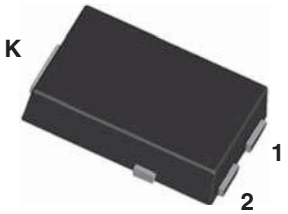
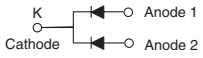
High Current Density Surface Mount Schottky Barrier Rectifiers

eSMP® Series



TO-277A (SMPC)



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 5.0 A
V_{RRM}	30 V, 40 V
I_{FSM}	200 A
E_{AS}	20 mJ
V_F at I_F = 5 A	0.37 V
T_J max.	150 °C
Package	TO-277A
Diode variations	Single

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
- Low forward voltage drop, low power losses
- High efficiency
- Low thermal resistance
- Meets MSL level 1, per J-STD-020
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

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

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

PARAMETER		SYMBOL	SS10P3C	SS10P4C	UNIT
Device marking code			S103C	S104C	
Maximum repetitive peak reverse voltage		V_{RRM}	30	40	V
Maximum average forward rectified current (fig. 1)	total device	$I_{F(AV)}$	10		A
	per diode		5.0		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load		I_{FSM}	200		A
Non-repetitive avalanche energy at 25 °C, I_{AS} = 2 A per diode		E_{AS}	20		mJ
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +150		°C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage per diode	I_F = 2.5 A	T_A = 25 °C	V_F (1)	0.40	-	V
	I_F = 5.0 A			0.45	0.53	
	I_F = 2.5 A	T_A = 125 °C		0.29	-	
	I_F = 5.0 A			0.37	0.44	
Reverse current per diode	Rated V_R	T_A = 25 °C	I_R (2)	56	550	µA
		T_A = 125 °C		28	45	mA
Typical junction capacitance per diode	4.0 V, 1 MHz		C_J	430	-	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**	**SS10P3C**	**SS10P4C**	**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**
SS10P4C-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS10P4C-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS10P4CHM3/86A (1)	0.10	86A	1500	7" diameter plastic tape and reel
SS10P4CHM3/87A (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)

