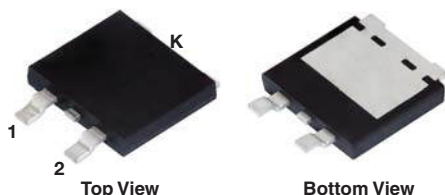


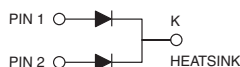
Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.48\text{ V}$ at $I_F = 2.5\text{ A}$

TMBS® eSMP® Series
TO-263AC (SMPD)



V10D100C



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/doc299912



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 5.0 A
V_{RRM}	100 V
I_{FSM}	100 A
V_F at $I_F = 5.0\text{ A}$ ($T_A = 125\text{ °C}$)	0.60 V
T_J max.	150 °C
Package	TO-263AC (SMPD)
Diode variations	Dual common cathode

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V10D100C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	10	A
		5	
Maximum DC reverse voltage	V_{DC}	160	V
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	100	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	$I_F = 2.5\text{ A}$	$V_F^{(1)}$	0.55	-	V
	$I_F = 5.0\text{ A}$		0.67	0.75	
	$I_F = 2.5\text{ A}$		0.48	-	
	$I_F = 5.0\text{ A}$		0.60	0.68	
Reverse current at rated V_R per diode	$V_R = 70\text{ V}$	$I_R^{(2)}$	2.3	-	μA
	$T_A = 25\text{ }^{\circ}\text{C}$		2.3	-	mA
	$T_A = 125\text{ }^{\circ}\text{C}$		-	500	μA
	$V_R = 100\text{ V}$		7	20	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	V10D100C	UNIT
Typical thermal resistance	$R_{\theta\text{JC}}$	3.5	$^{\circ}\text{C/W}$
		2.5	
	$R_{\theta\text{JA}}^{(1)(2)}$	48	

Notes

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

ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-263AC (SMPD)	V10D100C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
TO-263AC (SMPD)	V10D100CHM3/I ⁽¹⁾	0.55	I	2000/reel	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

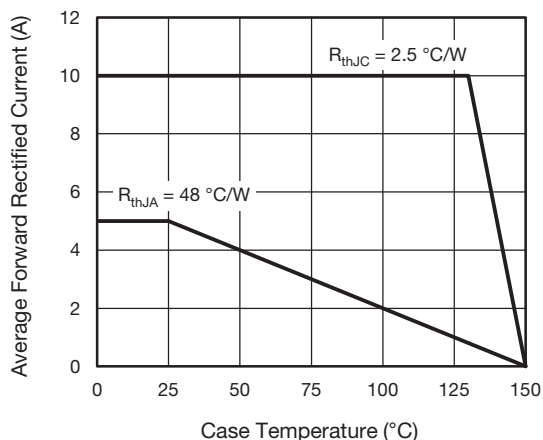
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

