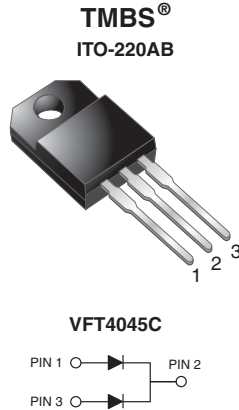


# Dual Low-Voltage Trench MOS Barrier Schottky Rectifier

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


## 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 [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

## 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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 20 A
$V_{RRM}$	45 V
$I_{FSM}$	240 A
$V_F$ at $I_F = 20\text{ A}$	0.41 V
$T_J$ max.	150 °C
Package	ITO-220AB
Circuit configuration	Common cathode

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VFT4045C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	45	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	per device	40
		per diode	20
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	240	A
Isolation voltage from terminal to heatsink $t = 1\text{ min}$	$V_{AC}$	1500	V
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +150	°C

ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ °C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_A = 25\text{ °C}$	$V_F^{(1)}$	0.41	-	V	
				$I_F = 10\text{ A}$	0.44		-
				$I_F = 20\text{ A}$	0.50		0.58
	$I_F = 5\text{ A}$	$T_A = 125\text{ °C}$		0.28	-		
				$I_F = 10\text{ A}$	0.33		-
				$I_F = 20\text{ A}$	0.41		0.50
Reverse current per diode	$V_R = 45\text{ V}$	$T_A = 25\text{ °C}$	$I_R^{(2)}$	-	3000	µA	
		$T_A = 125\text{ °C}$		18	50	mA	

### Notes

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

(2) Pulse test: Pulse width ≤ 40 ms



THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER		SYMBOL	VFT4045C	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	5.0	$^\circ\text{C/W}$
	per device		3.5	

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ITO-220AB	VFT4045C-M3/4W	1.76	4W	50/tube	Tube

