)		13	

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

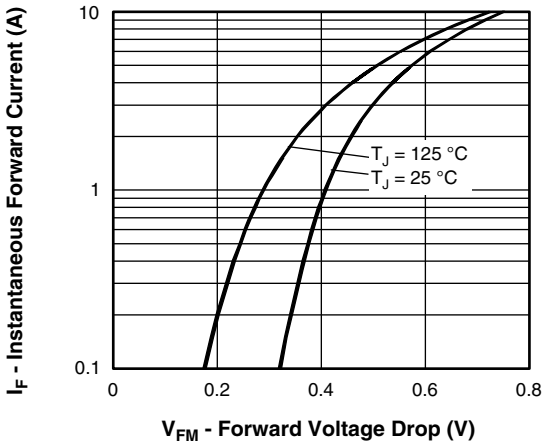


Fig. 1 - Maximum Forward Voltage Drop Characteristics

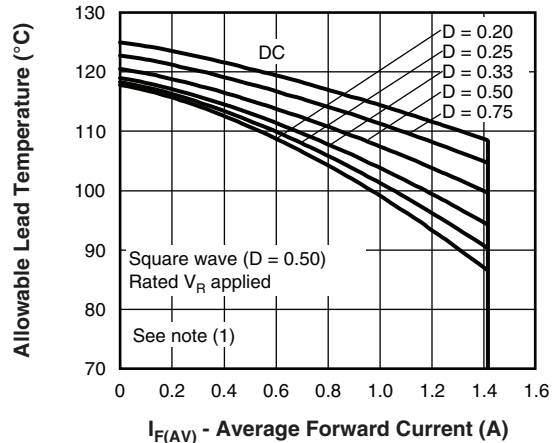


Fig. 4 - Maximum Average Forward Current vs. Allowable Lead Temperature

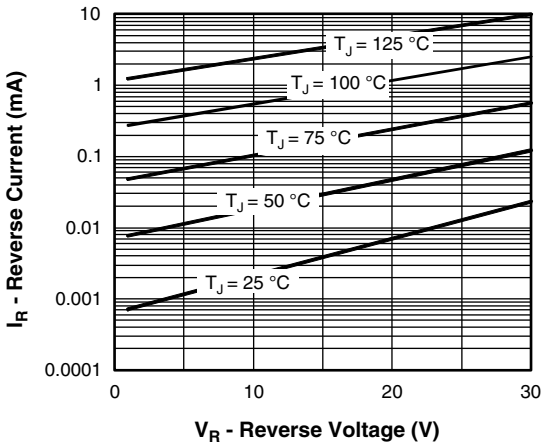


Fig. 2 - Typical Peak Reverse Current vs. Reverse Voltage

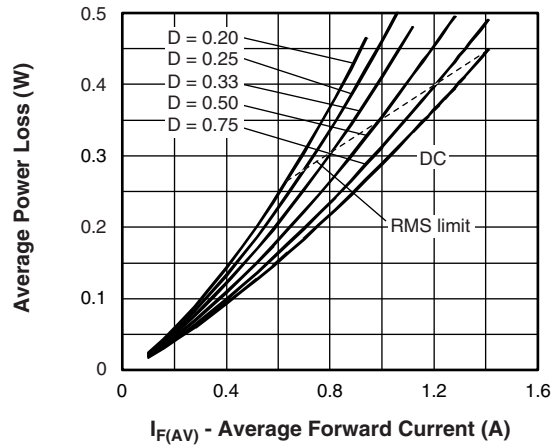


Fig. 5 - Maximum Average Forward Dissipation vs. Average Forward Current

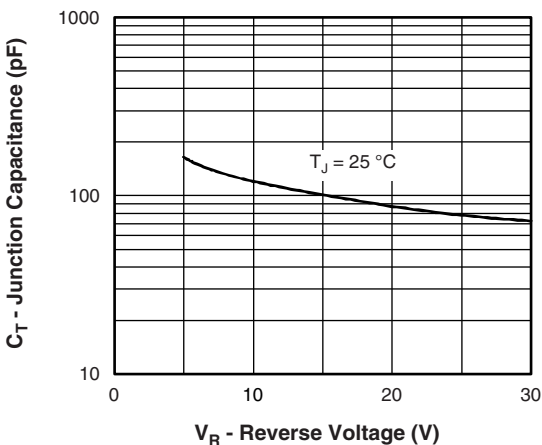


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

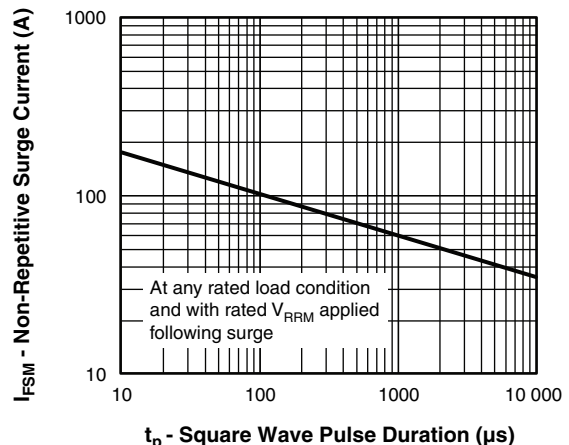


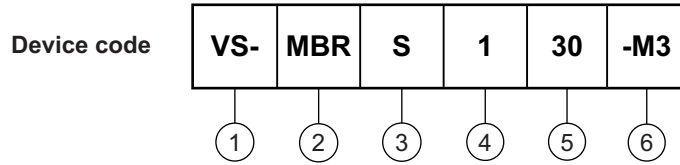
Fig. 6 - Maximum Peak Surge Forward Current vs. Pulse Duration

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;
