- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation

Dual High-Voltage Trench MOS Barrier Schottky Rectifier Ultra Low  $V_F = 0.42$  V at  $I_F = 5$  A

- Solder dip 275 °C max. 10 s, per JESD 22-B106
  FREE
- Material categorization: For definitions of compliance please see <u>www.vishay.com/doc?99912</u>

#### 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

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

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**TMBS<sup>®</sup>** 

TO-3PW

PIN 1 0 PIN 2

PIN 3 0-CASE

2 x 20 A

100 V

250 A

250 mJ

0.67 V

150 °C

TO-3PW Dual common cathode

**PRIMARY CHARACTERISTICS** 

I<sub>F(AV)</sub>

V<sub>RRM</sub>

IFSM

E<sub>AS</sub> at L = 70 mH

 $V_F$  at  $I_F = 20 A$ 

T<sub>.1</sub> max.

Package

**Diode variations** 

V40100PGW

ROHS COMPLIANT

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# Vishay General Semiconductor

V40100PGW

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Breakdown voltage	l <sub>R</sub> = 1.0 mA	T <sub>A</sub> = 25 °C	V <sub>BR</sub>	100 (minimum)	-	V	
Instantaneous forward voltage per diode	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	- V <sub>F</sub> (1)	0.49	-	V	
	I <sub>F</sub> = 10 A			0.58	-		
	I <sub>F</sub> = 20 A			0.76	0.85		
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.42	-		
	I <sub>F</sub> = 10 A			0.54	-		
	I <sub>F</sub> = 20 A			0.67	0.73		
Reverse current per diode	V <sub>R</sub> = 70 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	16	-	μA	
		T <sub>A</sub> = 125 °C		8.3	-	mA	
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C		69	1000	μA	
		T <sub>A</sub> = 125 °C		21	47	mA	

#### Notes

<sup>(1)</sup> Pulse test: 300 µs pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  40 ms

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER		SYMBOL	V40100PGW	UNIT		
Typical thermal resistance	per diode	- R <sub>θJC</sub>	2.0	°C/W		
	per device		1.4	C/W		

ORDERING INFORMATION (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<sub>A</sub> = 25 °C unless otherwise noted)

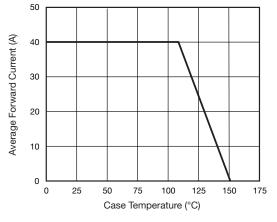


Fig. 1 - Forward Current Derating Curve

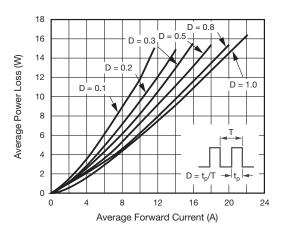


Fig. 2 - Forward Power Loss Characteristics Per Diode

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## V40100PGW





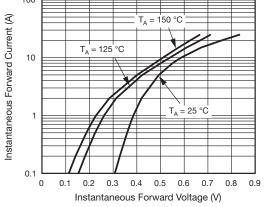


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

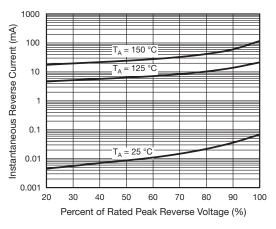


Fig. 4 - Typical Reverse Characteristics Per Diode

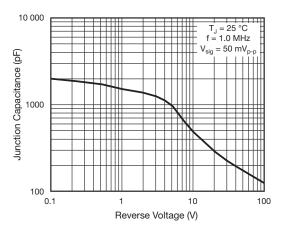


Fig. 5 - Typical Junction Capacitance Per Diode

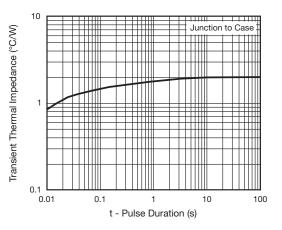
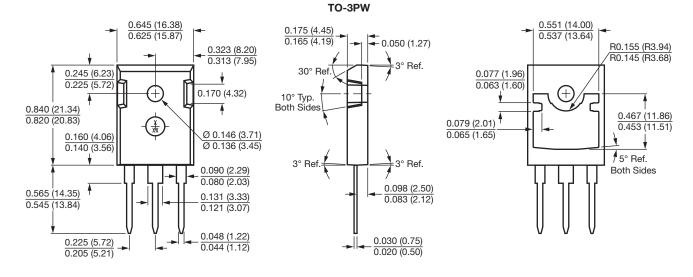


Fig. 6 - Typical Transient Thermal Impedance Per Diode

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



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