VSS8D3M15

AUTOMOTIVE

HALOGEN

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



DESIGN SUPPORT TOOLS



PRIMARY CHARACTERISTICS				
I _{F(AV)}	3 A			
V _{RRM}	150 V			
I _{FSM}	60 A			
V _F at I _F = 3 A (T _A = 125 °C)	0.64 V			
T _J max.	175 °C			
Package	SlimSMAW (DO-221AD)			
Circuit configuration	Single			

FEATURES

- Low-profile package
- Meets MSL level 1, J-STD-020, per LF maximum peak of 260 °C
 - RoHS COMPLIANT
 - Automotive ordering code: base P/NHM3
- FREE Compatible to SOD-128 package case outline
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

AEC-Q101 gualified available

For use in high frequency inverters, freewheeling, DC/DC converters, and polarity protection in commercial, industrial, and automotive applications.

MECHANICAL DATA

Case: SlimSMAW (DO-221AD)

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 gualified

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

H3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	VSS8D3M15	UNIT		
Device marking code		3M15			
Maximum repetitive peak reverse voltage	V _{RRM}	150	V		
Maximum average forward rectified current (fig. 1)	I _F ⁽¹⁾	3			
	I _F ⁽²⁾	1.9	— A		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	60	A		
Operating junction temperature range	T _J ⁽³⁾	-40 to +175	°C		
Storage temperature range	T _{STG}	-55 to +175	°C		

Notes

⁽¹⁾ Mounted on 30 mm x 30 mm pad areas aluminum PCB

⁽²⁾ Free air. mounted on recommended copper pad area

 $^{(3)}$ The heat generated must be less than the thermal conductivity from junction-to-ambient: dP_D/dT_J < 1/ R_{0JA}

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ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 1.5 A	T _A = 25 °C	V _F ⁽¹⁾	0.76	-	V
	I _F = 3 A			1.04	1.12	
	I _F = 1.5 A	- T _A = 125 °C		0.57	-	
	I _F = 3 A			0.64	0.72	
Reverse current	V _R = 100 V	T _A = 25 °C	_R (2)	0.01	-	mA
	$v_{\rm R} = 100 v$	T _A = 125 °C		0.5	-	
	V _R = 150 V	T _A = 25 °C		-	0.18	
	v _R = 150 v	T _A = 125 °C		1.0	3.0	
Typical junction capacitance	4.0 V, 1 MHz		CJ	190	-	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 specified)					
PARAMETER	SYMBOL	TYP.	MAX.	UNIT	
Typical thermal resistance	R _{0JA} ⁽¹⁾⁽²⁾	120	150	°C/W	
	R _{0JM} ⁽³⁾	12	15	C/W	

Notes

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

(2) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint

⁽³⁾ Thermal resistance junction-to-mount to follow JEDEC 51-14 transient dual interface test method (TDIM)

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
VSS8D3M15-M3/H	0.033	Н	3500	7" diameter plastic tape and reel		
VSS8D3M15-M3/I	0.033	I	14 000	13" diameter plastic tape and reel		
VSS8D3M15HM3/H (1)	0.033	Н	3500	7" diameter plastic tape and reel		
VSS8D3M15HM3/I ⁽¹⁾	0.033	Ι	14 000	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)

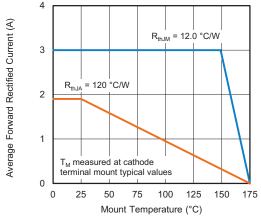


Fig. 1 - Forward Current Derating Curve

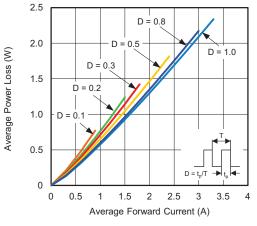


Fig. 2 - Forward Power Loss Characteristics

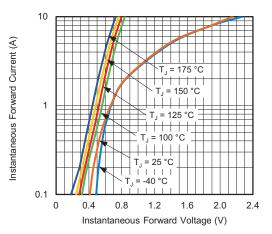


Fig. 3 - Typical Instantaneous Forward Characteristics

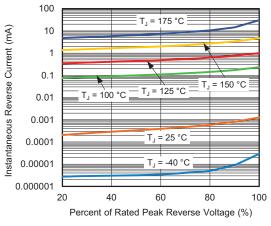


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

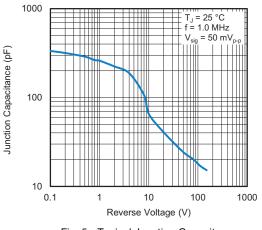


Fig. 5 - Typical Junction Capacitance

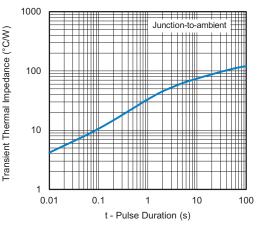


Fig. 6 - Typical Transient Thermal Impedance

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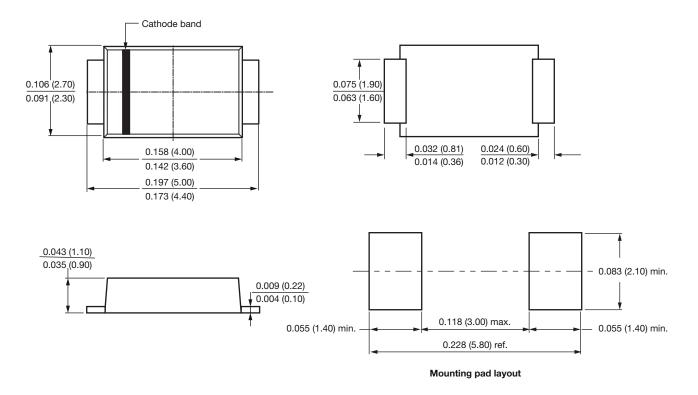


VSS8D3M15

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimSMAW (DO-221AD)





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