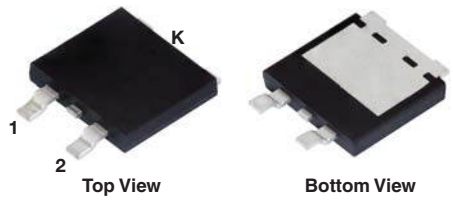
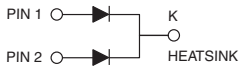
Dual High-Voltage Trench MOS Barrier Schottky Rectifier

TMBS® eSMP® Series
TO-263AC (SMPD)



Top View Bottom View

V20D202C



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.

MECHANICAL DATA

Case: TO-263AC (SMPD)
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	
$I_{F(AV)}$	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	TO-263AC (SMPD)
Diode variations	Dual common cathode

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)	per device	$I_{F(AV)}$	20	A
	per diode		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/µs
Operating junction and storage temperature range		T_J, T_{STG}	-40 to +175	°C

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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 ≤ 5 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER		SYMBOL	V20D202C	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	2.8	°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 -mount

(2) Free air, without heatsink

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-263AC (SMPD)	V20D202C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
TO-263AC (SMPD)	V20D202CHM3/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 °C unless otherwise noted)

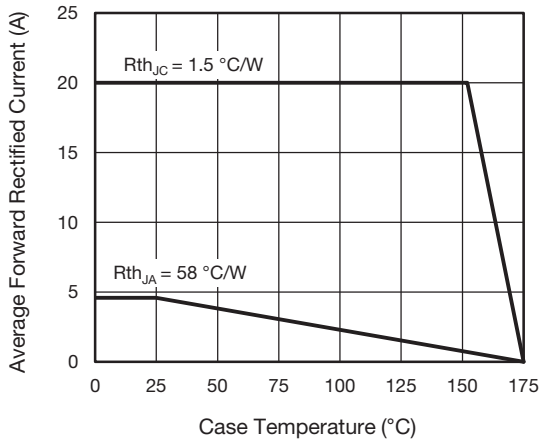

Fig. 1 - Forward Current Derating Curve

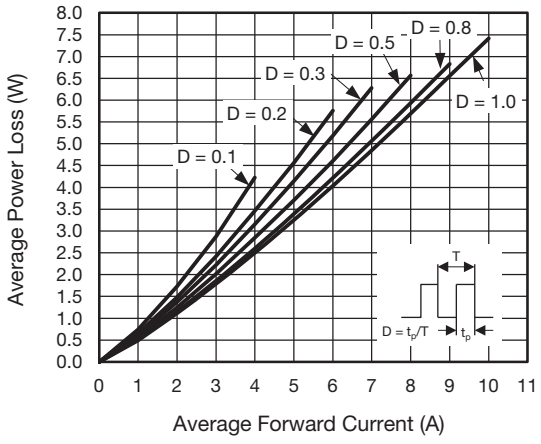

Fig. 2 - Forward Power Loss Characteristics

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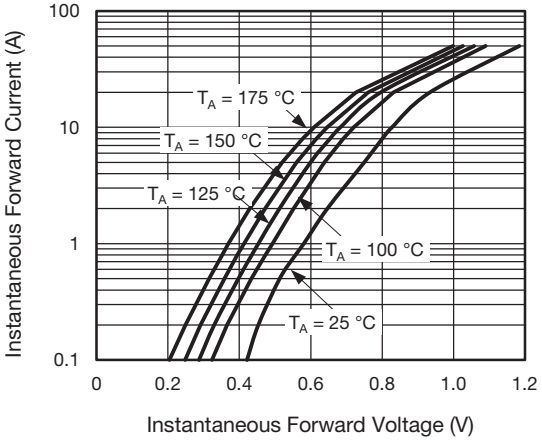

