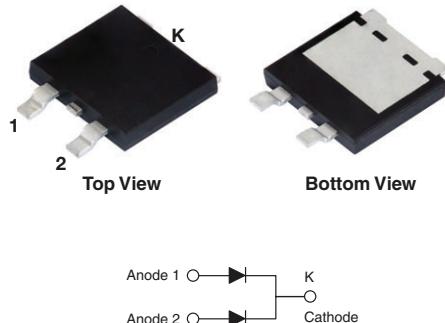


Dual High-Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low V_F = 0.43 V at I_F = 5 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

AUTOMOTIVE GRADE Available



RoHS
COMPLIANT
HALOGEN
FREE

LINKS TO ADDITIONAL RESOURCES



[3D Models](#)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 30 A
V_{RRM}	120 V
I_{FSM}	320 A
V_F at I_F = 30 A (T_A = 125 °C)	0.70 V
T_J max.	175 °C
Package	SMPD (TO-263AC)
Circuit configuration	Common cathode

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: 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 °C unless otherwise noted)

PARAMETER	SYMBOL	V60DM120C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	60	A
per device		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/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	$I_F = 5 \text{ A}$	V_F ⁽¹⁾	0.51	-	V
	$I_F = 15 \text{ A}$		0.68	-	
	$I_F = 30 \text{ A}$		0.87	0.97	
	$I_F = 5 \text{ A}$		0.43	-	
	$I_F = 15 \text{ A}$		0.58	-	
	$I_F = 30 \text{ A}$		0.69	0.77	
Reverse current at rated V_R per diode	$V_R = 90 \text{ V}$	$T_A = 25^\circ\text{C}$	0.01	-	mA
	$V_R = 90 \text{ V}$	$T_A = 125^\circ\text{C}$	5	-	
	$V_R = 120 \text{ V}$	$T_A = 25^\circ\text{C}$	-	0.7	
	$V_R = 120 \text{ V}$	$T_A = 125^\circ\text{C}$	10	35	

Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width $\leq 5 \text{ ms}$
THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	V60DM120C	UNIT
Typical thermal resistance	$R_{\theta\text{JC}}$	0.95	
	$R_{\theta\text{JA}}$ ^{(1)/(2)}	45	$^\circ\text{C/W}$

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)

PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V60DM120C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
V60DM120CHM3/I ⁽¹⁾	0.55	I	2000/reel	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

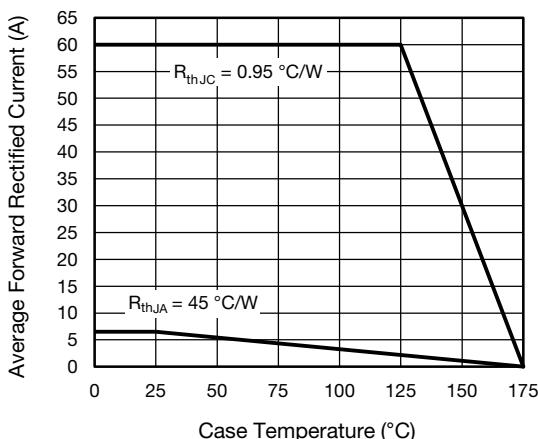
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

