



**THE DATASHEET OF  
VS-10BQ060-M3/5BT**

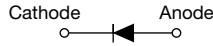




High Performance Schottky Rectifier, 1.0 A



SMB (DO-214AA)



FEATURES

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

DESCRIPTION

The VS-10BQ060-M3 surface mount Schottky rectifier has been designed for applications requiring low forward drop and very small foot prints on PC boards.

Table with 2 columns: Characteristic and Value. Includes I\_F(AV), V\_R, V\_F at I\_F, I\_RMS, T\_J max., E\_AS, Package, and Circuit configuration.

Table with 4 columns: SYMBOL, CHARACTERISTICS, VALUES, UNITS. Lists major ratings and characteristics like I\_F(AV), V\_RRM, I\_FSM, V\_F, and T\_J.

Table with 4 columns: PARAMETER, SYMBOL, VS-10BQ060-M3, UNITS. Lists voltage ratings for V\_R and V\_RWM.

Table with 5 columns: PARAMETER, SYMBOL, TEST CONDITIONS, VALUES, UNITS. Lists absolute maximum ratings for current, surge current, avalanche energy, and current.



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	1 A	$T_J = 25\text{ }^\circ\text{C}$	0.49	V
		2 A		0.60	
		1 A	$T_J = 125\text{ }^\circ\text{C}$	0.42	
		2 A		0.56	
Maximum reverse leakage current See fig. 2	$I_{RM}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	0.1	mA
		$T_J = 125\text{ }^\circ\text{C}$		8.0	
Typical junction capacitance	$C_T$	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^\circ\text{C}$		80	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/ $\mu\text{s}$

**Note**(1) Pulse width = 300  $\mu\text{s}$ , 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 +150	$^\circ\text{C}$
Maximum thermal resistance, junction to lead	$R_{thJL}^{(2)}$	DC operation		36	$^\circ\text{C/W}$
Maximum thermal resistance, junction to ambient	$R_{thJA}$			80	
Approximate weight				0.10	g
				0.003	oz.
Marking device		Case style SMB (DO-214AA)		1H	

