Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low V_F = 0.39 V at I_F = 5 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 25 A
V_{RRM}	100 V
I_{FSM}	300 A
E_{AS} at L = 100 mH	280 mJ
V_F at I_F = 25 A	0.66 V
T_J max.	150 °C
Package	TO-3PW
Diode variations	Dual common cathode

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER		SYMBOL	V50100PW	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	100	V
Maximum average forward rectified current (fig. 1)	per device	$I_{F(AV)}$	50	A
	per diode		25	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	300	A
Non-repetitive avalanche energy at T_J = 25 °C, L = 100 mH per diode		E_{AS}	280	mJ
Peak repetitive reverse current at t_p = 2 μs, 1 kHz, T_J = 38 °C ± 2 °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

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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)	0.48	-	V
	I_F = 10 A			0.56	-	
	I_F = 20 A			0.69	-	
	I_F = 25 A			0.76	0.84	
	I_F = 5 A	T_A = 125 °C		0.39	-	
	I_F = 10 A			0.50	-	
	I_F = 20 A			0.61	-	
	I_F = 25 A			0.66	0.74	
Reverse current per diode	V_R = 70 V	T_A = 25 °C	I_R (2)	23	-	µA
		T_A = 125 °C		11	-	mA
	V_R = 100 V	T_A = 25 °C		-	1000	µA
		T_A = 125 °C		29	80	mA

Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER		**SYMBOL**	**V50100PW**	**UNIT**
Typical thermal resistance	per diode	$R_{\theta JC}$	1.5	°C/W
	per device		0.8	

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-3PW	V50100PW-M3/4W	4.5	4W	30/tube	Tube

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

Fig. 2 - Forward Power Loss Characteristics Per Diode

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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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