

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



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



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

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

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)	$I_{F(AV)}$	40	A
		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/ μs
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +150	°C

ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I _R = 1.0 mA	T _A = 25 °C	V _{BR}	100 (minimum)	-	V
Instantaneous forward voltage per diode	I _F = 5 A	T _A = 25 °C	V _F ⁽¹⁾	0.49	-	V
	I _F = 10 A			0.58	-	
	I _F = 20 A			0.76	0.85	
	I _F = 5 A	T _A = 125 °C		0.42	-	
	I _F = 10 A			0.54	-	
	I _F = 20 A			0.67	0.73	
Reverse current per diode	V _R = 70 V	T _A = 25 °C	I _R ⁽²⁾	16	-	μA
		T _A = 125 °C		8.3	-	mA
	V _R = 100 V	T _A = 25 °C		69	1000	μA
		T _A = 125 °C		21	47	mA

Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ 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	

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

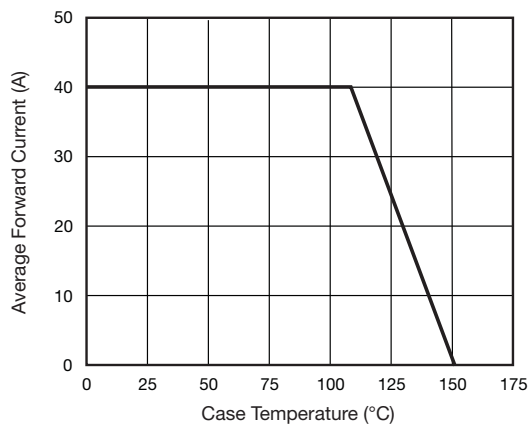
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

