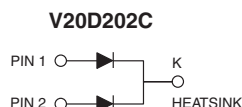
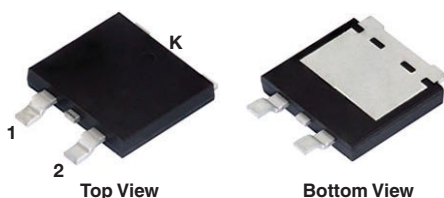


Dual High-Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

eSMP® Series SMPD (TO-263AC)



DESIGN SUPPORT TOOLS AVAILABLE



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 10.0 A
V_{RRM}	200 V
I_{FSM}	150 A
V_F at $I_F = 10.0$ A ($T_A = 125$ °C)	0.68 V
T_J max.	175 °C
Package	SMPD (TO-263AC)
Circuit configuration	Common cathode

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/doc299912



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.

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_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified

(X denotes revision code e.g. A, B, ...)

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

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	V20D202C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	200	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	20	A
		10	
Maximum DC reverse voltage	V_{DC}	160	V
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	150	A
Voltage rate of change (rated V_R)	dV/dt	10 000	V/ μ s
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +175	°C

ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	I _F = 5 A	T _A = 25 °C	V _F ⁽¹⁾	0.75	-	V
	I _F = 10 A			0.83	0.9	
	I _F = 5 A	T _A = 125 °C		0.6	-	
	I _F = 10 A			0.68	0.76	
Reverse current at rated V _R per diode	V _R = 160 V	T _A = 25 °C	I _R ⁽²⁾	0.8	-	μA
		T _A = 125 °C		1	-	mA
	V _R = 200 V	T _A = 25 °C		-	150	μA
		T _A = 125 °C		2.5	10	mA

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width $\leq 5\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER		SYMBOL	V20D202C	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	2.8	$^{\circ}\text{C/W}$
	per device		1.5	
	per device	$R_{\theta JA}^{(1)(2)}$	58	

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$ - junction-to-ambient
(2) Free air, without heatsink

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMPD (TO-263AC)	V20D202C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
SMPD (TO-263AC)	V20D202CHM3_A/I ⁽¹⁾	0.55	I	2000/reel	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

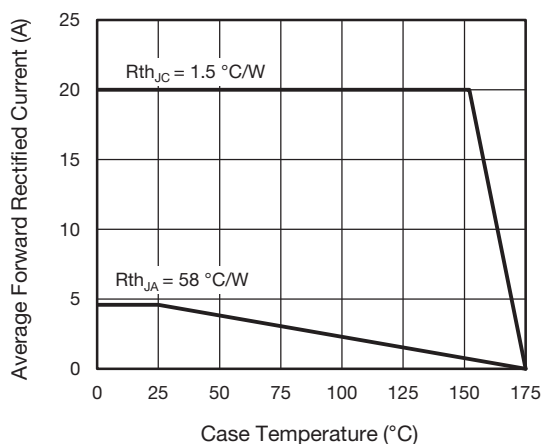
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