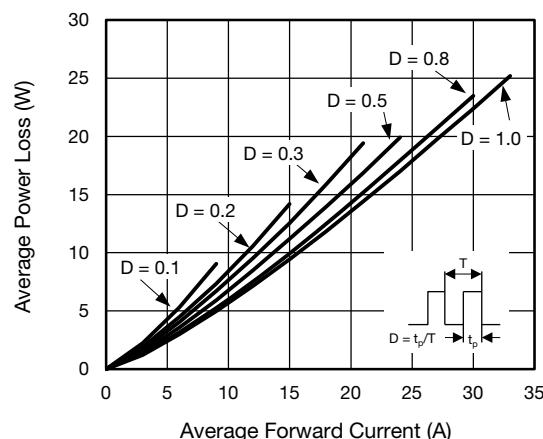


Fig. 2 - Forward Power Loss Characteristics Per Diode

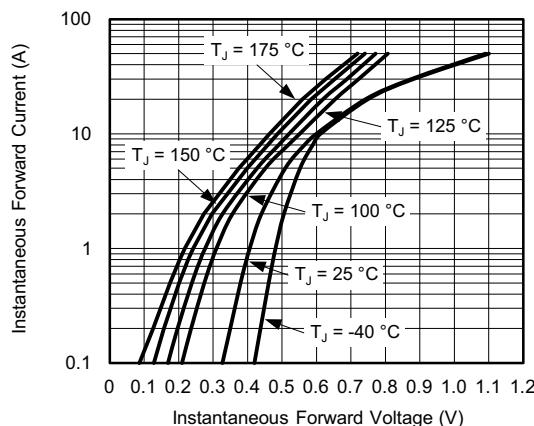


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

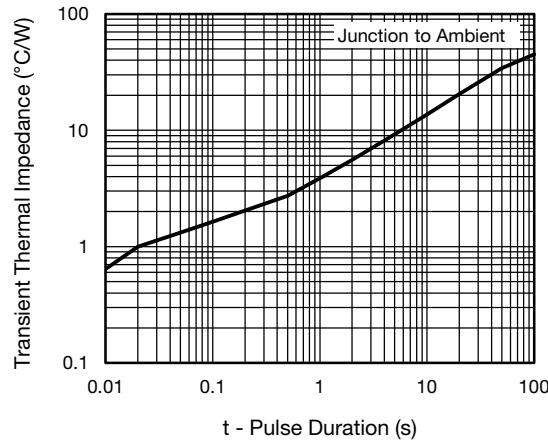


Fig. 6 - Typical Transient Thermal Impedance Per Device

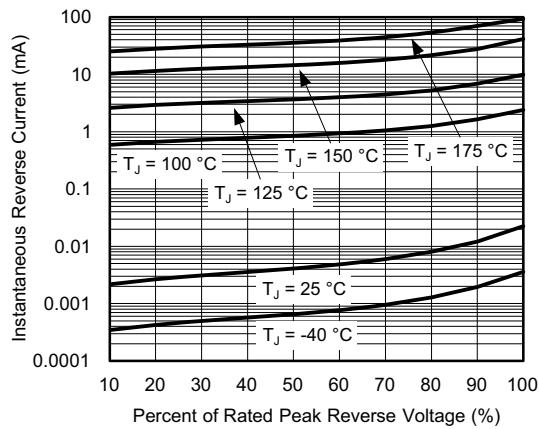


Fig. 4 - Typical Reverse Characteristics Per Diode

