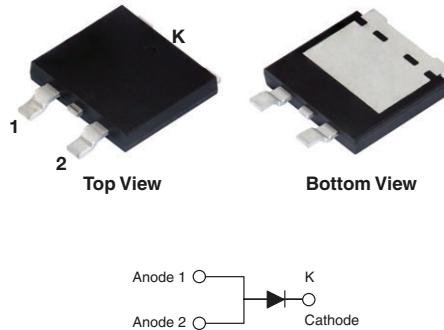


Dual High-Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low V_F = 0.52 V at I_F = 5 A

eSMP® Series SMPD (TO-263AC)



LINKS TO ADDITIONAL RESOURCES



FEATURES

- Trench MOS Schottky technology generation 2
- Very low profile - typical height of 1.7 mm
- 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



RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection in commercial, industrial, and automotive application.

MECHANICAL DATA

Case: SMPD (TO-263AC)

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

Polarity: as marked

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	20 A
V_{RRM}	120 V
I_{FSM}	150 A
V_F at I_F = 20 A (T_A = 125 °C)	0.71 V
T_J max.	175 °C
Package	SMPD (TO-263AC)
Circuit configuration	Single

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	V20DM120	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120	V
Maximum DC forward rectified current (fig. 1)	$I_{F(AV)}^{(1)}$	20	A
	$I_{F(AV)}^{(2)}$	5.5	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	150	A
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +175	°C

Notes

(1) With infinite heatsink

(2) With recommended pad size, 2 oz FR4 PCB

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

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	$I_F = 5 \text{ A}$	$T_A = 25^\circ\text{C}$	$V_F^{(1)}$	0.62	-	V	
	$I_F = 10 \text{ A}$			0.77	-		
	$I_F = 20 \text{ A}$			1.02	1.1		
	$I_F = 5 \text{ A}$	$T_A = 125^\circ\text{C}$		0.52	-		
	$I_F = 10 \text{ A}$			0.61	-		
	$I_F = 20 \text{ A}$			0.71	0.79		
Reverse current at rated V_R per diode	$V_R = 90 \text{ V}$	$T_A = 25^\circ\text{C}$	$I_R^{(2)}$	0.01	-	mA	
		$T_A = 125^\circ\text{C}$		3	-		
	$V_R = 120 \text{ V}$	$T_A = 25^\circ\text{C}$		-	0.8		
		$T_A = 125^\circ\text{C}$		5	15		

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	V20DM120		UNIT
Typical thermal resistance	$R_{\theta\text{JC}}$	1.6		°C/W
	$R_{\theta\text{JA}}^{(1)(2)}$	48		

