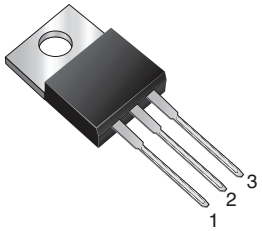
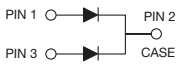
Dual High Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low V_F = 0.40 V at I_F = 5 A



TO-220AB



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

TYPICAL APPLICATIONS

For use in high frequency converters, switching power supplies, freewheeling diodes, OR-ing diode, DC/DC converters, and reverse battery protection.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 20 A
V_{RRM}	100 V
I_{FSM}	250 A
V_F at I_F = 20 A (125 °C)	0.59 V
T_J max.	175 °C
Package	TO-220AB
Circuit configuration	Common cathode

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 °C unless otherwise noted)

PARAMETER		SYMBOL	V41M103C	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	100	V
Maximum average forward rectified current (fig. 1)	per device	$I_{F(AV)}$	40	A
	per diode		20	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	250	A
Operating junction temperature range		T_J (1)	-40 to +175	°C
Storage temperature range		T_{STG}	-55 to +175	

Note

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

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ELECTRICAL CHARACTERISTICS (T_J = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage per diode	I_F = 5 A	T_J = 25 °C	V_F (1)	0.49	-	V
	I_F = 10 A			0.56	-	
	I_F = 20 A			0.67	0.73	
	I_F = 5 A	T_J = 125 °C		0.40	-	
	I_F = 10 A			0.49	-	
	I_F = 20 A			0.59	0.65	
Reverse current at rated V_R per diode	V_R = 70 V	T_J = 25 °C	I_R (2)	0.005	-	mA
		T_J = 125 °C		3.2	-	
	V_R = 100 V	T_J = 25 °C		-	0.4	
		T_J = 125 °C		8.0	45	
Typical junction capacitance	4 V, 1MHz		C_J	2500	-	pF

Notes

(2) Pulse test: 300 μs pulse width, 1 % duty cycle
(3) Pulse test: Pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**V41M103C**	**UNIT**
Typical thermal resistance per device	$R_{\theta JC}$ (1)	1.0	°C/W

Note

(4) Thermal resistance junction-to-case to follow JEDEC® 51-14 transient dual interface test method (TDIM)

OERDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
V41M103C-M3/P	1.88	P	50/tube	Tube