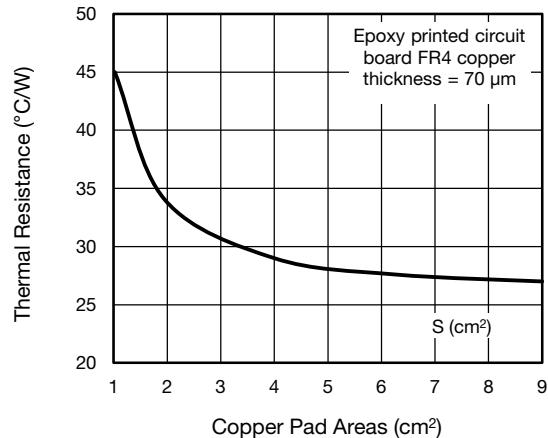


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

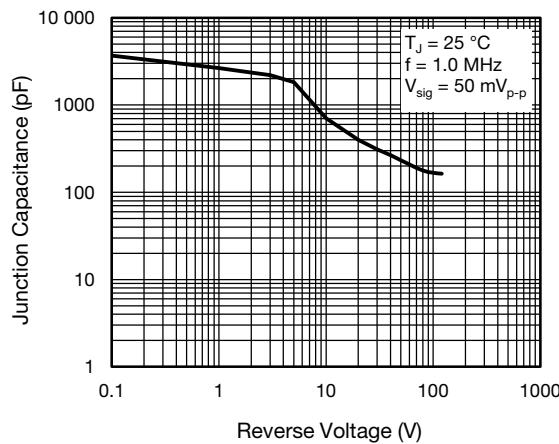
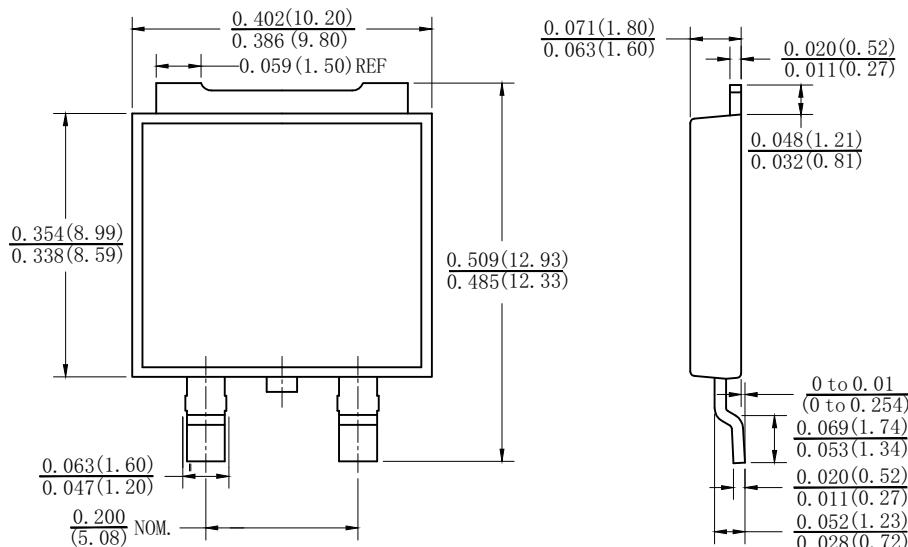
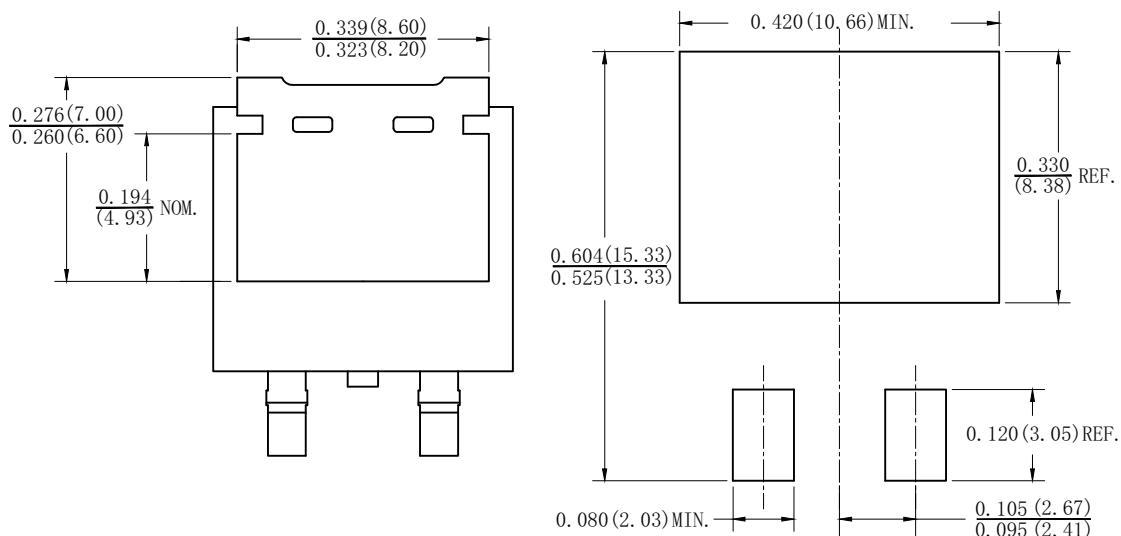


Fig. 5 - Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPD (TO-263AC)

Mounting Pad Layout


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