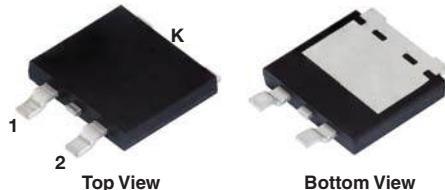


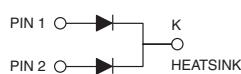
## Dual Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.51$  V at  $I_F = 5$  A

### TMBS® eSMP® Series TO-263AC (SMPD)



V30DM120C



### FEATURES

- Trench MOS Schottky technology
- Very low profile - typical height of 1.7 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency operation
- AEC-Q101 qualified available:
  - Automotive ordering code: base P/NHM3
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://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: 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 15 A
$V_{RRM}$	120 V
$I_{FSM}$	150 A
$V_F$ at $I_F = 15$ A ( $T_A = 125$ °C)	0.67 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	V30DM120C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	120	V
Maximum average forward rectified current (fig. 1)	per device	30	A
	per diode	15	
Peak forward surge current 10 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

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	$I_F = 5 \text{ A}$	$T_A = 25^\circ\text{C}$	0.59	-	V
	$I_F = 7.5 \text{ A}$		0.66	-	
	$I_F = 15 \text{ A}$		0.88	0.97	
	$I_F = 5 \text{ A}$	$T_A = 125^\circ\text{C}$	0.51	-	
	$I_F = 7.5 \text{ A}$		0.56	-	
	$I_F = 15 \text{ A}$		0.67	0.76	
Reverse current per diode	$V_R = 90 \text{ V}$	$T_A = 25^\circ\text{C}$	5	-	$\mu\text{A}$
		$T_A = 125^\circ\text{C}$	3.1	-	mA
	$V_R = 120 \text{ V}$	$T_A = 25^\circ\text{C}$	-	800	$\mu\text{A}$
		$T_A = 125^\circ\text{C}$	6	27	mA

**Notes**

(1) Pulse test: 300  $\mu\text{s}$  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	V30DM120C		UNIT	
Typical thermal resistance	per diode	$R_{\theta\text{JC}}$	2.2	$^\circ\text{C/W}$	
	per device		1.2		
	per device	$R_{\theta\text{JA}}^{(1)(2)}$	48		

**Notes**

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

(2) Free air, without heatsink

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-263AC (SMPD)	V30DM120C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
TO-263AC (SMPD)	V30DM120CHM3/I <sup>(1)</sup>	0.55	I	2000/reel	13" diameter plastic tape and reel

**Note**
<sup>(1)</sup> AEC-Q101 qualified

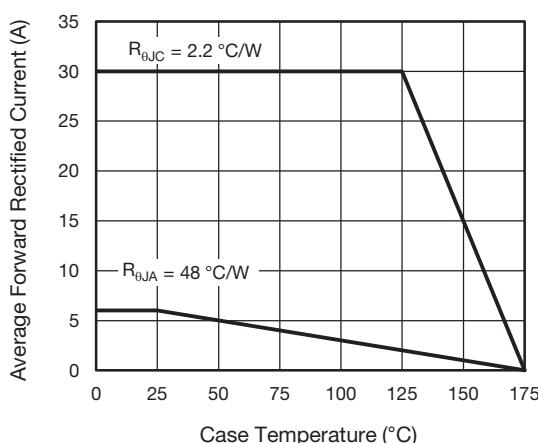
**RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25^\circ\text{C}$  unless otherwise noted)**