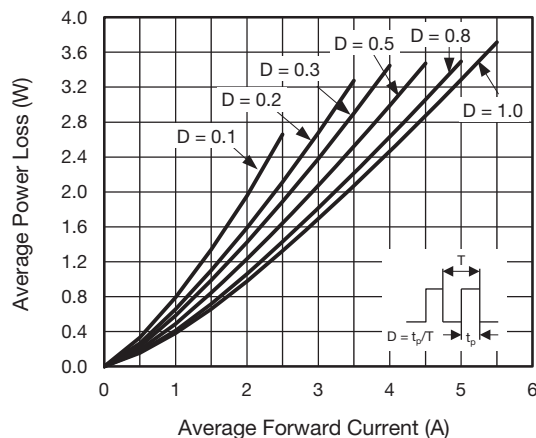


Fig. 2 - Average Power Loss Characteristics

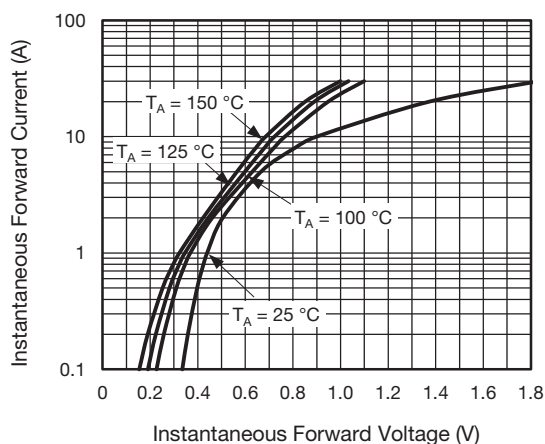


Fig. 3 - Typical Instantaneous Forward Characteristics

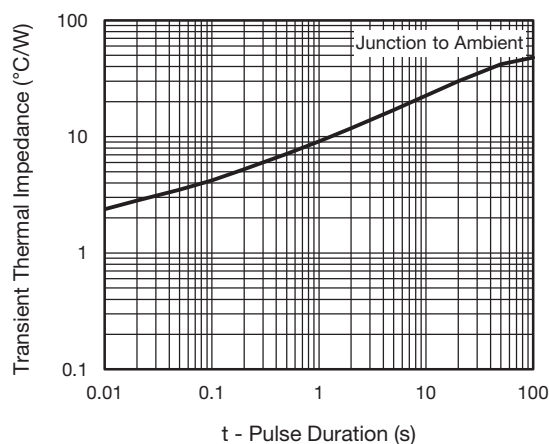


Fig. 6 - Typical Transient Thermal Impedance

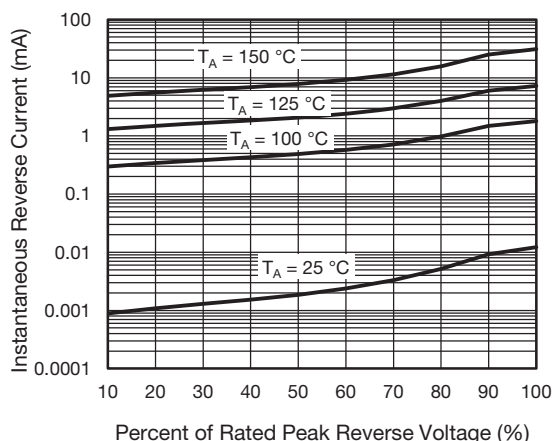


Fig. 4 - Typical Reverse Leakage Characteristics