Fig. 3 - Typical Instantaneous Forward Characteristics

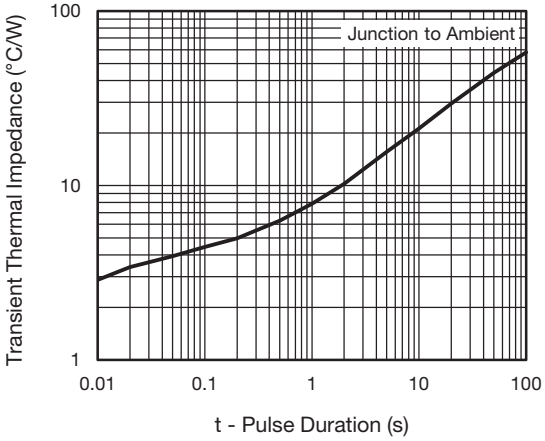

Fig. 6 - Typical Transient Thermal Impedance

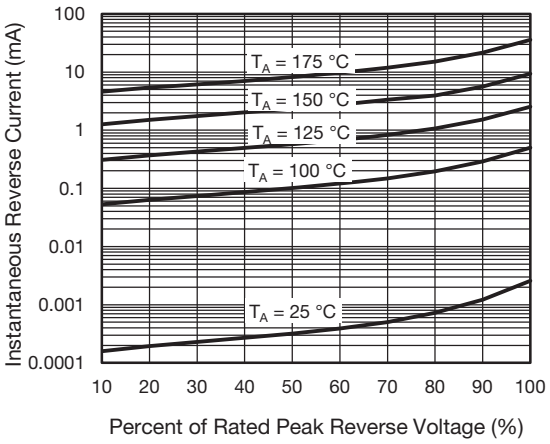

Fig. 4 - Typical Reverse Characteristics

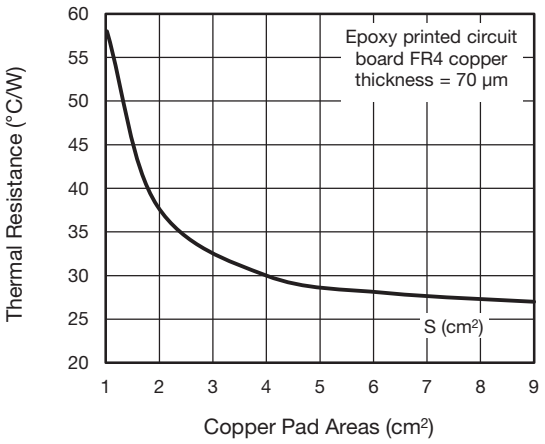

Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

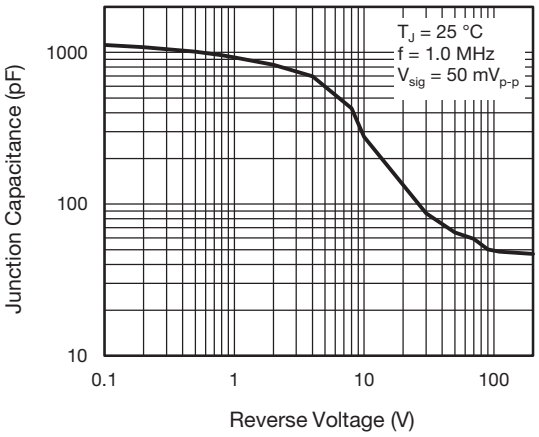

Fig. 5 - Typical Junction Capacitance

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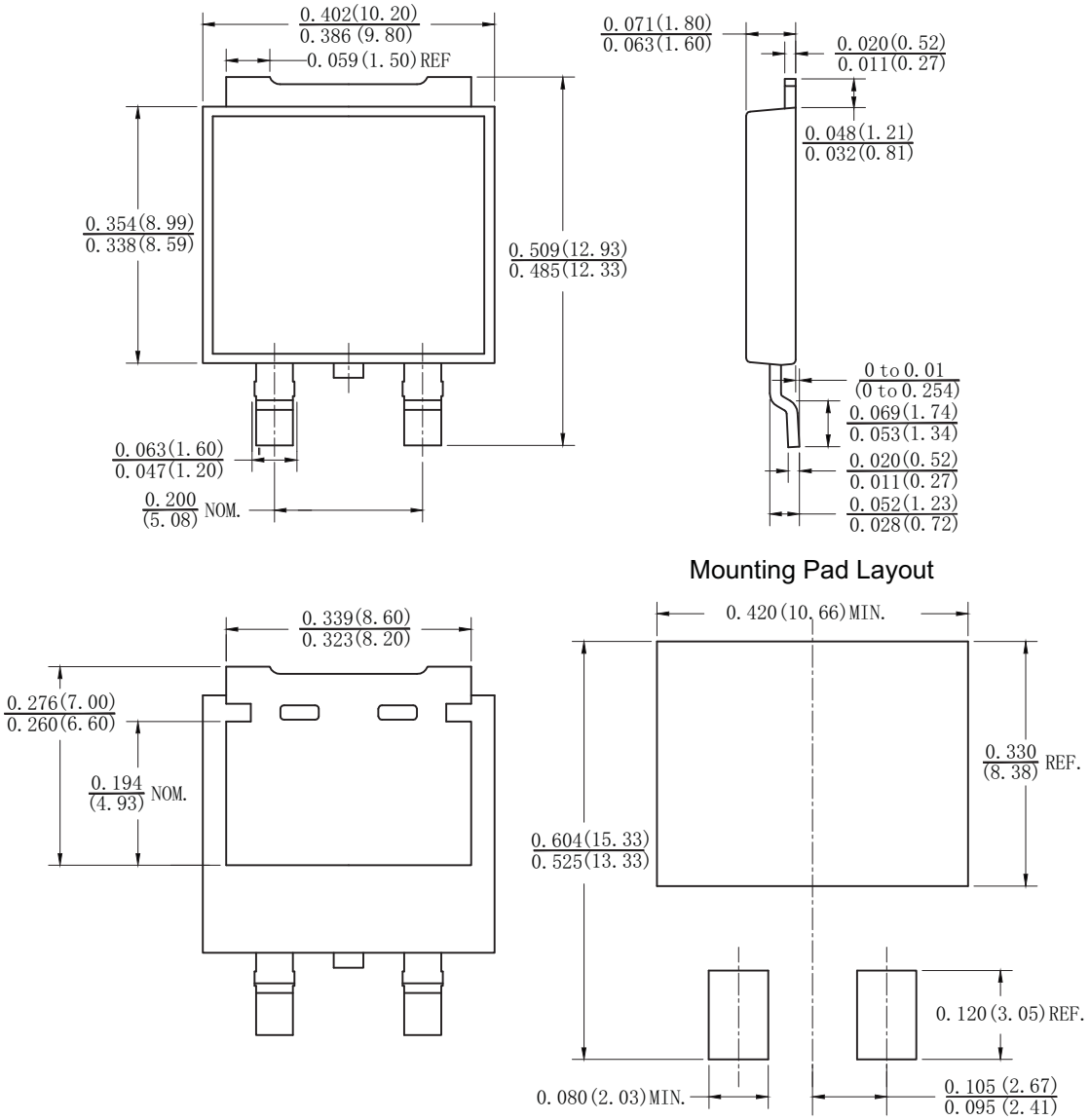
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AC (SMPD)



Mounting Pad Layout

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