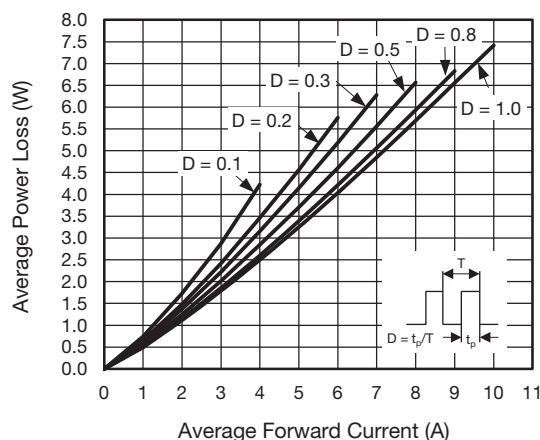


Fig. 2 - Forward Power Loss Characteristics

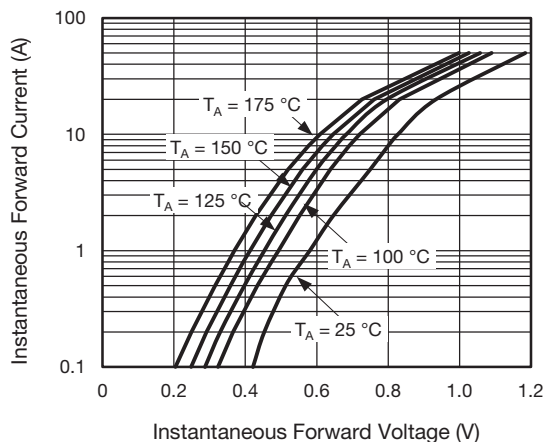


Fig. 3 - Typical Instantaneous Forward Characteristics

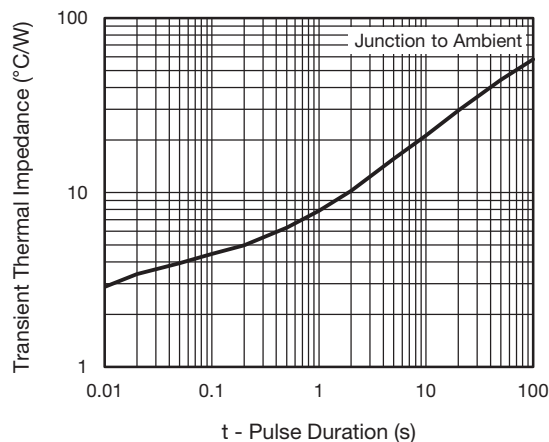


Fig. 6 - Typical Transient Thermal Impedance

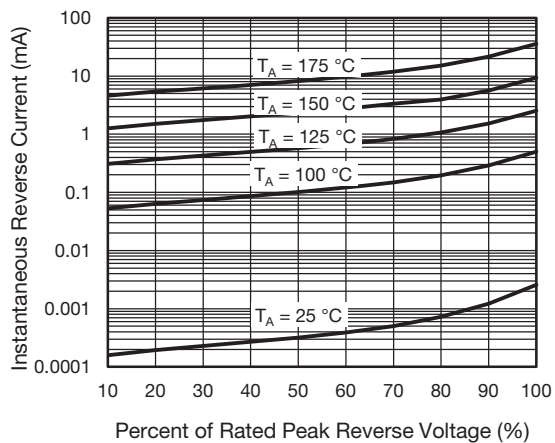


Fig. 4 - Typical Reverse Characteristics