Notes

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

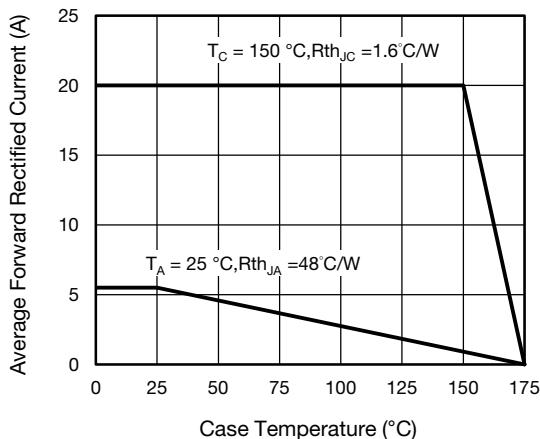
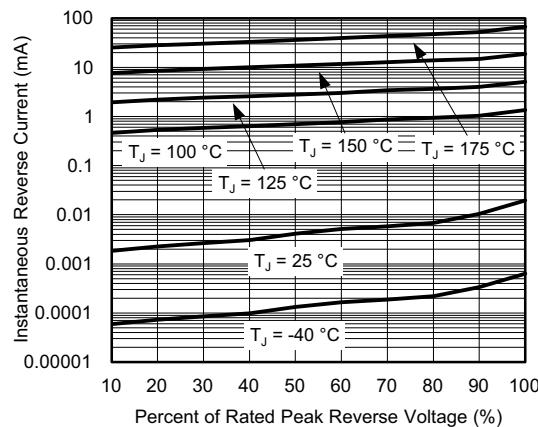
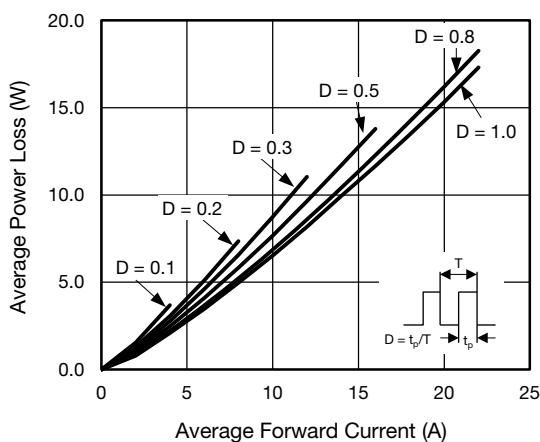
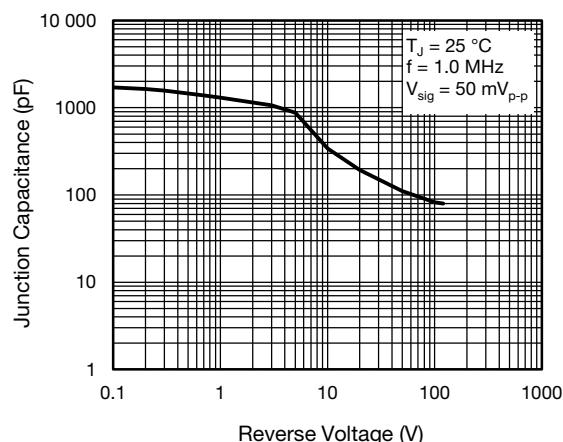
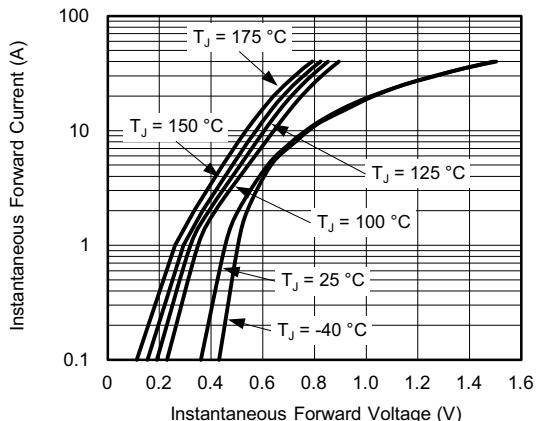
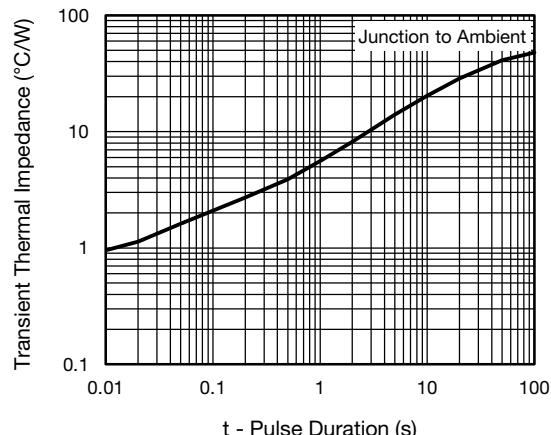
(2) Free air, without heatsink

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V20DM120-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
V20DM120HM3/I ⁽¹⁾	0.55	I	2000/reel	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

