

Surface Mount Trench MOS Barrier Schottky Rectifier

TMBS® eSMP® Series

DO-220AA (SMP)
FEATURES

- Low profile package
- Ideal for automated placement
- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- 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
TYPICAL APPLICATIONS

For use in low voltage, high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	3.0 A
V_{RRM}	60 V
I_{FSM}	60 A
V_F at $I_F = 3.0$ A	0.48 V
T_J max.	150 °C
Package	DO-220AA (SMP)
Diode variations	Single die

MECHANICAL DATA

Case: DO-220AA (SMP)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,.....)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

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

PARAMETER	SYMBOL	V3P6	UNIT
Device marking code		V36	
Maximum repetitive peak reverse voltage	V_{RRM}	60	V
Maximum DC forward current	$I_F^{(1)}$	3.0	A
	$I_F^{(2)}$	2.4	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	60	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}	-55 to +150	°C

Notes

(1) Mounted on 8 mm x 8 mm pad areas, 1 oz. FR4 PCB

(2) Free air, mounted on recommended copper pad area

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 3.0\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.53	0.63	V
		$T_A = 125\text{ }^\circ\text{C}$		0.48	0.59	
Reverse current	$V_R = 60\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	-	900	μA
		$T_A = 125\text{ }^\circ\text{C}$		4	15	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	250	-	pF

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
 (2) Pulse test: pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified)			
PARAMETER	SYMBOL	V3P6	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	125	$^\circ\text{C/W}$
	$R_{\theta JM}^{(2)}$	15	

Notes

- (1) Free air, mounted on recommended PCB, 1 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient
 (2) Units mounted on PCB with specific copper pad areas; $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V3P6-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
V3P6-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel
V3P6HM3/84A ⁽¹⁾	0.024	84A	3000	7" diameter plastic tape and reel
V3P6HM3/85A ⁽¹⁾	0.024	85A	10 000	13" diameter plastic tape and reel
V3P6HM3_A/H ⁽¹⁾	0.024	H	3000	7" diameter plastic tape and reel
V3P6HM3_A/I ⁽¹⁾	0.024	I	10 000	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

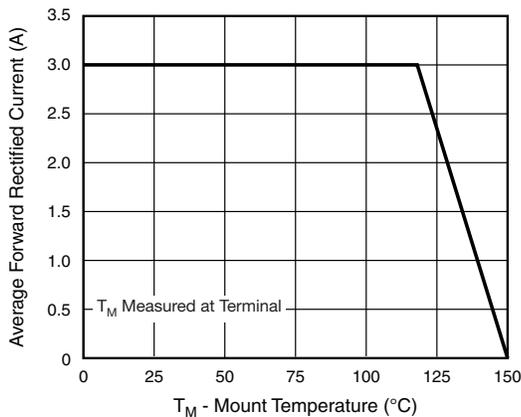
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

