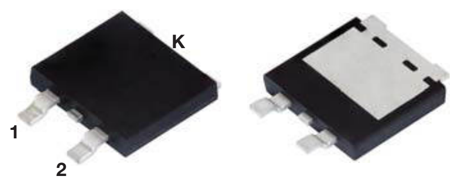
Dual High-Voltage Trench MOS Barrier Schottky Rectifier

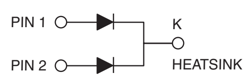
Ultra Low V_F = 0.48 V at I_F = 2.5 A

TMBS® eSMP® Series
TO-263AC (SMPD)



Top View **Bottom View**

V10D100C



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 A (T_A = 125 °C)	0.60 V
T_J max.	150 °C
Package	TO-263AC (SMPD)
Diode variations	Dual common cathode

FEATURES

RoHS
COMPLIANT
HALOGEN
FREE

- 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

TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection in commercial, inductrial, 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

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER		SYMBOL	V10D100C	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	100	V
Maximum average forward rectified current (fig. 1)	per device	$I_{F(AV)}$	10	A
	per diode		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/μs
Operating junction and storage temperature range		T_J, T_{STG}	-40 to +150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage	I_F = 2.5 A	T_A = 25 °C	V_F (1)	0.55	-	V
	I_F = 5.0 A			0.67	0.75	
	I_F = 2.5 A	T_A = 125 °C		0.48	-	
	I_F = 5.0 A			0.60	0.68	
Reverse current at rated V_R per diode	V_R = 70 V	T_A = 25 °C	I_R (2)	2.3	-	μA
		T_A = 125 °C		2.3	-	mA
	V_R = 100 V	T_A = 25 °C		-	500	μA
		T_A = 125 °C		7	20	mA

Notes

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

(2) Pulse test: Pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER		**SYMBOL**	**V10D100C**	**UNIT**
Typical thermal resistance	per diode	$R_{\theta JC}$	3.5	°C/W
	per device		2.5	
	per device	$R_{\theta JA}$ (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)					
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 °C unless otherwise noted)

