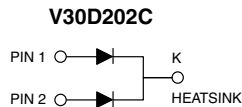
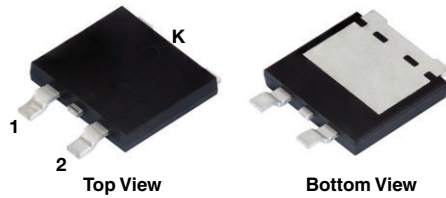


# Dual High-Voltage TMBS<sup>®</sup> (Trench MOS Barrier Schottky) Rectifier

## eSMP<sup>®</sup> Series SMPD (TO-263AC)



### 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](http://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:** 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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 15.0 A
$V_{RRM}$	200 V
$I_{FSM}$	260 A
$V_F$ at $I_F = 15.0$ A ( $T_A = 125$ °C)	0.66 V
$T_J$ max.	175 °C
Package	SMPD (TO-263AC)
Circuit configuration	Common cathode

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	V30D202C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	200	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	per device	30
		per diode	15
Maximum DC reverse voltage	$V_{DC}$	160	V
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	260	A
Voltage rate of change (rated $V_R$ )	dV/dt	10 000	V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +175	°C

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.72	-	V
	$I_F = 10\text{ A}$			0.78	-	
	$I_F = 15\text{ A}$			0.8	0.88	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.56	-	
	$I_F = 10\text{ A}$			0.64	-	
	$I_F = 15\text{ A}$			0.66	0.73	
Reverse current at rated $V_R$ per diode	$V_R = 160\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	1	-	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		2	-	mA
	$V_R = 200\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		-	200	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		5	25	mA

**Notes**

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

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V30D202C	UNIT
Typical thermal resistance	$R_{\theta JC}$	per diode	2.0
		per device	1.1
	$R_{\theta JA}^{(1)(2)}$	per device	50

**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

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMPD (TO-263AC)	V30D202C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
SMPD (TO-263AC)	V30D202CHM3_A/I <sup>(1)</sup>	0.55	I	2000/reel	13" diameter plastic tape and reel

**Note**

- (1) AEC-Q101 qualified

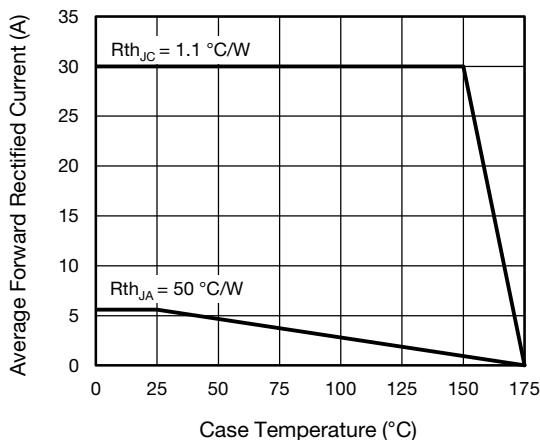
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