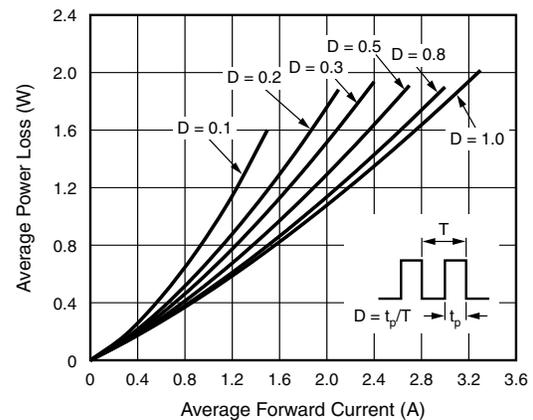


Fig. 2 - Forward Power Loss Characteristics

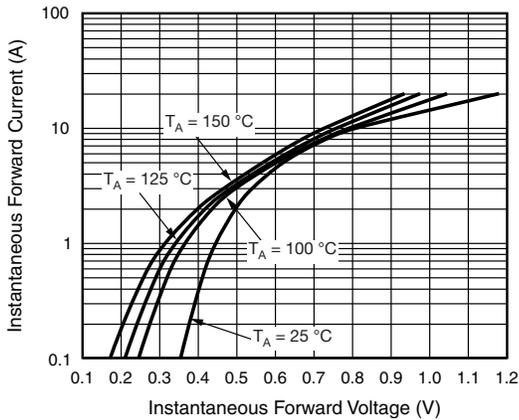


Fig. 3 - Typical Instantaneous Forward Characteristics

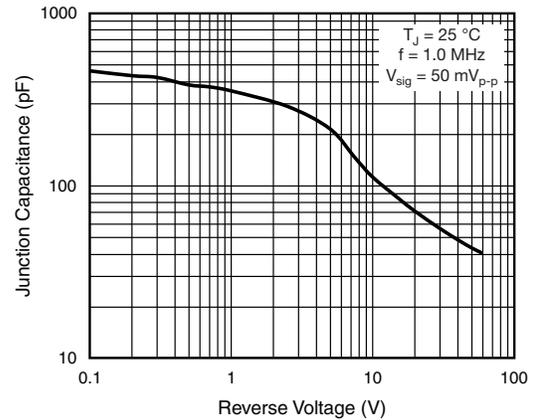


Fig. 5 - Typical Junction Capacitance

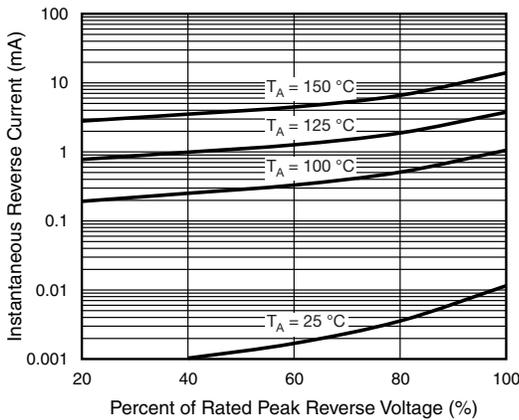


Fig. 4 - Typical Reverse Characteristics

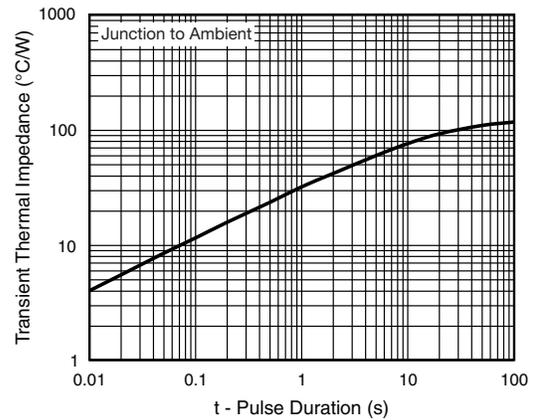
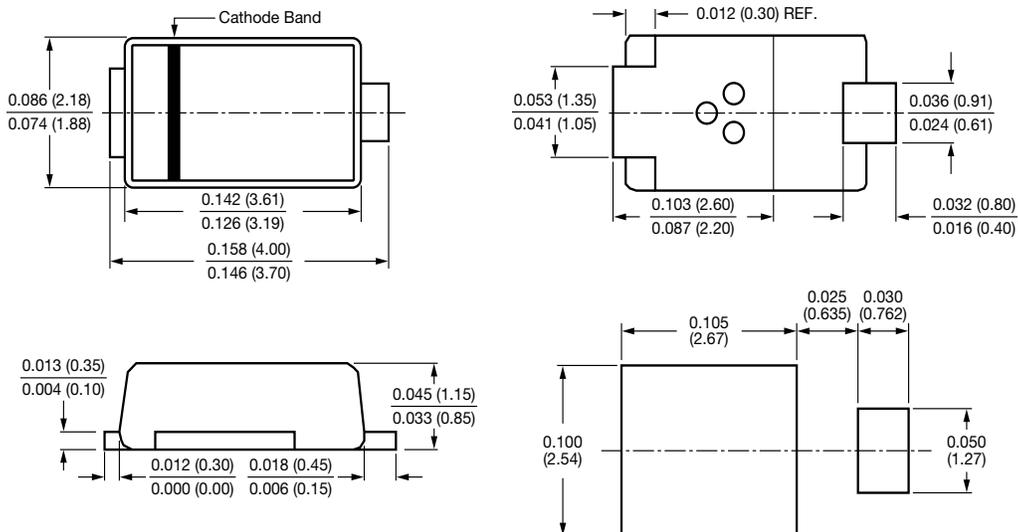


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)





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