V20PWM10

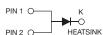
Vishay General Semiconductor

High Current Density Surface-Mount TMBS[®] (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.47$ V at $I_F = 5$ A



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DESIGN SUPPORT TOOLS



PRIMARY CHARACTERISTICS				
I _{F(AV)}	20 A			
V _{RRM}	100 V			
I _{FSM}	200 A			
V _F at I _F = 20 A (T _A = 125 °C)	0.70 V			
T _J max.	175 °C			
Package	SlimDPAK (TO-252AE)			
Circuit configuration	Single			

FEATURES

- Very low profile typical height of 1.3 mm
- Trench MOS Schottky technology
- Ideal for automated placement
- · Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
 Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in low voltage high frequency DC/DC converters, freewheeling diodes, and polarity protection applications.

MECHANICAL DATA

Case: SlimDPAK (TO-252AE)

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

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

M3 and HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V20PWM10	UNIT	
Device marking code		V20PWM10		
Maximum repetitive peak reverse voltage	V _{RRM}	100	V	
Maximum average forward rectified current (Fig. 1)	I _{F(AV)} ⁽¹⁾ 20		A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	200	A	
Operating junction temperature range	T _J ⁽²⁾	T _J ⁽²⁾ -40 to +175		
Storage temperature range	T _{STG}	-55 to +175	°C	

Notes

⁽¹⁾ With infinite heatsink

 $^{(2)}$ The heat generated must be less than the thermal conductivity from junction to ambient: dP_D/dT_J < 1/R_{θ JA}



FREE

V20PWM10



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ELECTRICAL CHARACTERISTICS ($T_A = 25$ °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_{F} = 5.0 \text{ A}$	T _A = 25 °C	V _F (1)	0.55	-	V
	I _F = 10 A			0.65	-	
	I _F = 20 A			0.82	0.90	
	I _F = 5.0 A	T _A = 125 °C		0.47	-	
	I _F = 10 A			0.58	-	
	I _F = 20 A			0.70	0.78	
Reverse current	V _R = 70 V	T _A = 25 °C	I _R (2)	0.01	-	mA
		T _A = 125 °C		3	-	
	V _B = 100 V	T _A = 25 °C		-	0.2	
	$v_{\rm R} = 100 v$	T _A = 125 °C		5	15	
Typical junction capacitance	4.0 V, 1 MHz		CJ	1575	-	pF

Notes

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

⁽²⁾ Pulse test: pulse width \leq 5 ms

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V20PWM10	UNIT	
Typical thermal resistance	R _{0JA} (1)(2)	55	°C/W	
	R _{0JM} ⁽³⁾	2.0		

Notes

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

 $^{(2)}$ Free air, mounted on recommended copper pad area; thermal resistance $R_{\theta JA}$ - junction to ambient

 $^{(3)}$ Mounted on infinite heat sink; thermal resistance $R_{\theta JM}$ - junction-to-mount

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
V20PWM10-M3/I	0.20	I	4500	13" diameter plastic tape and reel	
V20PWM10HM3/I ⁽¹⁾	0.20	l	4500	13" diameter plastic tape and reel	

Note

(1) AEC-Q101 qualified



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

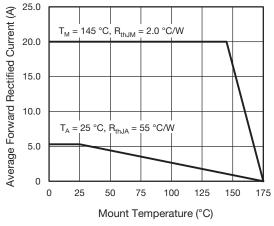
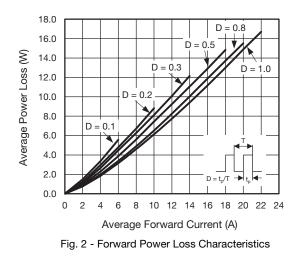
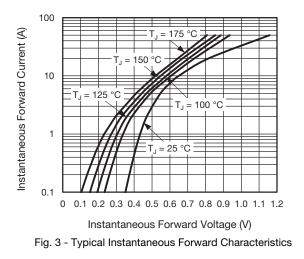
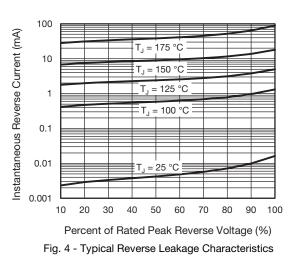
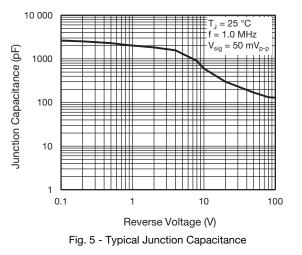


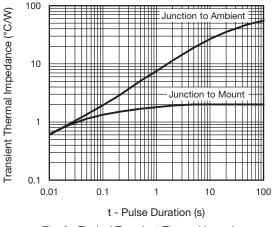
Fig. 1 - Maximum Forward Current Derating Curve

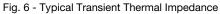












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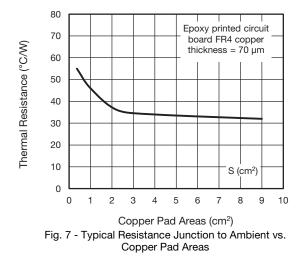
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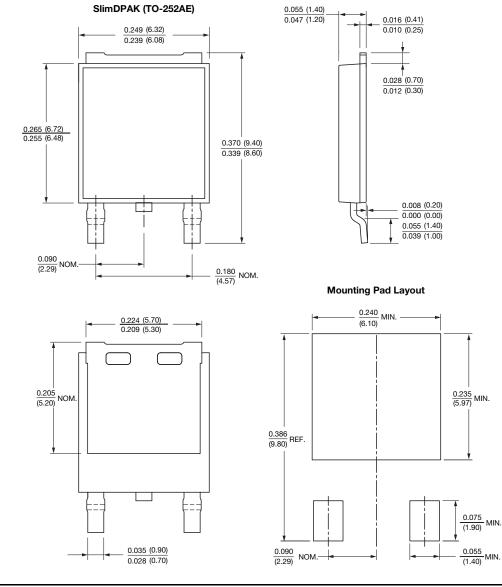
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