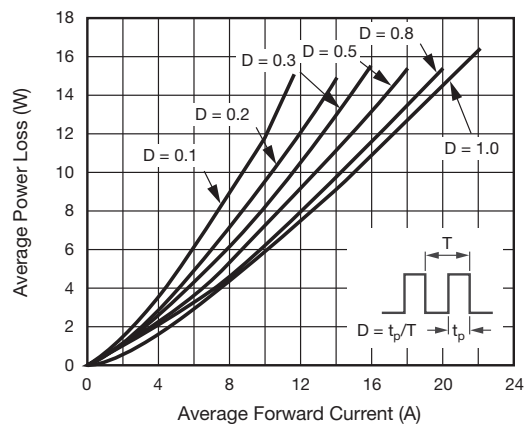


Fig. 2 - Forward Power Loss Characteristics Per Diode

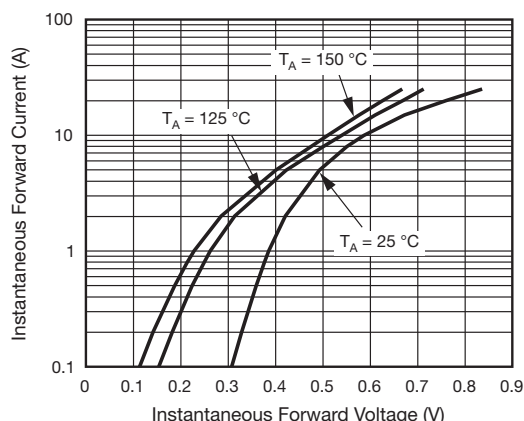


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

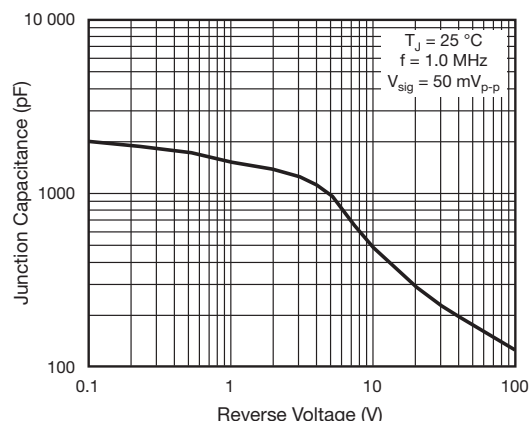


Fig. 5 - Typical Junction Capacitance Per Diode

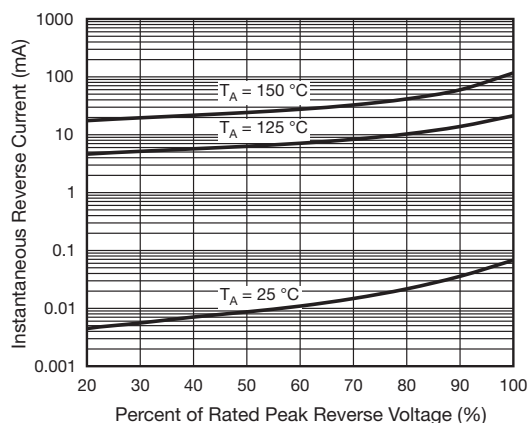


Fig. 4 - Typical Reverse Characteristics Per Diode

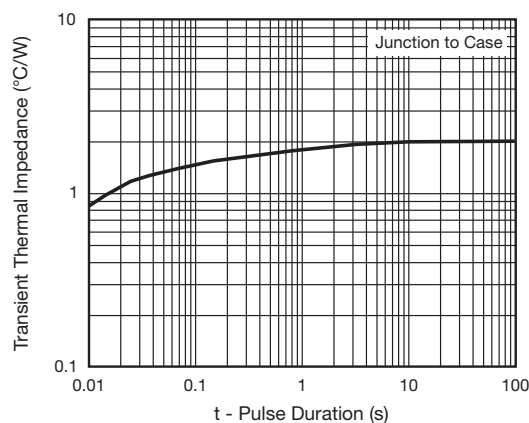
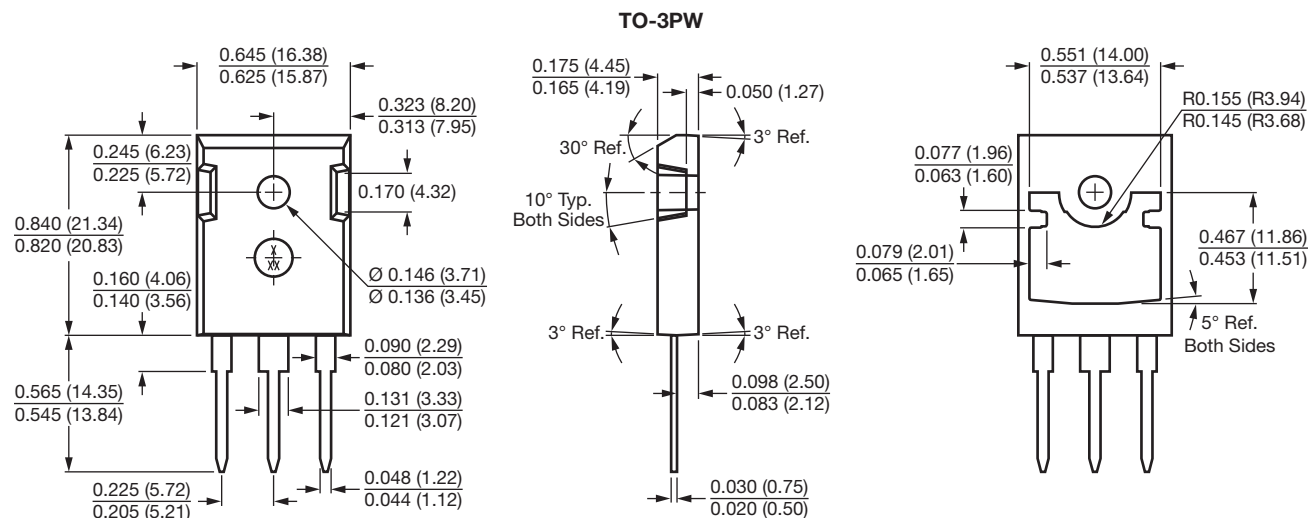


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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