RoHS COMPLIANT

HALOGEN

FREE



Vishay General Semiconductor

Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.52 \text{ V}$ at $I_F = 5 \text{ A}$



DESIGN SUPPORT TOOLS

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PRIMARY CHARACTERISTICS				
I _{F(AV)}	2 x 15 A			
V _{RRM}	120 V			
I _{FSM}	150 A			
V _F at I _F = 15 A	0.68 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
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in solar cell junction box as a bypass diode for protection, using DC forward current without reverse bias.

MECHANICAL DATA

Case: D²PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

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

E3 and M3 suffix meet JESD 201 class 2 whisker test

Polarity: as marked

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	VB30M120C	UNIT	
Maximum repetitive peak reverse voltage		V_{RRM}	120	V	
Maximum average forward rectified current (fig. 1)	per device	I _{F(AV)}	30	A	
	per diode		15		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I _{FSM}	150		
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 +150	°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⁾	0.60	-	V
	I _F = 7.5 A			0.67	-	
	I _F = 15 A			0.87	0.98	
	I _F = 5 A	T _A = 125 °C		0.52	-	
	I _F = 7.5 A			0.57	-	
	I _F = 15 A			0.68	0.76	
Reverse current per diode	V _R = 90 V	T _A = 25 °C	I _R ⁽²⁾	3.5	-	μΑ
		T _A = 125 °C		2	-	mA
	I V _R = 120 V	T _A = 25 °C		-	800	μΑ
		T _A = 125 °C		5	27	mA

Notes

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

(2) Pulse test: Pulse width ≤ 20 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL VB30M120C		UNIT
Typical thermal resistance per diode	$R_{ heta JC}$	2.2	°C/W

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
TO-263AB	VB30M120C-E3/4W	1.37	4W	50/tube	Tube	
TO-263AB	VB30M120C-E3/8W	1.37	8W	800/reel	Tape and reel	
TO-263AB	VB30M120C-M3/I	1.37	I	800/reel	Tape and reel	

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

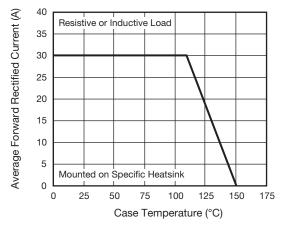


Fig. 1 - Maximum Forward Current Derating Curve

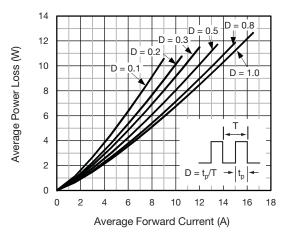
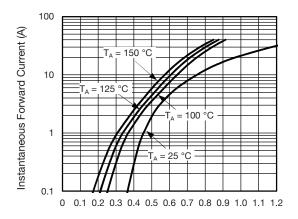


Fig. 2 - Forward Power Loss Characteristics Per Diode



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Instantaneous Forward Voltage (V)
Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

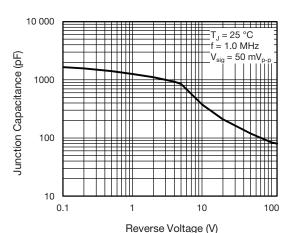


Fig. 5 - Typical Junction Capacitance Per Diode

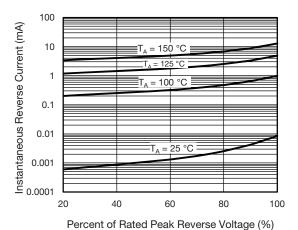


Fig. 4 - Typical Reverse Characteristics Per Diode

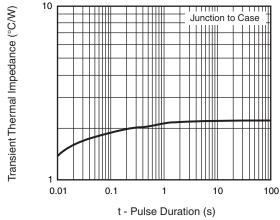
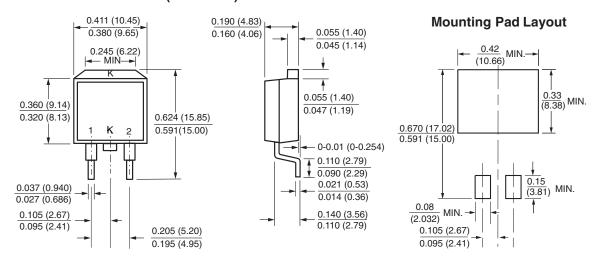


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)





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