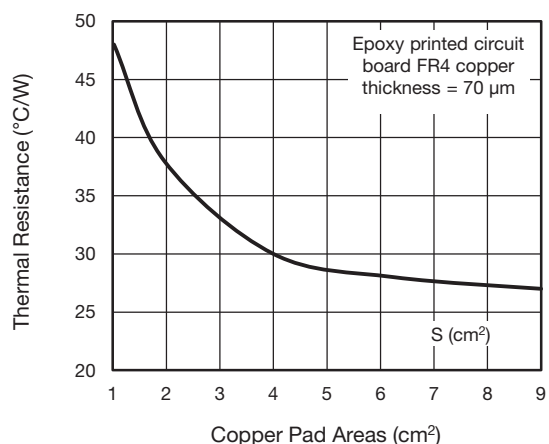


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

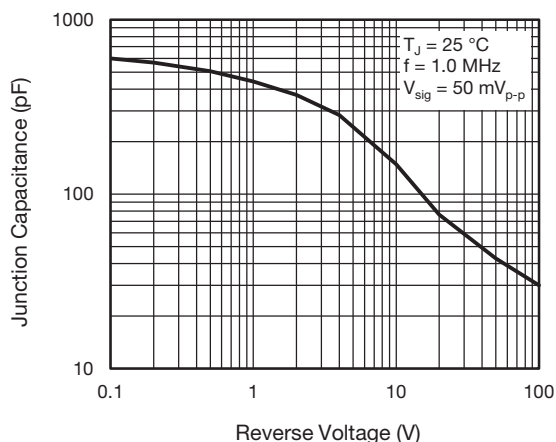
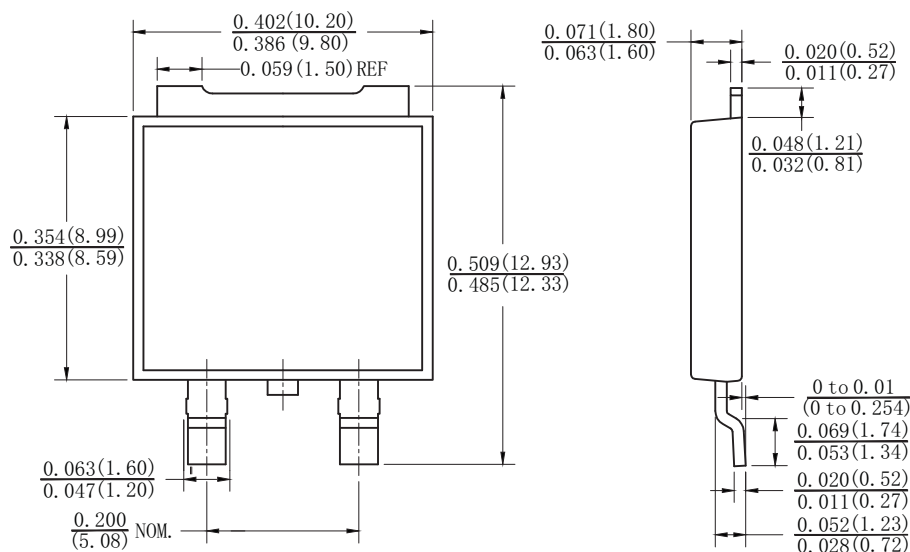


Fig. 5 - Typical Junction Capacitance

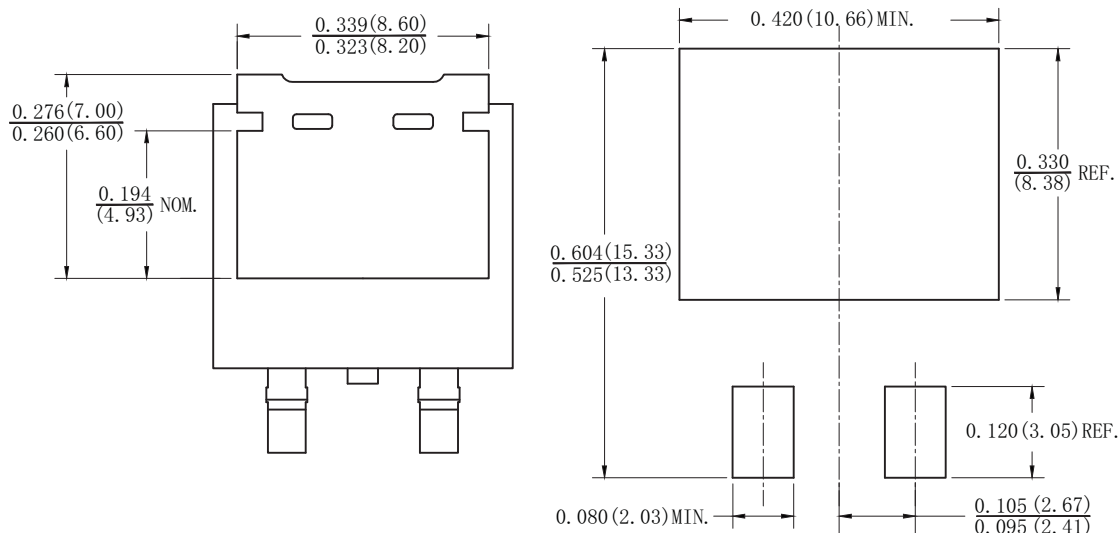


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AC (SMPD)



Mounting Pad Layout





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