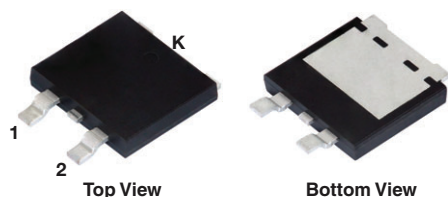


Dual High-Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.43 \text{ V}$ at $I_F = 5 \text{ A}$

eSMP® Series SMPD (TO-263AC)



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

AUTOMOTIVE
GRADE
Available



RoHS
COMPLIANT
HALOGEN
FREE

LINKS TO ADDITIONAL RESOURCES



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

$I_{F(AV)}$	35 A
V_{RRM}	120 V
I_{FSM}	320 A
V_F at $I_F = 35 \text{ A}$ ($T_A = 125 \text{ °C}$)	0.73 V
T_J max.	175 °C
Package	SMPD (TO-263AC)
Circuit configuration	Single

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	V35DM120	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}^{(1)}$	35	A
	$I_{F(AV)}^{(2)}$	6.3	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	320	A
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +175	°C

Notes

(1) With infinite heatsink

(2) With recommended pad size, 2 oz FR4 PCB



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⁾	0.53	-	V
	I _F = 17.5 A			0.73	-	
	I _F = 35 A			0.97	1.05	
	I _F = 5 A	T _A = 125 °C		0.43	-	
	I _F = 17.5 A			0.61	-	
	I _F = 35 A			0.73	0.81	
	Reverse current at rated V _R per diode	V _R = 90 V		T _A = 25 °C	I _R ⁽²⁾	
T _A = 125 °C			5	-		
V _R = 120 V		T _A = 25 °C	-	1.2		
		T _A = 125 °C	10	30		

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	V35DM120	UNIT
Typical thermal resistance	$R_{\theta JC}$	1.1	$^{\circ}\text{C/W}$
	$R_{\theta JA}^{(1)(2)}$	48	

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

(2) Free air, without heatsink

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V35DM120-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
V35DM120HM3/I ⁽¹⁾	0.55	I	2000/reel	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

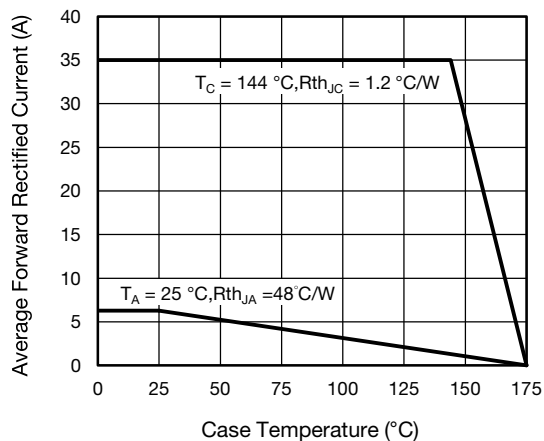
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

