

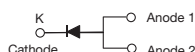


High Current Density Standard Avalanche Surface Mount Rectifiers

eSMP® Series



TO-277A (SMPC)



FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Glass passivated chip junction
- Controlled avalanche characteristics
- Low leakage current
- High forward surge capability
- AEC-Q101 qualified
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition

AUTOMOTIVE
GRADE
Available



RoHS
COMPLIANT
HALOGEN
FREE

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	4.0 A
V_{RRM}	200 V to 1000 V
I_{FSM}	100 A
E_{AS}	20 mJ
V_F at $I_F = 4$ A	0.92 V
T_J max.	175 °C

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

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

PARAMETER		SYMBOL	AS4PD	AS4PG	AS4PJ	AS4PK	AS4PM	UNIT
Device marking code			AS4D	AS4G	AS4J	AS4K	AS4M	
Maximum repetitive peak reverse voltage		V _{RRM}	200	400	600	800	1000	V
Maximum DC forward current (fig. 1)		I _F ⁽¹⁾	4.0					A
		I _F ⁽²⁾	2.4					
Peak forward surge current 10 ms single half sine-wave superimposed on rated load		I _{FSM}	100					A
Non-repetitive avalanche energy at T _J = 25 °C	I _{AS} = 2.5 A max.	E _{AS}	20					mJ
	I _{AS} = 1.0 A typical		30					
Operating junction and storage temperature range		T _J , T _{STG}	- 55 to + 175					°C

Notes

(1) Mounted on 20 mm x 20 mm pad areas, 1 oz. FR4 PCB

(2) Free air, mounted on recommended copper pad area



ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 2.0 A	T _A = 25 °C	V _F ⁽¹⁾	0.962	-	V
	I _F = 4.0 A			1.044	1.10	
	I _F = 2.0 A	T _A = 125 °C		0.822	-	
	I _F = 4.0 A			0.922	0.98	
Reverse current	rated V _R	T _A = 25 °C	I _R ⁽²⁾	0.35	10	μA
		T _A = 125 °C		75	150	
Typical reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	1.8	-	μs
Typical junction capacitance per diode	4.0 V, 1 MHz		C _J	60	-	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 °C unless otherwise noted)							
PARAMETER	SYMBOL	AS4PD	AS4PG	AS4PJ	AS4PK	AS4PM	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾	80					°C/W
	R _{θJM} ⁽²⁾	5					

Notes(1) Free air, mounted on recommended PCB 1 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient(2) Units mounted on PCB with 20 mm x 20 mm copper pad areas, 1 oz. FR4 PCB; $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
AS4PJ-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
AS4PJ-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
AS4PJHM3/86A ⁽¹⁾	0.10	86A	1500	7" diameter plastic tape and reel
AS4PJHM3/87A ⁽¹⁾	0.10	87A	6500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

