VT6045CBP

Vishay General Semiconductor

Trench MOS Barrier Schottky Rectifier for PV Solar Cell Bypass Protection

Ultra Low $V_F = 0.33$ V at $I_F = 10$ A



PRIMARY CHARACTERISTICS					
I _{F(AV)}	2 x 30 A				
V _{RRM}	45 V				
I _{FSM}	320 A				
V_F at $I_F = 30$ A	0.47 V				
T _{OP} max. (AC mode)	150 °C				
T _J max. (DC forward current)	200 °C				
Package	TO-220AB				
Diode variation	Dual 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
- T_{.1} 200 °C max. in solar bypass mode application
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in solar cell junction box as a bypass diode for protection, using DC forward current without reverse bias.

MECHANICAL DATA

Case: TO-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 ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER		SYMBOL	VT6045CBP	UNIT	
Maximum repetitive peak reverse voltage		V _{RRM}	45	V	
Maximum average forward rectified current (fig. 1)	per device	- I _{F(AV)} ⁽¹⁾	60	٨	
	per diode		30	A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I _{FSM}	320	А	
Operating junction and storage temperature range (AC mode)		T _{OP} , T _{STG}	-40 to +150	°C	
Junction temperature in DC forward current without reverse bias, t \leq 1 h		T _J ⁽²⁾	≤ 200	°C	

Notes

(1) With heatsink

⁽²⁾ Meets the requirements of IEC 61215 ed. 2 bypass diode thermal test

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BoHS COMPLIANT HALOGEN

FREE



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ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	I _F = 10 A	T _A = 25 °C	- V _F (1)	0.44	-	V	
	I _F = 15 A			0.47	-		
	I _F = 30 A			0.54	0.64		
	I _F = 10 A	T _A = 125 °C		0.33	-		
	I _F = 15 A			0.37	-		
	I _F = 30 A			0.47	0.56		
Reverse current per diode	V 45 V	T _A = 25 °C	I _R ⁽²⁾	-	3000	μA	
	$V_R = 45 V$ T_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

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER		SYMBOL	VT6045CBP	UNIT	
Turpical thermal registerion	per diode	$R_{ ext{ heta}JC}$	1.5	°C/W	
Typical thermal resistance	per device		0.8	C/W	

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
TO-220AB	VT6045CBP-M3/4W	1.89	4W	50/tube	Tube	

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

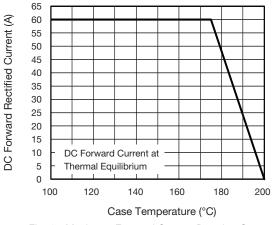


Fig. 1 - Maximum Forward Current Derating Curve

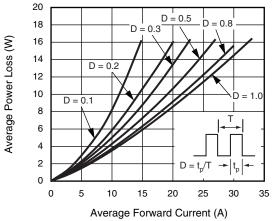


Fig. 2 - Forward Power Loss Characteristics Per Diode

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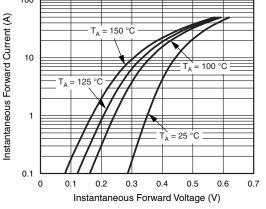


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

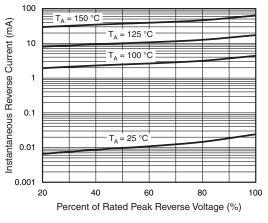


Fig. 4 - Typical Reverse Characteristics Per Diode

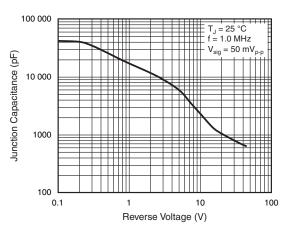


Fig. 5 - Typical Junction Capacitance Per Diode

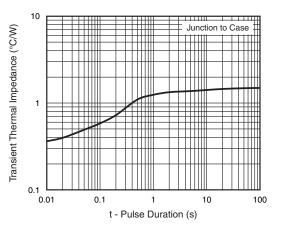
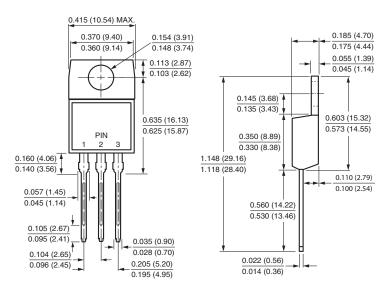


Fig. 6 - Typical Transient Thermal Impedance Per Diode



PACKAGE OUTLINE DIMENSIONS in inches (millimeters) TO-220AB

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