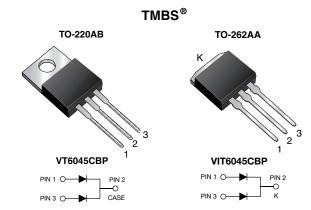
Revision: 15-Dec-16 **1** For technical questions within your region: <u>DiodesAmericas@vishay.com</u>, <u>DiodesAsia@</u>

VT6045CBP, VIT6045CBP

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, TO-262AA				
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
- T₁ 200 °C max. in solar bypass mode application
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

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, TO-262AA

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		SYMBOL	VT6045CBP	VIT6045CBP	UNIT	
Maximum repetitive peak reverse voltage		V _{RRM}	45		V	
Maximum average forward rectified current (fig. 1)	per device	. (1)	60		A	
	per diode	I _{F(AV)} ⁽¹⁾	30			
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⁾	≤ 2	00	°C	

Notes

(1) With heatsink

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





ROHS 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	5 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		T _A = 25 °C	L (2)	-	3000	μA
	$V_{\rm R} = 45 \text{ V}$ $T_{\rm A} = 125 \text{ °C}$	I _R ⁽²⁾	18	50	mA	

Notes

 $^{(1)}\,$ Pulse test: 300 μs pulse width, 1 % duty cycle

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

THERMAL CHARACTERISTICS ($T_A = 25$ °C unless otherwise noted)					
PARAMETER		SYMBOL	VT6045CBP	VIT6045CBP	UNIT
Typical thermal resistance	per diode	- R _{θJC}	1.5		°C/W
	per device		0.8		

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	
TO-262AA	VIT6045CBP-M3/4W	1.45	4W	50/tube	Tube	



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

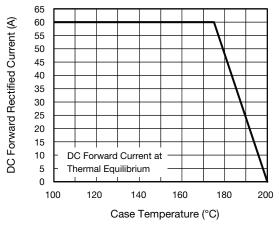


Fig. 1 - Maximum Forward Current Derating Curve

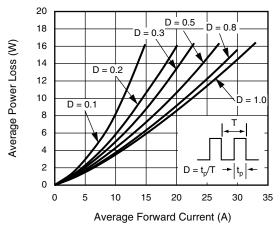


Fig. 2 - Forward Power Loss Characteristics Per Diode

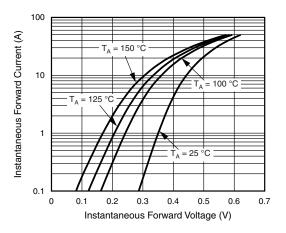


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

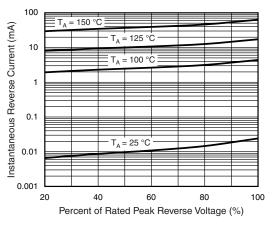


Fig. 4 - Typical Reverse Characteristics Per Diode

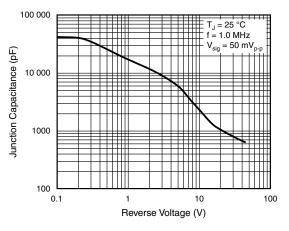


Fig. 5 - Typical Junction Capacitance Per Diode

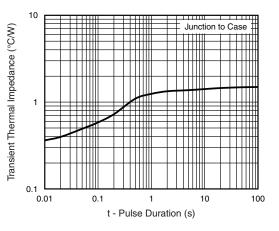


Fig. 6 - Typical Transient Thermal Impedance Per Diode

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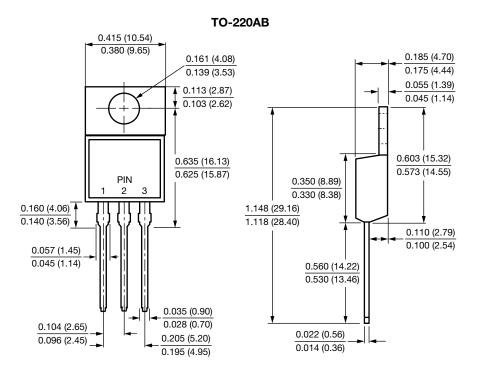
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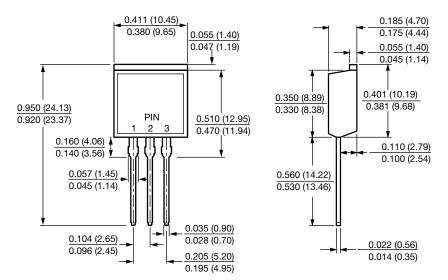
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



TO-262AA





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