

## Dual Low-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F$  = 0.33 V at  $I_F$  = 5.0 A

**TMBS®**  
ITO-220AB



PIN 1 → PIN 2  
PIN 3 → PIN 2

### 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
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



**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 10 A
$V_{RRM}$	45 V
$I_{FSM}$	160 A
$V_F$ at $I_F$ = 10 A	0.41 V
$T_J$ max.	150 °C

### MAXIMUM RATINGS ( $T_A$ = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VFT2045C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	45	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	20	A
per device		10	
per diode			
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	160	A
Isolation voltage from thermal to heatsink $t = 1$ min	$V_{AC}$	1500	V
Operating junction and storage temperature range	$T_J$ , $T_{STG}$	- 40 to + 150	°C

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_A = 25^\circ\text{C}$	$V_F$ <sup>(1)</sup>	0.44	-	V	
	$I_F = 10\text{ A}$			0.49	0.58		
	$I_F = 5\text{ A}$	$T_A = 125^\circ\text{C}$		0.33	-		
	$I_F = 10\text{ A}$			0.41	0.52		
Reverse current per diode	$V_R = 45\text{ V}$	$T_A = 25^\circ\text{C}$	$I_R$ <sup>(2)</sup>	-	2000	$\mu\text{A}$	
		$T_A = 125^\circ\text{C}$		10	30	$\text{mA}$	

**Notes**

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

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

THERMAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	VFT2045C			UNIT
Typical thermal resistance	per diode	$R_{\theta\text{JC}}$	6.0		$^\circ\text{C/W}$
	per device		4.5		

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**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

