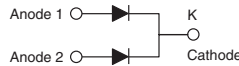
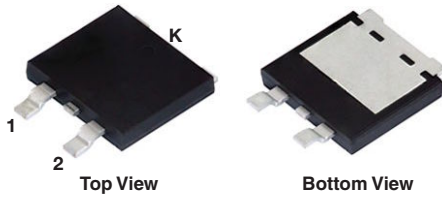




Dual High-Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.36\text{ V}$ at $I_F = 5\text{ A}$

eSMP® Series SMPD (TO-263AC)



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
- 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

DESIGN SUPPORT TOOLS AVAILABLE



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.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 30 A
V_{RRM}	100 V
I_{FSM}	320 A
V_F at $I_F = 30\text{ A}$ ($T_A = 125\text{ °C}$)	0.66 V
T_J max.	150 °C
Package	SMPD (TO-263AC)
Circuit configuration	Common cathode

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

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V60D100C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	per device	60
		per diode	30
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	320	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 +150	°C



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.45	-	V
	$I_F = 15\text{ A}$			0.62	-	
	$I_F = 30\text{ A}$			0.75	0.81	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.36	-	
	$I_F = 15\text{ A}$			0.54	-	
	$I_F = 30\text{ A}$			0.66	0.73	
Reverse current at rated V_R per diode	$V_R = 70\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	12	-	μA
		$T_A = 125\text{ }^\circ\text{C}$		11	-	mA
	$V_R = 100\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		-	1000	μA
		$T_A = 125\text{ }^\circ\text{C}$		27	85	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	V60D100C	UNIT	
Typical thermal resistance	per diode	$R_{\theta JC}$	1.8	$^\circ\text{C/W}$
	per device	$R_{\theta JC}$	0.95	
	per device	$R_{\theta JM}^{(2)}$	3	
	per device	$R_{\theta JA}^{(1)(2)}$	45	

Notes

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

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMPD (TO-263AC)	V60D100C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
SMPD (TO-263AC)	V60D100CHM3/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)

