

Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.55$ V at $I_F = 5$ A



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 **RoHS** COMPLIANT compliance please see www.vishay.com/doc?99912



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-220AB

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per
J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 15 A
V_{RRM}	120 V
I_{FSM}	120 A
V_F at $I_F = 15$ A ($T_A = 125$ °C)	0.70 V
T_J max.	175 °C
Package	TO-220AB
Diode variations	Common cathode

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	V30M120M	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	30	A
		15	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	120	A
Voltage rate of change (rated V_R)	dV/dt	10 000	V/μs
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	$I_F = 5 \text{ A}$ $I_F = 7.5 \text{ A}$ $I_F = 15 \text{ A}$	$T_A = 25^\circ\text{C}$	$V_F^{(1)}$	0.64	-	V	
				0.73	-		
				0.98	1.07		
	$I_F = 5 \text{ A}$ $I_F = 7.5 \text{ A}$ $I_F = 15 \text{ A}$	$T_A = 125^\circ\text{C}$		0.55	-		
				0.60	-		
				0.70	0.78		
Reverse current per diode	$V_R = 100 \text{ V}$	$T_A = 25^\circ\text{C}$	$I_R^{(2)}$	6.0	-	μA	
		$T_A = 125^\circ\text{C}$		2.0	-	mA	
	$V_R = 120 \text{ V}$	$T_A = 25^\circ\text{C}$		-	1000	μA	
		$T_A = 125^\circ\text{C}$		3.4	26	mA	

Notes

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

(2) Pulse test: Pulse width $\leq 5 \text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	V30M120M			UNIT
Typical thermal resistance	per diode	$R_{\theta\text{JC}}$	1.8		$^\circ\text{C/W}$
	per device		0.9		
	per device		40		

Notes

(1) The heat generated must be less than the thermal conductivity from junction-to-ambient $dP_D/dT_J < 1/R_{\theta\text{JA}}$

(2) Free air, without heatsink

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V30M120M-E3/4W	1.88	4W	50/tube	Tube

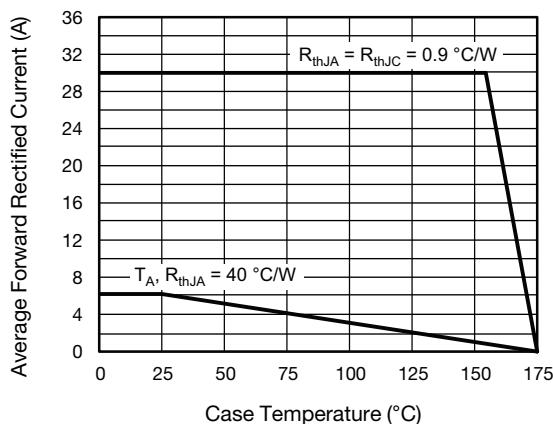
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

