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# **Dual High Voltage Trench MOS Barrier Schottky Rectifier**

Ultra Low  $V_F = 0.53$  V at  $I_F = 5$  A



V30M100M

PIN 1 O PIN 2 CASE PIN 3 O-

PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	2 x 15 A			
V <sub>RRM</sub>	100 V			
I <sub>FSM</sub>	120 A			
V <sub>F</sub> at I <sub>F</sub> = 15 A (T <sub>A</sub> = 125 °C)	0.70 V			
T <sub>J</sub> max.	175 °C			
Package	TO-220AB			
Diode variations	Common cathode			

## **FEATURES**

- Trench MOS Schottky technology
- · Low forward voltage drop, low power losses
- · High efficiency operation
- Solder dip 275 °C max. 10 s, per JESD 22-B106 RoHS
- Material categorization: for definitions of COMPLIANT 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-220AB

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

<b>MAXIMUM RATINGS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER		SYMBOL	V30M100M	UNIT		
Maximum repetitive peak reverse voltage		V <sub>RRM</sub>	100	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		I <sub>FSM</sub>	120	А		
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>	-55 to +175	°C		







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ELECTRICAL CHARACTERISTICS (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>	0.59	-	V	
	I <sub>F</sub> = 7.5 A			0.66	-		
	I <sub>F</sub> = 15 A			0.85	0.93		
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.53	-		
	I <sub>F</sub> = 7.5 A			0.59	-		
	I <sub>F</sub> = 15 A			0.70	0.78		
Reverse current per diode	V <sub>R</sub> = 70 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> (2)	3.0	-	μA	
		T <sub>A</sub> = 125 °C		1.0	-	mA	
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C		-	1000	μA	
	$v_{\rm R} = 100 v$	T <sub>A</sub> = 125 °C		3.0	16	mA	

Notes

<sup>(1)</sup> Pulse test: 300 µs pulse width, 1 % duty cycle

 $^{(2)}$  Pulse test: Pulse width  $\leq 5\mbox{ ms}$ 

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER		SYMBOL	V30M100M	UNIT	
Typical thermal resistance	per diode	$\frac{R_{\theta JC}}{R_{\theta JA}}$	1.8	°C/W	
	per device		0.9		
	per device		40		

#### Notes

<sup>(1)</sup> The heat generated must be less than the thermal conductivity from junction-to-ambient  $dP_D/dT_J < 1/R_{\theta JA}$ 

<sup>(2)</sup> Free air, without heatsink

ORDERING INFORMATION (Example)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
TO-220AB	V30M100M-E3/4W	1.88	4W	50/tube	Tube		

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

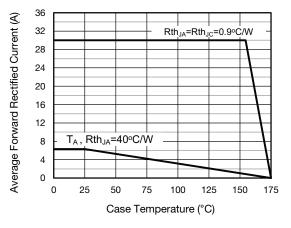


Fig. 1 - Maximum Forward Current Derating Curve

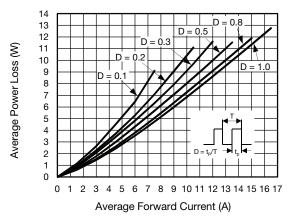


Fig. 2 - Forward Power Loss Characteristics Per Diode

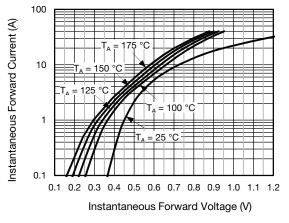
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Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

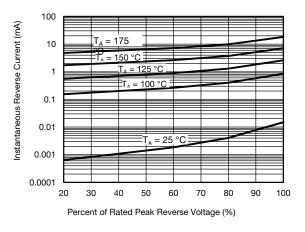


Fig. 4 - Typical Reverse Characteristics Per Diode

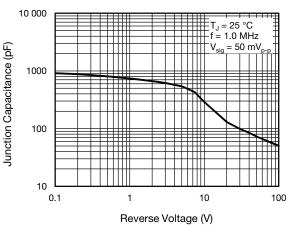


Fig. 5 - Typical Junction Capacitance Per Diode

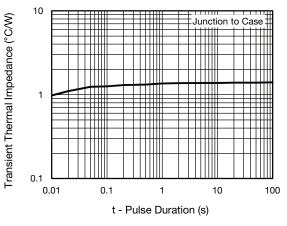
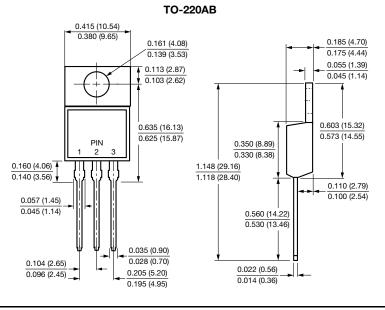


Fig. 6 - Typical Transient Thermal Impedance Per Device

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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