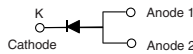


## High Current Density Surface Mount Schottky Barrier Rectifiers

### eSMP™ Series



TO-277A (SMPC)



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	5.0 A
$V_{RRM}$	90 V, 100 V
$I_{FSM}$	150 A
$V_F$ at $I_F = 5.0$ A	0.649 V
$I_R$	4.5 $\mu$ A
$T_J$ max.	150 °C

### TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, dc-to-dc converters and polarity protection application.

### 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
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- Halogen-free



RoHS  
COMPLIANT  
HALOGEN  
FREE

### MECHANICAL DATA

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

Molding compound meets UL 94V-0 flammability rating.

Base P/N-E3 - RoHS compliant, commercial grade

Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	SS5P9	SS5P10	UNIT
Device marking code		S59	S510	
Maximum repetitive peak reverse voltage	$V_{RRM}$	90	100	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 $I_{AS} = 2$ A, $T_J = 25$ °C	$E_{AS}$	20		mJ
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150		°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage <sup>(1)</sup>	$I_F = 2.5\text{ A}$ $I_F = 5.0\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F$	0.708 0.832	- 0.88	V
	$I_F = 2.5\text{ A}$ $I_F = 5.0\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.571 0.649	- 0.68	
Reverse current <sup>(2)</sup>	rated $V_R$	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$	$I_R$	4.5 2.7	15 5	$\mu\text{A}$ mA
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	130	-	pF

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

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	SS5P9	SS5P10	UNIT
Typical thermal resistance	$R_{\theta JA}$ <sup>(1)</sup>	65		$^\circ\text{C/W}$
	$R_{\theta JL}$	3		

**Note:**

(1) Units mounted on recommended P.C.B. 1 oz. pad layout

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS5P10-E3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS5P10-E3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS5P10-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS5P10-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel

