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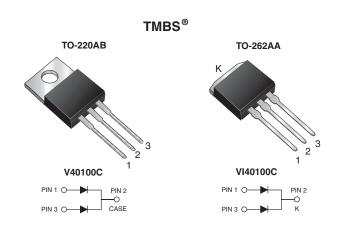
FREE



## Vishay General Semiconductor

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

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



PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	2 x 20 A				
V <sub>RRM</sub>	100 V				
I <sub>FSM</sub>	250 A				
V <sub>F</sub> at I <sub>F</sub> = 20 A	0.61 V				
T <sub>J</sub> max.	150 °C				
Package	TO-220AB, TO-262AA				
Diode variation	Common cathode				

### **FEATURES**

- Trench MOS Schottky technology
- · Low forward voltage drop, low power losses
- · High efficiency operation
- Low thermal resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- 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 high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

### **MECHANICAL DATA**

Case: TO-220AB and TO-262AA

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

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

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs max.

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER		SYMBOL	V40100C	VI40100C	UNIT	
Max. repetitive peak reverse voltage		V <sub>RRM</sub>	100		V	
Max. average forward rectified current (fig. 1)	per device		40		А	
	per diode	I <sub>F(AV)</sub>	20			
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I <sub>FSM</sub>	250		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>	- 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>	0.47	-	. V	
	I <sub>F</sub> = 10 A			0.54	-		
	I <sub>F</sub> = 20 A			0.67	0.73		
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.38	-		
	I <sub>F</sub> = 10 A			0.45	-		
	I <sub>F</sub> = 20 A			0.61	0.67		
Reverse current at rated V <sub>R</sub> per diode	V <sub>R</sub> = 70 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	9	-	μΑ	
		T <sub>A</sub> = 125 °C		10	-	mA	
	$V_R = 100 \text{ V}$ $T_A = 25 \text{ °C}$ $T_A = 125 \text{ °C}$	T <sub>A</sub> = 25 °C		-	1000	μΑ	
			21	45	mA		

#### **Notes**

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	V40100C	VI40100C	UNIT	
Typical thermal resistance per diode	$R_{ heta JC}$	2.0		°C/W	

ORDERING INFORMATION (Example)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
TO-220AB	V40100C-M3/4W	1.85	4W	50/tube	Tube		
TO-262AA	VI40100C-M3/4W	1.45	4W	50/tube	Tube		
TO-220AB	V40100CHM3/4W (1)	1.85	4W	50/tube	Tube		
TO-262AA	VI40100CHM3/4W (1)	1.45	4W	50/tube	Tube		

### Note

### **RATINGS AND CHARACTERISTICS CURVES**

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

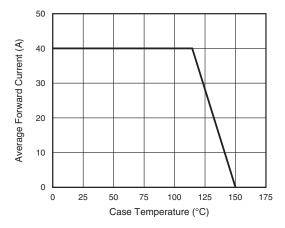


Fig. 1 - Forward Current Derating Curve

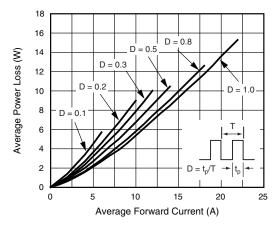


Fig. 2 - Forward Power Loss Characteristics Per Diode

<sup>(1)</sup> AEC-Q101 qualified



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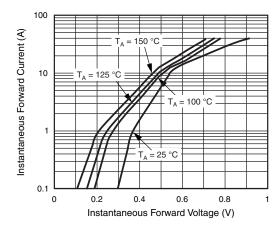


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

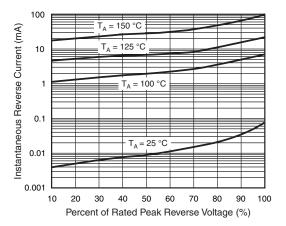


Fig. 4 - Typical Reverse Characteristics Per Diode

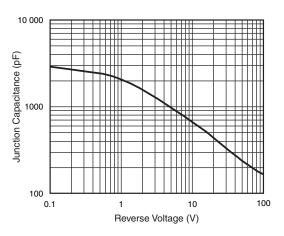


Fig. 5 - Typical Junction Capacitance Per Diode

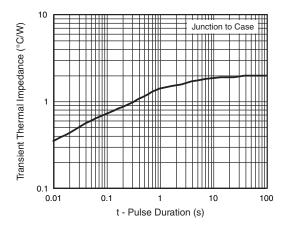


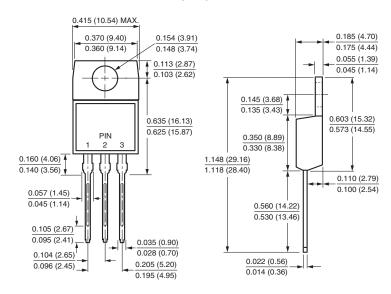
Fig. 6 - Typical Transient Thermal Impedance Per Diode



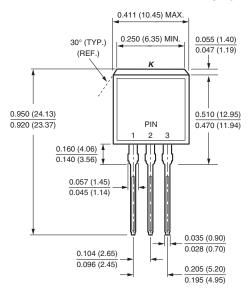
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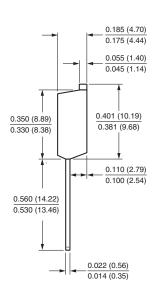
### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### **TO-220AB**



#### **TO-262AA**







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