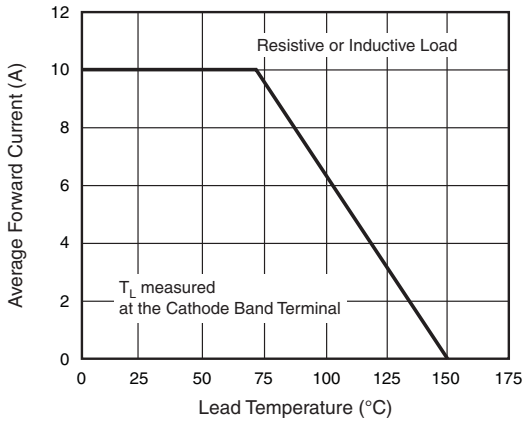

Fig. 1 - Maximum Forward Current Derating Curve

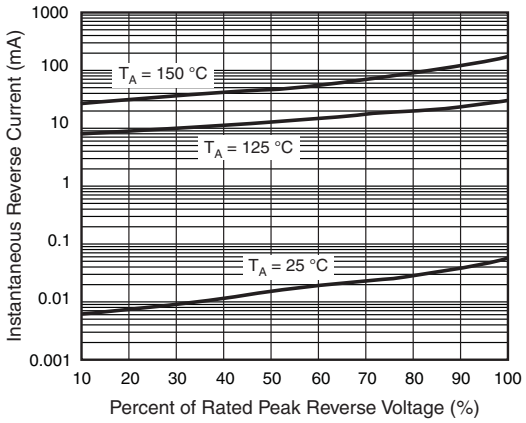

Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

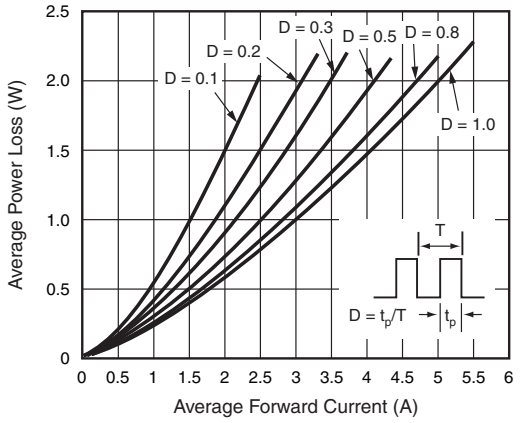

Fig. 2 - Forward Power Loss Characteristics Per Diode

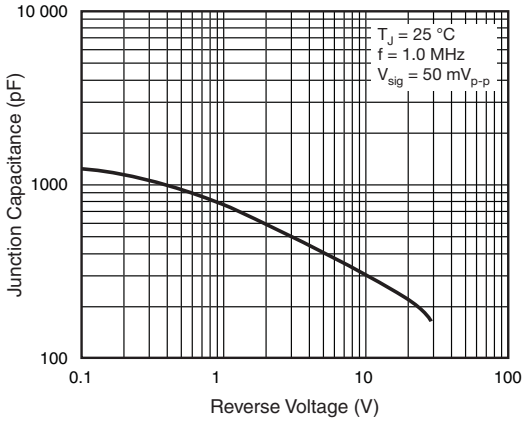

Fig. 5 - Typical Junction Capacitance Per Diode

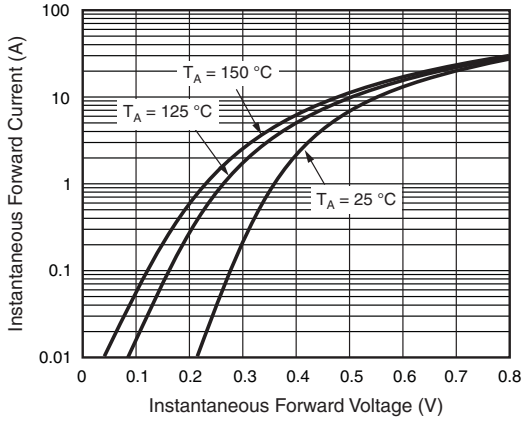

Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

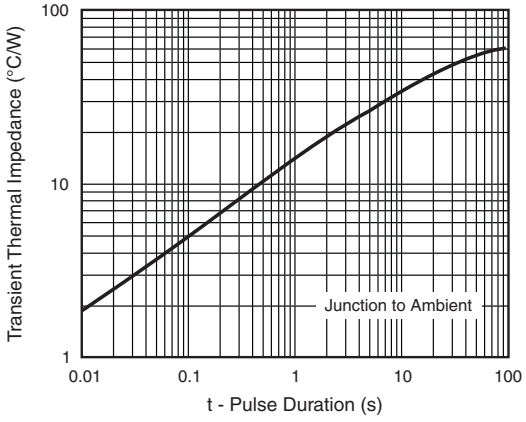

Fig. 6 - Typical Transient Thermal Impedance Per Diode

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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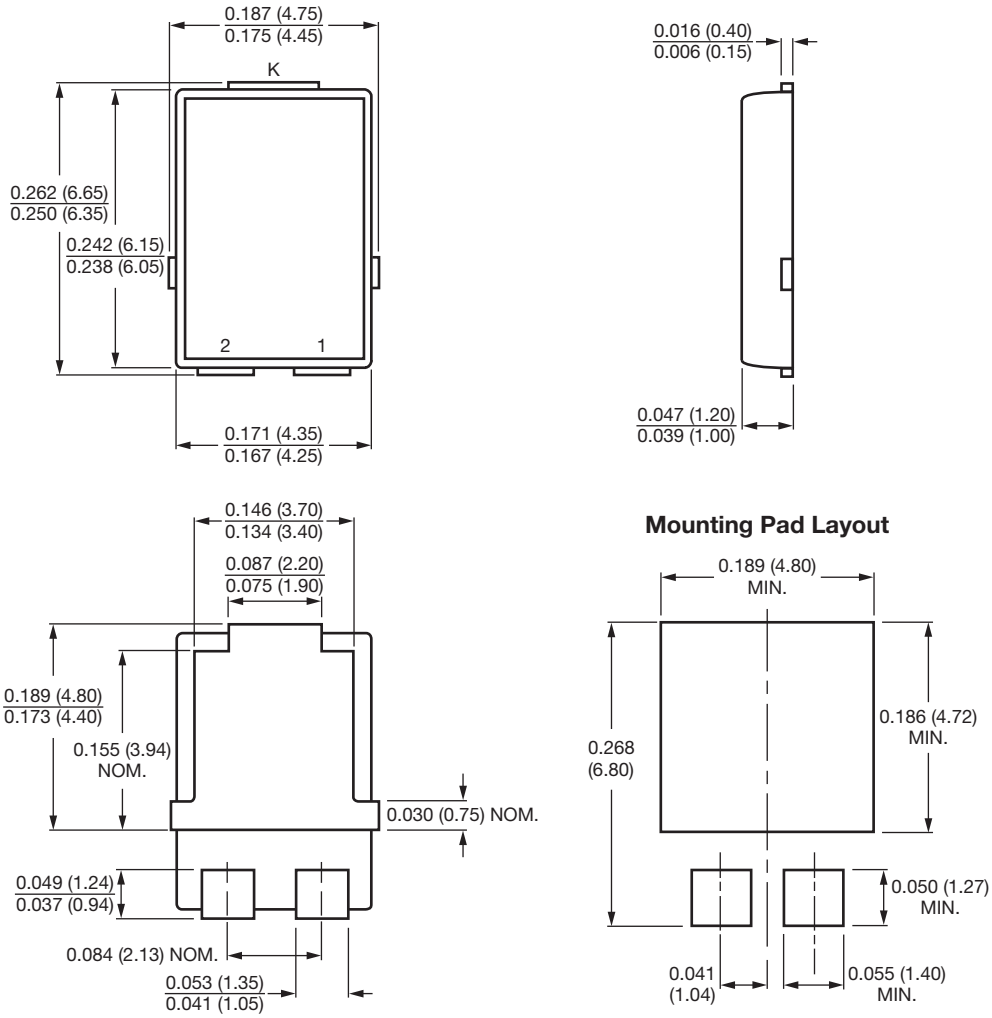

Conform to JEDEC TO-277A

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