**RATINGS AND CHARACTERISTICS CURVES**

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

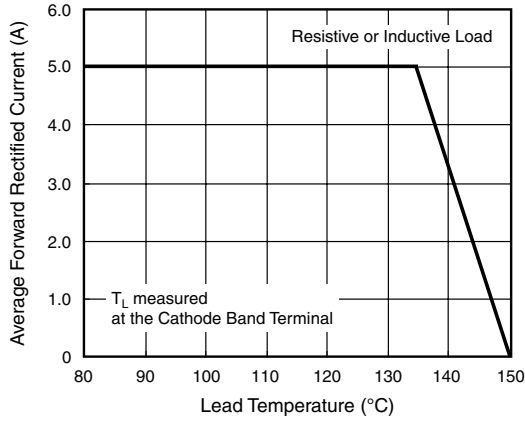


Figure 1. Maximum Forward Current Derating Curve

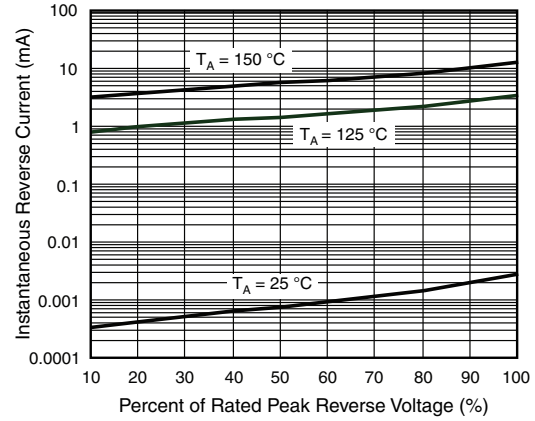


Figure 4. Typical Reverse Characteristics

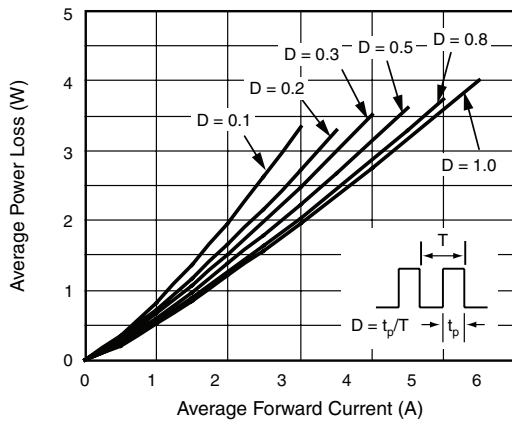


Figure 2. Forward Power Loss Characteristics

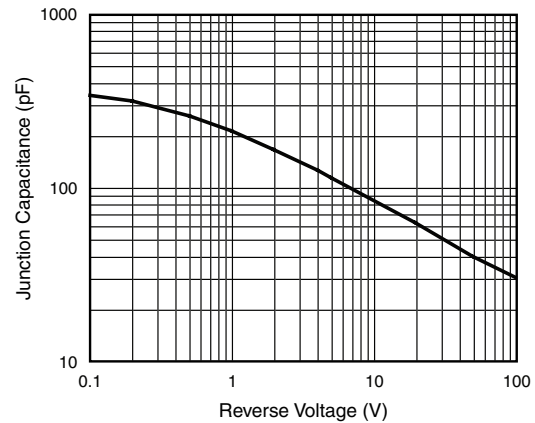


Figure 5. Typical Junction Capacitance

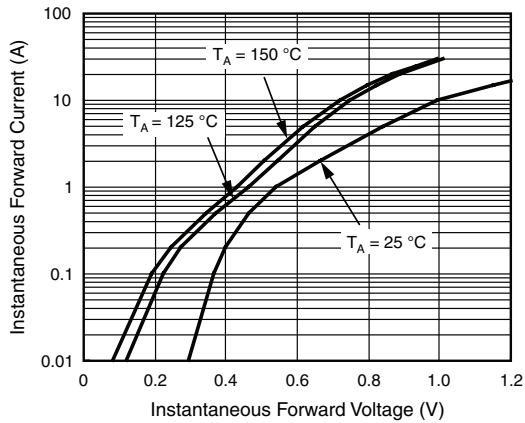


Figure 3. Typical Instantaneous Forward Characteristics

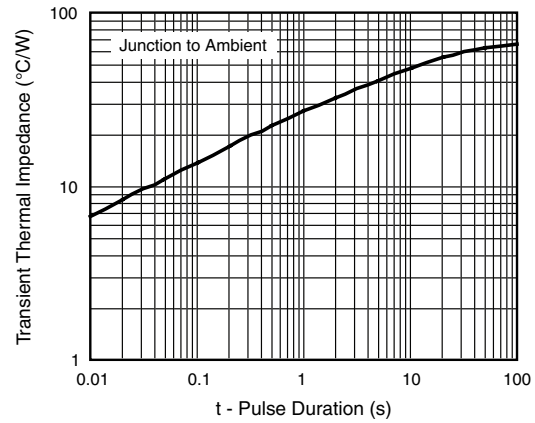
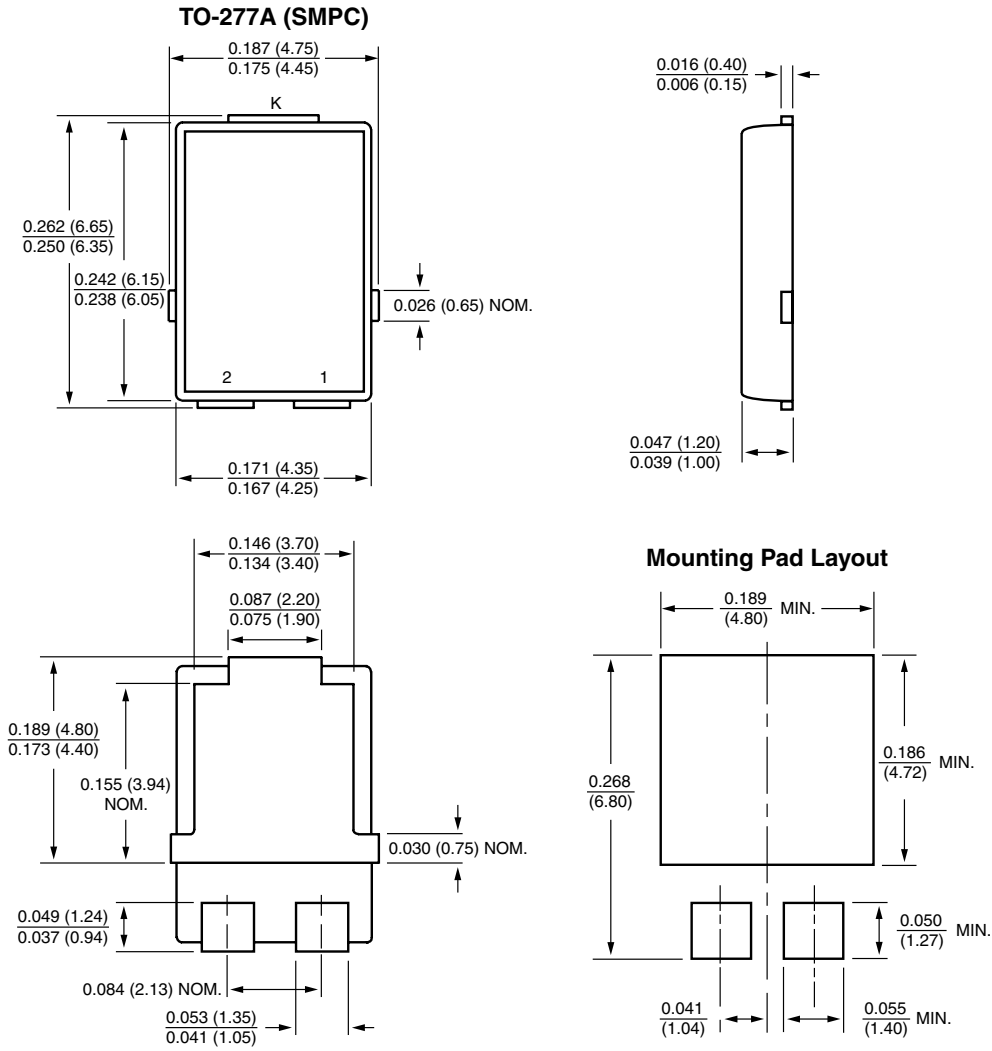


Figure 6. Typical Transient Thermal Impedance



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





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