

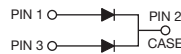


**THE DATASHEET OF  
V40100PGW-M3/4W**



# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low  $V_F = 0.42\text{ V}$  at  $I_F = 5\text{ A}$ 

**TMBS®**
**TO-3PW**


PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 20 A
$V_{RRM}$	100 V
$I_{FSM}$	250 A
$E_{AS}$ at $L = 70\text{ mH}$	250 mJ
$V_F$ at $I_F = 20\text{ A}$	0.67 V
$T_J$ max.	150 °C
Package	TO-3PW
Diode variations	Dual common cathode

## 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
- 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 converters, switching power supplies, freewheeling diodes, OR-ing diode, DC/DC converters and reverse battery protection.

## MECHANICAL DATA

**Case:** TO-3PW

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 ( $T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V40100PGW	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	per device	40
		per diode	20
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	250	A
Non-repetitive avalanche energy at $T_J = 25\text{ °C}$ , $L = 70\text{ mH}$ per diode	$E_{AS}$	250	mJ
Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$ , 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$ per diode	$I_{RRM}$	1.0	A
Voltage rate of change (rated $V_R$ )	dV/dt	10 000	V/ $\mu\text{s}$
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +150	°C

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	$I_R = 1.0\text{ mA}$	$T_A = 25\text{ }^\circ\text{C}$	$V_{BR}$	100 (minimum)	-	V
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.49	-	V
	$I_F = 10\text{ A}$			0.58	-	
	$I_F = 20\text{ A}$			0.76	0.85	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.42	-	
	$I_F = 10\text{ A}$			0.54	-	
	$I_F = 20\text{ A}$			0.67	0.73	
Reverse current per diode	$V_R = 70\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	16	-	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		8.3	-	mA
	$V_R = 100\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		69	1000	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		21	47	mA

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
 (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER		SYMBOL	V40100PGW	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$
	per device		1.4	

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-3PW	V40100PGW-M3/4W	4.5	4W	30/tube	Tube

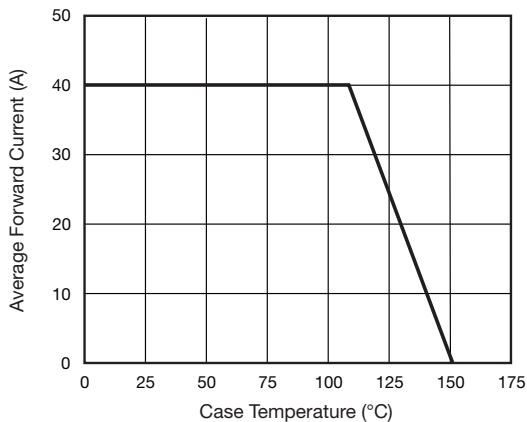
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

