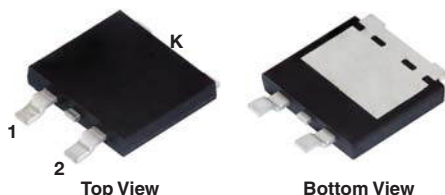


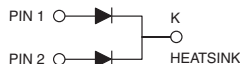
Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.39\text{ V}$ at $I_F = 5\text{ A}$

TMBS® eSMP® Series
TO-263AC (SMPD)



V60D120C



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
- AEC-Q101 qualified available:
 - Automotive ordering code: base P/NHM3
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?999912



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 30 A
V_{RRM}	120 V
I_{FSM}	320 A
V_F at $I_F = 30\text{ A}$ ($T_A = 125\text{ °C}$)	0.70 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	V60D120C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	60	A
		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	$I_F = 5\text{ A}$	$V_F^{(1)}$	0.48	-	V
	$I_F = 15\text{ A}$		0.68	-	
	$I_F = 30\text{ A}$		0.91	0.96	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^{\circ}\text{C}$	0.39	-	
	$I_F = 15\text{ A}$		0.59	-	
	$I_F = 30\text{ A}$		0.70	0.76	
Reverse current at rated V_R per diode	$V_R = 90\text{ V}$	$T_A = 25\text{ }^{\circ}\text{C}$	14	-	μA
		$T_A = 125\text{ }^{\circ}\text{C}$	11	-	mA
	$V_R = 120\text{ V}$	$T_A = 25\text{ }^{\circ}\text{C}$	-	800	μA
		$T_A = 125\text{ }^{\circ}\text{C}$	27	75	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	V60D120C	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	1.8	$^{\circ}\text{C/W}$
	per device		0.95	
	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

ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-263AC (SMPD)	V60D120C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
TO-263AC (SMPD)	V60D120CHM3/I ⁽¹⁾	0.55	I	2000/reel	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

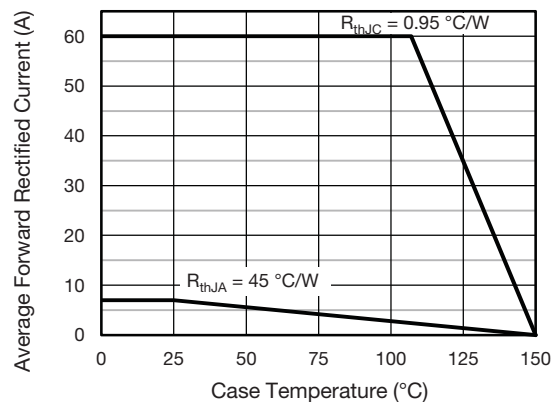
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

