

Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.52\text{ V}$ at $I_F = 5\text{ A}$



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 DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, 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}	170 V
I_{FSM}	200 A
V_F at $I_F = 20\text{ A}$	0.67 V
T_J max.	175 °C

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	V40170PW	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	170	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	40	A
per diode		20	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	200	A
Voltage rate of change (rated V_R)	dV/dt	10 000	V/ μ s
Operating junction and storage temperature range	T_J, T_{STG}	- 40 to + 175	°C

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$V_F^{(1)}$	0.67	-	V
	$I_F = 10\text{ A}$		0.75	-	
	$I_F = 20\text{ A}$		0.83	0.95	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^{\circ}\text{C}$	0.52	-	
	$I_F = 10\text{ A}$		0.59	-	
	$I_F = 20\text{ A}$		0.67	0.75	
Reverse current per diode	$V_R = 136\text{ V}$	$T_A = 25\text{ }^{\circ}\text{C}$	1.3	-	μA
		$T_A = 125\text{ }^{\circ}\text{C}$	1.5	-	mA
	$V_R = 170\text{ V}$	$T_A = 25\text{ }^{\circ}\text{C}$	-	250	μA
		$T_A = 125\text{ }^{\circ}\text{C}$	2.5	50	mA

Notes

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

(2) Pulse test: Pulse width $\leq 20\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER		SYMBOL	V40170PW	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	1.2	$^{\circ}\text{C/W}$
	per device		0.85	

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-3PW	V40170PW-M3/4W	4.5	4W	30/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

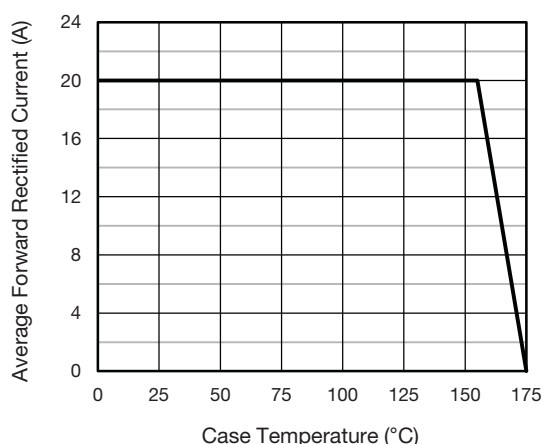
($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

