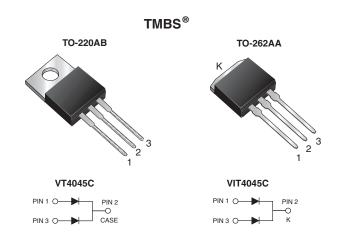


## Vishay General Semiconductor

## **Dual Low-Voltage Trench MOS Barrier Schottky Rectifier**

Ultra Low  $V_F = 0.28 \text{ V}$  at  $I_F = 5.0 \text{ A}$ 



PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	2 x 20 A				
$V_{RRM}$	45 V				
I <sub>FSM</sub>	240 A				
V <sub>F</sub> at I <sub>F</sub> = 20 A	0.41 V				
T <sub>J</sub> max.	150 °C				
Package	TO-220AB, TO-262AA				
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

 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

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER		SYMBOL	VT4045C	VIT4045C	UNIT	
Maximum repetitive peak reverse voltage		$V_{RRM}$	45		V	
Maximum average forward rectified current (fig. 1)	per device	I <sub>F(AV)</sub>	40		А	
	per diode		20			
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I <sub>FSM</sub>	240		А	
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	$I_F = 5 A$	T <sub>A</sub> = 25 °C	– V <sub>F</sub> <sup>(1)</sup>	0.41	-	V	
	I <sub>F</sub> = 10 A			0.44	-		
	I <sub>F</sub> = 20 A			0.50	0.58		
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.28	-		
	I <sub>F</sub> = 10 A			0.33	-		
	I <sub>F</sub> = 20 A			0.41	0.50		
Reverse current per diode	V <sub>R</sub> = 45 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	-	3000	μΑ	
	VR = 45 V	T <sub>A</sub> = 125 °C		18	50	mA	

#### Notes

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

(2) Pulse test: Pulse width  $\leq$  40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	VT4045C	VIT4045C	UNIT		
Typical thermal resistance	per diode	В	1.5		°C/W	
	per device	$R_{ hetaJC}$	0.8			

ORDERING INFORMATION (Example)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
TO-220AB	VT4045C-M3/4W	1.89	4W	50/tube	Tube		
TO-262AA	VIT4045C-M3/4W	1.46	4W	50/tube	Tube		

12

10

8

6

2

0

Average Power Loss (W)

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# **RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25~^{\circ}\text{C}$ unless otherwise noted)

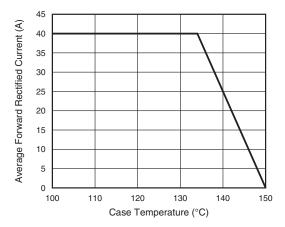


Fig. 1 - Maximum Forward Current Derating Curve

D = 0.3

0.2



Average Forward Current (A)

Fig. 2 - Forward Power Loss Characteristics Per Diode

16

20

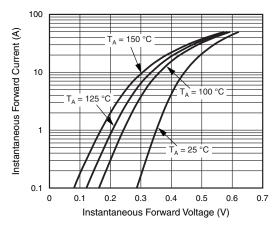


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

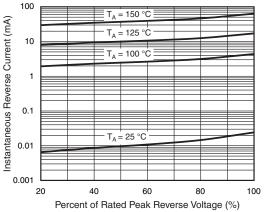


Fig. 4 - Typical Reverse Characteristics Per Diode

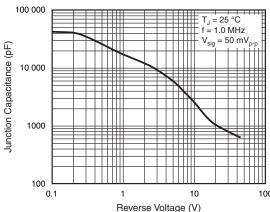


Fig. 5 - Typical Junction Capacitance Per Diode

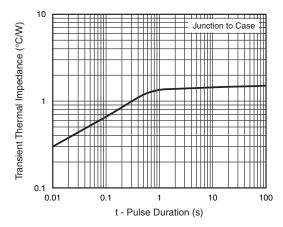


Fig. 6 - Typical Transient Thermal Impedance Per Diode

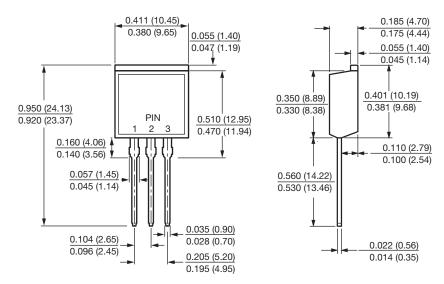


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### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### **TO-220AB** 0.415 (10.54) 0.380 (9.65) 0.185 (4.70) 0.161 (4.08) 0.139 (3.53) 0.175 (4.44) 0.055 (1.39) 0.113 (2.87) 0.045 (1.14) 0.103 (2.62) 0.603 (15.32) 0.635 (16.13) 0.573 (14.55) 0.625 (15.87) PIN 0.350 (8.89) 2 0.330 (8.38) 1.148 (29.16) 0.160 (4.06) 0.140 (3.56) 1.118 (28.40) 0.110 (2.79) 0.100 (2.54) 0.057 (1.45) 0.045 (1.14) 0.560 (14.22) 0.530 (13.46) 0.035 (0.90) 0.028 (0.70) 0.104 (2.65) 0.022 (0.56) 0.096 (2.45) 0.205 (5.20) 0.014 (0.36) 0.195 (4.95)

### **TO-262AA**





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