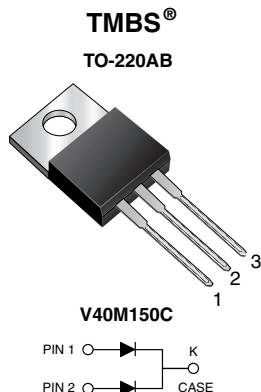


# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

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](http://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)	$I_{F(AV)}$	40	A
		20	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	160	
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +175	°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.69	-	V
	I <sub>F</sub> = 10 A			0.84	-	
	I <sub>F</sub> = 20 A			1.15	1.43	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.55	-	
	I <sub>F</sub> = 10 A			0.64	-	
	I <sub>F</sub> = 20 A			0.75	0.82	
Reverse current per diode	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	2	-	μA
		T <sub>A</sub> = 125 °C		2.5	-	mA
	V <sub>R</sub> = 150 V	T <sub>A</sub> = 25 °C		-	250	μA
		T <sub>A</sub> = 125 °C		5	25	mA

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 5\text{ ms}$ 

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ 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

<b>ORDERING INFORMATION</b> (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 <sup>(1)</sup>	1.89	4W	50/tube	Tube

**Note**

(1) AEC-Q101 qualified

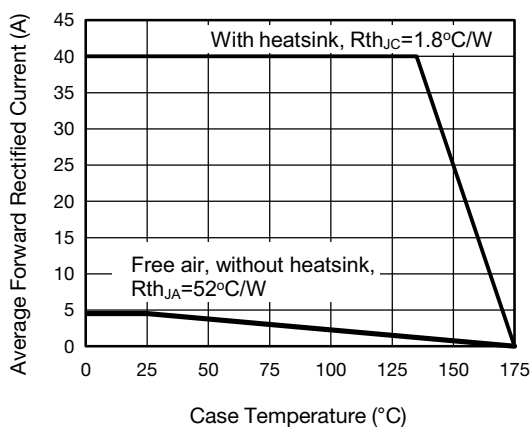
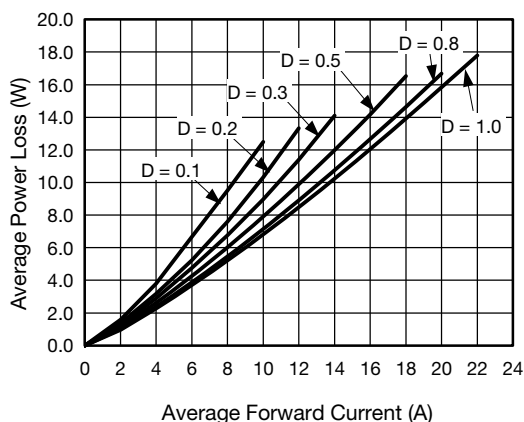
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)Fig. 1 - Maximum Forward Current Derating Curve  
(D = Duty Cycle = 0.5)

Fig. 2 - Forward Power Loss Characteristics Per Diode

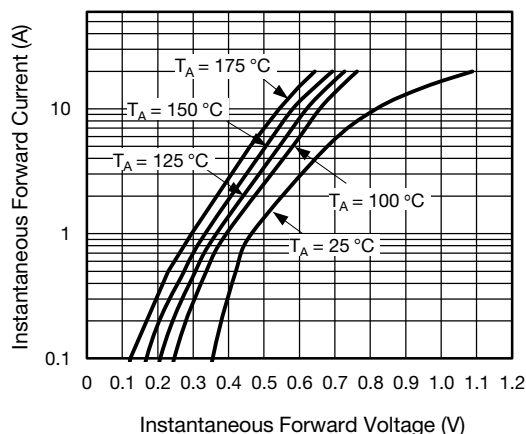


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

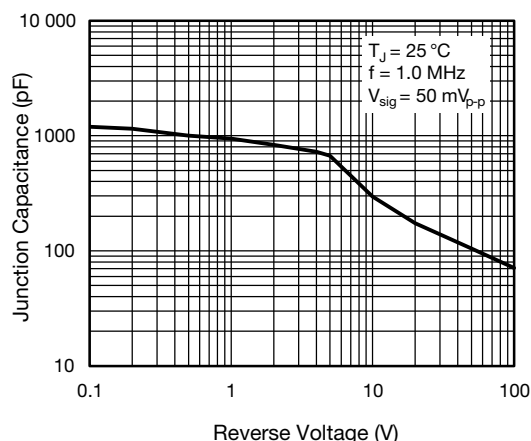


Fig. 5 - Typical Junction Capacitance Per Diode

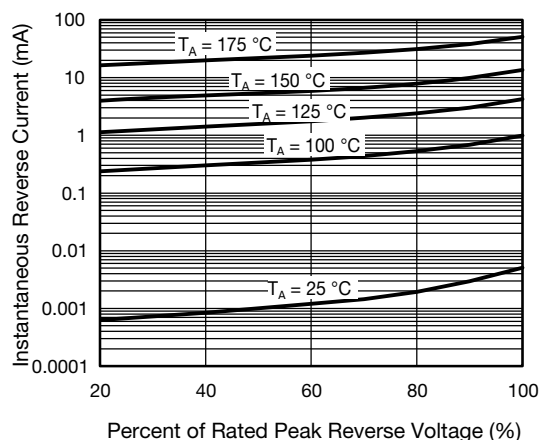


Fig. 4 - Typical Reverse Characteristics Per Diode

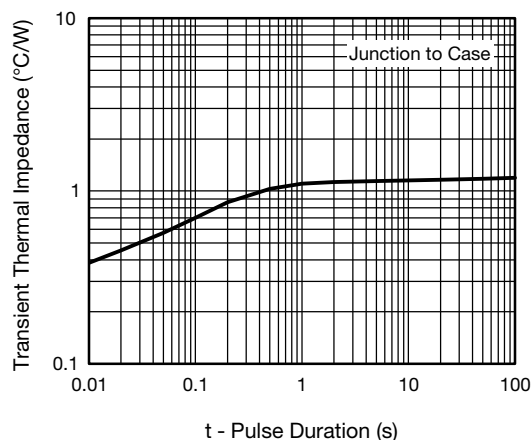
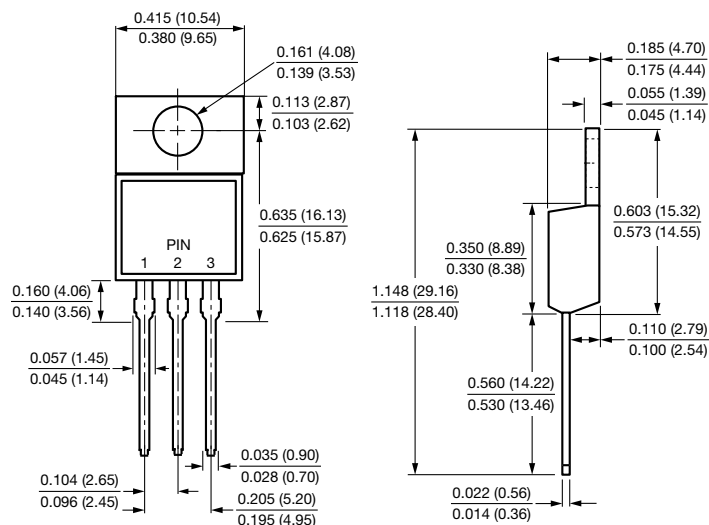


Fig. 6 - Typical Transient Thermal Impedance Per Diode

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB





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