

Vishay General Semiconductor

Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.38 \text{ V}$ at $I_F = 5 \text{ A}$



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	2 x 20 A			
V_{RRM}	100 V			
I _{FSM}	250 A			
V _F at I _F = 20 A	0.61 V			
T _J max.	150 °C			
Package	D ² PAK (TO-263AB)			
Circuit configuration Common cathode				

FEATURES

Trench MOS Schottky technology

· Low forward voltage drop, low power losses

• High efficiency operation

· Low thermal resistance

ROHS COMPLIANT HALOGEN FREE

- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in high frequency converters, switching power supplies, freewheeling diodes, OR-ing diode, DC/DC converters, and reverse battery protection.

MECHANICAL DATA

Case: D²PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant, and

commercial grade

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	VB40100C	UNIT	
Maximum repetitive peak reverse voltage		V_{RRM}	100	V	
Maximum average forward rectified current (fig. 1)	per device	I _{F(AV)}	40	- A	
	per diode		20		
Peak forward surge current 8.3 ms single half sine-von rated load per diode	I _{FSM}	250	А		
Voltage rate of change (rated V _R)		dV/dt	10 000	V/µs	
Operating junction temperature range	TJ	-40 to +150	°C		
Storage temperature range		T _{stg}	-55 to +150	°C	



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)								
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT		
Instantaneous forward voltage per diode	I _F = 5 A	T _A = 25 °C	V _F	0.47	-	V		
	I _F = 10 A			0.54	-			
	I _F = 20 A			0.67	0.73			
	I _F = 5 A	T _A = 125 °C		0.38	-			
	I _F = 10 A			0.45	-			
	I _F = 20 A			0.61	0.67			
Reverse current at rated V _R per diode ⁽²⁾	V _R = 70 V	T _A = 25 °C	I _R	9	-	μΑ		
	v _R = 70 v	T _A = 125 °C		10	-	mA		
	V _R = 100 V	T _A = 25 °C		-	1000	μΑ		
	v _R = 100 v	T _A = 125 °C		21	45	mA		

Notes

 $^{(1)}$ Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	VB40100C	UNIT	
Typical thermal resistance per diode	$R_{\theta JC}$	2.0	°C/W	

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
D ² PAK (TO-263AB)	VB40100C-M3/4W	1.39	4W	50/tube	Tube	
D ² PAK (TO-263AB)	VB40100C-M3/8W	1.39	8W	800/reel	Tape and reel	

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25$ °C unless otherwise noted)

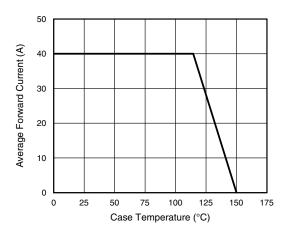


Fig. 1 - Forward Current Derating Curve

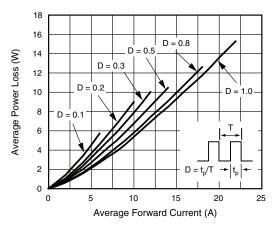


Fig. 2 - Forward Power Loss Characteristics Per Diode



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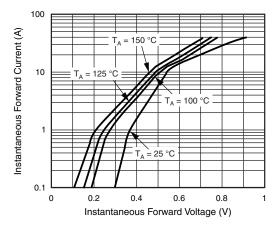


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

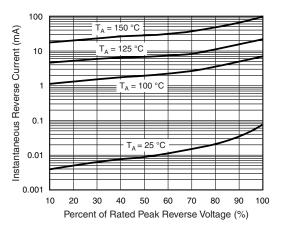


Fig. 4 - Typical Reverse Characteristics Per Diode

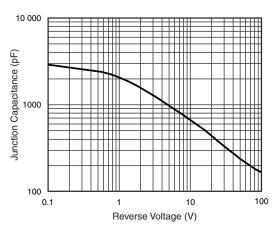


Fig. 5 - Typical Junction Capacitance Per Diode

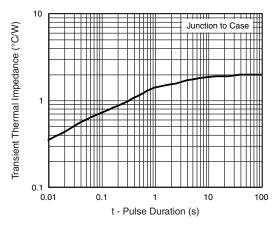


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB) 0.411 (10.45) 0.190 (4.83) 0.380 (9.65) 0.160 (4.06) 0.055 (1.40) 0.245 (6.22) 0.045 (1.14) MIN. 0.055 (1.40) 0.360 (9.14) 0.047 (1.19) 0.320 (8.13) 0.624 (15.85) 0.591 (15.00) Κ 2 0 to 0.01 (0 to 0.254) 0.110 (2.79) 0.110 (2.29) 0.037 (0.940) 0.021 (0.53) 0.027 (0.686) 0.014 (0.36) 0.105 (2.67) 0.140 (3.56) 0.095 (2.41) 0.205 (5.20) 0.110 (2.79) 0.195 (4.95)

0.42 (10.66) MIN. 0.33 (8.38) MIN. 0.08 (2.032) MIN. 0.105 (2.67) 0.095 (2.41)

Mounting Pad Layout



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