

High Current Density Surface Mount Schottky Barrier Rectifiers

eSMP® Series



TO-277A (SMPC)



FEATURES

- 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, 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/doc299912



RoHS
COMPLIANT
HALOGEN
FREE

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	5.0 A
V_{RRM}	30 V, 40 V
I_{FSM}	150 A
E_{AS}	20 mJ
V_F at $I_F = 5.0$ A	0.403 V
T_J max.	150 °C
Package	TO-277A (SMPC)
Diode variations	Single

TYPICAL APPLICATIONS

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

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

Base P/NHM3_X - halogen-free, RoHS-compliant, and automotive grade ("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	SS5P3	SS5P4	UNIT
Device marking code		S53	S54	
Maximum repetitive peak reverse voltage	V_{RRM}	30	40	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	5.0		A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	150		A
Non-repetitive avalanche energy at $I_{AS} = 2.0$ A, $T_J = 25$ °C	E_{AS}	20		mJ
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150		°C



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage	$I_F = 2.5\text{ A}$	$V_F^{(1)}$	0.416	-	V
	$I_F = 5.0\text{ A}$		0.476	0.52	
	$I_F = 2.5\text{ A}$		0.312	-	
	$I_F = 5.0\text{ A}$		0.403	0.45	
Maximum reverse current	Rated V_R	$I_R^{(2)}$	61.8	250	μA
			26.7	40	mA
Typical junction capacitance	4.0 V, 1 MHz	C_J	280	-	pF

Notes(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: Pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)				
PARAMETER	SYMBOL	SS5P3	SS5P4	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	60		$^{\circ}\text{C/W}$
	$R_{\theta JL}$	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
SS5P4-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS5P4-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS5P4HM3/86A ⁽¹⁾	0.10	86A	1500	7" diameter plastic tape and reel
SS5P4HM3/87A ⁽¹⁾	0.10	87A	6500	13" diameter plastic tape and reel
SS5P4HM3_A/H ⁽¹⁾	0.10	H	1500	7" diameter plastic tape and reel
SS5P4HM3_A/I ⁽¹⁾	0.10	I	6500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

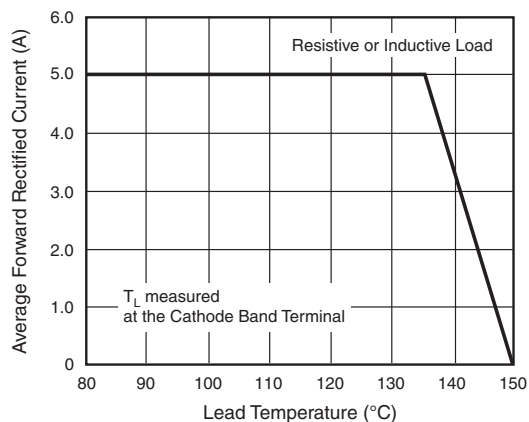
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)


