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 <sub>F(AV)</sub>	2 x 15 A			
V <sub>RRM</sub>	120 V			
I <sub>FSM</sub>	150 A			
V <sub>F</sub> at I <sub>F</sub> = 15 A	0.68 V			
T <sub>J</sub> max.	150 °C			
Package	D <sup>2</sup> 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 <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

### **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: D<sup>2</sup>PAK (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 <sub>A</sub> = 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 <sub>F(AV)</sub>	30	A	
	per diode		15		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I <sub>FSM</sub>	150		
Voltage rate of change (rated V <sub>R</sub> )		dV/dt	10 000	V/µs	
Operating junction and storage temperature range		T <sub>J</sub> , T <sub>STG</sub>	-40 to +150	°C	



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.60	-	V
	I <sub>F</sub> = 7.5 A			0.67	-	
	I <sub>F</sub> = 15 A			0.87	0.98	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.52	-	
	I <sub>F</sub> = 7.5 A			0.57	-	
	I <sub>F</sub> = 15 A			0.68	0.76	
Reverse current per diode	V <sub>R</sub> = 90 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	3.5	-	μΑ
		T <sub>A</sub> = 125 °C		2	-	mA
	I V <sub>R</sub> = 120 V	T <sub>A</sub> = 25 °C		-	800	μΑ
		T <sub>A</sub> = 125 °C		5	27	mA

#### **Notes**

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

(2) Pulse test: Pulse width ≤ 20 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 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<sub>A</sub> = 25 °C unless otherwise noted)

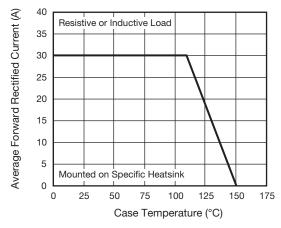


Fig. 1 - Maximum Forward Current Derating Curve

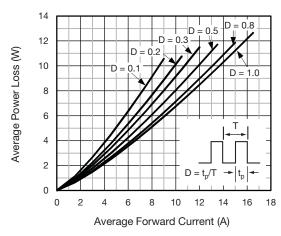
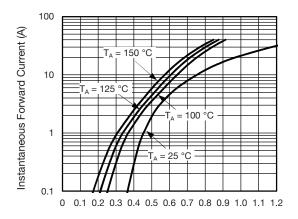


Fig. 2 - Forward Power Loss Characteristics Per Diode



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

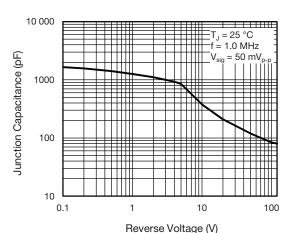


Fig. 5 - Typical Junction Capacitance Per Diode

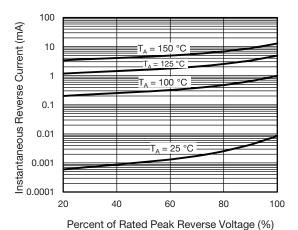


Fig. 4 - Typical Reverse Characteristics Per Diode

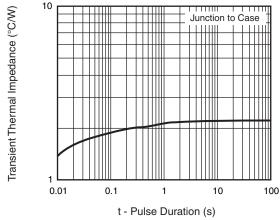
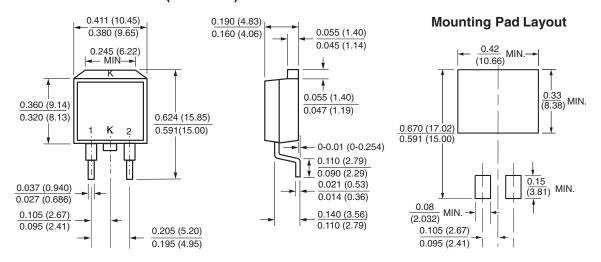


Fig. 6 - Typical Transient Thermal Impedance Per Diode

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

## D<sup>2</sup>PAK (TO-263AB)





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