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**VSSAF5L45**

Vishay General Semiconductor

## Surface Mount Trench MOS Barrier Schottky Rectifier



### FEATURES

- Very low profile - typical height of 0.95 mm
- 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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS	
Package	DO-221AC (SlimSMA)
$I_{F(AV)}$	5.0 A
$V_{RRM}$	45 V
$I_{FSM}$	100 A
$V_F$ at $I_F = 5.0$ A	0.39 V
$T_J$ max.	150 °C
Diode variations	Single die

### MECHANICAL DATA

**Case:** DO-221AC (SlimSMA)

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 JESD22-B102

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	VSSAF5L45	UNIT
Device marking code		5L45	
Maximum repetitive peak reverse voltage	$V_{RRM}$	45	V
Maximum DC forward current	$I_F^{(1)}$	5.0	A
	$I_F^{(2)}$	3.0	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	100	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +150	°C

### Notes

(1) Mounted on 10 mm x 10 mm pad areas, 2 oz. FR4 PCB

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



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 2.5 A	T <sub>A</sub> = 25 °C	0.42	-	V
			I <sub>F</sub> = 5.0 A	0.47	
	I <sub>F</sub> = 2.5 A	T <sub>A</sub> = 125 °C	0.31	-	
			I <sub>F</sub> = 5.0 A	0.39	
Reverse current	V <sub>R</sub> = 45 V	T <sub>A</sub> = 25 °C	-	650	μA
		T <sub>A</sub> = 125 °C	8	45	mA
Typical junction capacitance	4.0 V, 1 MHz	C <sub>J</sub>	740	-	pF

**Notes**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise specified)			
PARAMETER	SYMBOL	VSSAF5L45	UNIT
Typical thermal resistance	R <sub>θJA</sub> (1)	115	°C/W
	R <sub>θJM</sub> (2)	12	

**Notes**

- (1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance R<sub>θJA</sub> - junction to ambient
- (2) Mounted on 10 mm x 10 mm pad areas, 2 oz. FR4 PCB; R<sub>θJM</sub> - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
VSSAF5L45-M3/6A	0.032	6A	3500	7" diameter plastic tape and reel
VSSAF5L45-M3/6B	0.032	6B	14 000	13" diameter plastic tape and reel
VSSAF5L45HM3/6A (1)	0.032	6A	3500	7" diameter plastic tape and reel
VSSAF5L45HM3/6B (1)	0.032	6B	14 000	13" diameter plastic tape and reel
VSSAF5L45HM3_A/H (1)	0.032	H	3500	7" diameter plastic tape and reel
VSSAF5L45HM3_A/I (1)	0.032	I	14 000	13" diameter plastic tape and reel

**Note**

- (1) AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise specified)**

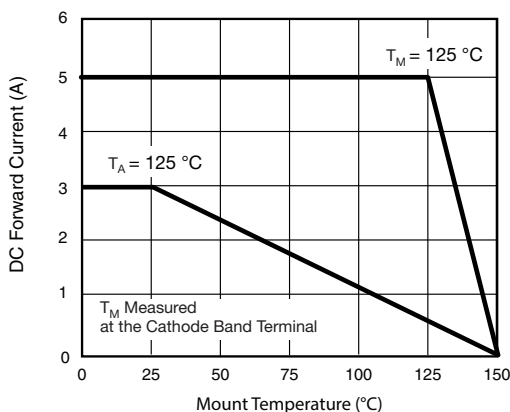


Fig. 1 - Maximum Forward Current Derating Curve

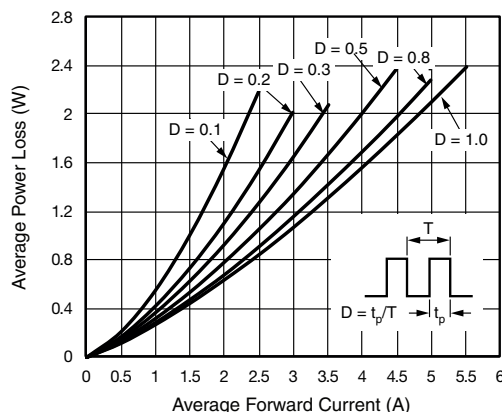


Fig. 2 - Average Power Loss Characteristics



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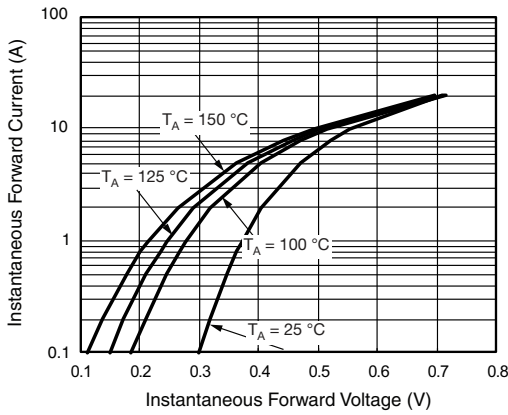