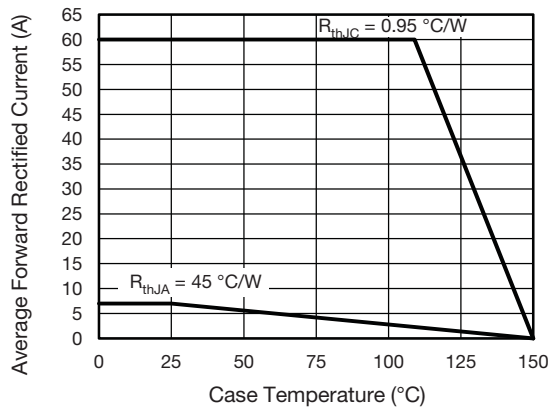


Fig. 1 - Forward Current Derating Curve

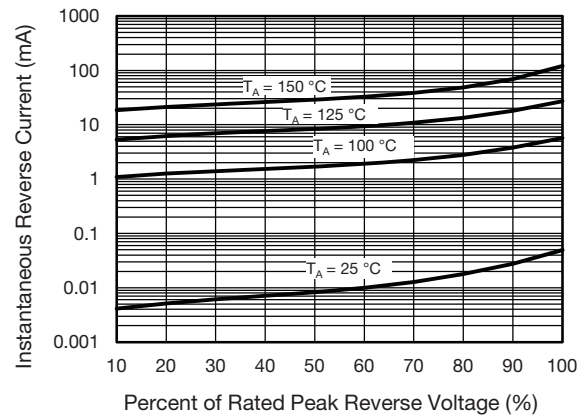


Fig. 4 - Typical Reverse Characteristics Per Diode

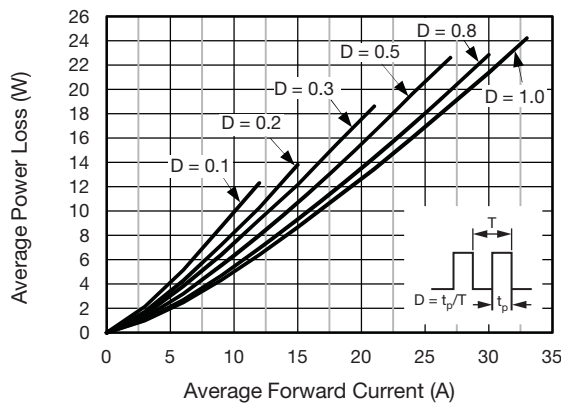


Fig. 2 - Forward Power Loss Characteristics Per Diode

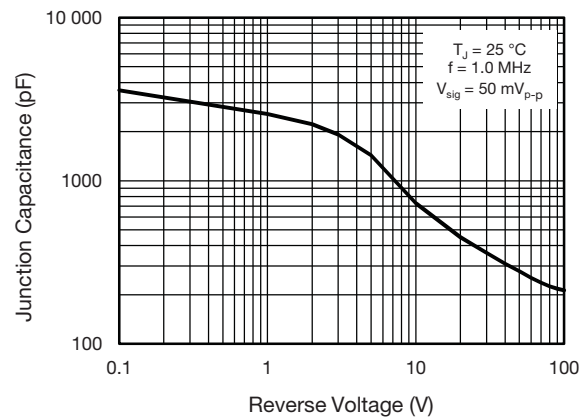


Fig. 5 - Typical Junction Capacitance Per Diode

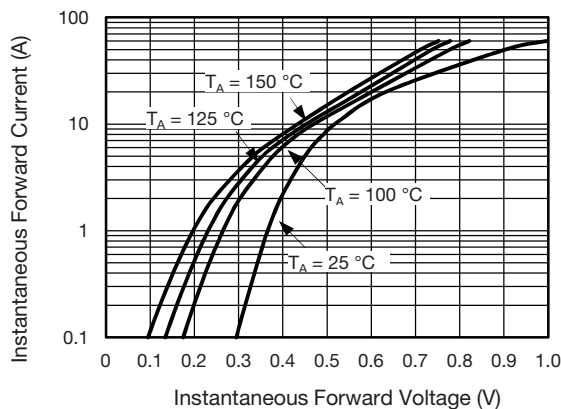


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

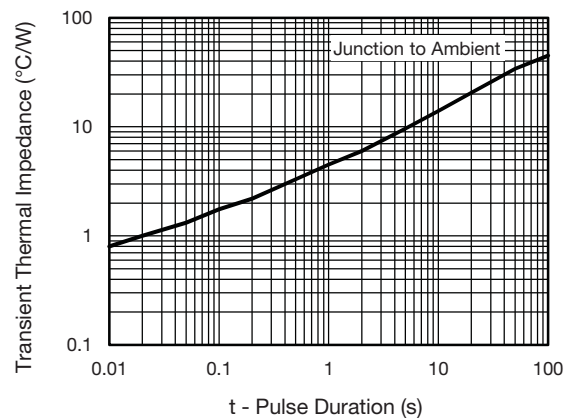


Fig. 6 - Typical Transient Thermal Impedance Per Device

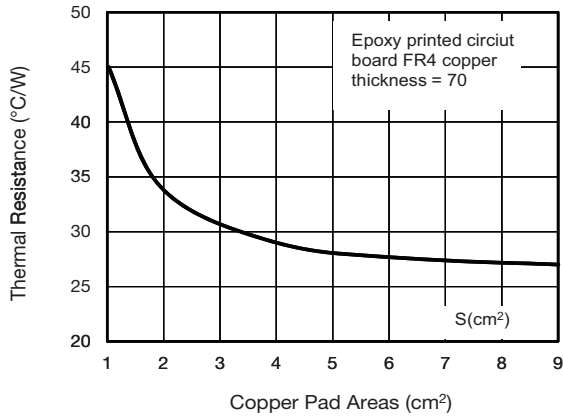
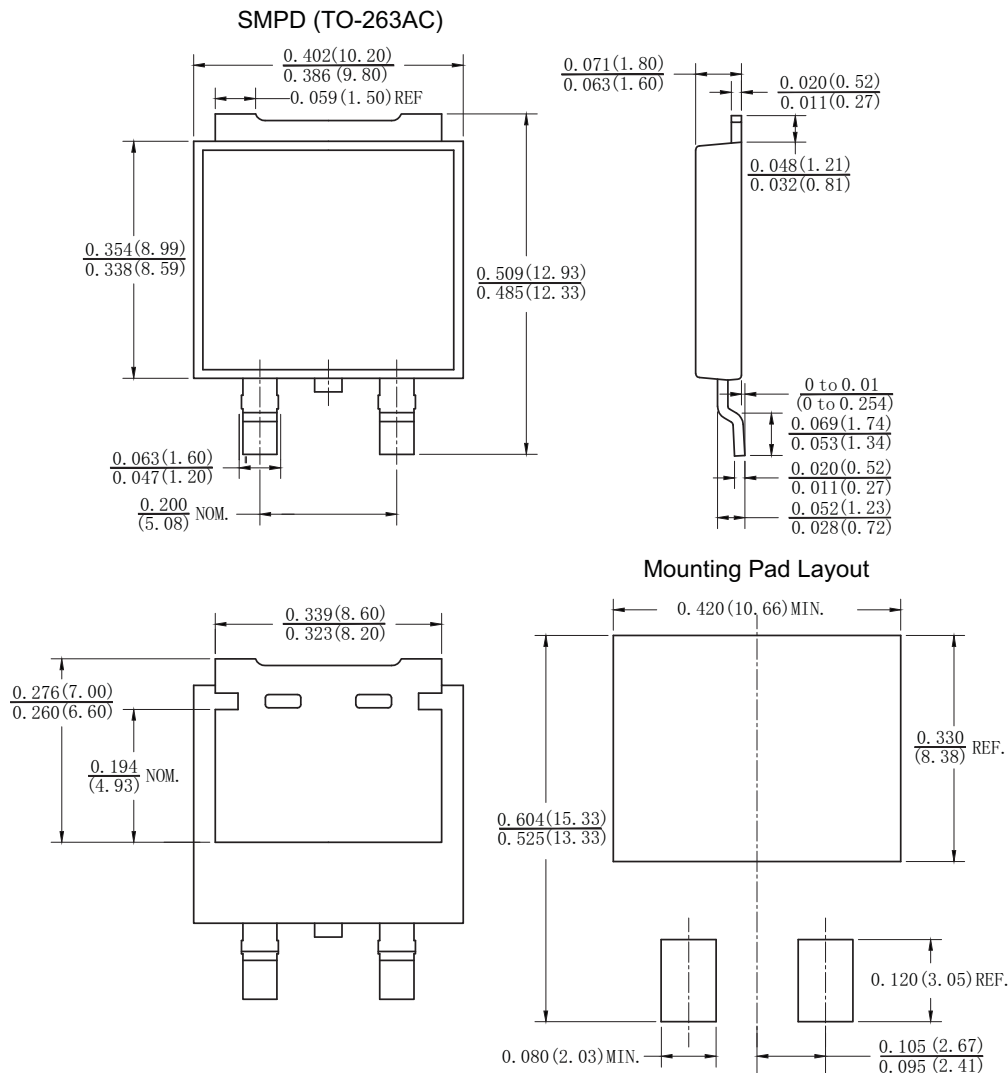


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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