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Vishay General Semiconductor

Dual Low-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.28$ V at $I_F = 5.0$ A



VFT4045C

PRIMARY CHARACTERISTICS					
I _{F(AV)}	2 x 20 A				
V _{RRM}	45 V				
I _{FSM}	240 A				
V_F at $I_F = 20$ A	0.41 V				
T _J max.	150 °C				
Package	ITO-220AB				
Circuit configuration	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 <u>www.vishay.com/doc?99912</u>

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 _A = 25 °C unless otherwise noted)							
PARAMETER			VFT4045C	UNIT			
Maximum repetitive peak reverse voltage		V _{RRM}	45	V			
Maximum average forward rectified current (fig. 1)	per device	I	40	Α			
	per diode	IF(AV)	20	A			
Peak forward surge current 8.3 ms single half sine-wave	I _{FSM}	240	А				
Isolation voltage from terminal 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 ($T_A = 25 \text{ °C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	I _F = 5 A	T _A = 25 °C	V _F ⁽¹⁾	0.41	-	V	
	I _F = 10 A			0.44	-		
	I _F = 20 A			0.50	0.58		
	I _F = 5 A	T _A = 125 °C		0.28	-		
	I _F = 10 A			0.33	-		
	I _F = 20 A			0.41	0.50		
Reverse current per diode	V _R = 45 V	T _A = 25 °C	I _R ⁽²⁾	-	3000	μA	
	$v_{\rm R} = 43 v$ $T_{\rm A} =$	T _A = 125 °C		18	50	mA	

Notes

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

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

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RoHS COMPLIANT



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THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER		SYMBOL	VFT4045C	UNIT	
Typical thermal resistance	per diode	- R _{θJC}	5.0	°C/W	
	per device		3.5	0/11	

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 °C unless otherwise noted)

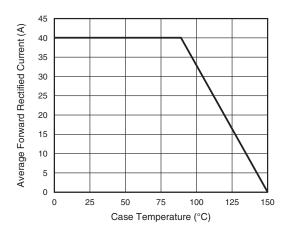


Fig. 1 - Maximum Forward Current Derating Curve

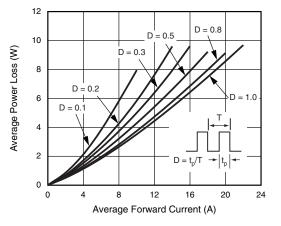


Fig. 2 - Forward Power Loss Characteristics Per Diode

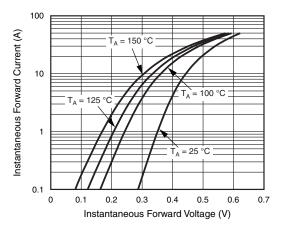


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

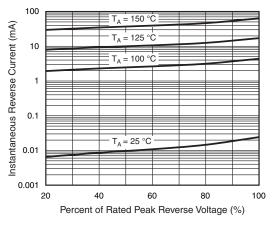


Fig. 4 - Typical Reverse Characteristics Per Diode

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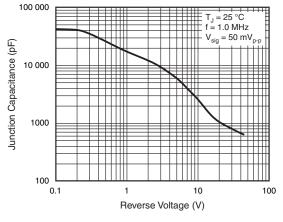


Fig. 5 - Typical Junction Capacitance Per Diode

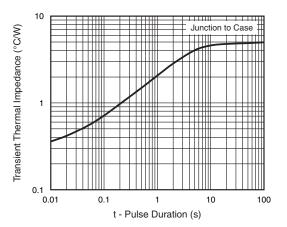
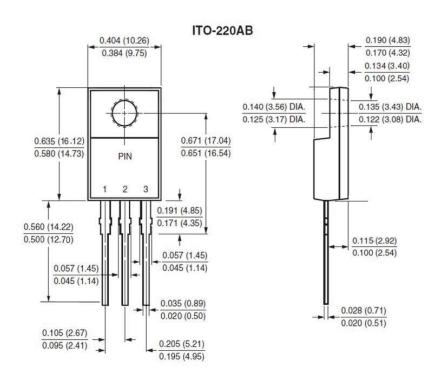


Fig. 6 - Typical Transient Thermal Impedance Per Diode







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