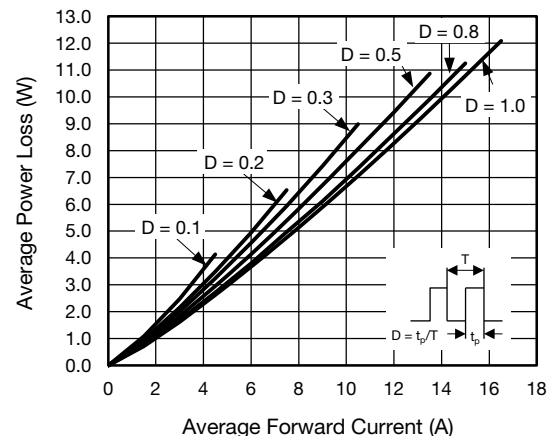


Fig. 2 - Forward Power Loss Characteristics

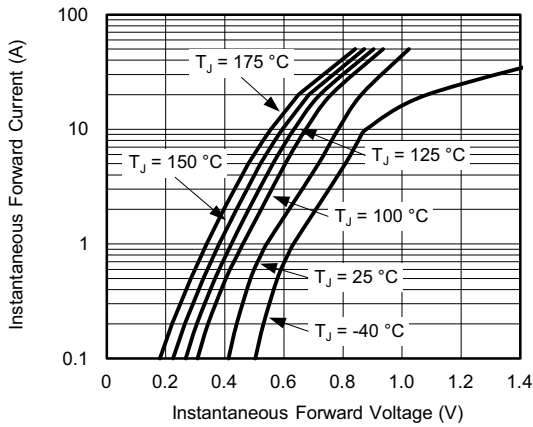


Fig. 3 - Typical Instantaneous Forward Characteristics

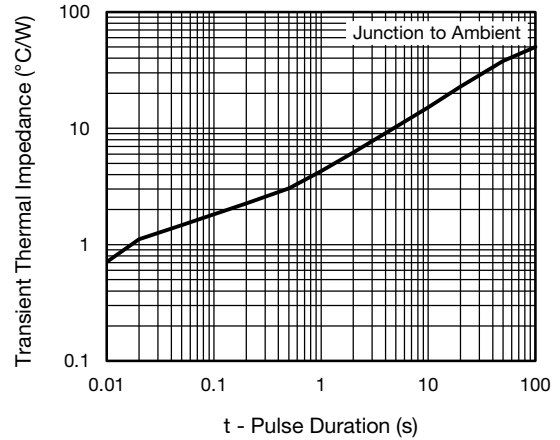


Fig. 6 - Typical Transient Thermal Impedance

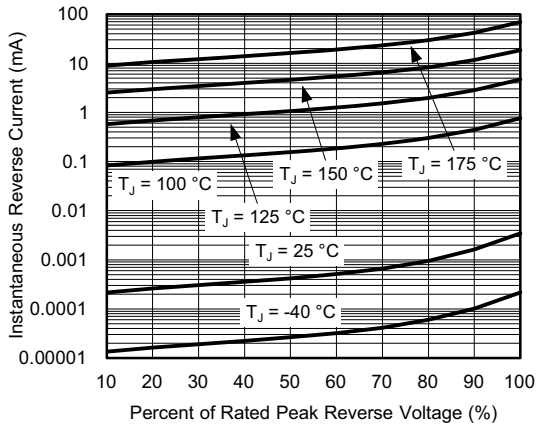


Fig. 4 - Typical Reverse Characteristics

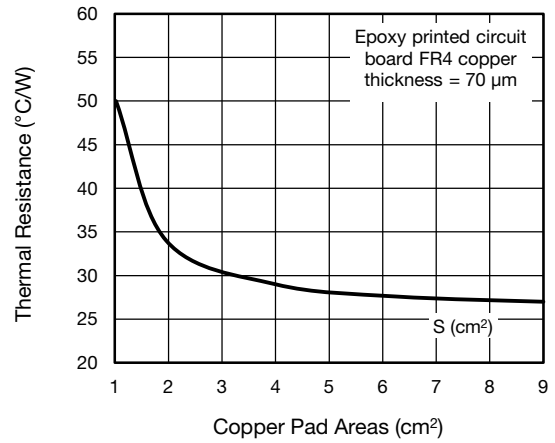