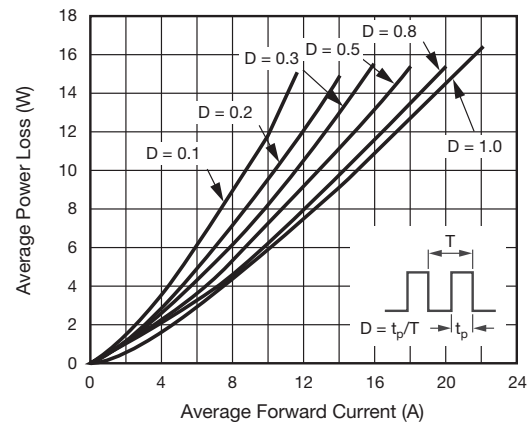


Fig. 2 - Forward Power Loss Characteristics Per Diode

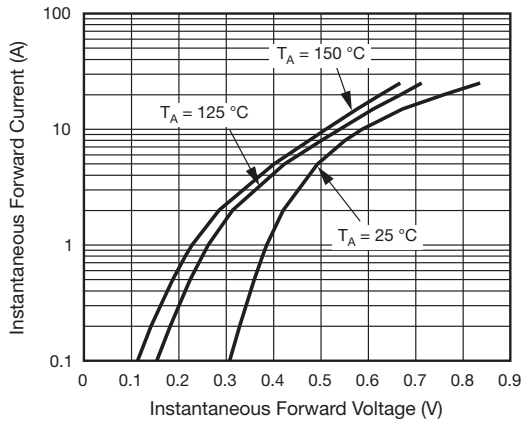


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

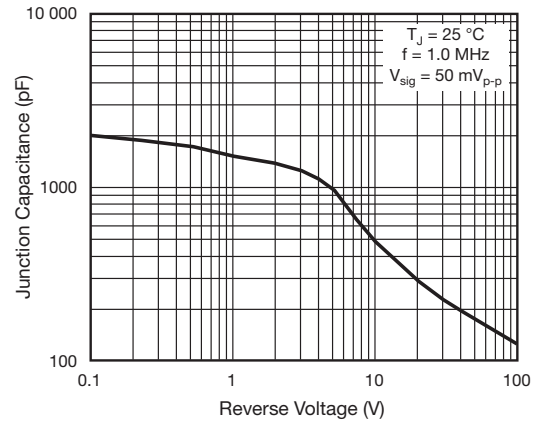


Fig. 5 - Typical Junction Capacitance Per Diode

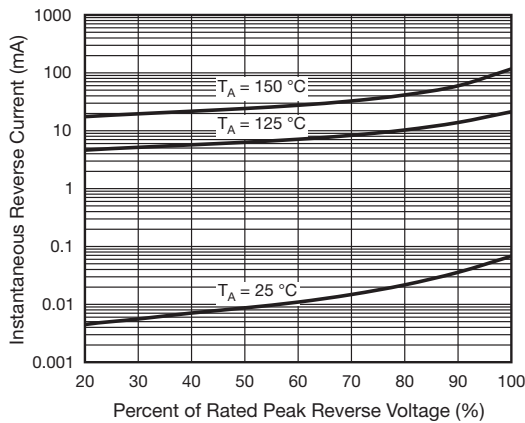


Fig. 4 - Typical Reverse Characteristics Per Diode

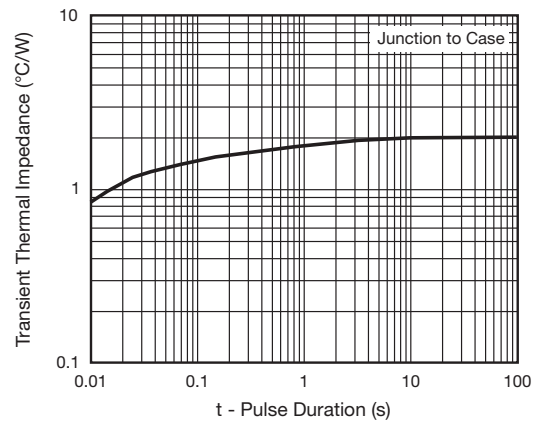
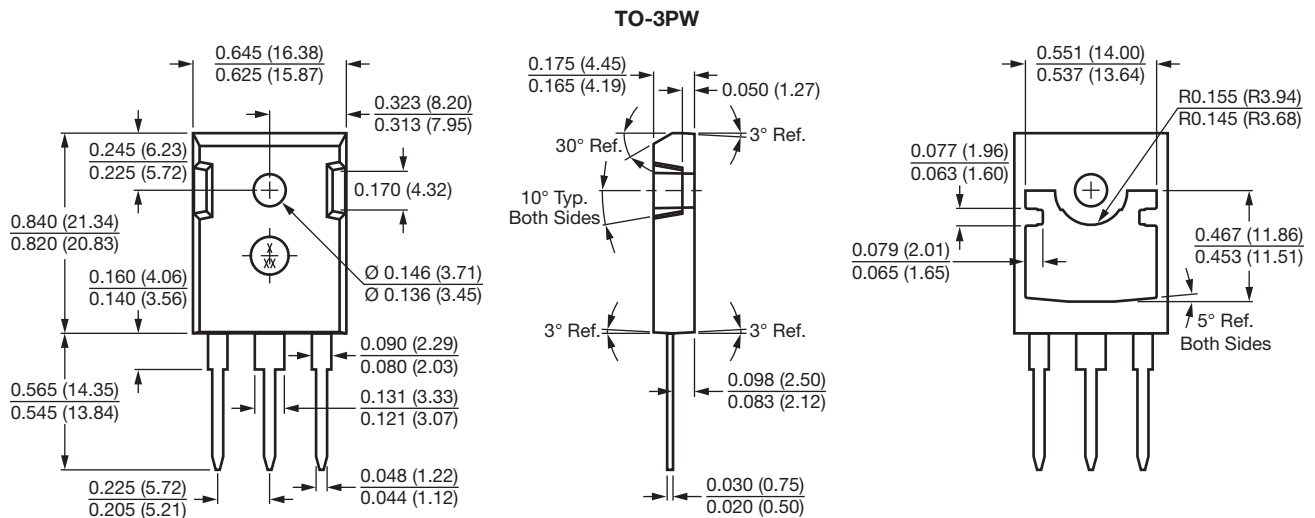


Fig. 6 - Typical Transient Thermal Impedance Per Diode

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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