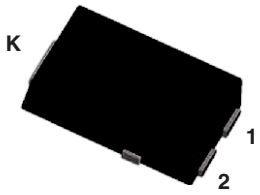
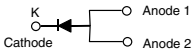
High Current Density Surface Mount Schottky Barrier Rectifier

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

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE

- 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**

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)

PARAMETER	SYMBOL	SS10P5	SS10P6	UNIT
Device marking code		S105	S106	
Maximum repetitive peak reverse voltage	V_{RRM}	50	60	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	10 (1)		A
		7 (2)		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	280		A
Non-repetitive avalanche energy at I_{AS} = 2 A , T_J = 25 °C	E_{AS}	20		mJ
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 150		°C

Notes
(1) Units mounted on infinite heatsink
(2) Units mounted on 5 cm x 5 cm, 2 oz. copper pad

For technical questions within your region, please contact one of the following:
DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage	I_F = 5 A	T_A = 25 °C	V_F (1)	0.51	-	V
	I_F = 7 A			0.55	0.67	
	I_F = 10 A			0.59		
	I_F = 5 A	T_A = 125 °C		0.42	-	
	I_F = 7 A			0.47	-	
	I_F = 10A			0.55	0.63	
Reverse current	Rated V_R	T_A = 25 °C	I_R (2)	7.8	150	µA
		T_A = 125 °C		5.9	15	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	560	-	pF

Notes

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

(4) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise specified)				
PARAMETER	**SYMBOL**	**SS10P5**	**SS10P6**	**UNIT**
Typical thermal resistance per diode	$R_{\theta JA}$ (1)	60		°C/W
	$R_{\theta JL}$	3		

Note

(1) 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 (1)	0.10	86A	1500	7" diameter plastic tape and reel
SS10P6HM3/87A (1)	0.10	87A	6500	13" diameter plastic tape and reel

Note

(1) Automotive grade

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RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