Fig. 1 - Forward Current Derating Curve

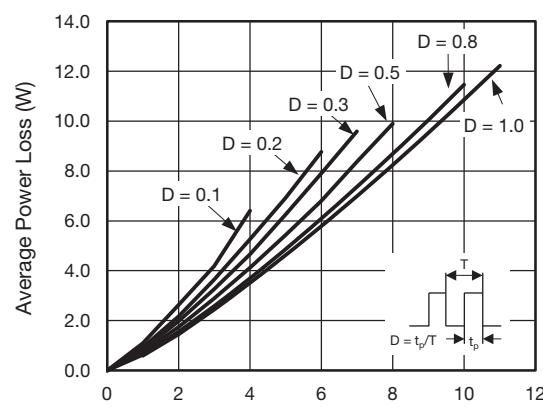


Fig. 2 - Forward Power Loss Characteristics Per Diode

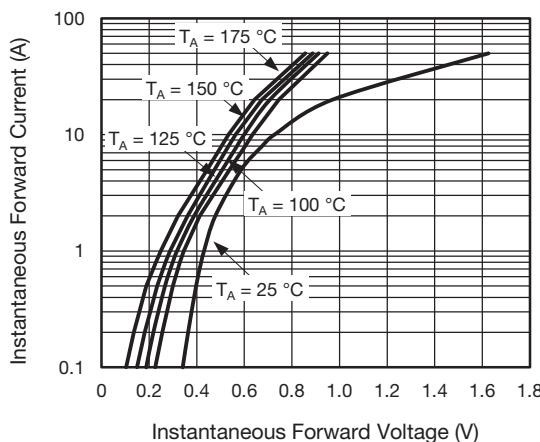


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

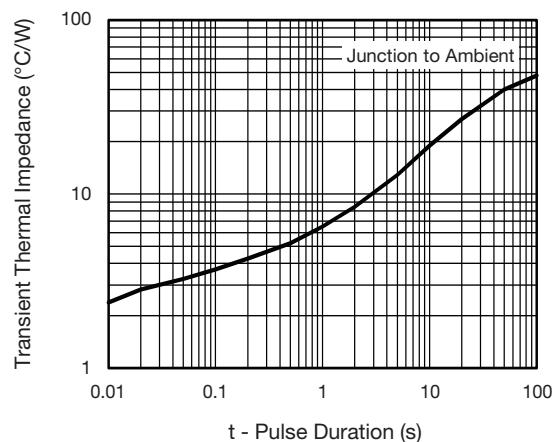


Fig. 6 - Typical Transient Thermal Impedance Per Device

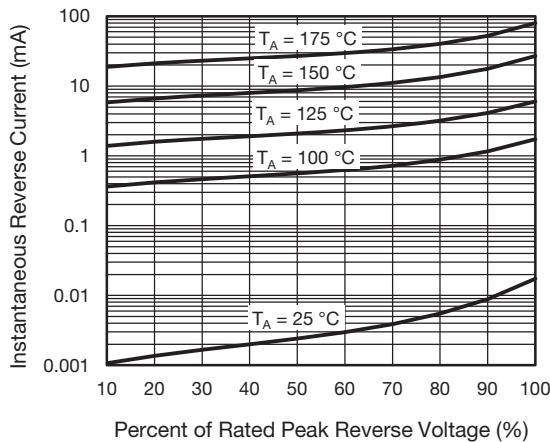


Fig. 4 - Typical Reverse Characteristics Per Diode

