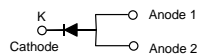


High Current Density Surface Mount Glass Passivated Rectifiers

eSMP® Series



TO-277A (SMPC)



AUTOMOTIVE
GRADE
Available



RoHS
COMPLIANT
HALOGEN
FREE

FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Glass passivated chip junction
- Low forward voltage drop
- High surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: For definitions of compliance

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes for consumer, automotive, and telecommunication.

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	4.0 A
V_{RRM}	100 V, 200 V, 400 V, 600 V, 800 V, 1000 V
I_{FSM}	100 A
I_R	10 μ A
V_F at $I_F = 4$ A	0.860 V
T_J max.	150 °C
Package	TO-277A (SMPC)
Diode variations	Single die

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)								
PARAMETER	SYMBOL	S4PB	S4PD	S4PG	S4PJ	S4PK	S4PM	UNIT
Device marking code		S4PB	S4PD	S4PG	S4PJ	S4PK	S4PM	
Max. repetitive peak reverse voltage	V_{RRM}	100	200	400	600	800	1000	V
Average forward current	$I_{F(AV)}$	4.0						A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	100						A
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	
Instantaneous forward voltage	$I_F = 2.0\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.897	-	V
	$I_F = 4.0\text{ A}$			0.958	1.10	
	$I_F = 2.0\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.783	-	
	$I_F = 4.0\text{ A}$			0.860	0.95	
Reverse current	Rated V_R	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	-	10	μA
		$T_A = 125\text{ }^\circ\text{C}$		55	100	
Max. reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $t_{rr} = 0.25\text{ A}$	t_{rr}	2.5	-	μs	
Typical junction capacitance	4.0 V, 1 MHz	C_J	30	-	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	S4PB	S4PD	S4PG	S4PJ	S4PK	S4PM	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	60						$^\circ\text{C/W}$
	$R_{\theta JL}$	4						

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
S4PJ-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
S4PJ-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
S4PJHM3/86A ⁽¹⁾	0.10	86A	1500	7" diameter plastic tape and reel
S4PJHM3/87A ⁽¹⁾	0.10	87A	6500	13" diameter plastic tape and reel

