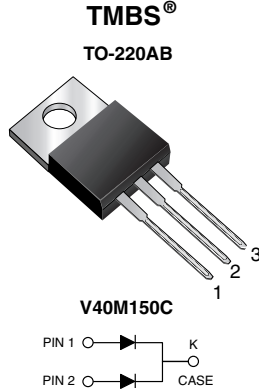


Dual High-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.55 \text{ V}$ at $I_F = 5 \text{ A}$


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
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
 COMPLIANT
 HALOGEN
FREE

TYPICAL APPLICATIONS

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

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

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 20 A
V_{RRM}	150 V
I_{FSM}	160 A
V_F at $I_F = 20 \text{ A}$ ($T_A = 125 \text{ °C}$)	0.75 V
T_J max.	175 °C
Package	TO-220AB
Diode variations	Dual common cathode

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V40M150C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	150	V
Maximum average forward rectified current (fig. 1)		per device	40
		per diode	20
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 +175	°C



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

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$V_F^{(1)}$	0.69	-	V	
	$I_F = 10\text{ A}$		0.84	-		
	$I_F = 20\text{ A}$		1.15	1.43		
	$I_F = 5\text{ A}$		0.55	-		
	$I_F = 10\text{ A}$		0.64	-		
	$I_F = 20\text{ A}$		0.75	0.82		
Reverse current per diode	$V_R = 100\text{ V}$	$I_R^{(2)}$	$T_A = 25\text{ }^\circ\text{C}$	2	-	μA
			$T_A = 125\text{ }^\circ\text{C}$	2.5	-	mA
	$V_R = 150\text{ V}$		$T_A = 25\text{ }^\circ\text{C}$	-	250	μA
			$T_A = 125\text{ }^\circ\text{C}$	5	25	mA

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width $\leq 5\text{ ms}$

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

PARAMETER		SYMBOL	V40M150C	UNIT
Typical thermal resistance (1)	per diode	$R_{\theta JC}$	1.8	$^\circ\text{C/W}$
	per device		1.2	
	per device	$R_{\theta JA}^{(2)}$	52	

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient $dP_D/dT_J < 1/R_{\theta JA}$
- (2) Free air, without heatsink

ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V40M150C-M3/4W	1.89	4W	50/tube	Tube
TO-220AB	V40M150CHM3/4W ⁽¹⁾	1.89	4W	50/tube	Tube

Note

- (1) AEC-Q101 qualified

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

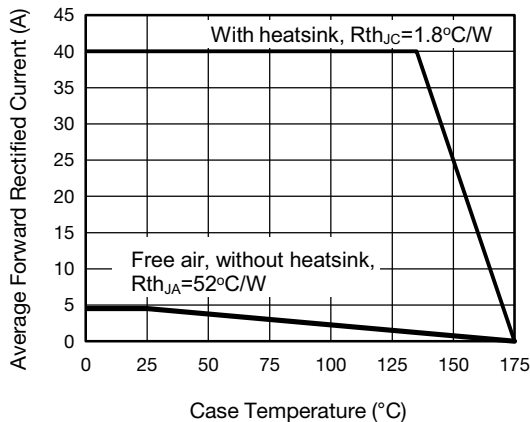


Fig. 1 - Maximum Forward Current Derating Curve (D = Duty Cycle = 0.5)