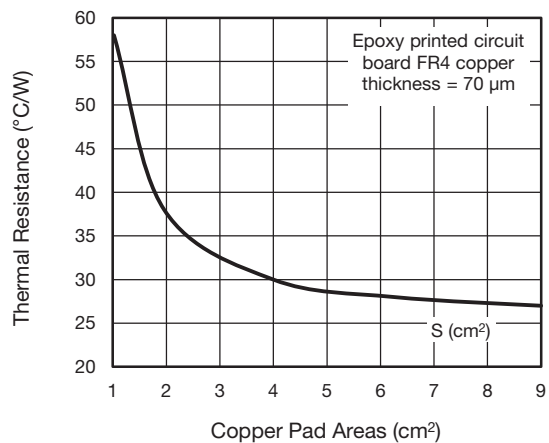


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

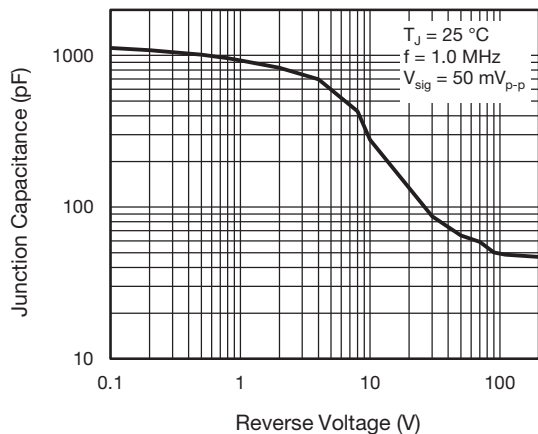
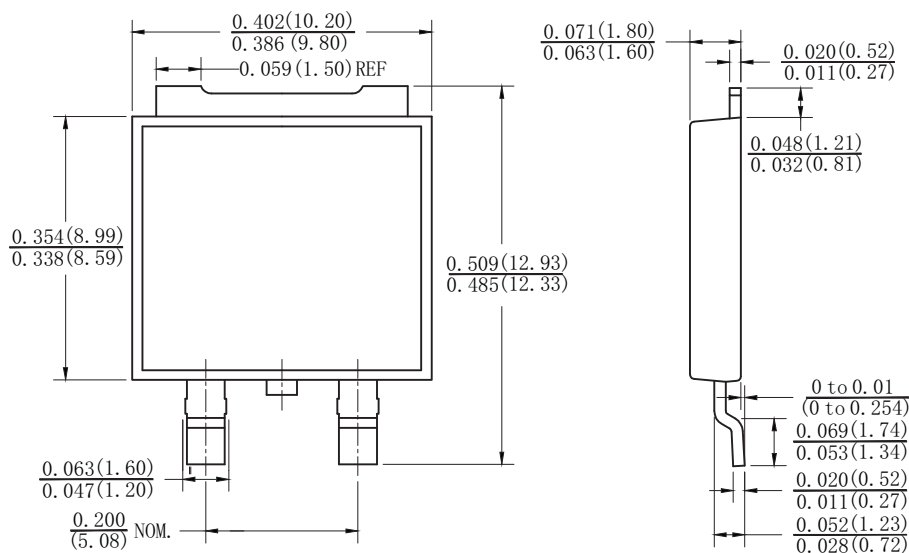
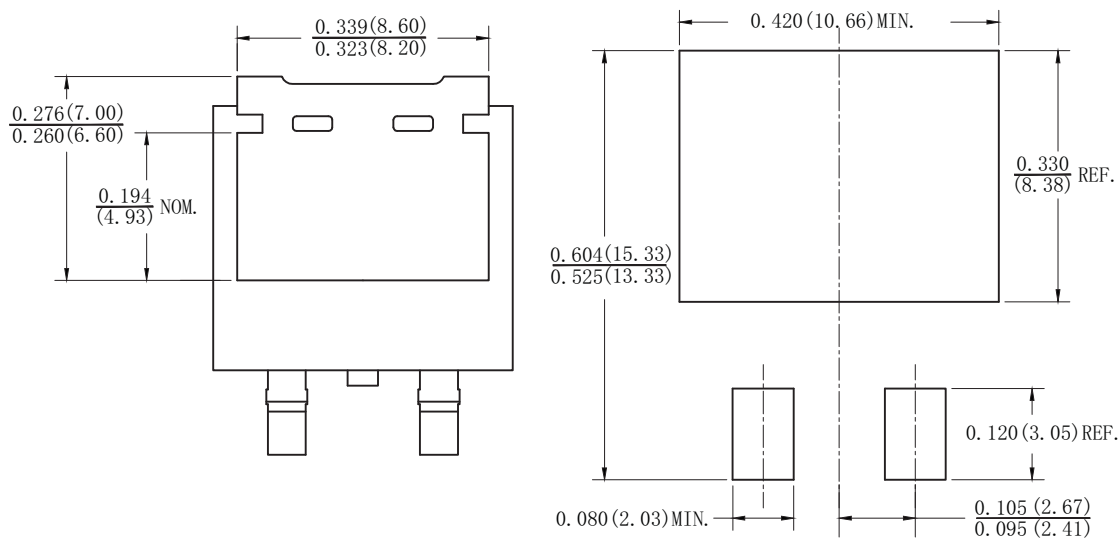


Fig. 5 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPD (TO-263AC)

Mounting Pad Layout




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