Fig. 1 - Forward Current Derating Curve

Fig. 4 - Typical Reverse Characteristics

Fig. 2 - Average Power Loss Characteristics

Fig. 5 - Typical Junction Capacitance

Fig. 3 - Typical Instantaneous Forward Characteristics

Fig. 6 - Typical Transient Thermal Impedance

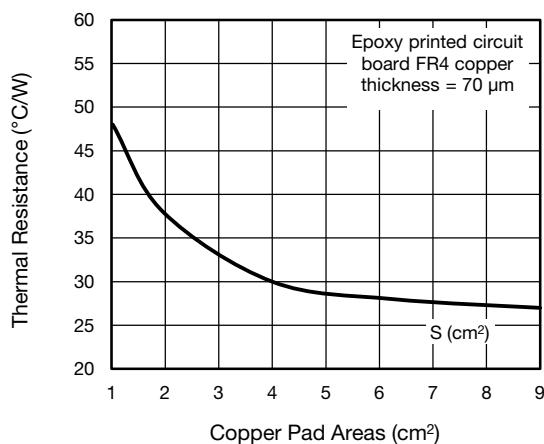
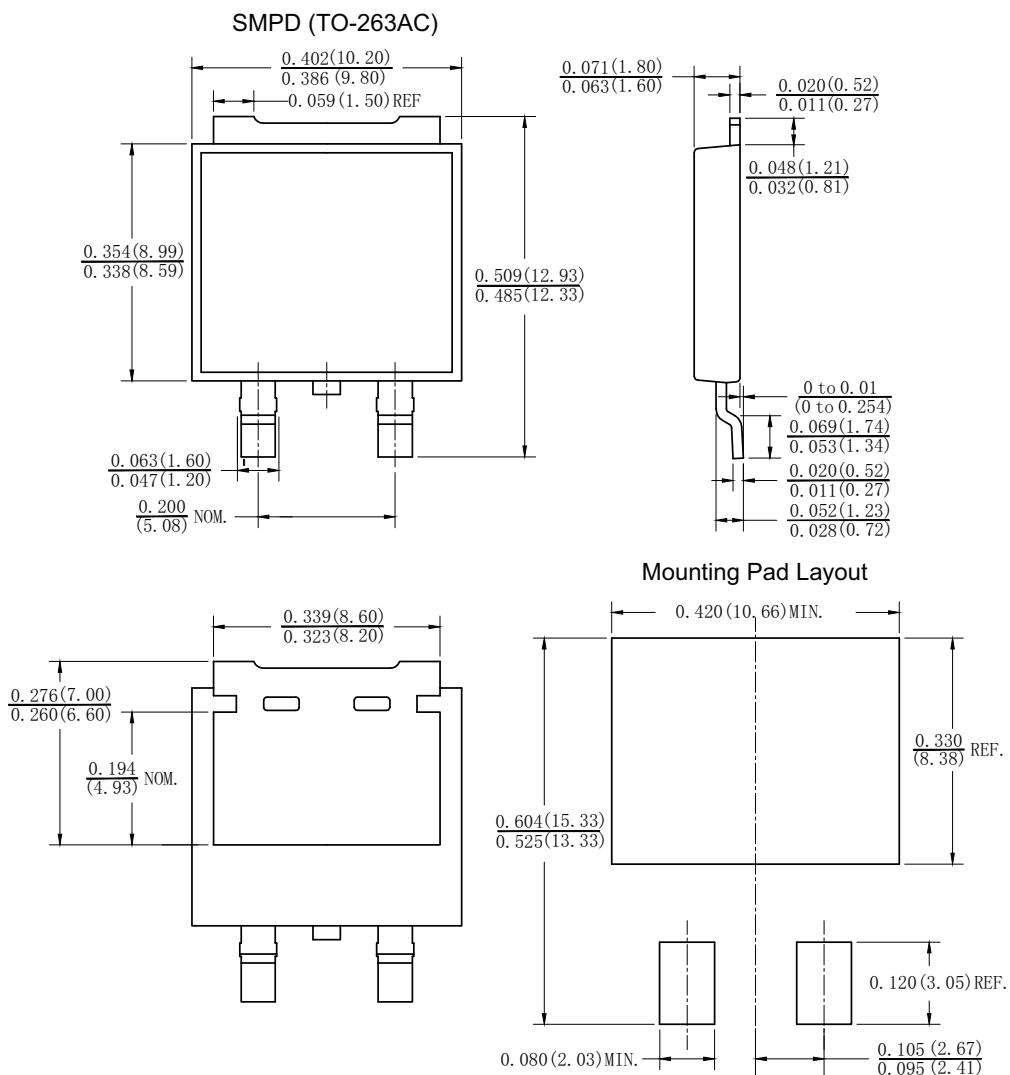


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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