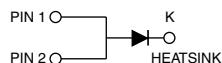
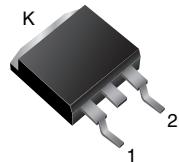


TMBS® (Trench MOS Barrier Schottky) Rectifier for PV Solar Cell Bypass Protection

Ultra Low V_F = 0.30 V at I_F = 5 A

D²PAK (TO-263AB)



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- T_J 200 °C max. in solar bypass application
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(DC)}$	30 A
V_{RRM}	45 V
I_{FSM}	200 A
V_F at I_F = 30 A	0.51 V
T_{OP} max. (AC mode)	150 °C
T_J max. (DC forward current)	200 °C
Package	D ² PAK (TO-263AB)
Circuit configuration	Single

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: D²PAK (TO-263AB)

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 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VBT3045BP	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	45	V
Maximum DC forward bypassing current (fig. 1)	$I_{F(DC)}$ ⁽¹⁾	30	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	200	A
Operating junction temperature range (AC mode)	T_{OP}	-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

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	
Instantaneous forward voltage	$I_F = 5 \text{ A}$	$T_A = 25^\circ\text{C}$	$V_F^{(1)}$	0.42	-	
	$I_F = 15 \text{ A}$			0.49	-	
	$I_F = 30 \text{ A}$			0.58	0.70	
	$I_F = 5 \text{ A}$	$T_A = 125^\circ\text{C}$		0.30	-	
	$I_F = 15 \text{ A}$			0.40	-	
	$I_F = 30 \text{ A}$			0.51	0.60	
Reverse current	$V_R = 45 \text{ V}$	$T_A = 25^\circ\text{C}$	$I_R^{(2)}$	-	2000 μA	
		$T_A = 125^\circ\text{C}$		19	60 mA	

Notes

(1) Pulse test: 300 μs 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	VBT3045BP	UNIT
Typical thermal resistance	$R_{\theta\text{JC}}$	1.0	$^\circ\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
D ² PAK (TO-263AB)	VBT3045BP-M3/4W	1.37	4W	50/tube	Tube
D ² PAK (TO-263AB)	VBT3045BP-M3/8W	1.37	8W	800/reel	Tape and reel

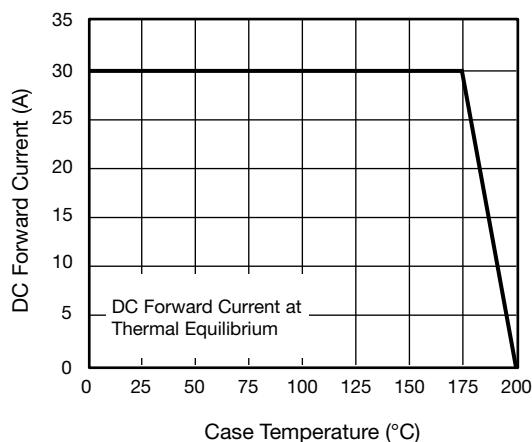
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

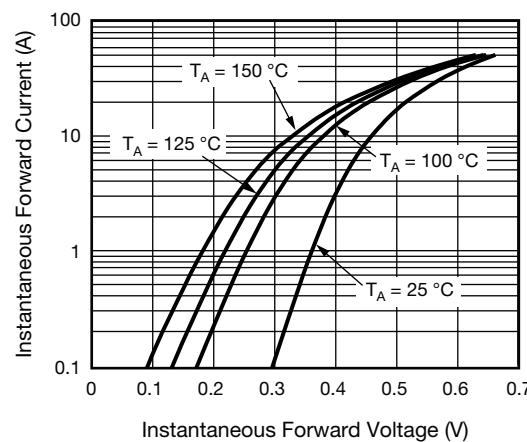


Fig. 2 - Typical Instantaneous Forward Characteristics

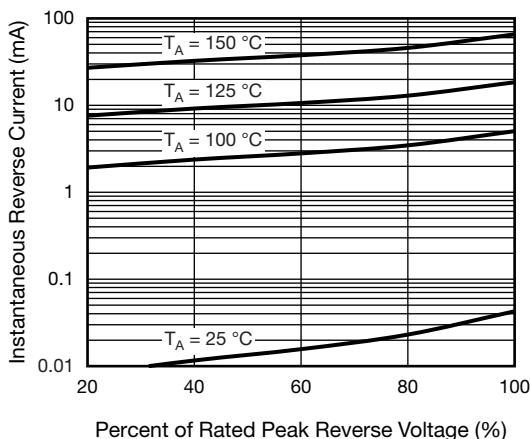


Fig. 3. Typical Reverse Characteristics.