Fig. 3 - Typical Instantaneous Forward Characteristics

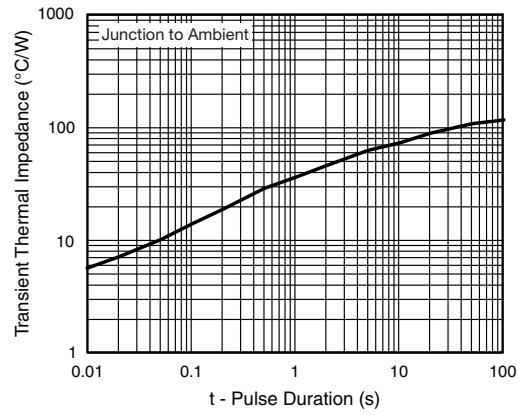


Fig. 6 - Typical Transient Thermal Impedance

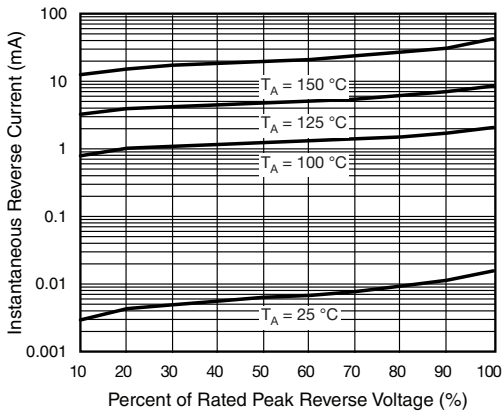


Fig. 4 - Typical Reverse Leakage Characteristics

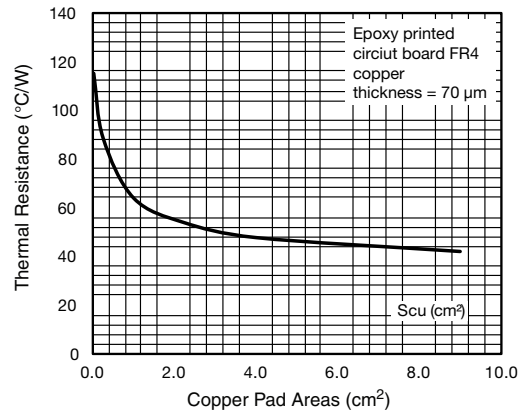


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Areas

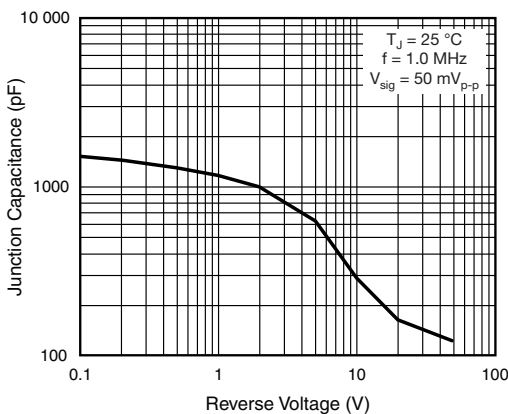


Fig. 5 - Typical Junction Capacitance



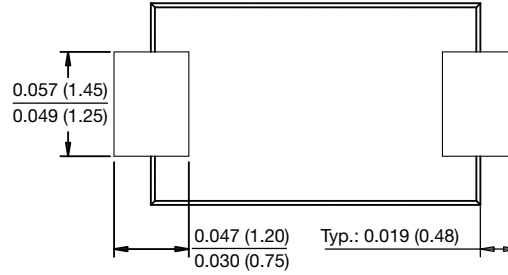
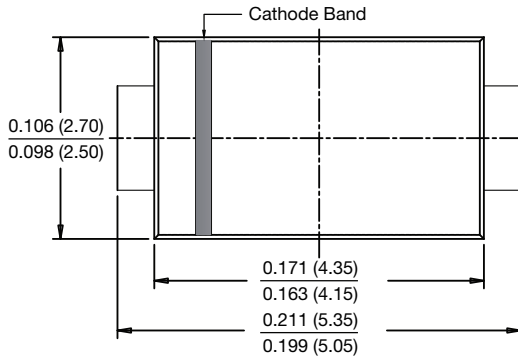
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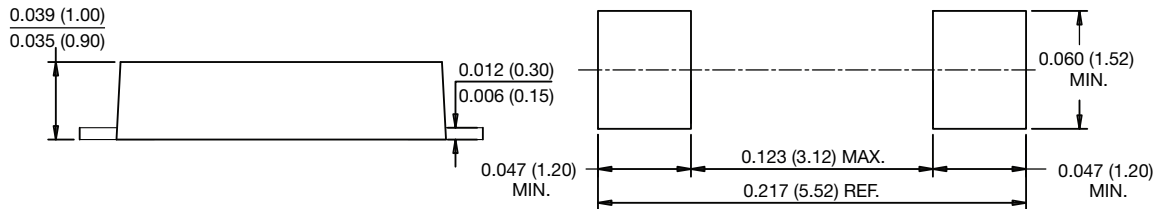
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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**DO-221AC (SlimSMA)**



**Mounting Pad Layout**





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