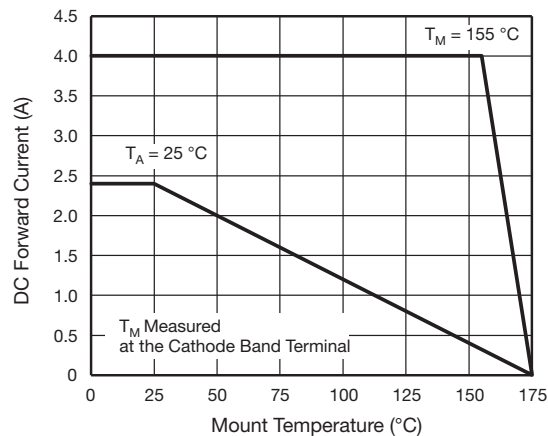

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

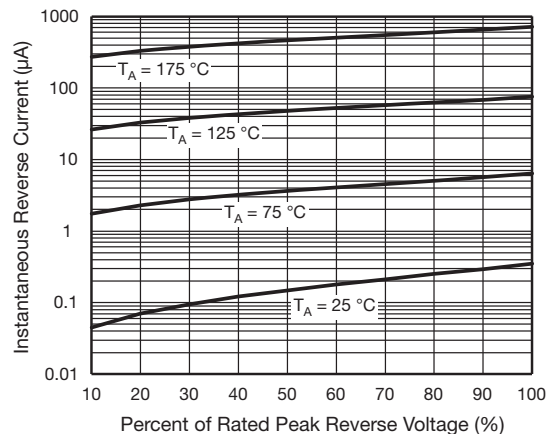


Fig. 4 - Typical Reverse Leakage Characteristics

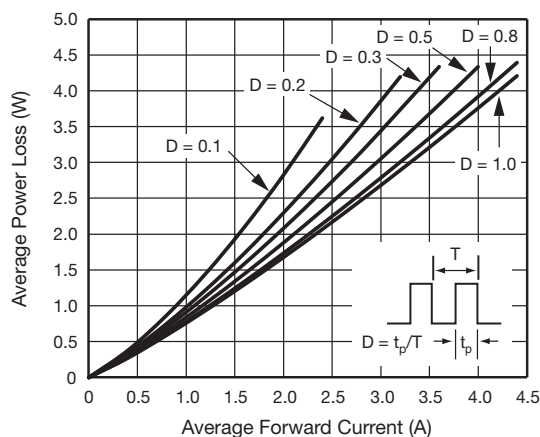


Fig. 2 - Forward Power Loss Characteristics

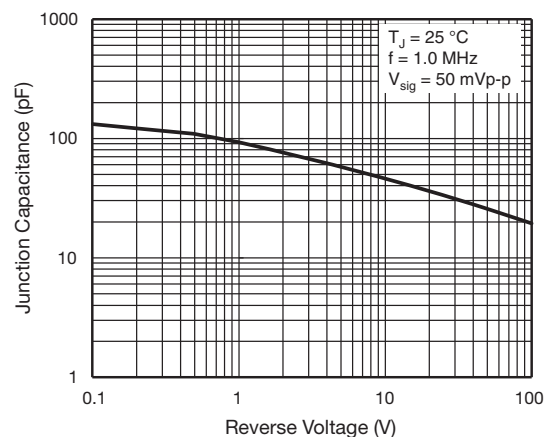


Fig. 5 - Typical Junction Capacitance

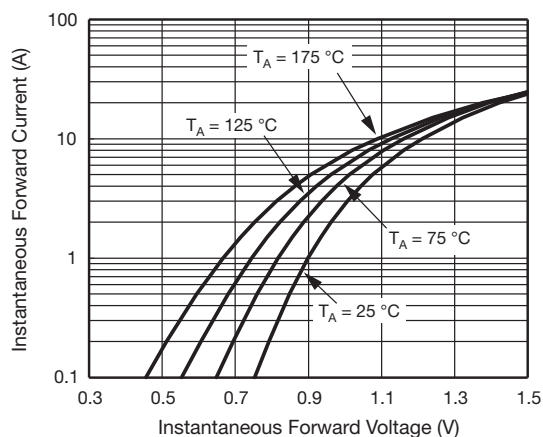


Fig. 3 - Typical Instantaneous Forward Characteristics

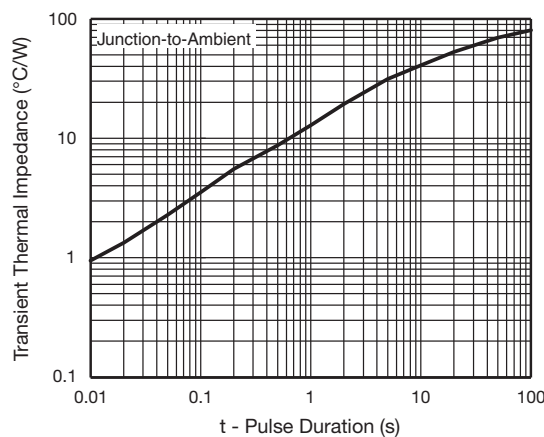
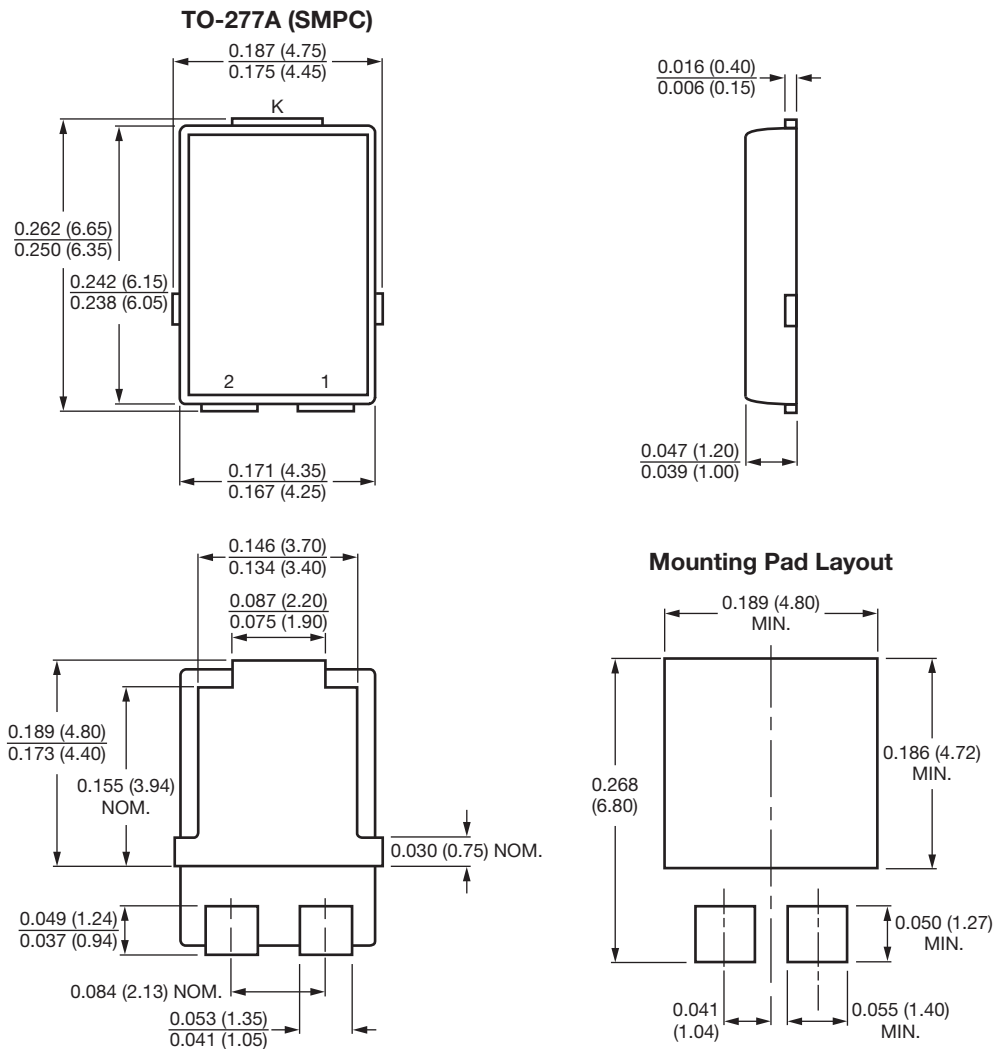


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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