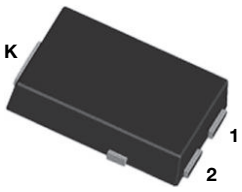
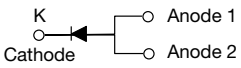
High Current Density Surface-Mount Schottky Rectifier

eSMP® Series



SMPC (TO-277A)



FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- High barrier technology, T_J = 175 °C maximum
- Low leakage current
- 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

LINKS TO ADDITIONAL RESOURCES

3D Models

TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, or polarity protection application.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
V_{RRM}	45 V
I_{FSM}	200 A
E_{AS}	20 mJ
V_F at I_F = 10 A	0.56 V
I_R	5.5 µA
T_J max.	175 °C
Package	SMPC (TO-277A)
Circuit configuration	Single

MECHANICAL DATA

Case: SMPC (TO-277A)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade
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

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**SS10PH45**	**UNIT**
Device marking code		10H45	
Maximum repetitive peak reverse voltage	V_{RRM}	45	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	10	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	200	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 +175	°C

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)	0.54	-	V
	I_F = 10 A			0.64	0.72	
	I_F = 5 A	T_A = 125 °C		0.45	-	
	I_F = 10 A			0.56	0.64	
Reverse current	Rated V_R	T_A = 25 °C	I_R (2)	5.5	80	µA
		T_A = 125 °C		3.9	10	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	400	-	pF

Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise specified)			
PARAMETER	**SYMBOL**	**SS10PH45**	**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**
SS10PH45-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS10PH45-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS10PH45HM3_A/H (1)	0.10	H	1500	7" diameter plastic tape and reel
SS10PH45HM3_A/I (1)	0.10	I	6500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise specified)