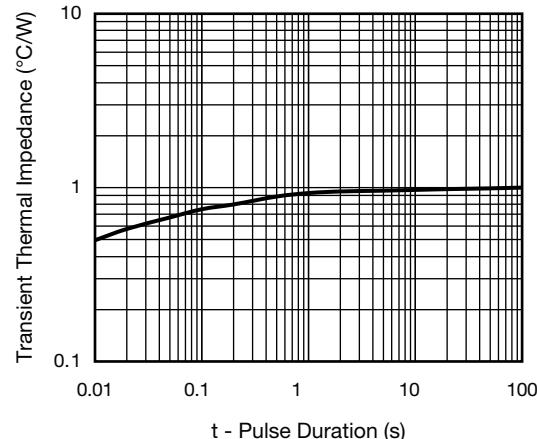


Fig. 5 - Typical Transient Thermal Impedance

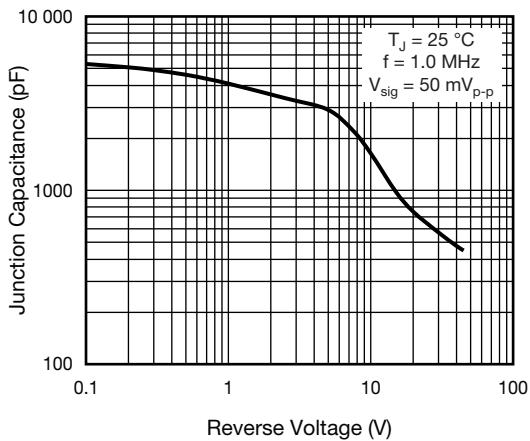
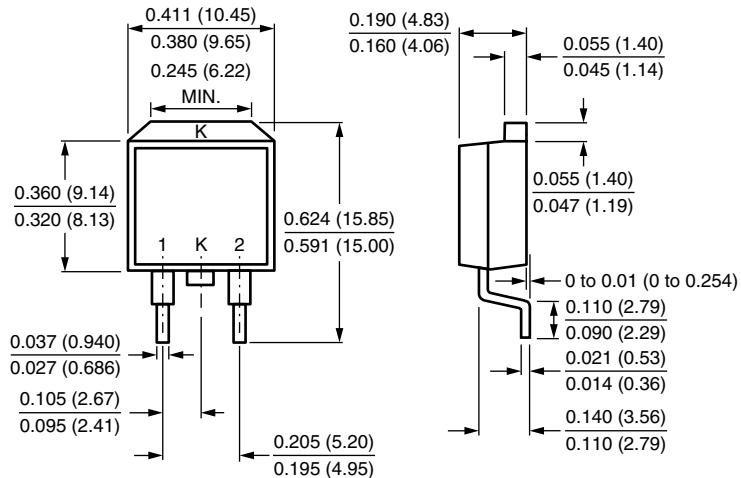


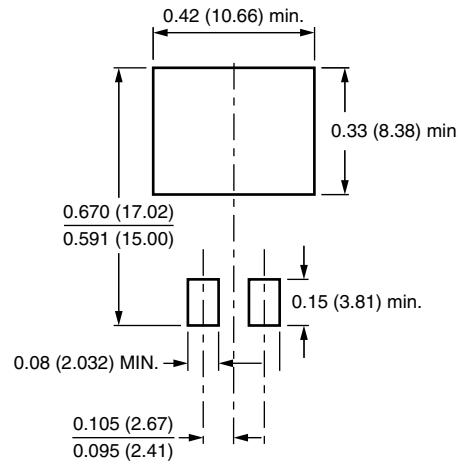
Fig. 4 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)



Mounting Pad Layout



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