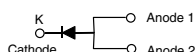


# High Current Density Surface Mount Schottky Barrier Rectifier

## eSMP® Series



### TO-277A (SMPC)



## PRIMARY CHARACTERISTICS

$I_{F(AV)}$	10 A
$V_{RRM}$	50 V, 60 V
$I_{FSM}$	280 A
$E_{AS}$	20 mJ
$V_F$ at $I_F = 10$ A	0.55 V
$T_J$ max.	150 °C

## TYPICAL APPLICATIONS

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

## FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- Low forward voltage drop, low power losses
- High efficiency
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

## MECHANICAL DATA

**Case:** TO-277A (SMPC)

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 automotive grade

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

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

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

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	SS10P5	SS10P6	UNIT
Device marking code		S105	S106	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	50	60	V
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	10 <sup>(1)</sup>		A
		7 <sup>(2)</sup>		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	280		A
Non-repetitive avalanche energy at I <sub>AS</sub> = 2 A , T <sub>J</sub> = 25 °C	E <sub>AS</sub>	20		mJ
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to + 150		°C

## Notes

(1) Units mounted on infinite heatsink

(2) Units mounted on 5 cm x 5 cm, 2 oz. copper pad

## SS10P5, SS10P6

Vishay General Semiconductor



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> = 5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.51	-	V	
	I <sub>F</sub> = 7 A			0.55	0.67		
	I <sub>F</sub> = 10 A			0.59			
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.42	-		
	I <sub>F</sub> = 7 A			0.47	-		
	I <sub>F</sub> = 10A			0.55	0.63		
Reverse current	Rated V <sub>R</sub>	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	7.8	150	μA	
		T <sub>A</sub> = 125 °C		5.9	15	mA	
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	560	-	pF	

## Notes

<sup>(3)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle<sup>(4)</sup> Pulse test: Pulse width  $\leq 40\text{ ms}$ 

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise specified)				
PARAMETER	SYMBOL	SS10P5	SS10P6	UNIT
Typical thermal resistance per diode	R <sub>θJA</sub> <sup>(1)</sup>	60		°C/W
	R <sub>θJL</sub>	3		

## Note

<sup>(1)</sup> Units mounted on recommended PCB 1 oz. pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS10P6-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS10P6-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS10P6HM3/86A <sup>(1)</sup>	0.10	86A	1500	7" diameter plastic tape and reel
SS10P6HM3/87A <sup>(1)</sup>	0.10	87A	6500	13" diameter plastic tape and reel

