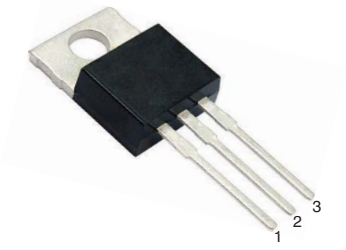
Dual Low-Voltage Trench MOS Barrier Schottky Rectifier

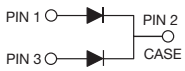
Ultra Low V_F = 0.33 V at I_F = 5 A

TMBS®

TO-220AB



VE3045C



FEATURES

- Power pack
- 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
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb e3 **RoHS** COMPLIANT

TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching power supplies, freewheeling diodes, DC/DC converters, and polarity protection application.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 15 A
V_{RRM}	45 V
I_{FSM}	160 A
V_F at I_F = 15 A (T_A = 125 °C)	0.46 V
T_J max.	150 °C
Package	TO-220AB
Diode variations	Common cathode

MECHANICAL DATA

Case: TO-220AB
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 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**	**VE3045C-E3**	**UNIT**
Maximum repetitive peak reverse voltage		V_{RRM}	45	V
Maximum average forward rectified current (fig. 1)	per device	$I_{F(AV)}$	30	A
	per diode		15	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	160	A
Operating junction and storage temperature range		T_J, T_{STG}	-40 to +150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage per diode	I_F = 5.0 A	T_A = 25 °C	V_F (1)	0.44	-	V
	I_F = 7.5 A			0.47	-	
	I_F = 15 A			0.54	0.62	
	I_F = 5.0 A	T_A = 125 °C		0.33	-	
	I_F = 7.5 A			0.37	-	
	I_F = 15 A			0.46	0.55	
Reverse current per diode	V_R = 45 V	T_A = 25 °C	I_R (2)	-	800	µA
		T_A = 125 °C		9	35	mA

Notes

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

(2) Pulse test: Pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER		SYMBOL	VE3045C-E3	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	3.0	°C/W
	per device		1.6	
	per device	$R_{\theta JA}$ (1)(2)	55	

Notes

(1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $\Delta P_D/\Delta T_J < 1\ R_{\theta JA}$

(2) Free air, without heatsink

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	VE3045C-E3/45	1.93	45	50/tube	Tube