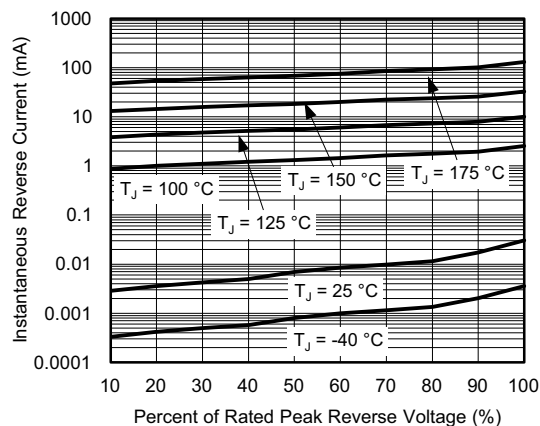


Fig. 4 - Typical Reverse Characteristics

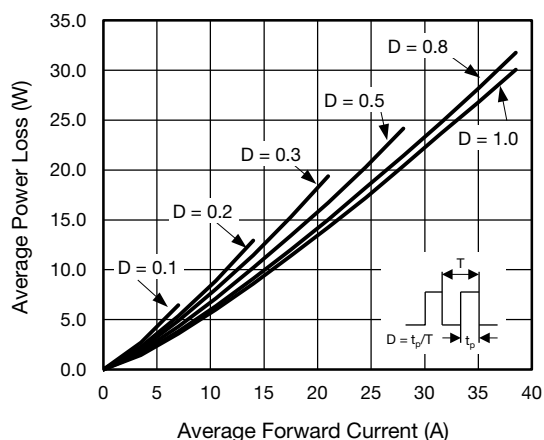


Fig. 2 - Forward Power Loss Characteristics

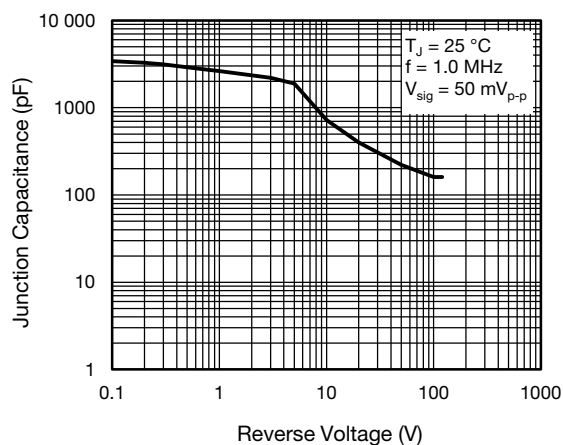


Fig. 5 - Typical Junction Capacitance

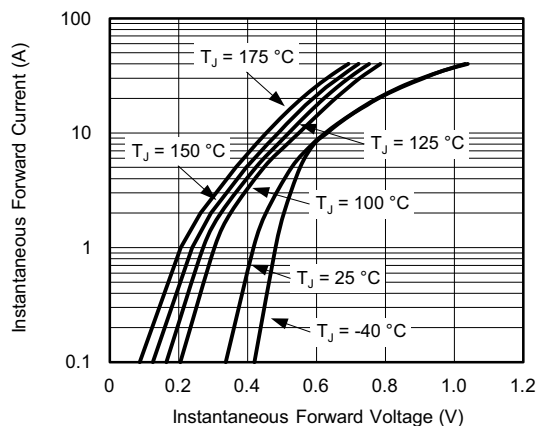