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

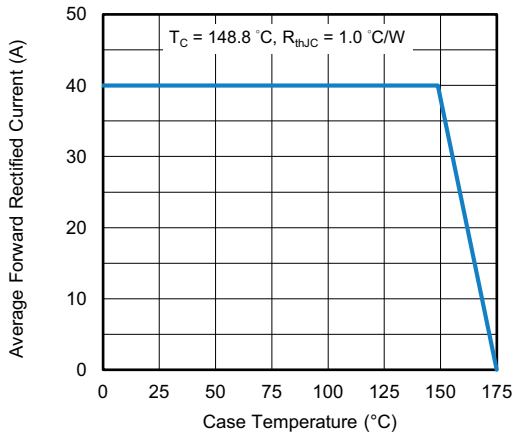

Fig. 1 - Forward Current Derating Curve

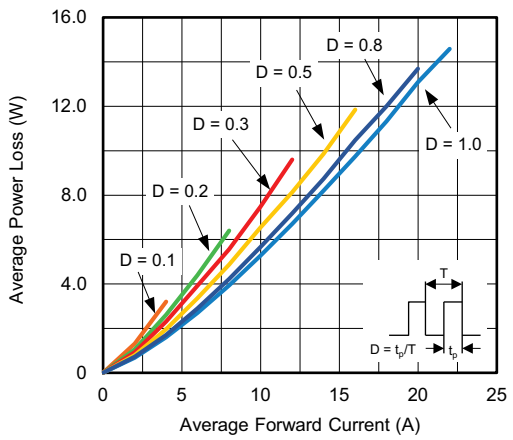

Fig. 2 - Forward Power Loss Characteristics Per Diode

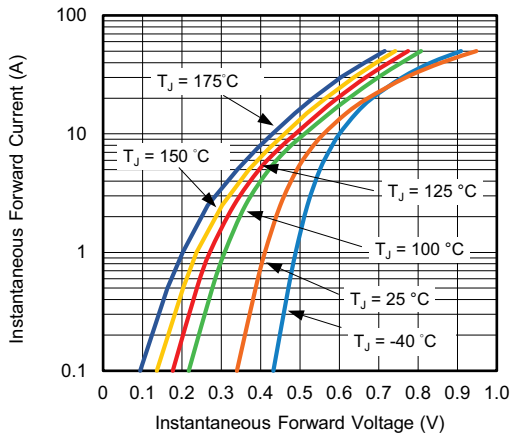

Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

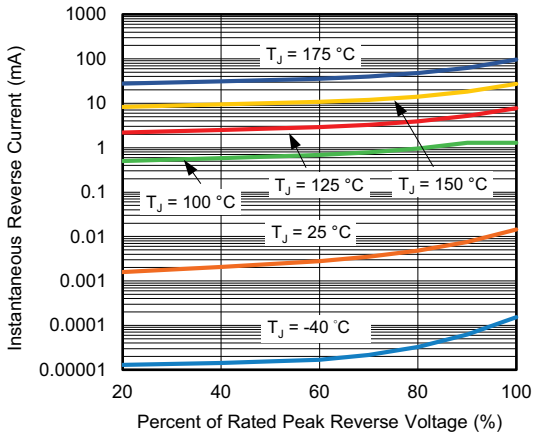

Fig. 4 - Typical Reverse Characteristics Per Diode

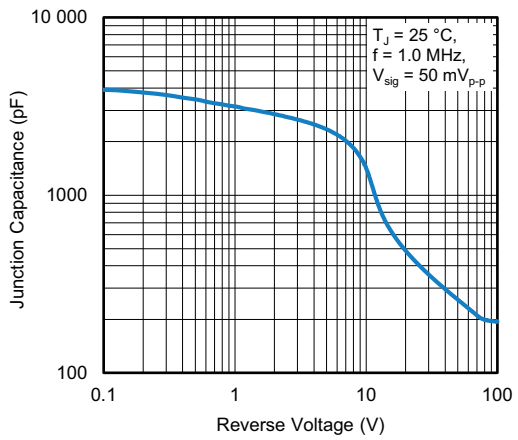

Fig. 5 - Typical Junction Capacitance

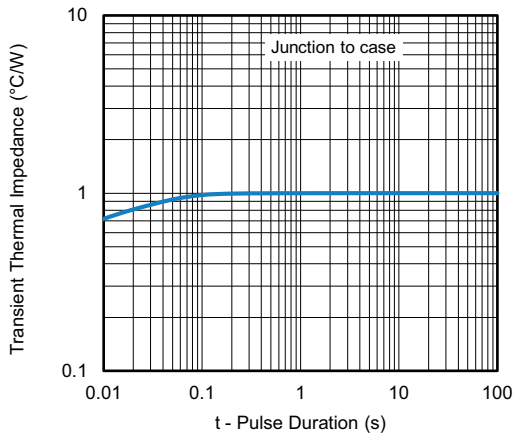

Fig. 6 - Typical Transient Thermal Impedance Per Device

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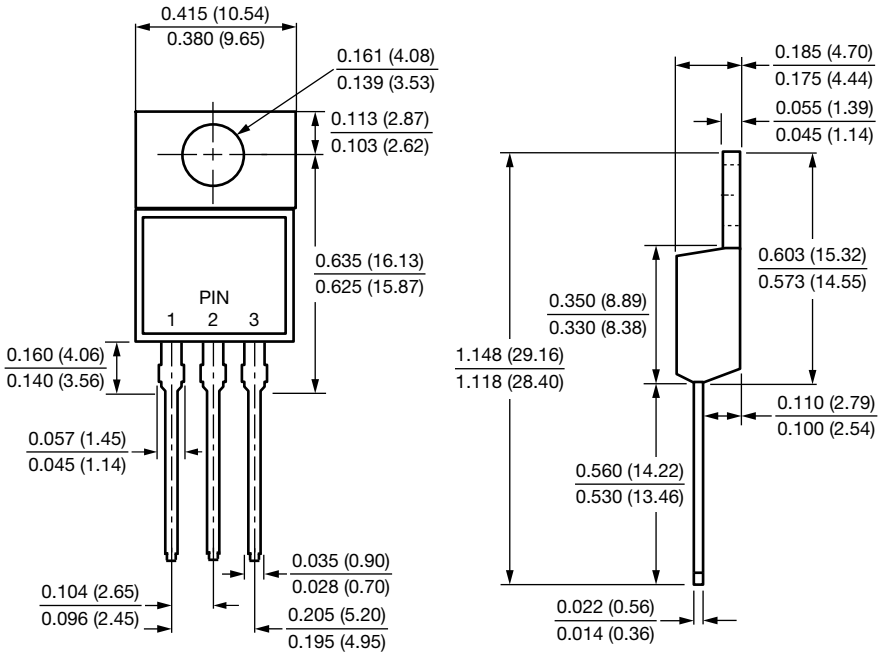
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



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