V20WL45-M3

Vishay General Semiconductor

Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.30$ V at $I_F = 5$ A



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PRIMARY CHARACTERISTICS				
I _{F(AV)}	20 A			
V _{RRM}	45 V			
I _{FSM}	180 A			
V_F at I_F = 20 A (T_A = 125 °C)	0.48 V			
T _J max.	150 °C			
Package	TO-252 (D-PAK)			
Diode variation	Single die			

FEATURES

- Trench MOS Schottky technology
- Ideal for automated placement
- · Low forward voltage drop, low power losses
- High efficiency operation



COMPLIANT

HALOGEN

FREE

- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: For definitions of compliance please see <u>www.vishay.com/doc?99912</u>

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-252 (D-PAK)

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

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V20WL45	UNIT	
Maximum repetitive peak reverse voltage	V _{RRM}	45	V	
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	20	А	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	180	А	
Operating junction and storage temperature range	T _J , T _{STG}	-40 to +150	°C	



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ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	TEST CO	NDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 5 A		V _F ⁽¹⁾	0.41	-	V
	I _F = 10 A	T _A = 25 °C		0.46	-	
	I _F = 20 A			0.53	0.62	
	I _F = 5 A	T _A = 125 °C		0.30	-	
	I _F = 10 A			0.37	-	
	I _F = 20 A			0.48	0.59	
Reverse current	V _B = 45 V	T _A = 25 °C	I _R ⁽²⁾	-	4000	μA
Reverse current	v _R = 43 v	T _A = 125 °C	'R (=/	24	53	mA

Notes

 $^{(1)}\,$ Pulse test: 300 μs pulse width, 1 % duty cycle

⁽²⁾ Pulse test: Pulse width \leq 5 ms

THERMAL CHARACTERISTICS (T _A = 25 °C ur	nless otherwi	se noted)		
PARAMETER	SYMBOL	V20WL45	UNIT	
Tunical thermal registeres	R _{0JC}	1.6	°C/W	
Typical thermal resistance	R _{0JA} (1)(2)	65	C/W	

Notes

⁽¹⁾ The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{0JA}$

(2) Free air, without heatsink

ORDERING INFOR	ORDERING INFORMATION (Example)			
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V20WL45-M3/I	0.38	l	2500/reel	13" diameter plastic tape and reel

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

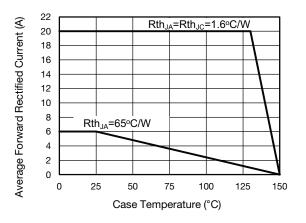


Fig. 1 - Forward Current Derating Curve

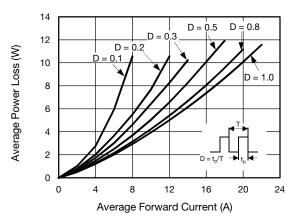
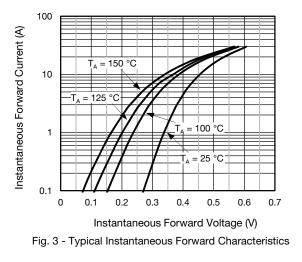


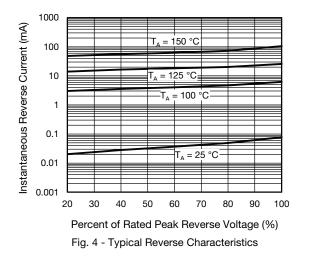
Fig. 2 - Forward Power Loss Characteristics

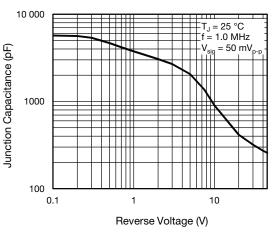
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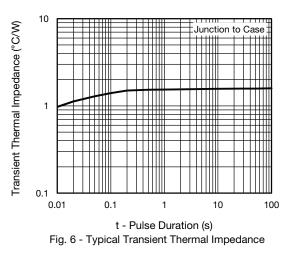
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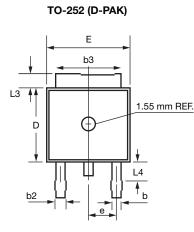


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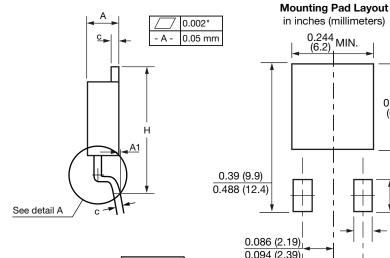
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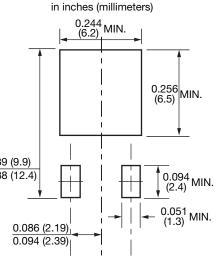
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

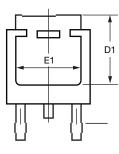
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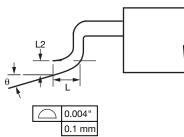


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SYMBOL	INC	HES	MILLIMETERS		
	MIN.	MAX.	MIN.	MAX.	
A	0.086	0.094	2.19	2.38	
A1	-	0.005	-	0.13	
b	0.025	0.035	0.64	0.89	
b2	0.033	0.045	0.84	1.14	
b3	0.205	0.215	5.21	5.46	
С	0.018	0.024	0.46	0.61	
D	0.235	0.250	5.97	6.22	
D1	0.205	-	5.21	-	
E	0.250	0.265	6.35	6.73	
E1	0.190	-	4.83	-	
е	0.090	0.090 BSC.		2.29 BSC.	
Н	0.380	0.410	9.65	10.41	
L	0.055	0.070	1.40	1.78	
L2	0.020 BSC.		0.51 BSC.		
L3	0.035	0.050	0.89	1.27	
L4	0.025	0.039	0.64	1.01	
θ	0°	8°	0°	8°	

Note

• Conforms to JEDEC® TO-252 variation AA except dimension "D"

Revision: 04-Dec-13

4

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