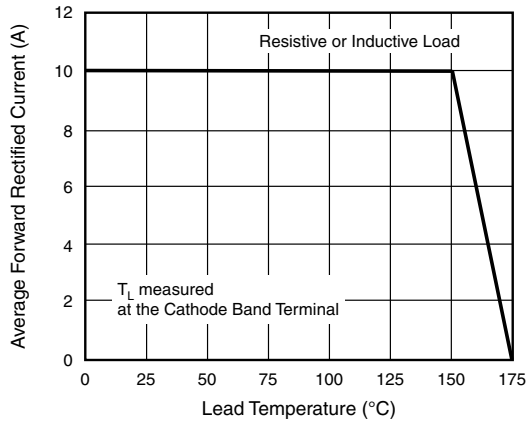


Fig. 1 - Maximum Forward Current Derating Curve

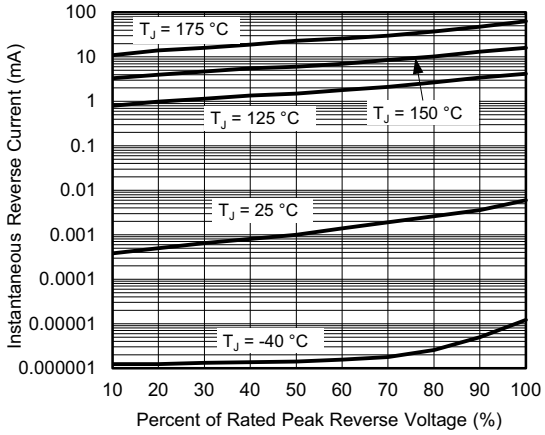


Fig. 4 - Typical Reverse Leakage Characteristics

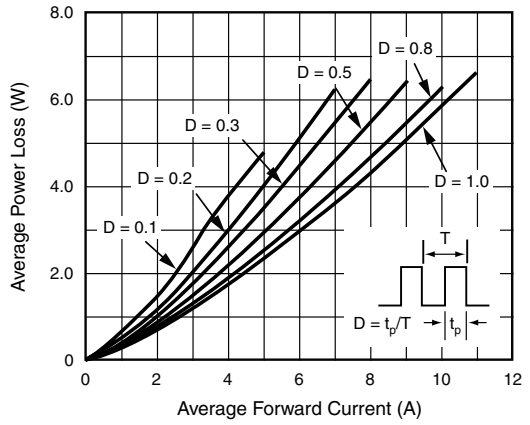


Fig. 2 - Forward Power Loss Characteristics

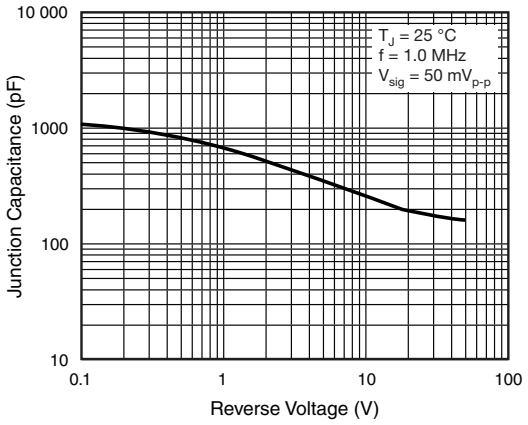


Fig. 5 - Typical Junction Capacitance

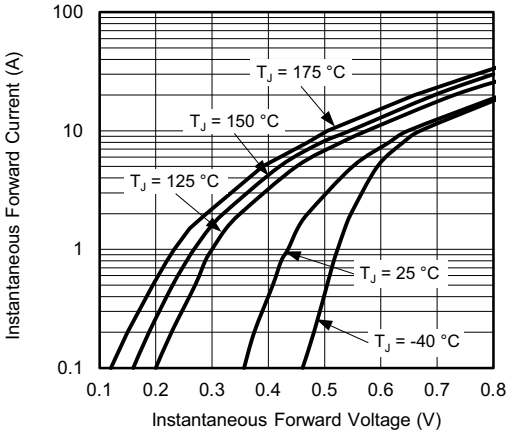


Fig. 3 - Typical Instantaneous Forward Characteristics

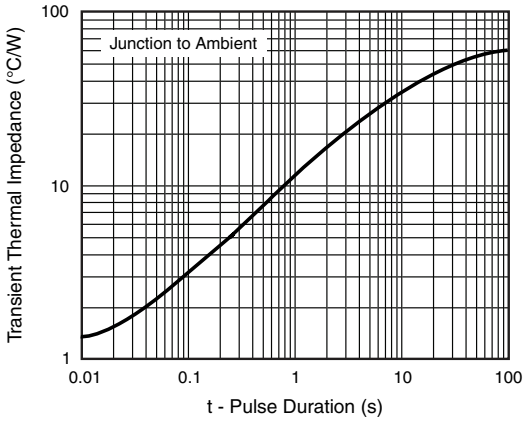
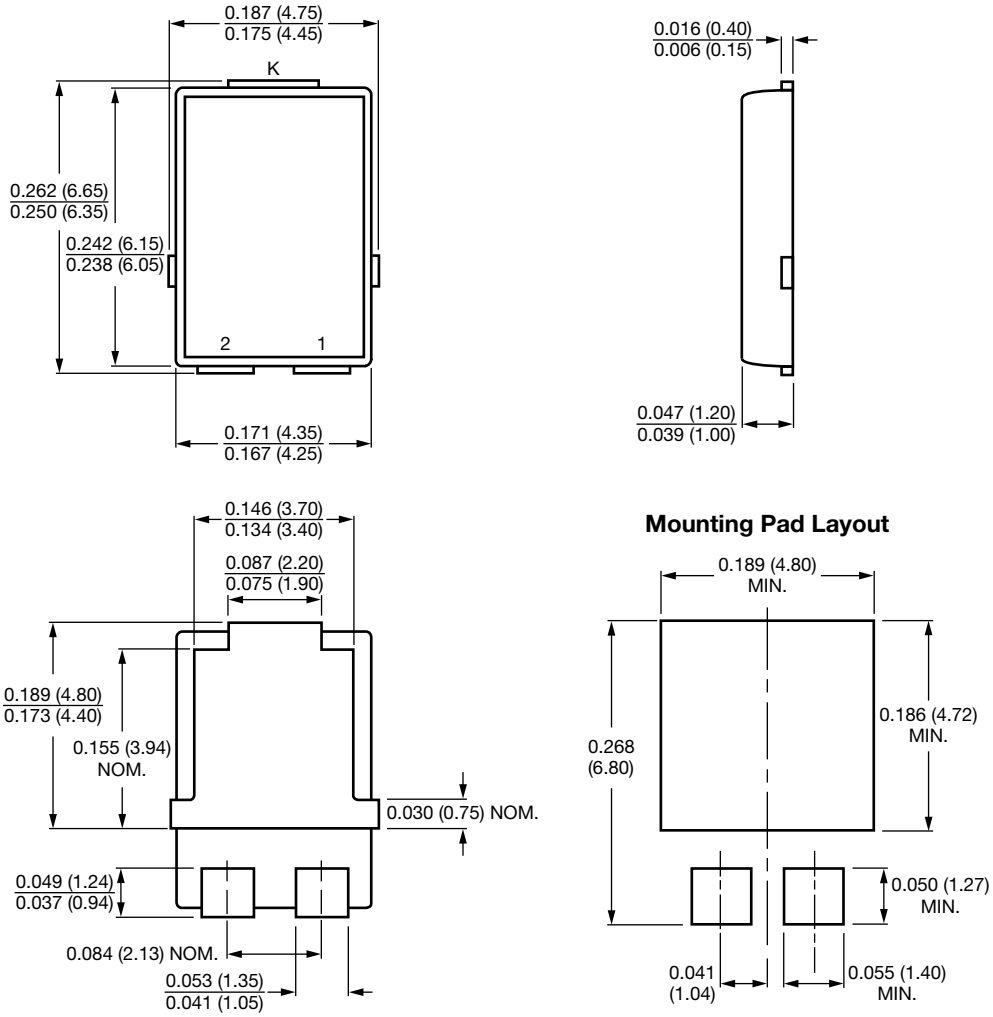


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPC (TO-277A)



Conform to JEDEC® TO-277A

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