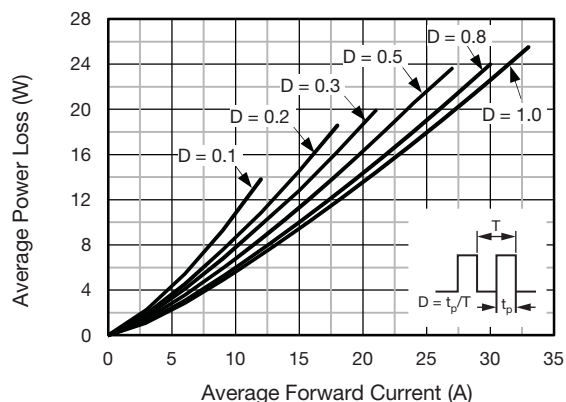


Fig. 2 - Forward Power Loss Characteristics Per Diode

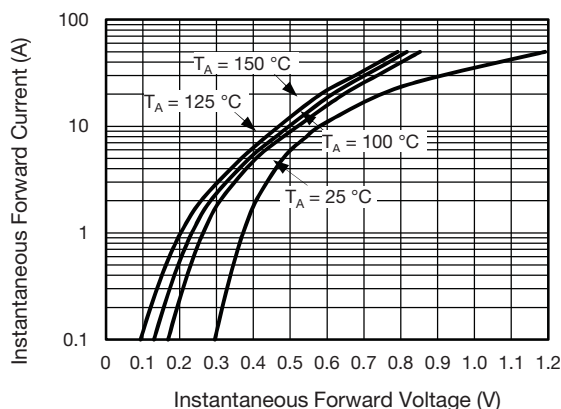


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

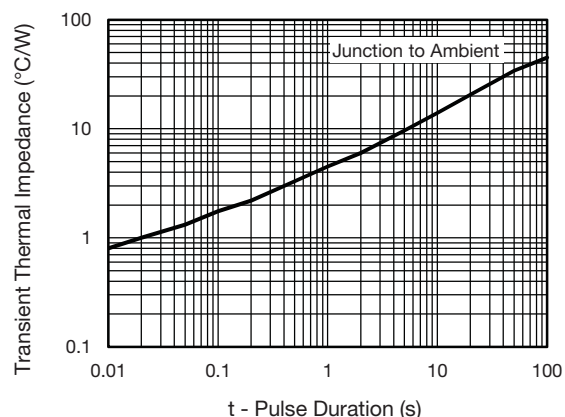


Fig. 6 - Typical Transient Thermal Impedance Per Device

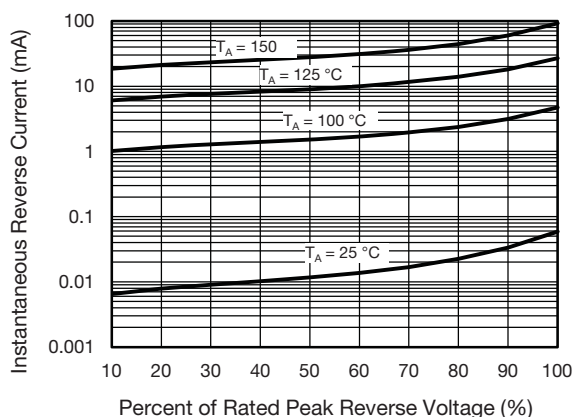


Fig. 4 - Typical Reverse Characteristics Per Diode

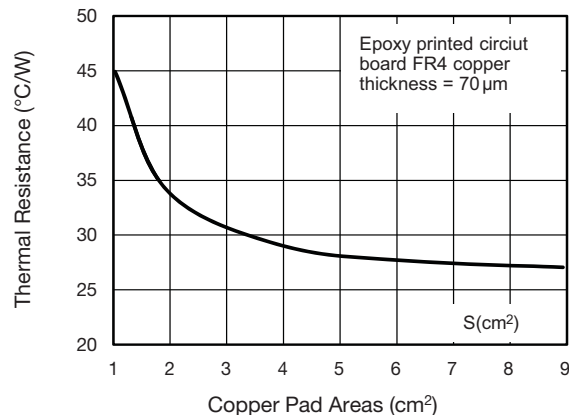


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

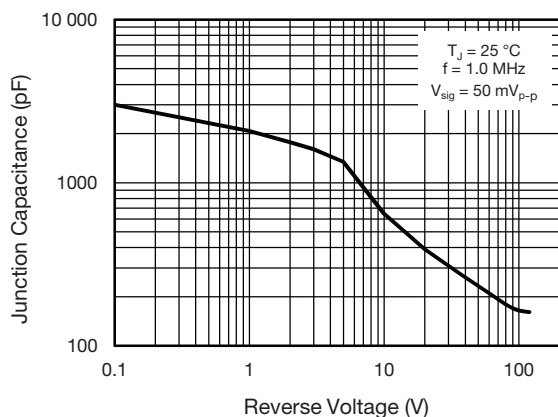
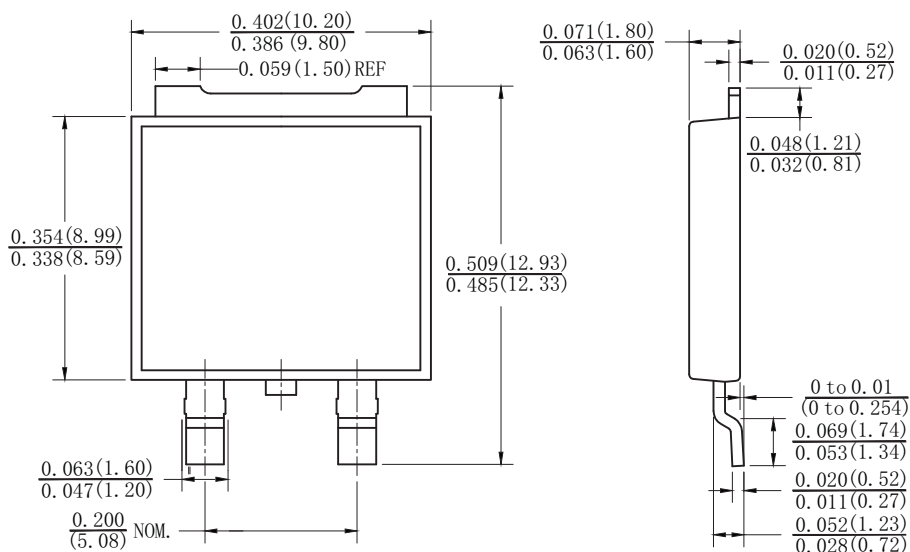


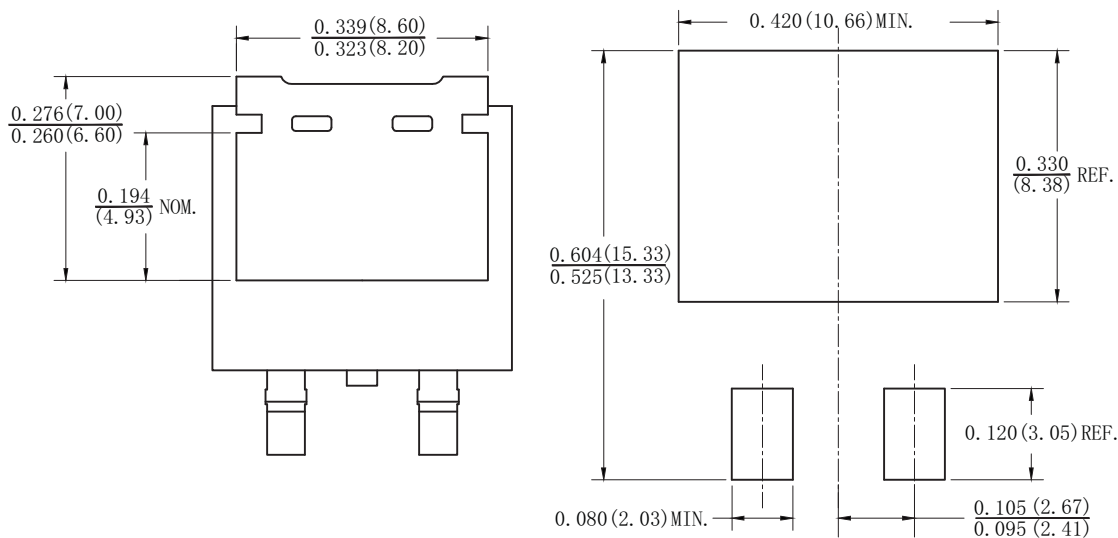
Fig. 5 - Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AC (SMPD)



Mounting Pad Layout





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