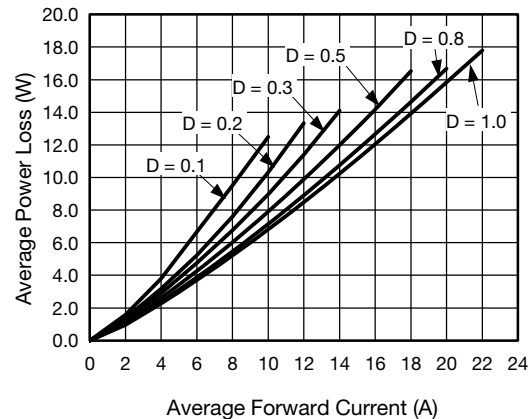


Fig. 2 - Forward Power Loss Characteristics Per Diode

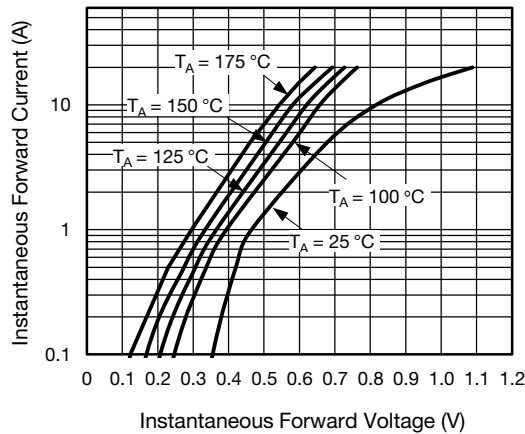


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

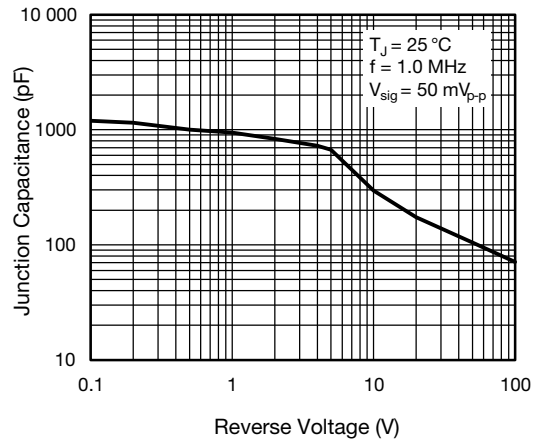


Fig. 5 - Typical Junction Capacitance Per Diode

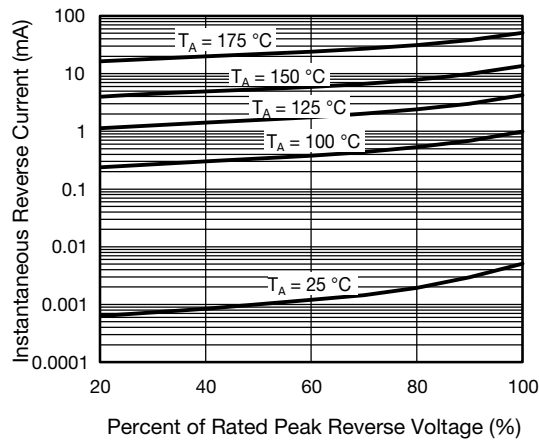


Fig. 4 - Typical Reverse Characteristics Per Diode

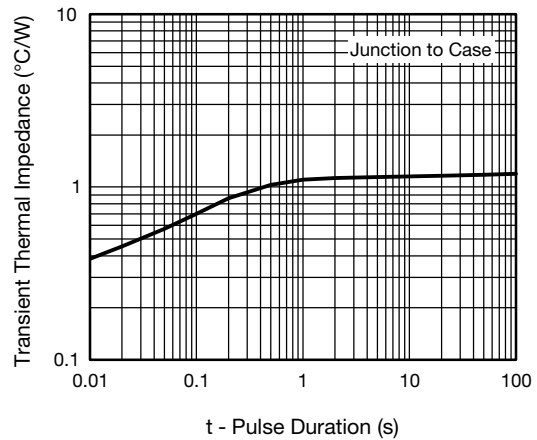
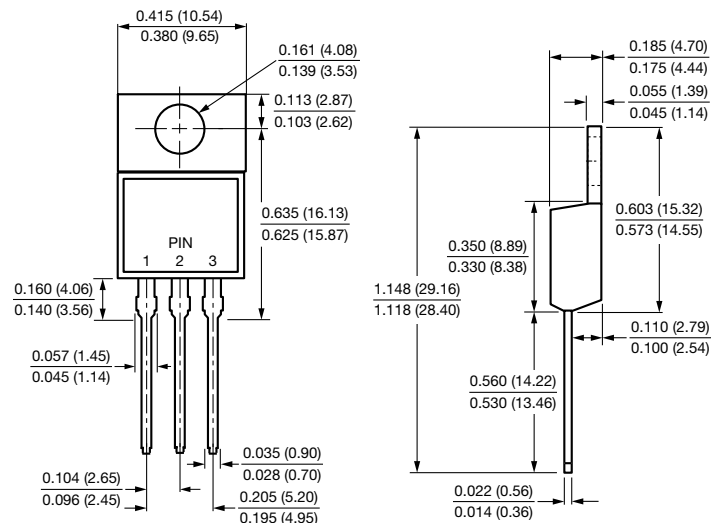


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB





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