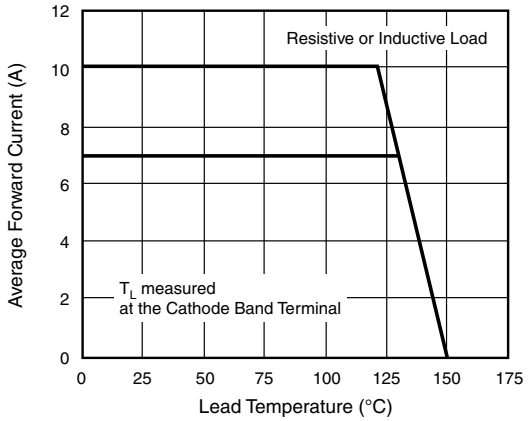

Fig. 1 - Maximum Forward Current Derating Curve

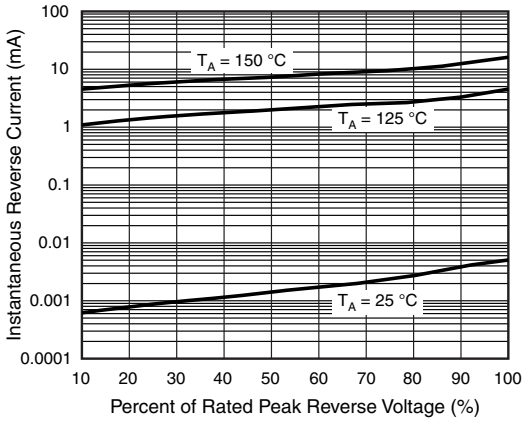

Fig. 4 - Typical Reverse Leakage Characteristics

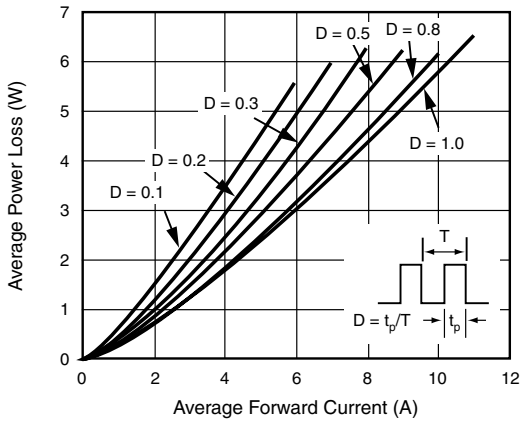

Fig. 2 - Forward Power Loss Characteristics

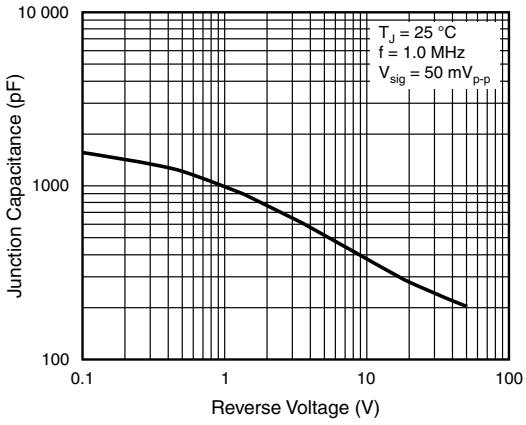

Fig. 5 - Typical Junction Capacitance

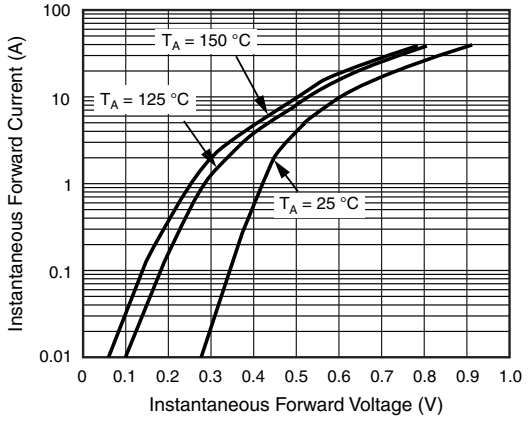

Fig. 3 - Typical Instantaneous Forward Characteristics

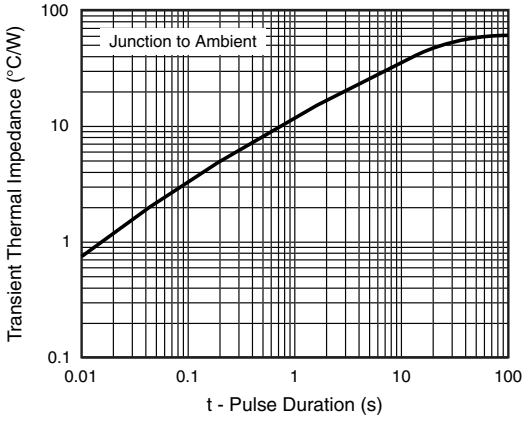

Fig. 6 - Typical Transient Thermal Impedance

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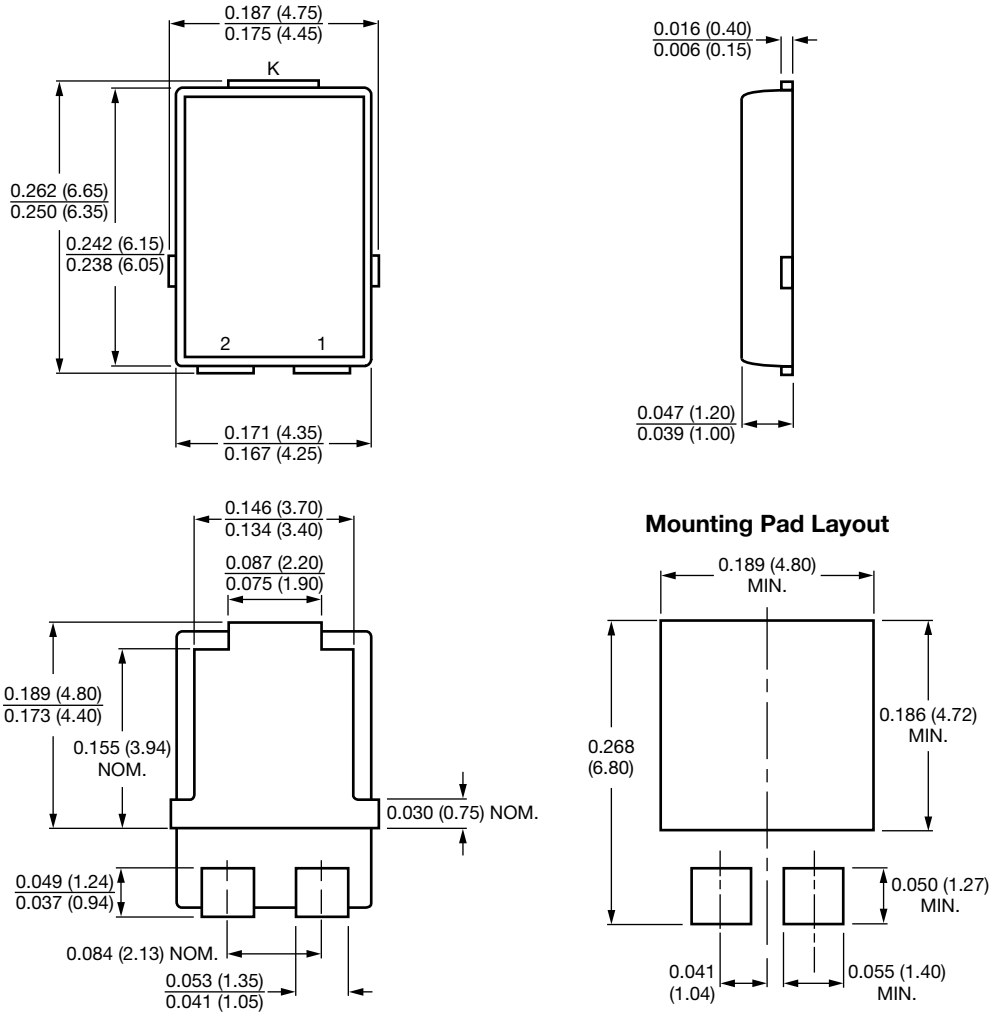
SS10P5, SS10P6

Vishay General Semiconductor

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-277A (SMPC)



Mounting Pad Layout

Conform to JEDEC TO-277A

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