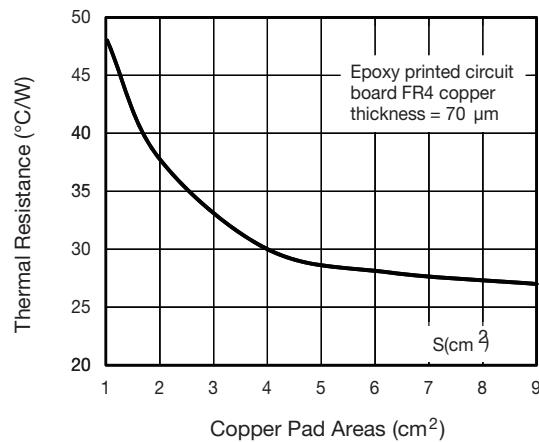


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

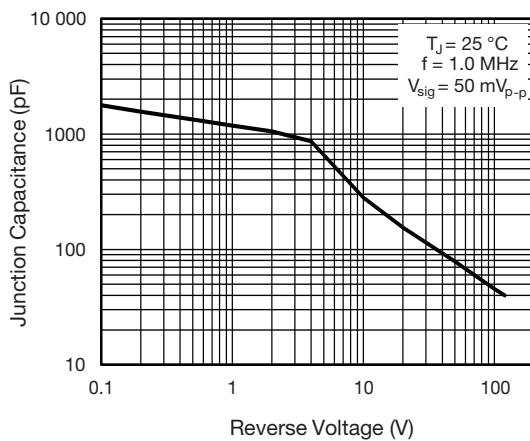
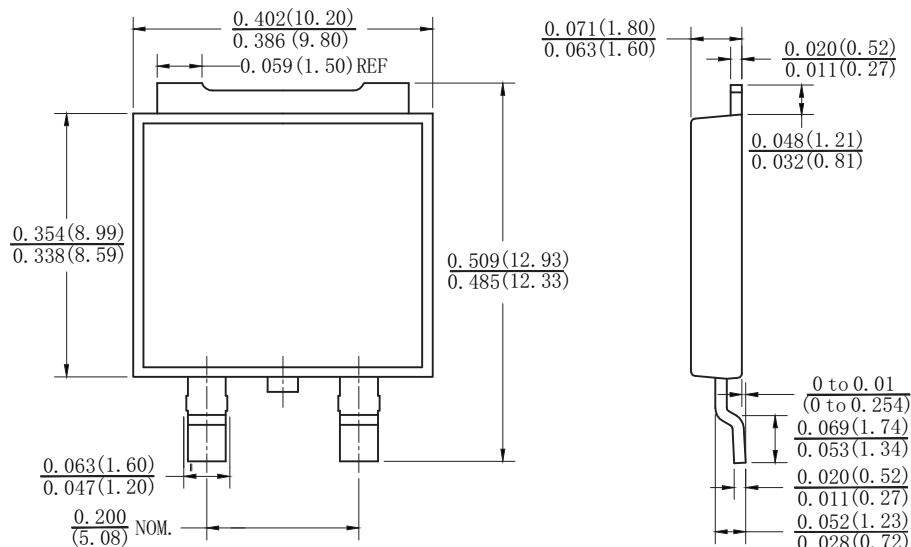
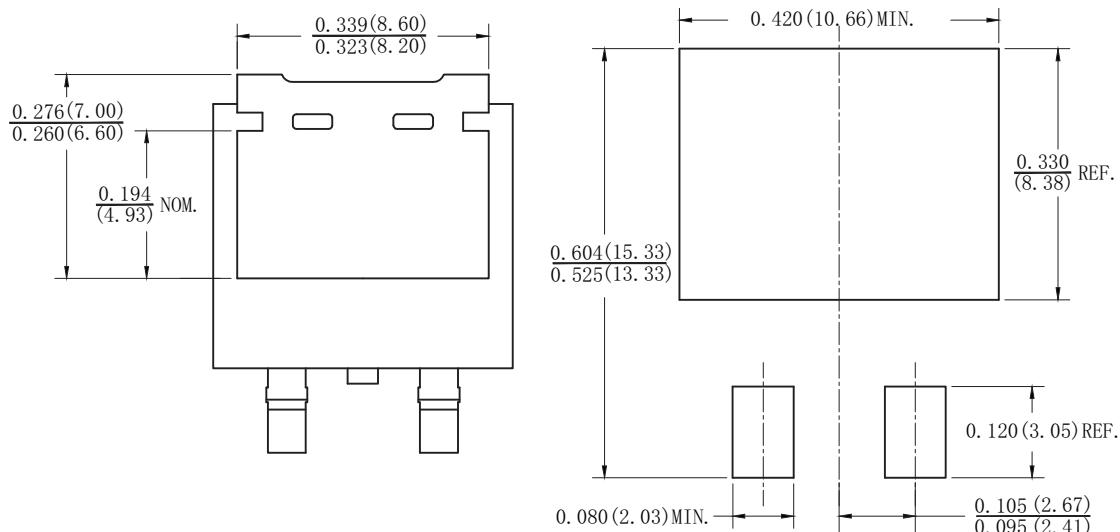


Fig. 5 - Typical Junction Capacitance Per Diode

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**TO-263AC (SMPD)**

**Mounting Pad Layout**


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