**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

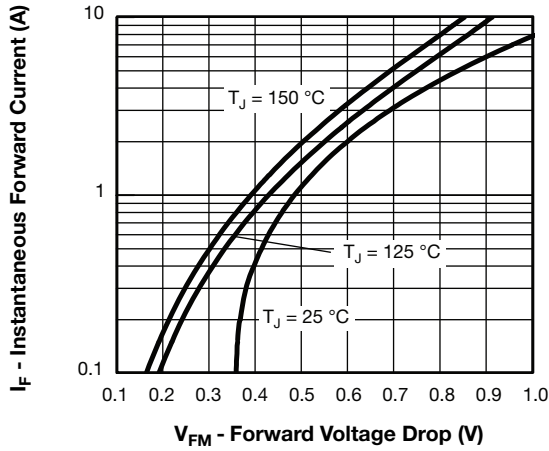


Fig. 1 - Maximum Forward Voltage Drop Characteristics

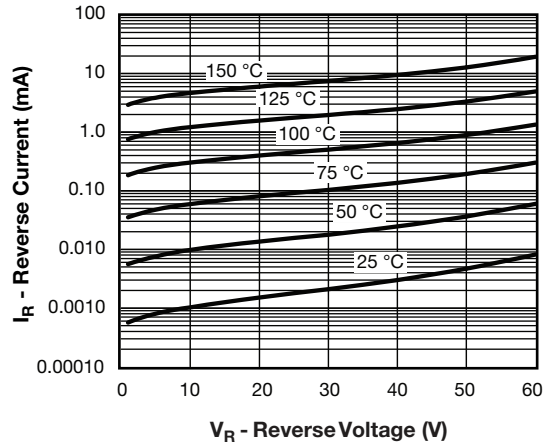


Fig. 2 - Typical Peak Reverse Current vs. Reverse Voltage

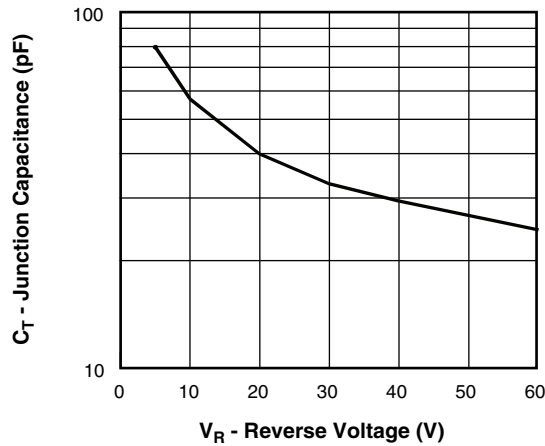


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

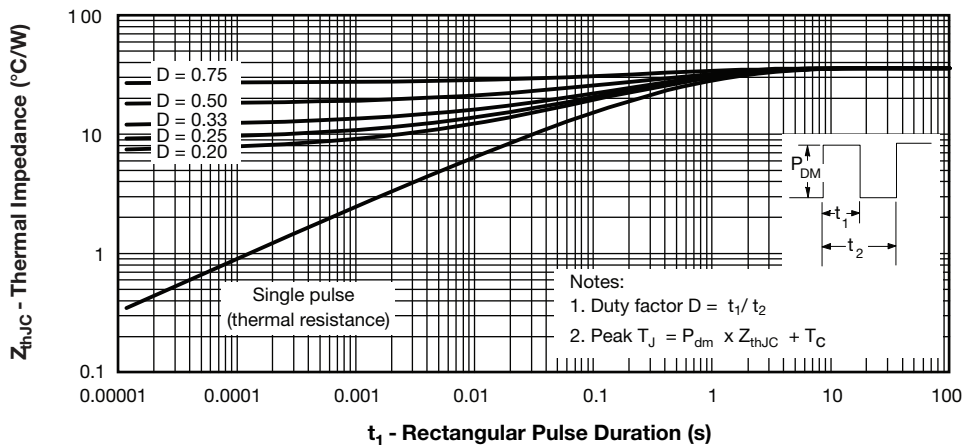


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

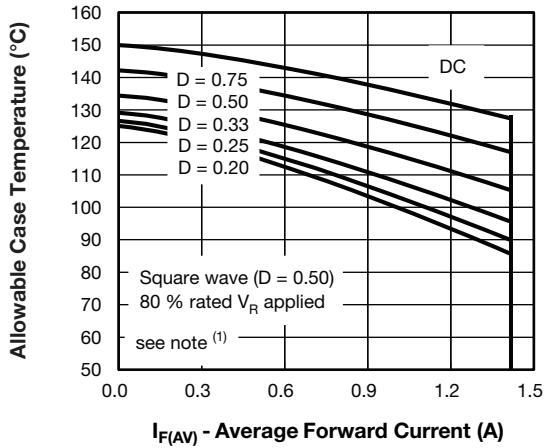


Fig. 5 - Maximum Average Forward Current vs. Allowable Lead Temperature

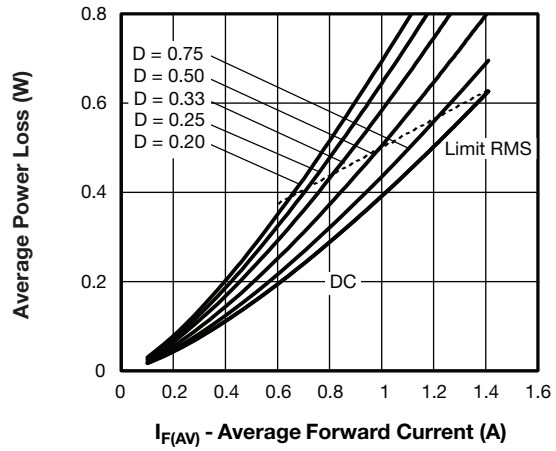


Fig. 6 - Maximum Average Forward Dissipation vs. Average Forward Current

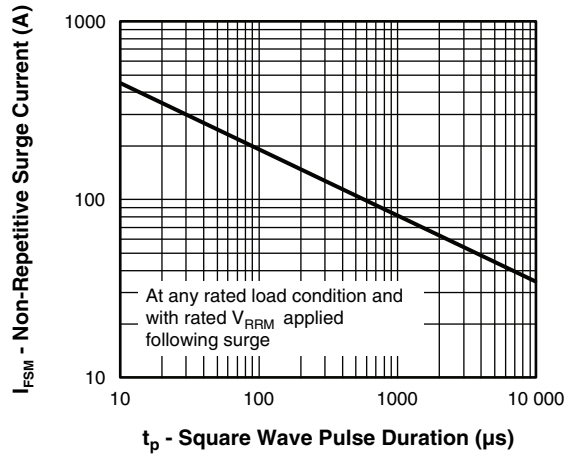


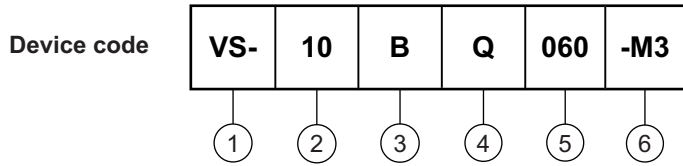
Fig. 7 - Maximum Peak Surge Forward Current vs. Pulse Duration

**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** - Current rating
- 3** - B = SMB
- 4** - Q = Schottky "Q" series
- 5** - Voltage rating (060 = 60 V)
- 6** - Environmental digit:  
-M3 = halogen-free, RoHS-compliant, and terminations lead (Pb)-free

ORDERING INFORMATION (Example)			
PREFERRED P/N	PREFERRED PACKAGE CODE	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-10BQ060-M3/5BT	5BT	3200	13" diameter plastic tape and reel

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95401">www.vishay.com/doc?95401</a>
Part marking information	<a href="http://www.vishay.com/doc?95403">www.vishay.com/doc?95403</a>
Packaging information	<a href="http://www.vishay.com/doc?95404">www.vishay.com/doc?95404</a>
SPICE model	<a href="http://www.vishay.com/doc?95638">www.vishay.com/doc?95638</a>



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