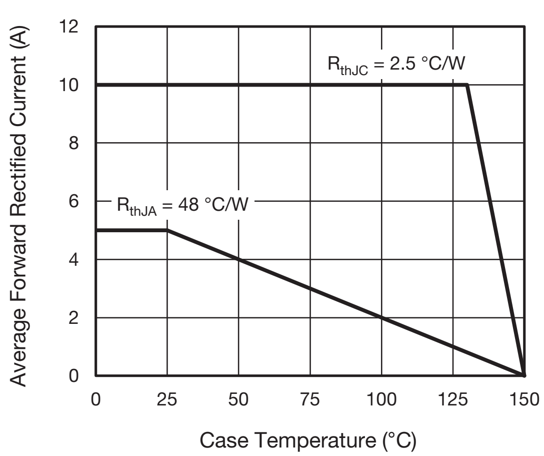


Fig. 1 - Maximum Forward Current Derating Curve

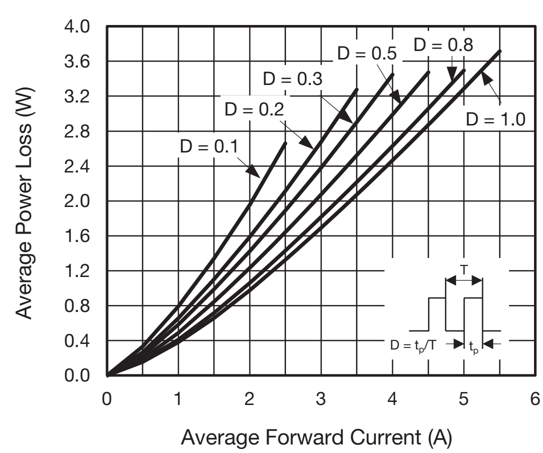


Fig. 2 - Average Power Loss Characteristics

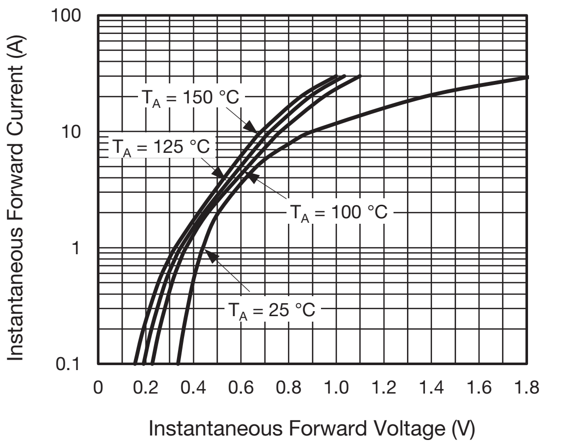


Fig. 3 - Typical Instantaneous Forward Characteristics

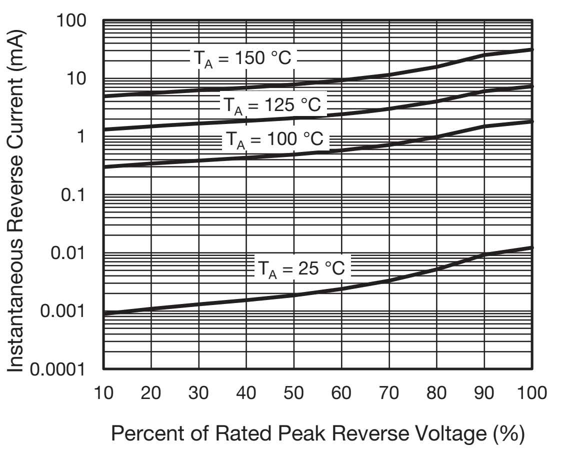


Fig. 4 - Typical Reverse Leakage Characteristics

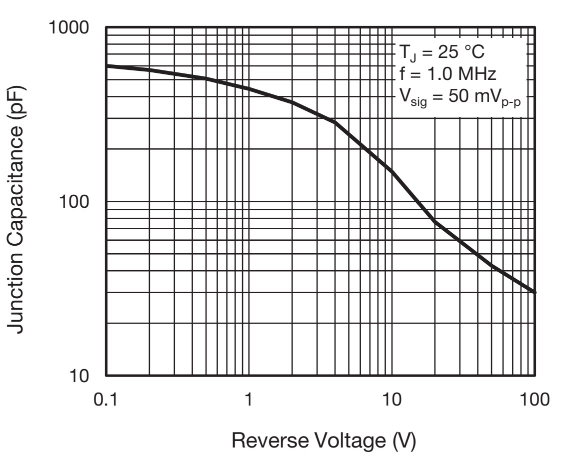


Fig. 5 - Typical Junction Capacitance