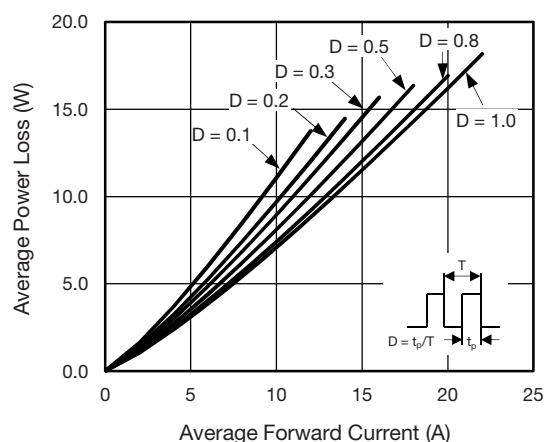


Fig. 2 - Forward Power Loss Characteristics Per Diode

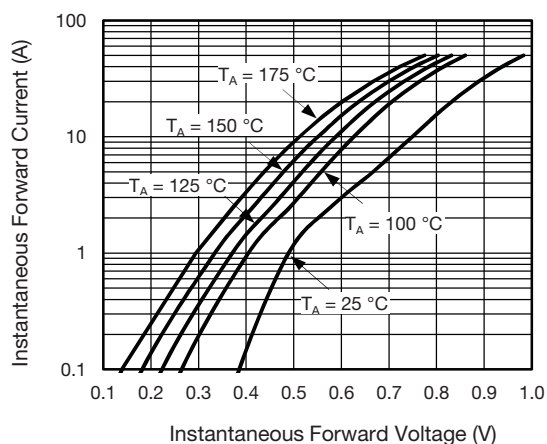


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

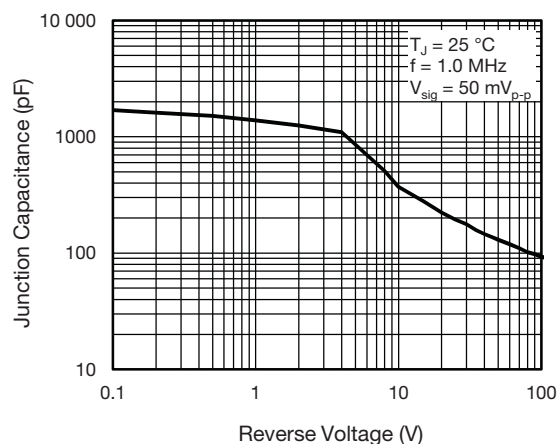


Fig. 5 - Typical Junction Capacitance Per Diode

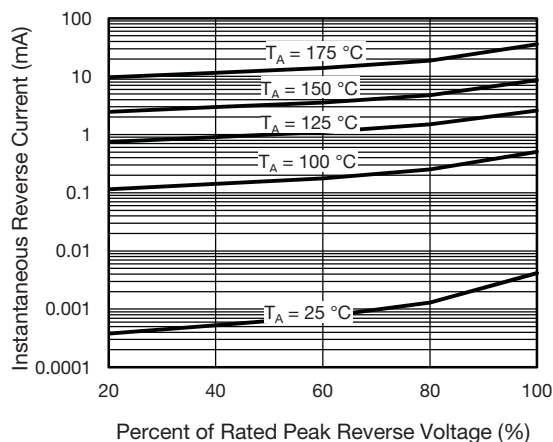


Fig. 4 - Typical Reverse Characteristics Per Diode

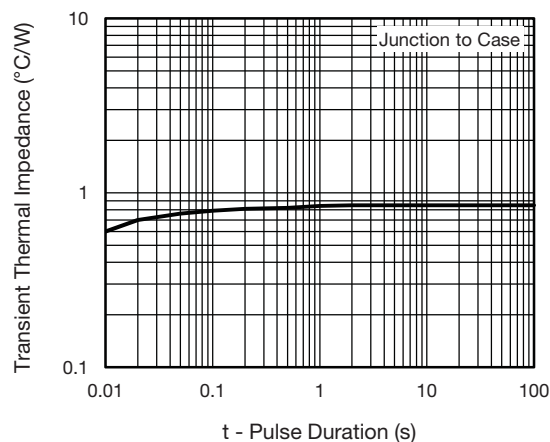
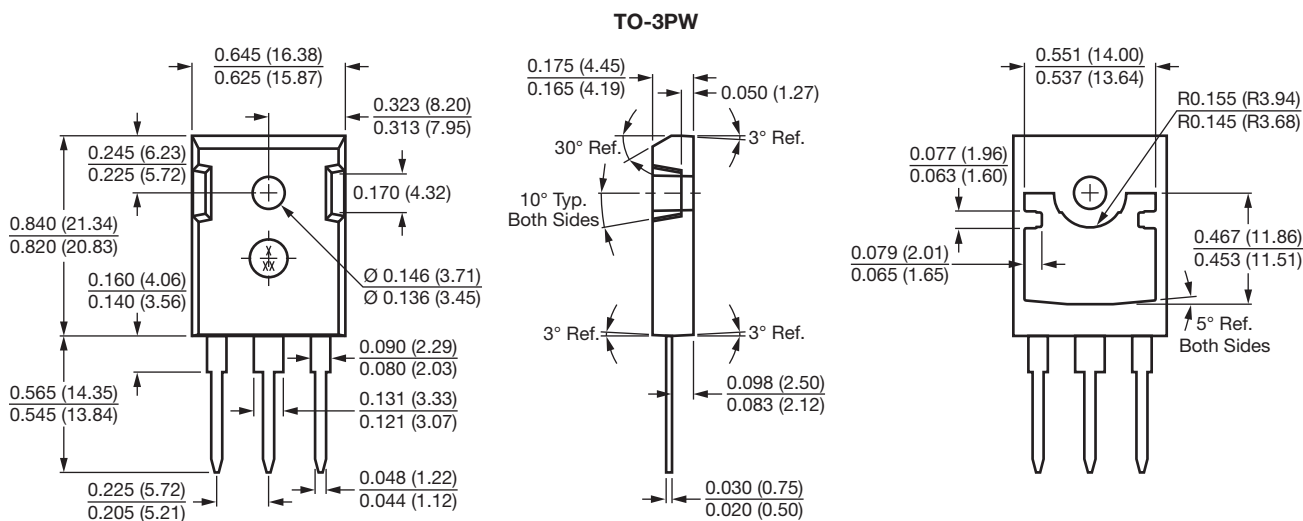


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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