Fig. 3 - Typical Instantaneous Forward Characteristics

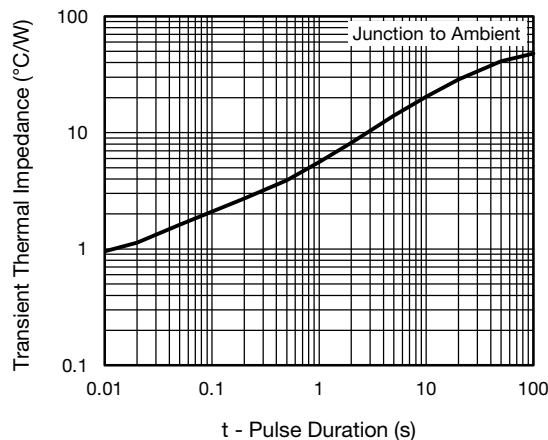


Fig. 6 - Typical Transient Thermal Impedance

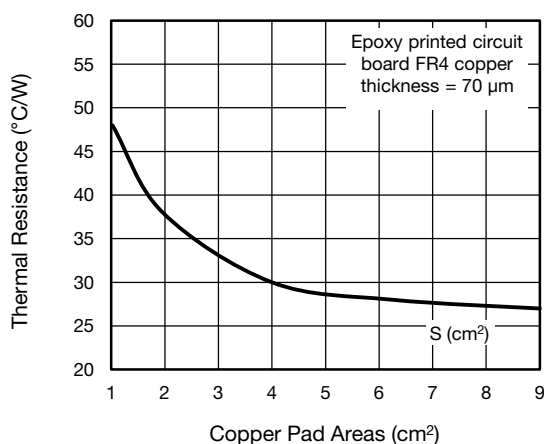
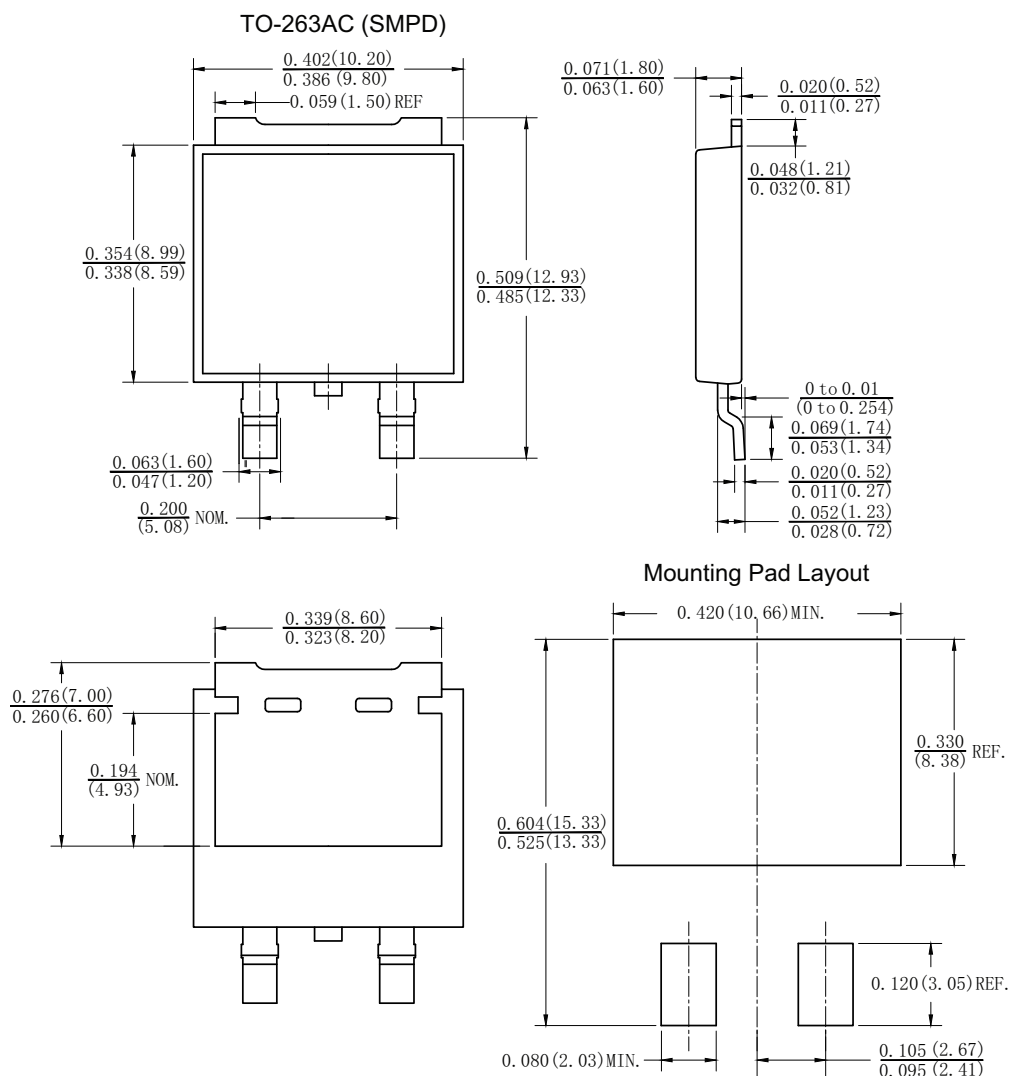


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)




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