 P_d = forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
 $P_{d_{REV}}$ = inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80\%$ rated V_R



ORDERING INFORMATION TABLE



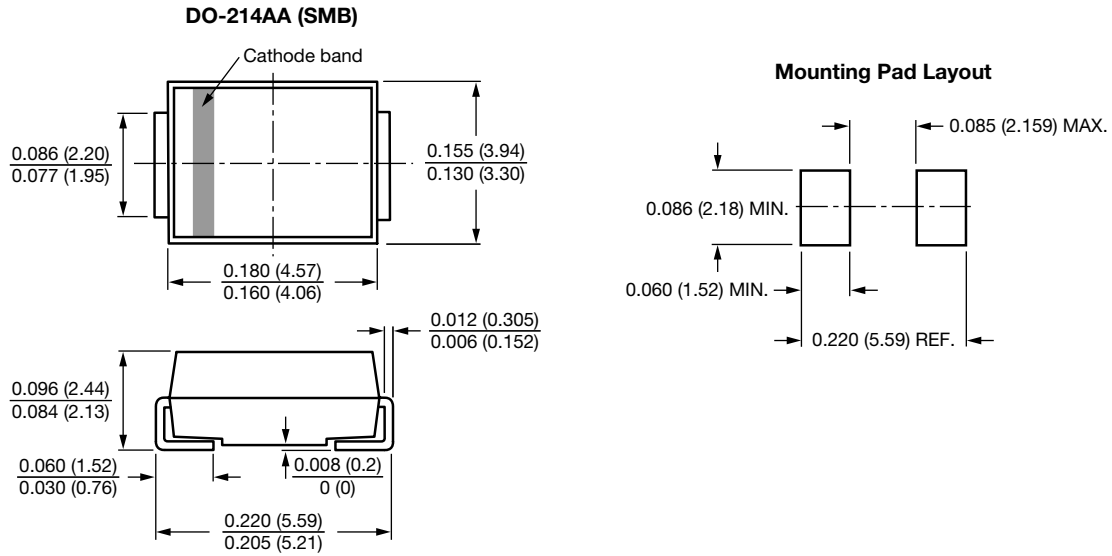
- 1** - Vishay Semiconductors product
- 2** - Schottky MBR series
- 3** - S = SMB package
- 4** - Current rating (1 = 1 A)
- 5** - Voltage rating (30 = 30 V)
- 6** - -M3 = halogen-free, RoHS-compliant, and termination lead (Pb)-free

ORDERING INFORMATION (Example)			
PREFERRED P/N	PREFERRED PACKAGE CODE	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-MBRS130-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

SMB

DIMENSIONS in inches (millimeters)





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