Note

- (1) Automotive grade

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

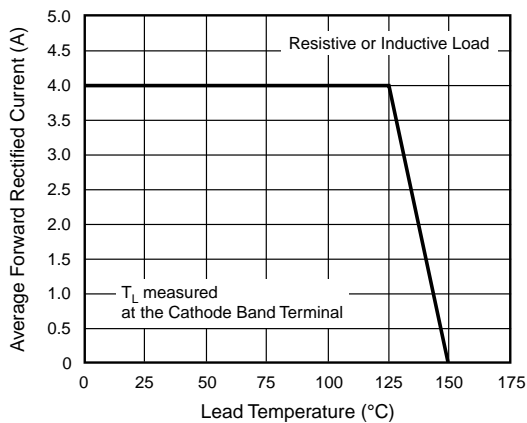


Fig. 1 - Maximum Forward Current Derating Curve

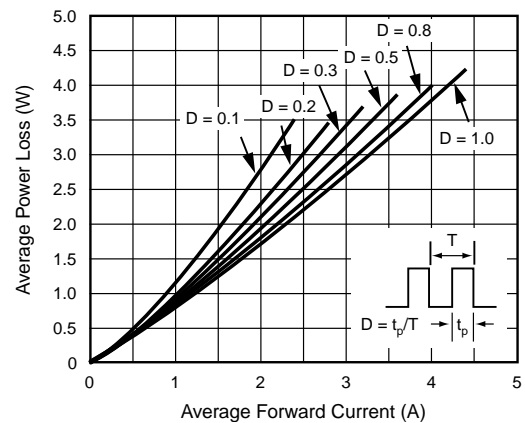


Fig. 2 - Forward Power Loss Characteristics

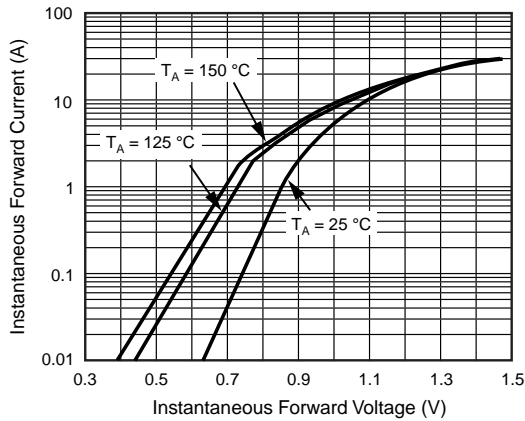


Fig. 3 - Typical Instantaneous Forward Characteristics

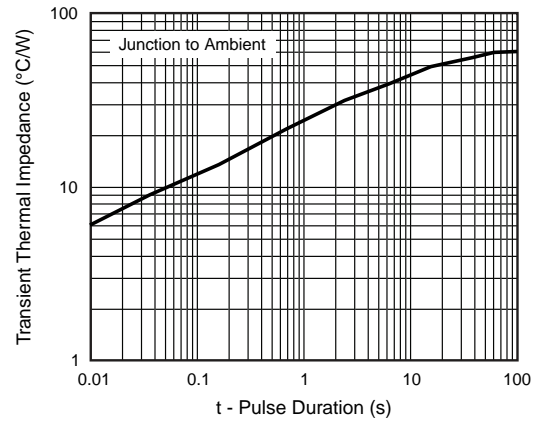


Fig. 6 - Typical Transient Thermal Impedance

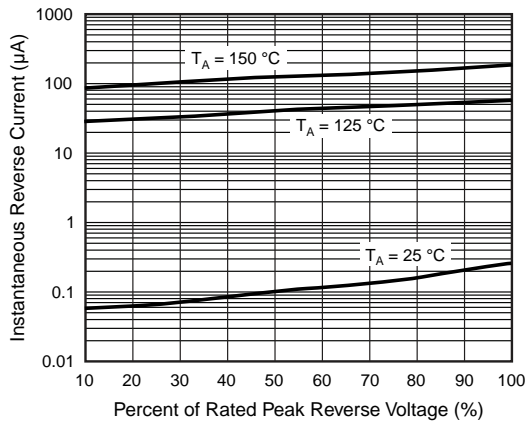


Fig. 4 - Typical Reverse Leakage Characteristics

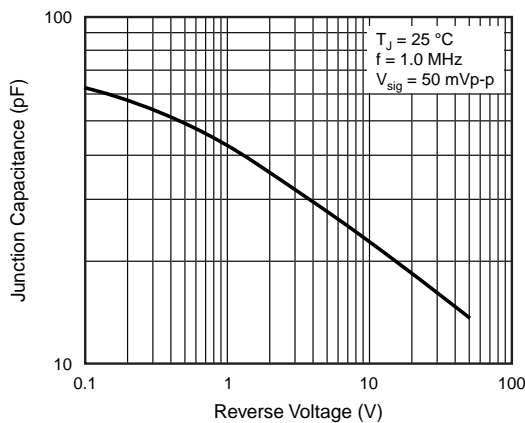
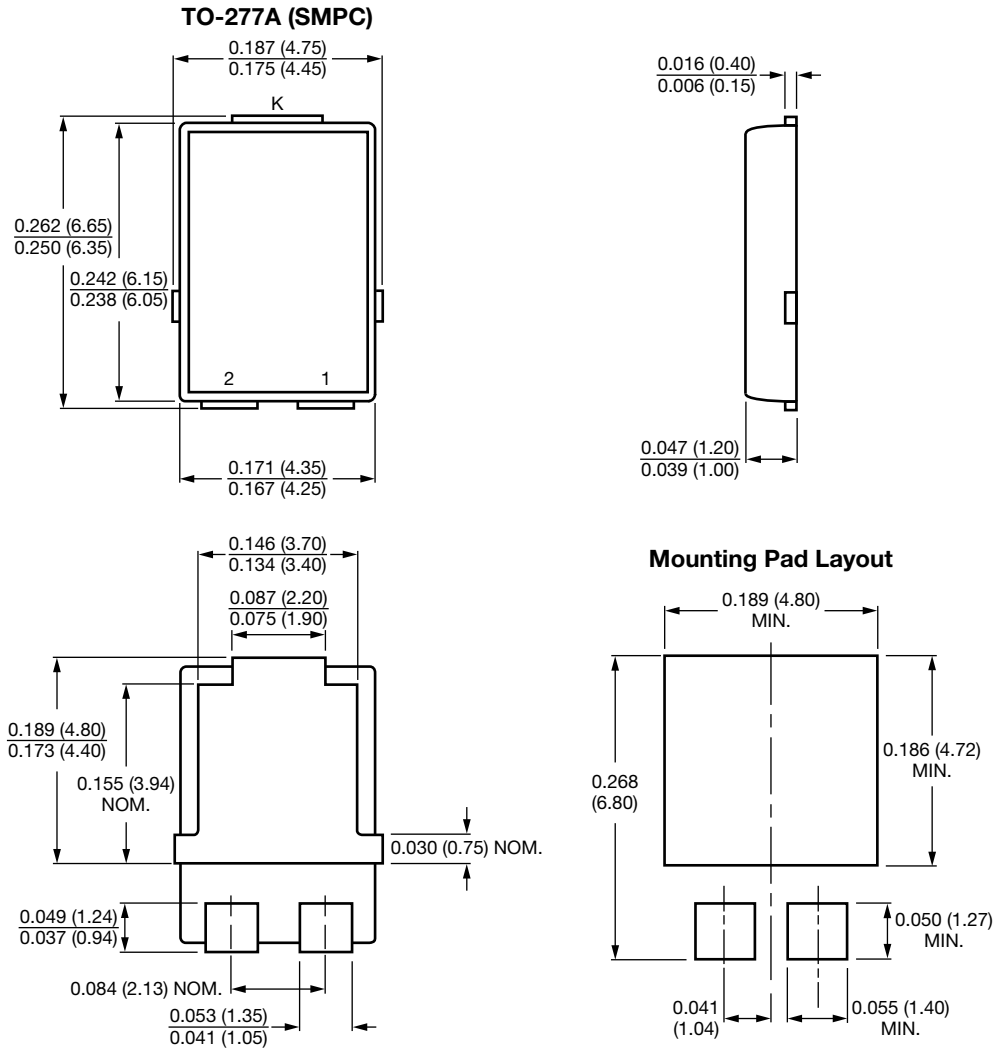


Fig. 5 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A