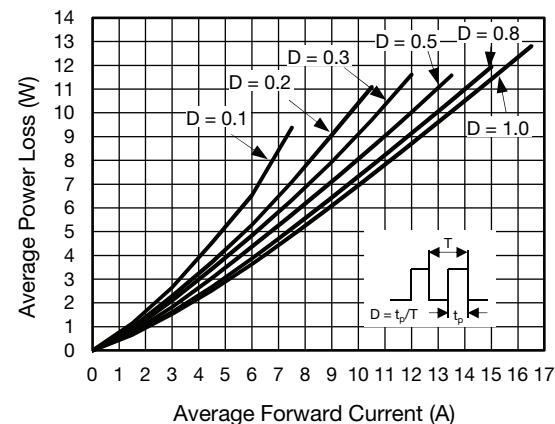


Fig. 2 - Forward Power Loss Characteristics Per Diode

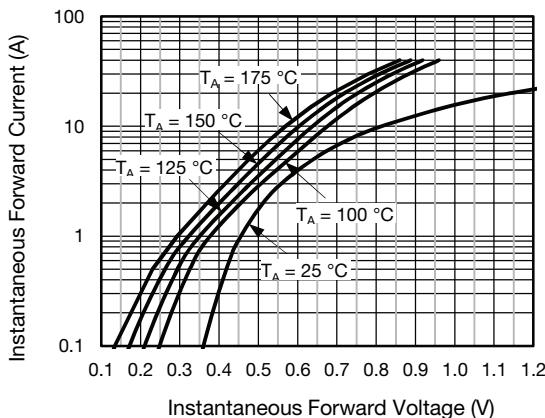


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

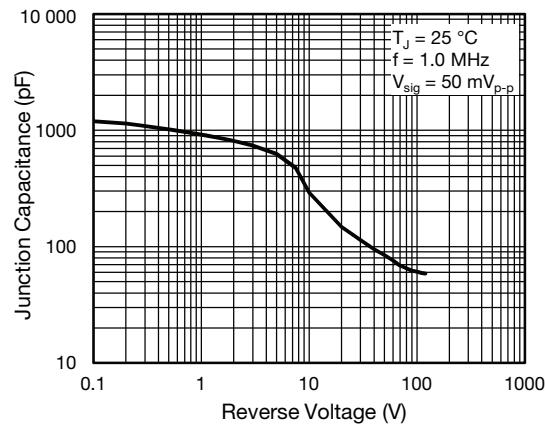


Fig. 5 - Typical Junction Capacitance Per Diode

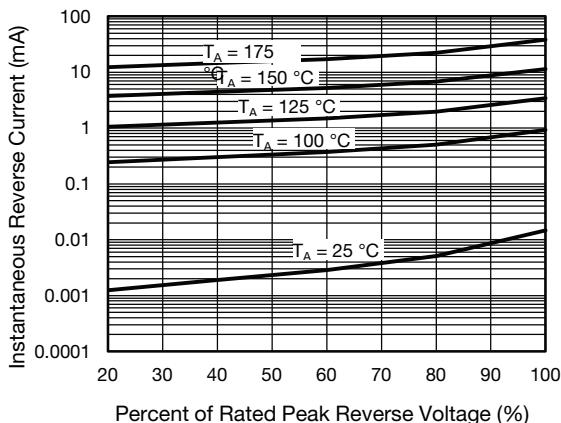


Fig. 4 - Typical Reverse Characteristics Per Diode

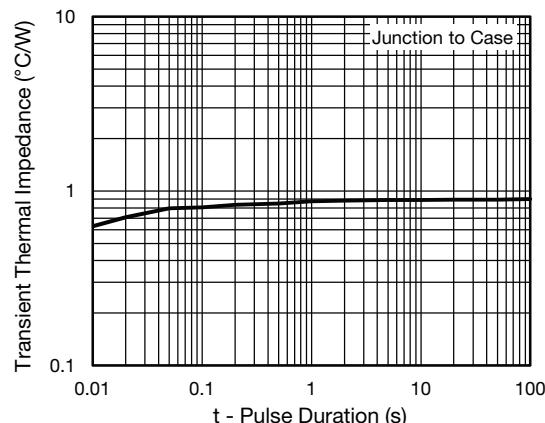
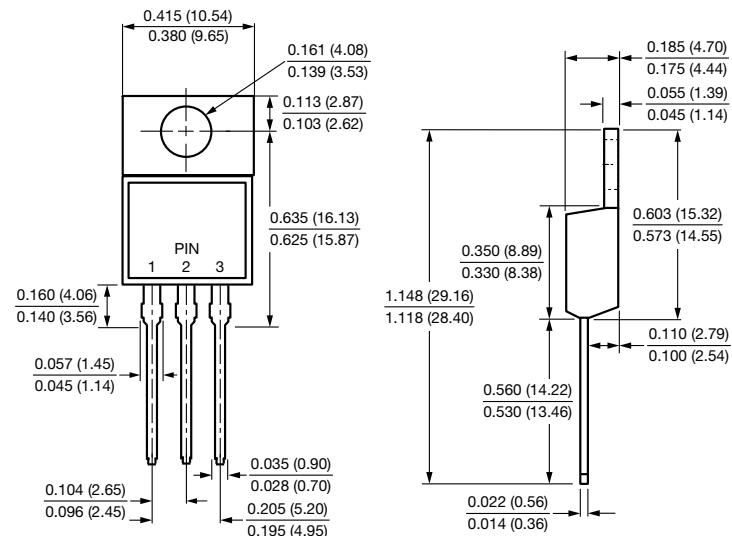


Fig. 6 - Typical Transient Thermal Impedance Per Device

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



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