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

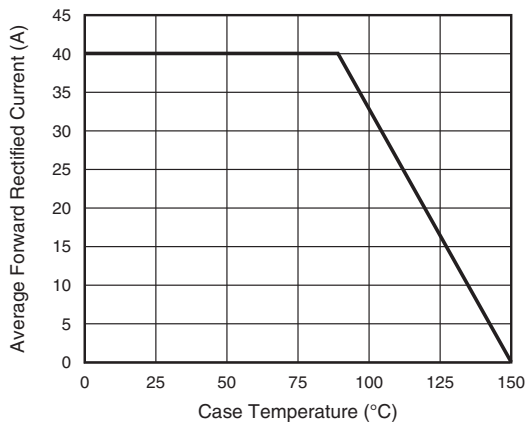


Fig. 1 - Maximum Forward Current Derating Curve

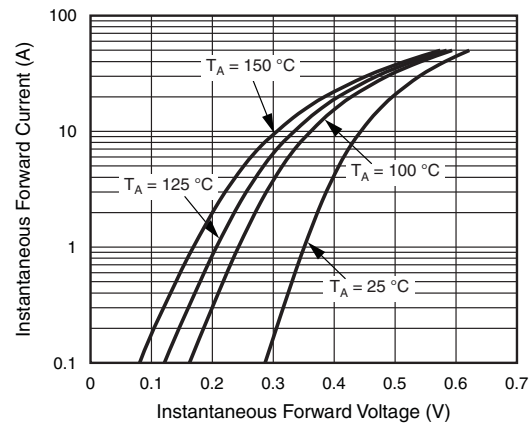


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

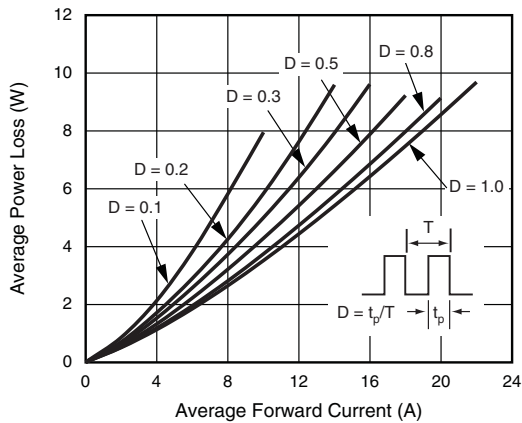


Fig. 2 - Forward Power Loss Characteristics Per Diode

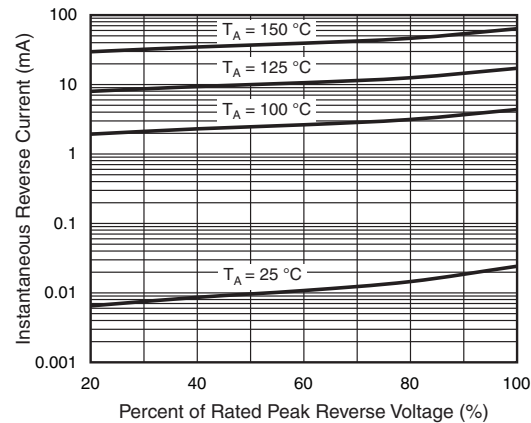


Fig. 4 - Typical Reverse Characteristics Per Diode

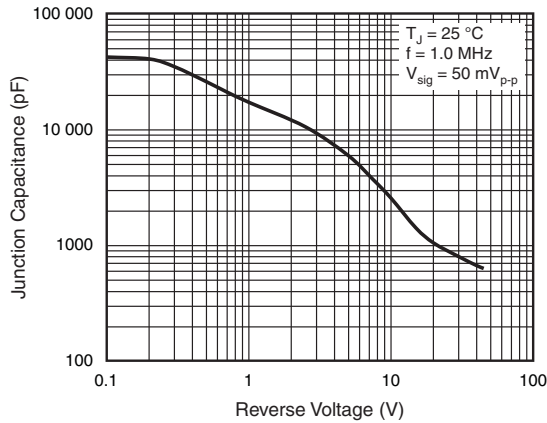


Fig. 5 - Typical Junction Capacitance Per Diode

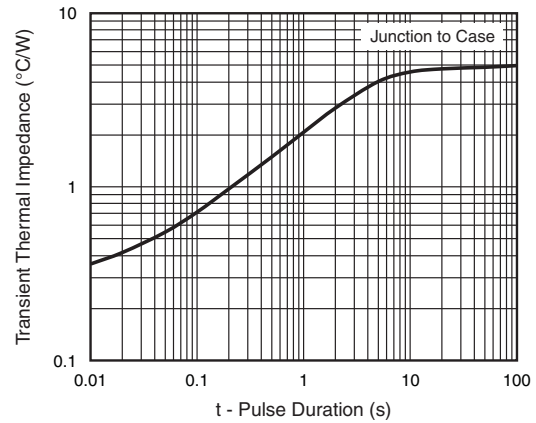
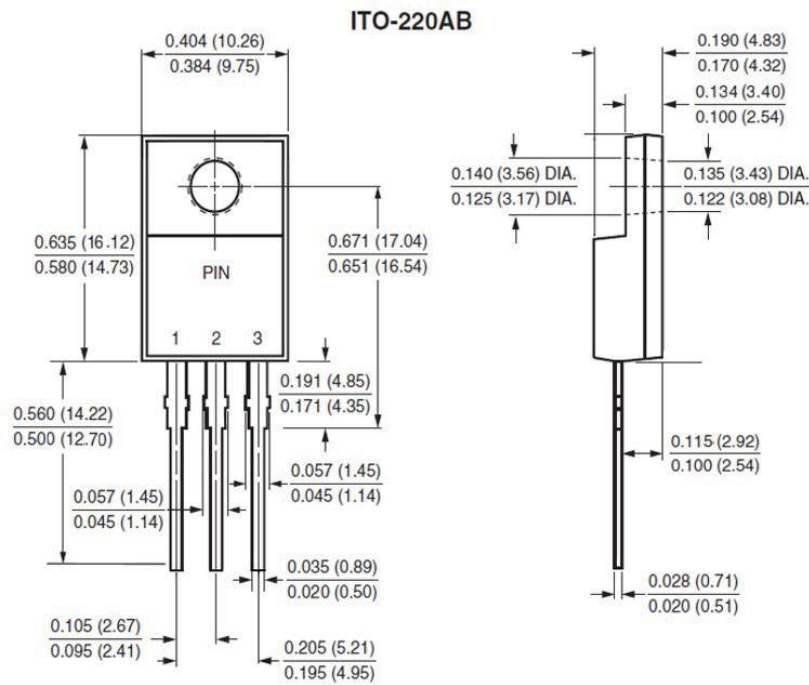


Fig. 6 - Typical Transient Thermal Impedance Per Diode

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





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