V20W60C-M3

Vishay General Semiconductor

## **Dual Trench MOS Barrier Schottky Rectifier**

Ultra Low  $V_F = 0.40$  V at  $I_F = 5$  A



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#### HEATSINK

PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub> 2 x 10 A					
V <sub>RRM</sub>	60 V				
I <sub>FSM</sub>	100 A				
$V_F$ at $I_F$ = 10 A ( $T_A$ = 125 °C)	0.51 V				
T <sub>J</sub> max.	150 °C				
Package	TO-252 (D-PAK)				
Diode variation	Dual common cathode				

### **FEATURES**

- 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
- Material categorization: For definitions of 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-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

<b>MAXIMUM RATINGS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)				
PARAMETER		SYMBOL	V20W60C	UNIT
Maximum repetitive peak reverse voltage		V <sub>RRM</sub>	60	V
Maximum average forward rectified current	per device	1	20	•
(fig. 1)	per diode	IF(AV)	10	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I <sub>FSM</sub>	100	А
Operating junction and storage temperature range		T <sub>J</sub> , T <sub>STG</sub>	-40 to +150	°C

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HALOGEN

FREE



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<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS S		SYMBOL	TYP.	MAX.	UNIT
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C		0.48	-	
Instantaneous forward voltage per diode	I <sub>F</sub> = 10 A	$I_{A} = 25$ C	V <sub>F</sub> (1)	0.55	0.65	- V
Instantaneous forward voltage per diode	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C	VF	0.40	-	
	I <sub>F</sub> = 10 A			0.51	0.62	
Reverse current per diode	V 60 V	$V_{R} = 60 V$ $T_{A} = 25 °C$ $T_{A} = 125 °C$	I <sub>B</sub> <sup>(2)</sup>	-	5000	μA
	$v_{\rm R} = 00 v$		'R (-/	17	60	mA

Notes

<sup>(1)</sup> Pulse test: 300 µs pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  5 ms

THERMAL CHARACTERIS	<b>TERMAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)			
PARAMETER		SYMBOL	V20W60C	UNIT
	per diode	P	2.4	
Typical thermal resistance	per device	$R_{ ext{ heta}JC}$	1.2	°C/W
	per device	R <sub>0JA</sub> (1)(2)	65	

#### Notes

<sup>(1)</sup> 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	DERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
V20W60C-M3/I	0.38		2500/reel	13" diameter plastic tape and reel	

## RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

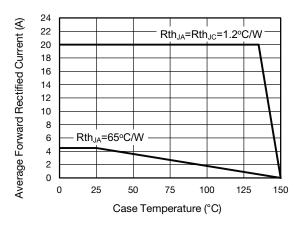


Fig. 1 - Maximum Forward Current Derating Curve

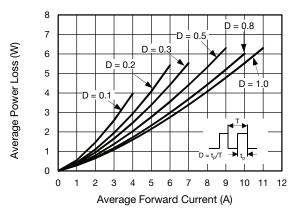


Fig. 2 - Forward Power Loss Characteristics Per Diode





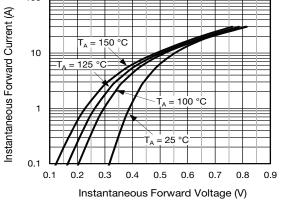


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

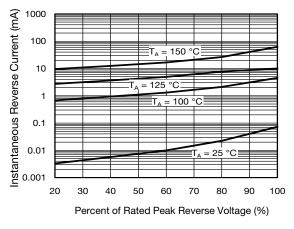


Fig. 4 - Typical Reverse Characteristics Per Diode

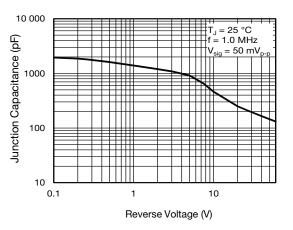


Fig. 5 - Typical Junction Capacitance Per Diode

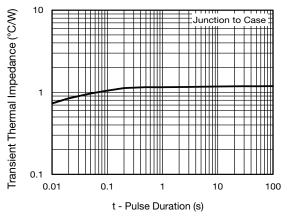
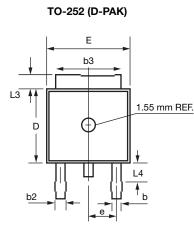


Fig. 6 - Typical Transient Thermal Impedance Per Device

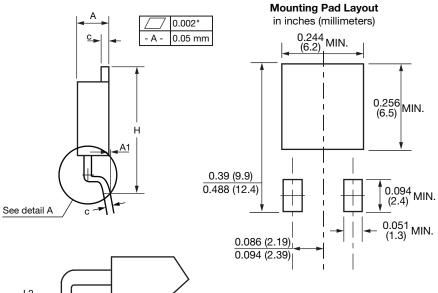


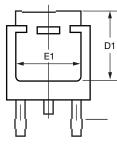
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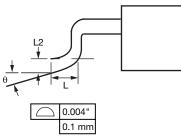
## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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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	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"

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4

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