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

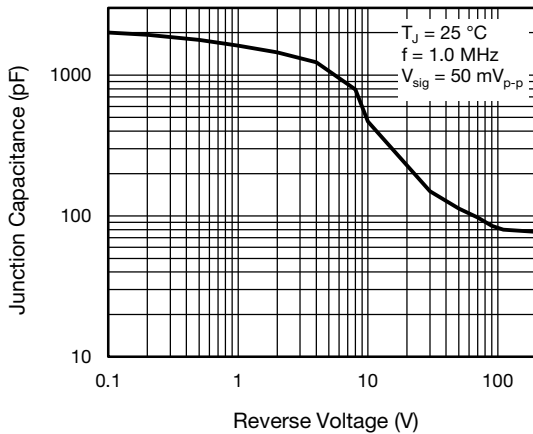
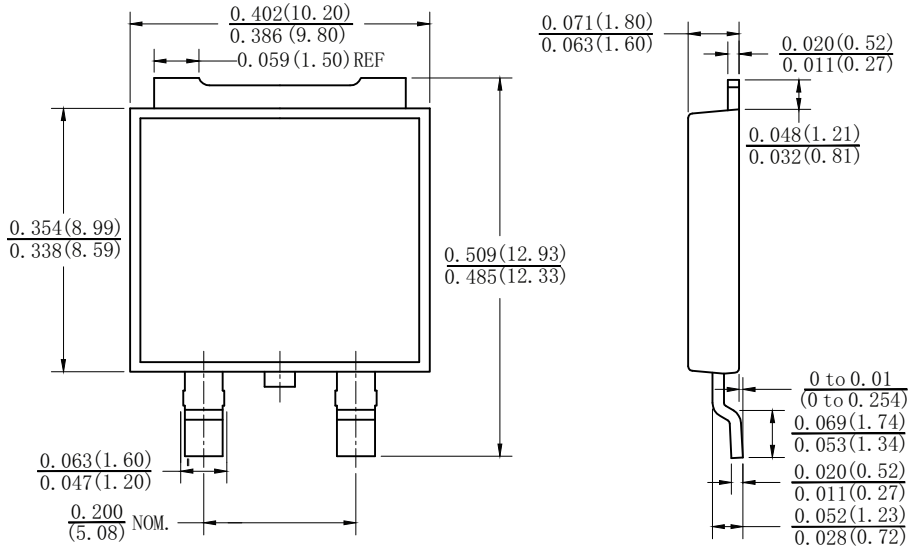


Fig. 5 - Typical Junction Capacitance

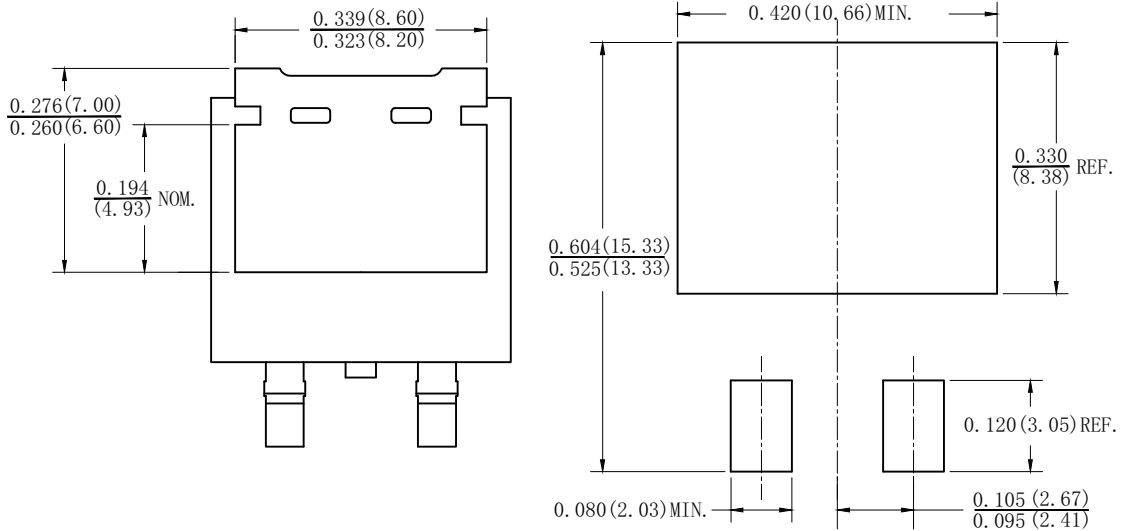


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPD (TO-263AC)



Mounting Pad Layout





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