## Note

<sup>(1)</sup> Automotive grade

## RATINGS AND CHARACTERISTICS CURVES

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

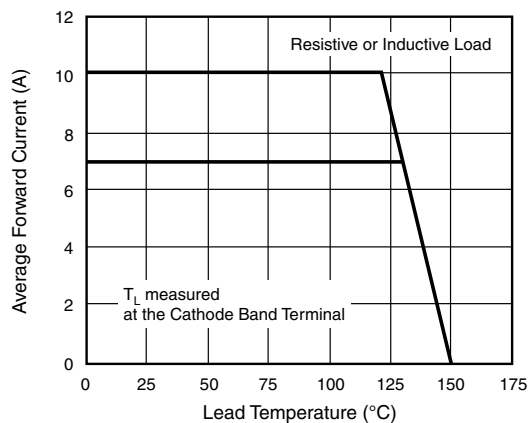


Fig. 1 - Maximum Forward Current Derating Curve

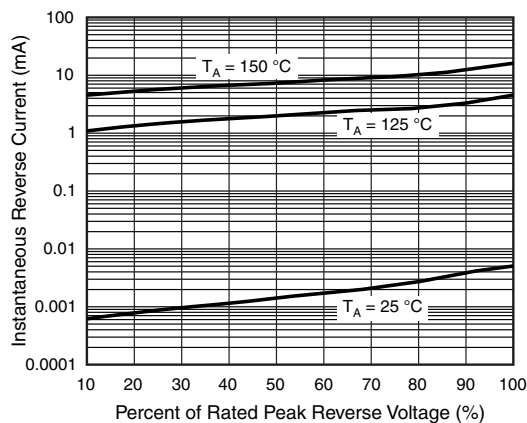


Fig. 4 - Typical Reverse Leakage Characteristics

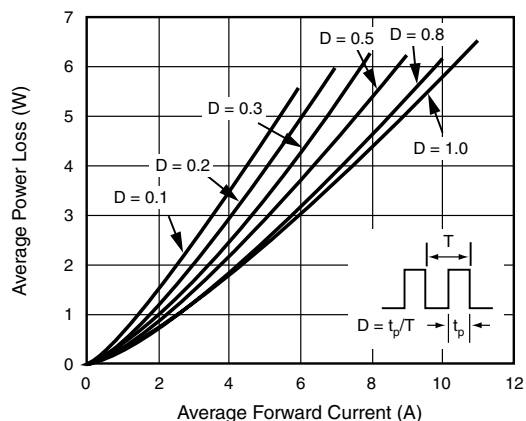


Fig. 2 - Forward Power Loss Characteristics

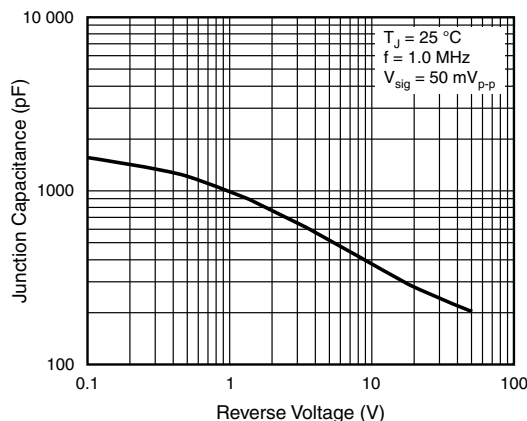


Fig. 5 - Typical Junction Capacitance

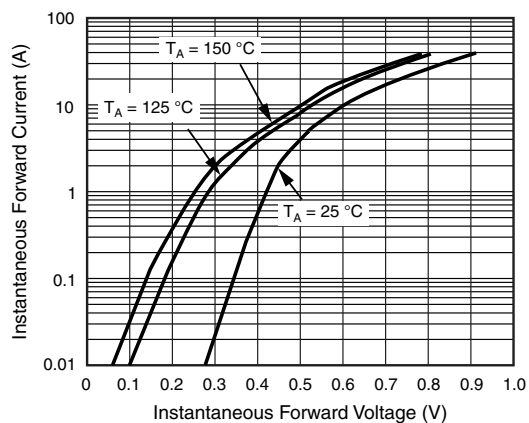


Fig. 3 - Typical Instantaneous Forward Characteristics

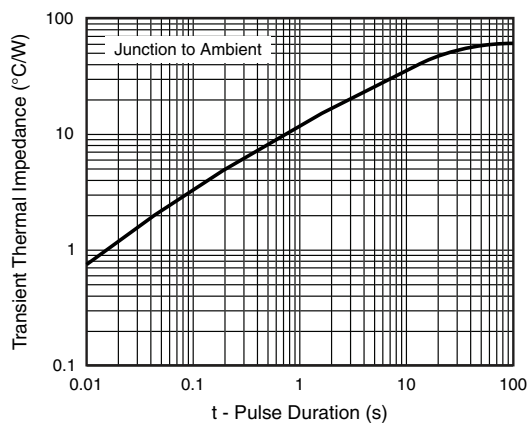
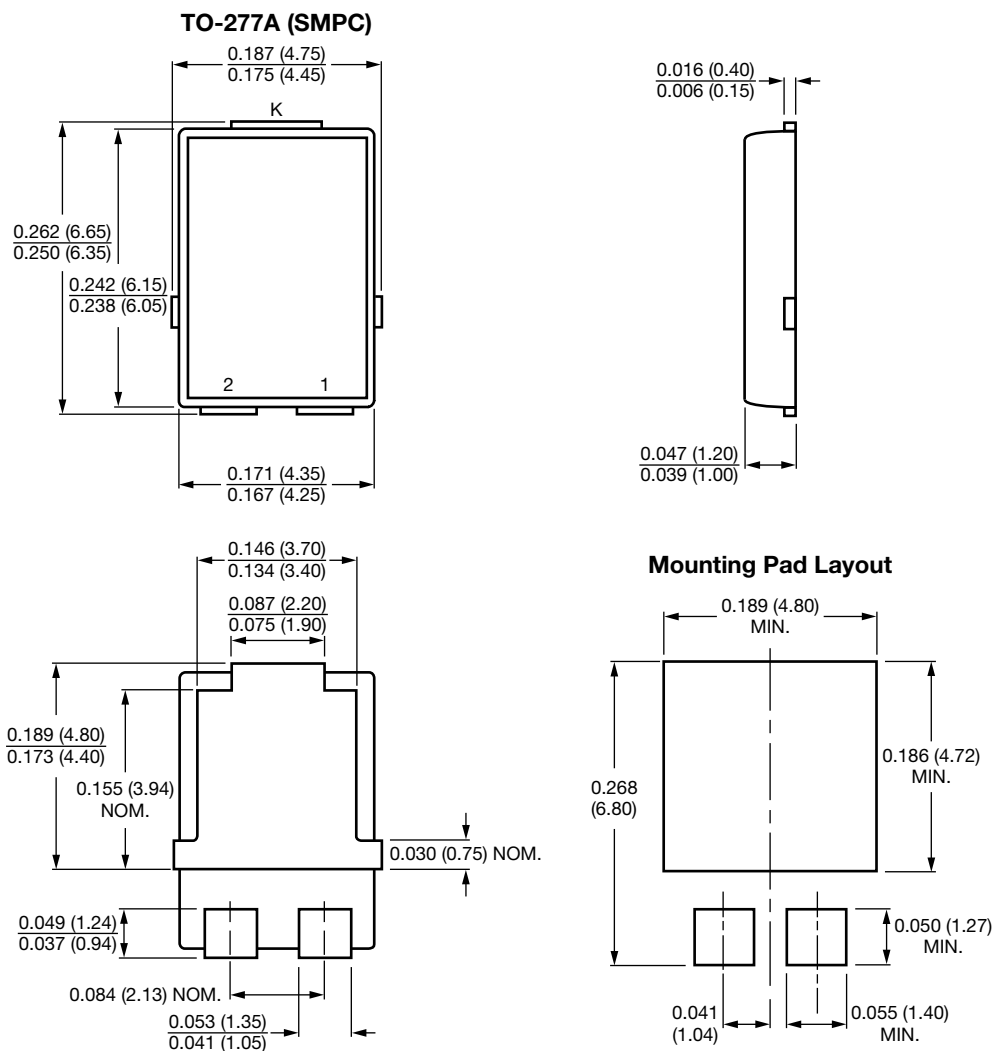


Fig. 6 - Typical Transient Thermal Impedance

**SS10P5, SS10P6**

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

Conform to JEDEC TO-277A



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