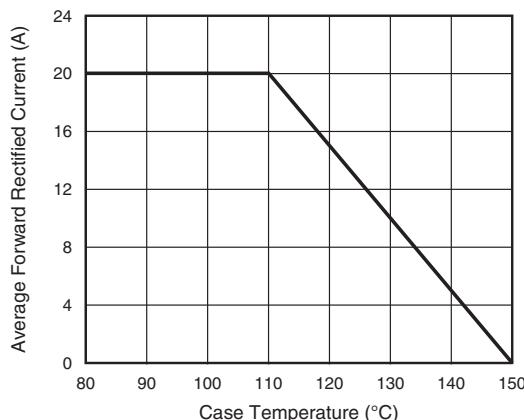


Fig. 1 - Maximum Forward Current Derating Curve

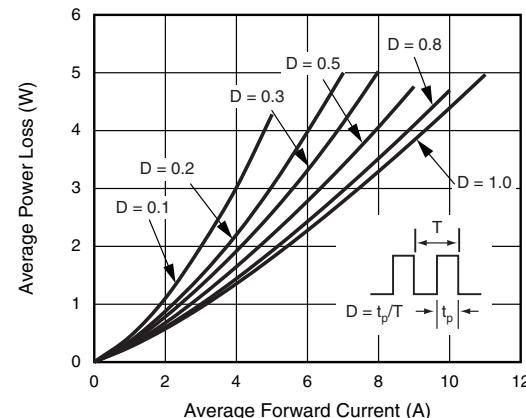


Fig. 2 - Forward Power Loss Characteristics Per Diode

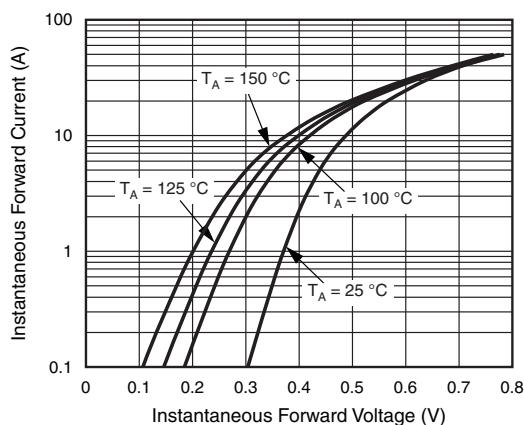


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

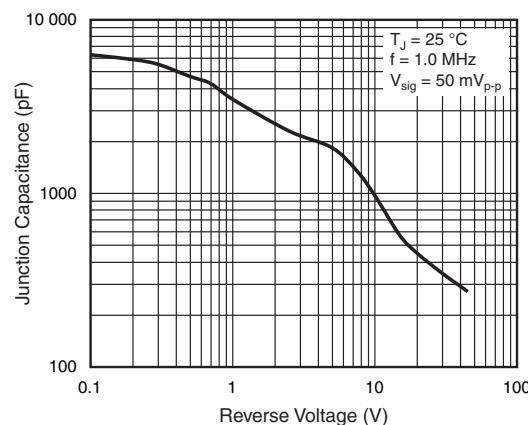


Fig. 5 - Typical Junction Capacitance Per Diode

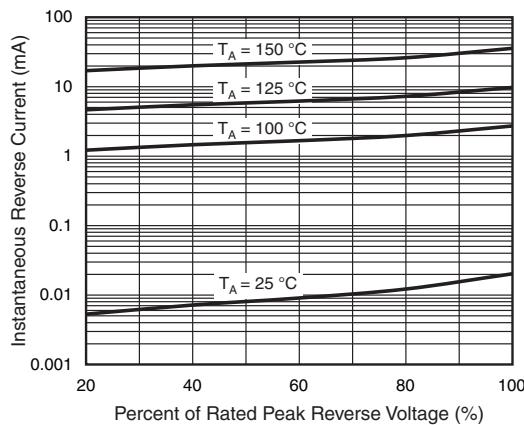


Fig. 4 - Typical Reverse Characteristics Per Diode

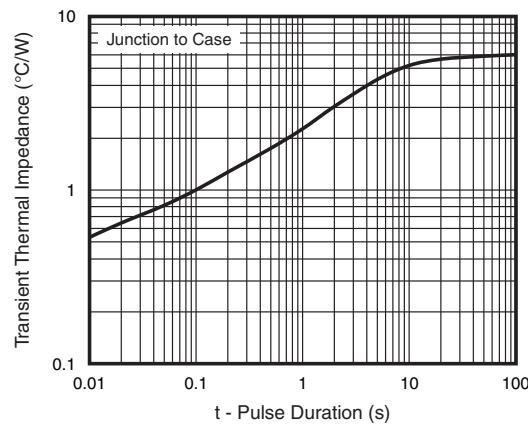
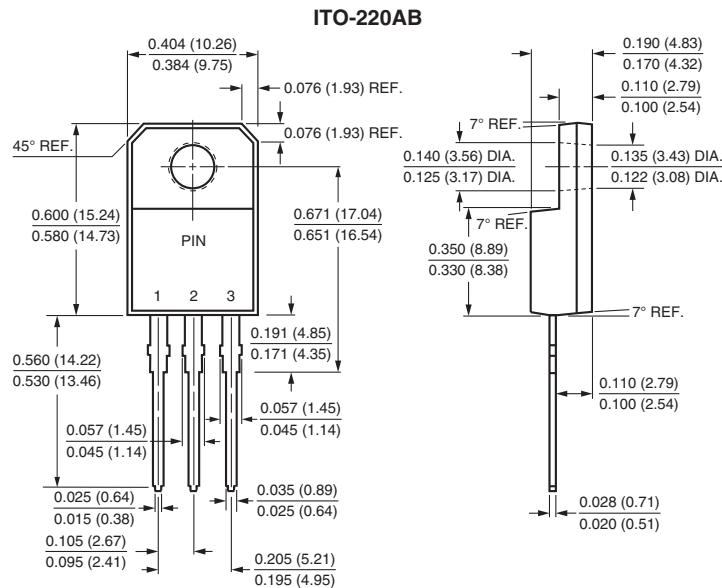


Fig. 6 - Typical Transient Thermal Impedance Per Diode

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



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