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

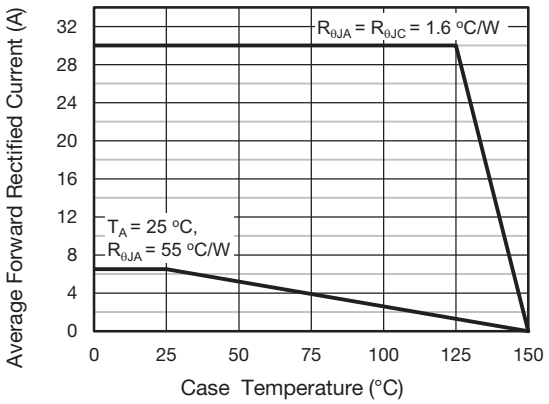


Fig. 1 - Maximum Forward Current Derating Curve

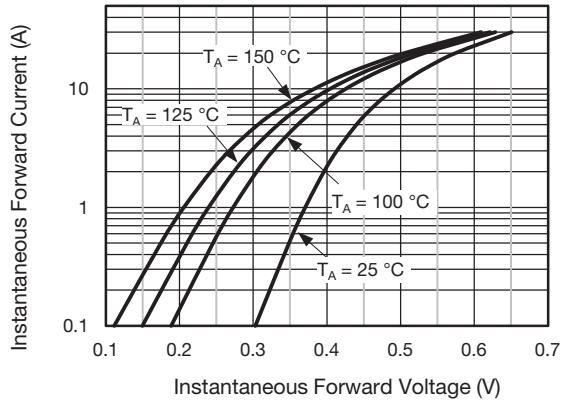


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

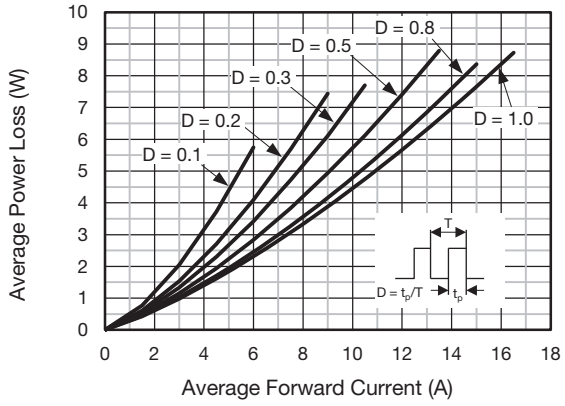


Fig. 2 - Forward Power Loss Characteristics Per Diode

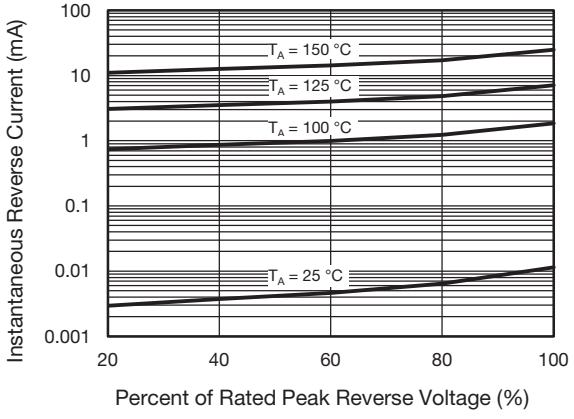


Fig. 4 - Typical Reverse Characteristics Per Diode

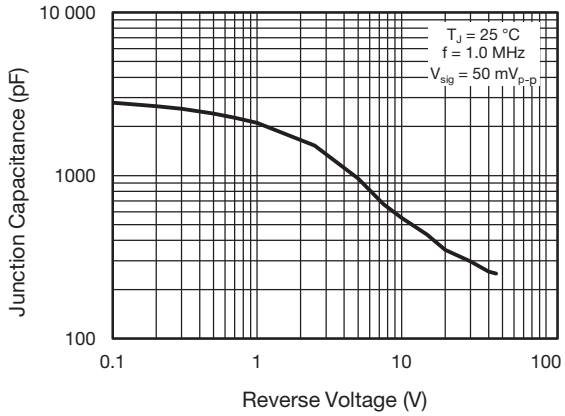


Fig. 5 - Typical Junction Capacitance Per Diode

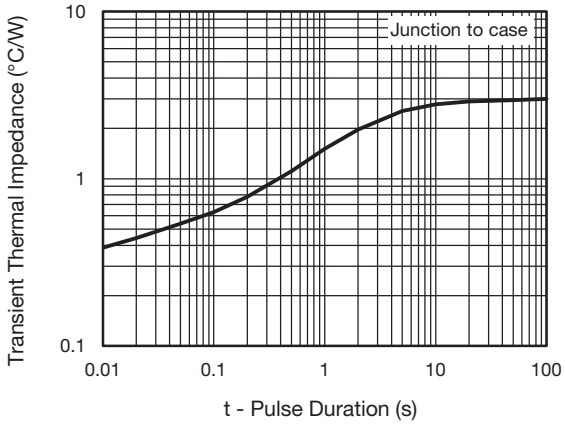
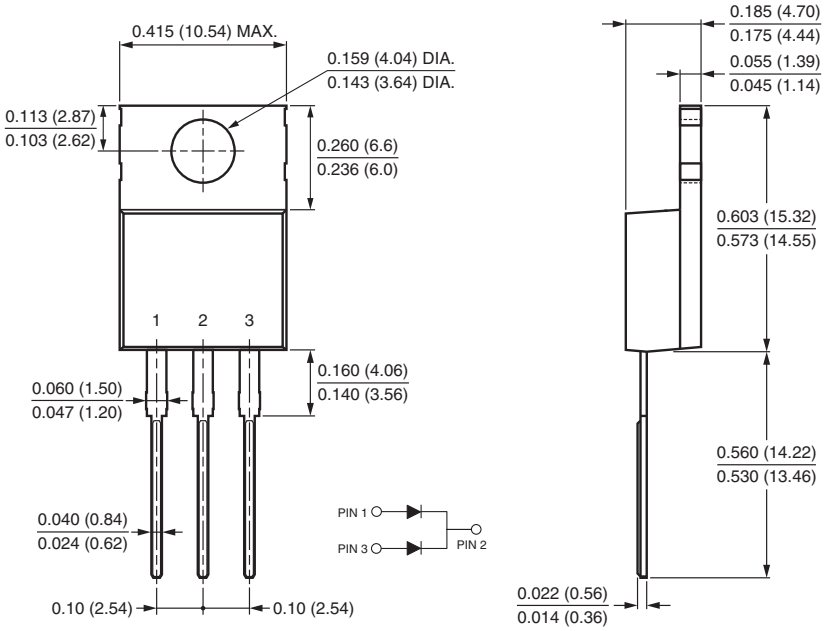


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



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