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Vishay General Semiconductor

Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.52$ V at $I_F = 5$ A

TMBS[®] TO-263AB VB40170C PIN 1 O

PRIMARY CHARACTERISTICS

IF(AV)

V_{RRM}

IFSM

 V_F at $I_F = 20$ A

T_J max.

HEATSINK

2 x 20 A

170 V

200 A

0.68 V

175 °C

FEATURES

- Trench MOS Schottky technology
- · Low forward voltage drop, low power losses
- · High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum RoHS peak of 245 °C COMPLIANT
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: TO-263AB

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER		SYMBOL	VB40170C	UNIT	
Maximum repetitive peak reverse voltage		V _{RRM}	170	V	
Maximum average forward rectified current (fig. 1)	per device		40	•	
	per diode	IF(AV)	20	— A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I _{FSM}	200	А	
Voltage rate of change (rated V _R)		dV/dt	10 000	V/µs	
Operating junction and storage temperature range		T _J , T _{STG}	- 40 to + 175	°C	









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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	I _F = 5 A	T _A = 25 °C	V _F ⁽¹⁾	0.66	-	V	
	I _F = 10 A			0.75	-		
	I _F = 20 A			0.86	1.20		
	$I_F = 5 A$	T _A = 125 °C		0.52	-		
	I _F = 10 A			0.59	-		
	I _F = 20 A			0.68	0.76		
Reverse current per diode	V _R = 136 V	T _A = 25 °C	I _R (2)	1.3	-	μA	
		T _A = 125 °C		2.2	-	mA	
	V _R = 170 V	T _A = 25 °C		-	250	μA	
		T _A = 125 °C		4.2	50	mA	

Notes

⁽¹⁾ Pulse test: 300 µs pulse width, 1 % duty cycle

⁽²⁾ Pulse test: Pulse width \leq 20 ms

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER		SYMBOL	VB40170C	UNIT	
Typical thermal resistance	per diode	$R_{ extsf{ heta}JC}$	1.2	°C/W	
	per device		0.85	0/10	

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
TO-263AB	VB40170C-E3/4W	1.38	4W	50/tube	Tube	
TO-263AB	VB40170C-E3/8W	1.38	8W	800/reel	Tape and reel	

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

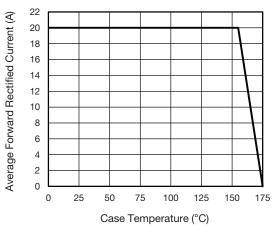


Fig. 1 - Maximum Forward Current Derating Curve

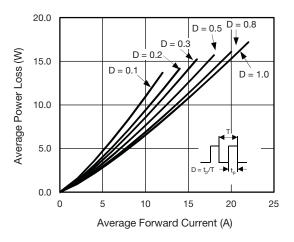


Fig. 2 - Forward Power Loss Characteristics Per Diode

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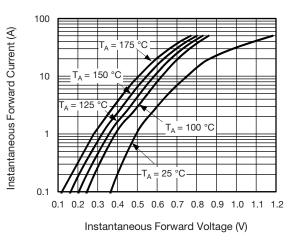
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VB40170C





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Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

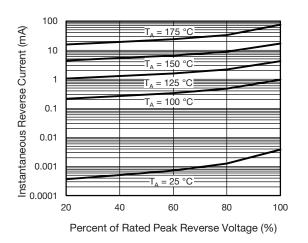
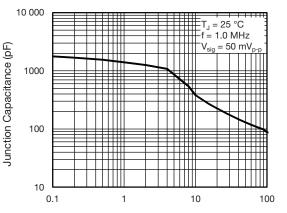


Fig. 4 - Typical Reverse Characteristics Per Diode





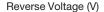


Fig. 5 - Typical Junction Capacitance Per Diode

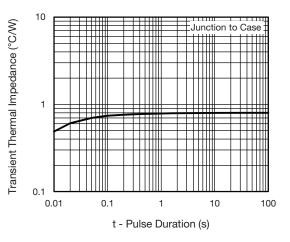
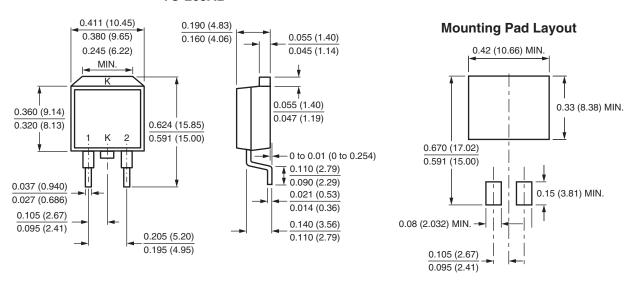


Fig. 6 - Typical Transient Thermal Impedance Per Diode



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