

## Vishay General Semiconductor

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

Ultra Low  $V_F = 0.33 \text{ V}$  at  $I_F = 5.0 \text{ A}$ 



PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	2 x 10 A			
V <sub>RRM</sub>	45 V			
I <sub>FSM</sub>	160 A			
V <sub>F</sub> at I <sub>F</sub> = 10 A	0.41 V			
T <sub>J</sub> max.	150 °C			
Package	ITO-220AB			
Diode variation	Dual common cathode			

#### **FEATURES**

Trench MOS Schottky technology

· Low forward voltage drop, low power losses

High efficiency operation

Solder bath temperature 275 °C max. 10 s, per JESD 22-B106

 Material categorization: For definitions of compliance please see <a href="https://www.vishav.com/doc?99912"><u>www.vishav.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: ITO-220AB

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	VFT2045C	UNIT	
Maximum repetitive peak reverse voltage		V <sub>RRM</sub>	45	V	
Maximum average forward rectified current (fig. 1)	per device	I <sub>F(AV)</sub>	20	Δ.	
	per diode		10	A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I <sub>FSM</sub>	160	А	
Isolation voltage from termal to heatsink t = 1 min		V <sub>AC</sub>	1500	V	
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>	0.44	-	V
	I <sub>F</sub> = 10 A			0.49	0.58	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.33	-	
	I <sub>F</sub> = 10 A			0.41	0.52	
Reverse current per diode	$V_R = 45 \text{ V}$ $T_A = 25 \text{ °C}$ $T_A = 125 \text{ °C}$	I <sub>R</sub> <sup>(2)</sup>	-	2000	μA	
			10	30	mA	

#### **Notes**

(1) Pulse test: 300 µs 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	VFT2045C	UNIT
Typical thermal resistance	per diode	$R_{ hetaJC}$	6.0	°C/W
	per device		4.5	J C/VV

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
ITO-220AB	VFT2045C-M3/4W	1.76	4W	50/tube	Tube	

### RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

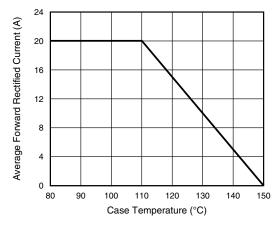


Fig. 1 - Maximum Forward Current Derating Curve

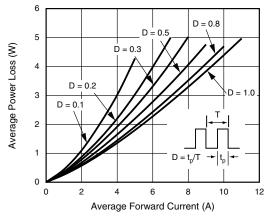


Fig. 2 - Forward Power Loss Characteristics Per Diode



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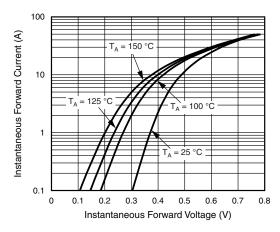


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

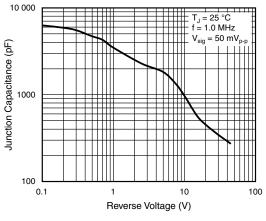


Fig. 5 - Typical Junction Capacitance Per Diode

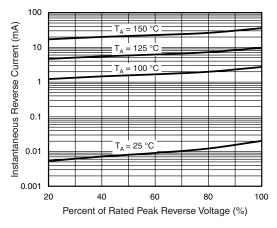


Fig. 4 - Typical Reverse Characteristics Per Diode

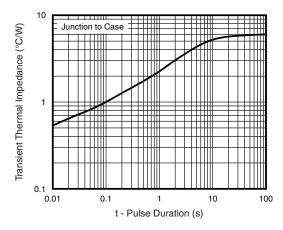
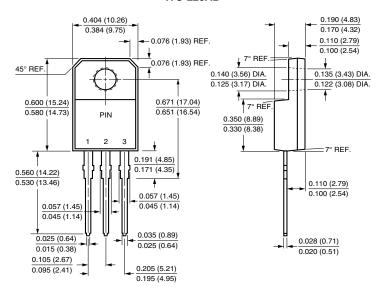


Fig. 6 - Typical Transient Thermal Impedance Per Diode

### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

#### ITO-220AB





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