Fig. 1 - Maximum Forward Current Derating Curve

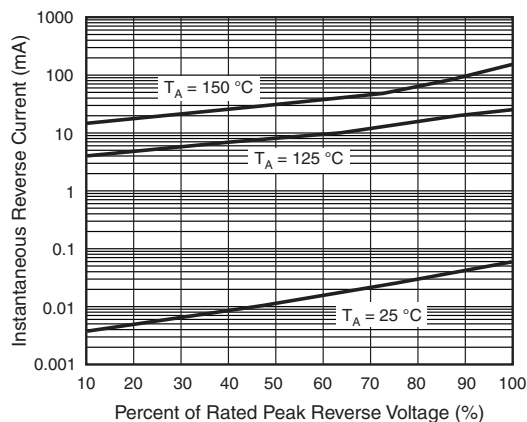


Fig. 4 - Typical Reverse Leakage Characteristics

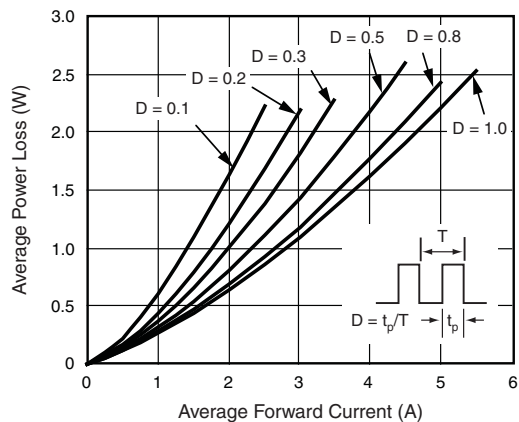


Fig. 2 - Forward Power Loss Characteristics

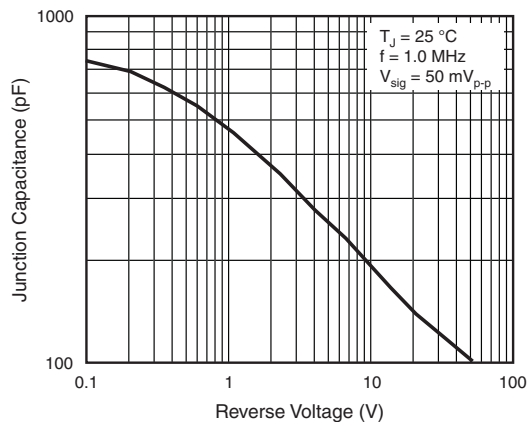


Fig. 5 - Typical Junction Capacitance

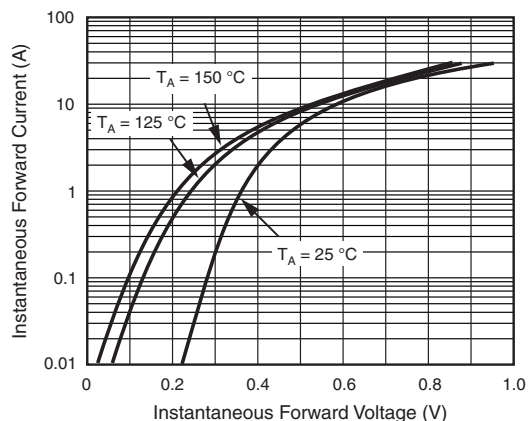


Fig. 3 - Typical Instantaneous Forward Characteristics

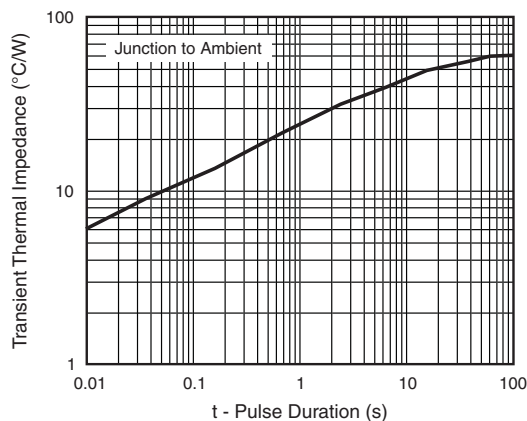
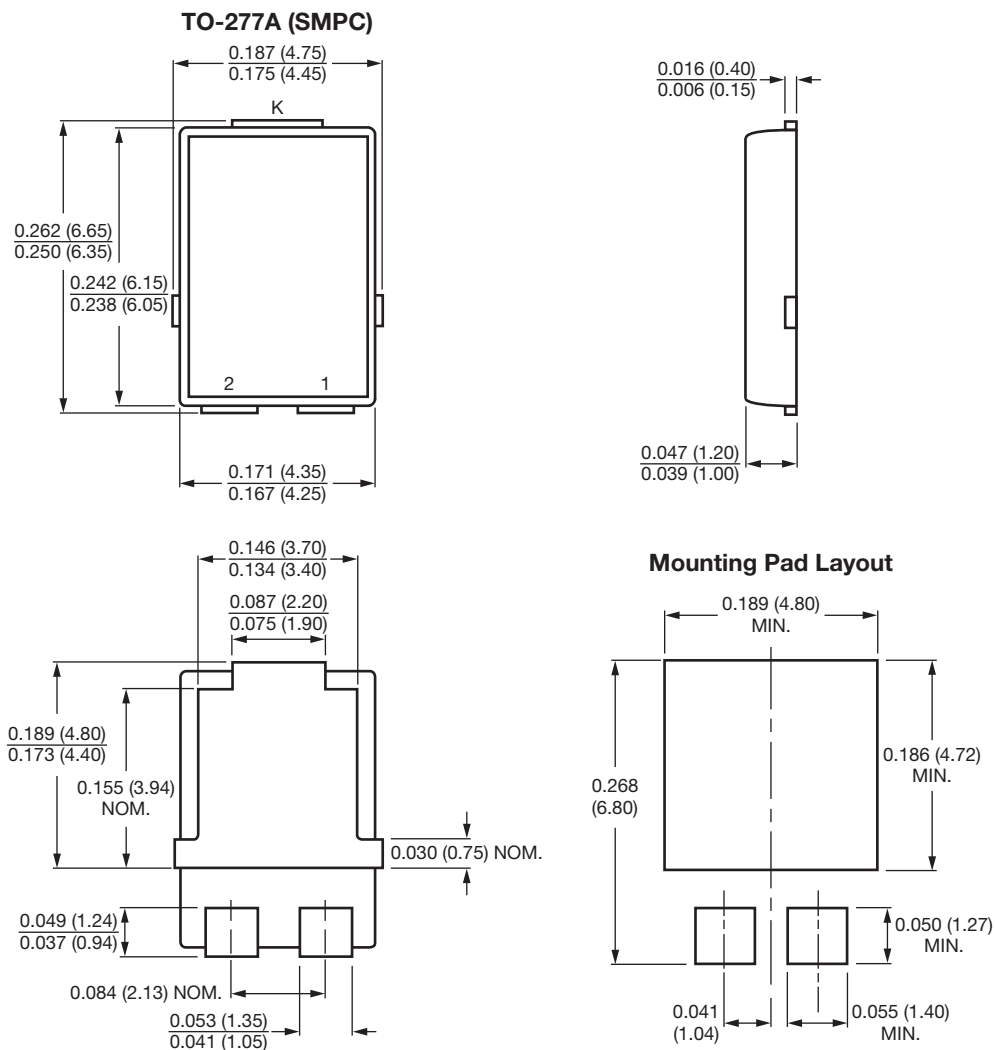


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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