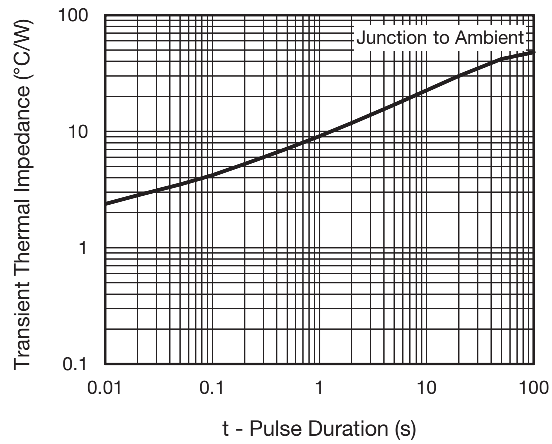


Fig. 6 - Typical Transient Thermal Impedance

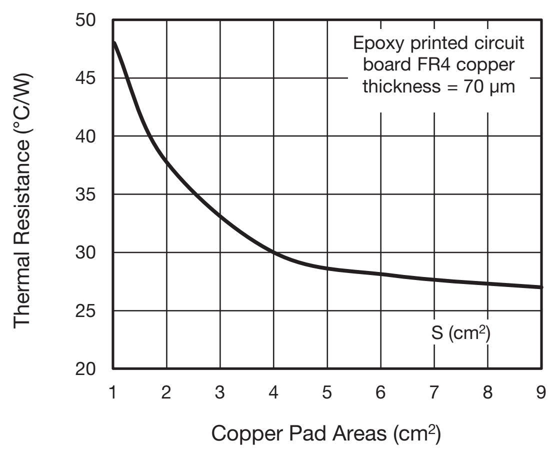
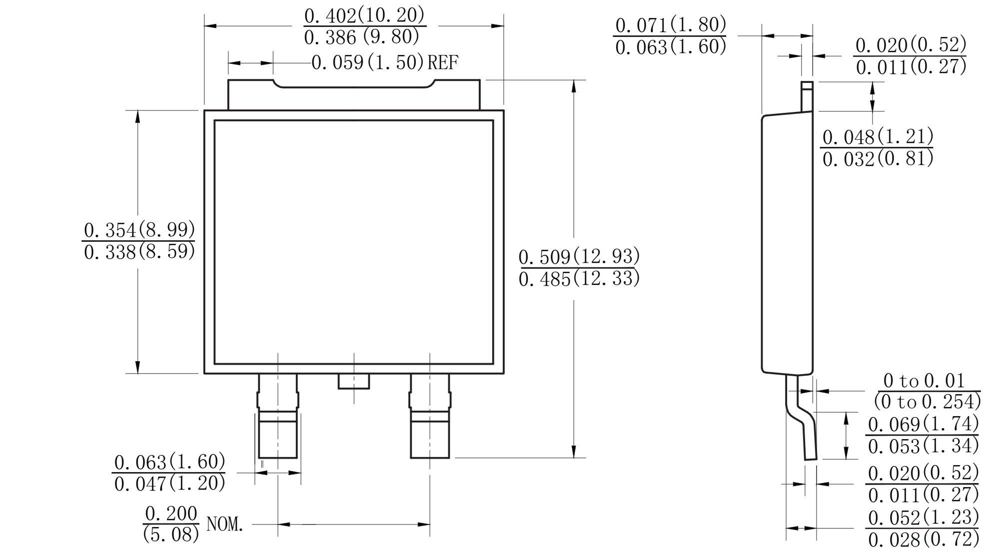
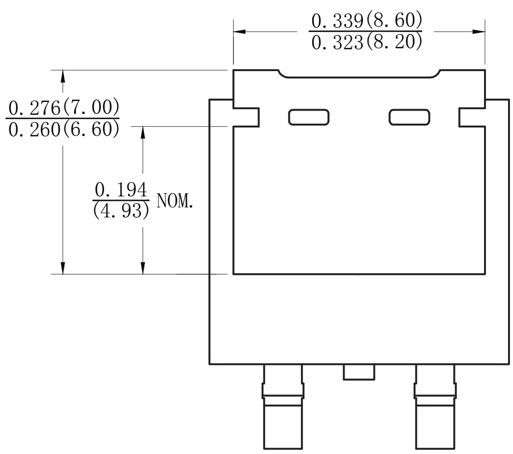


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

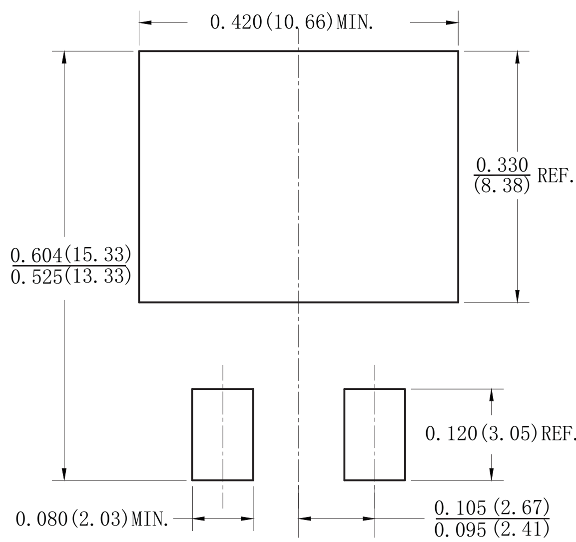
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AC (SMPD)





Mounting Pad Layout



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