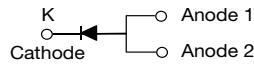


Ultrafast Avalanche Surface Mount Rectifiers

eSMP® Series



SMPC (TO-277A)



LINKS TO ADDITIONAL RESOURCES



FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Glass passivated pellet chip junction
- Fast reverse recovery time
- Controlled avalanche characteristics
- Low leakage current
- High forward surge capability
- 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/doc/99912



PRIMARY CHARACTERISTICS

$I_{F(AV)}$	3.0 A
V_{RRM}	200 V, 400 V, 600 V
I_{FSM}	75 A
t_{rr}	75 ns
E_{AS}	20 mJ
V_F at $I_F = 3.0$ A	1.13 V
T_J max.	175 °C
Package	SMPC (TO-277A)
Circuit configuration	Single

TYPICAL APPLICATIONS

For use in lighting, high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive, and telecommunication.

MECHANICAL DATA

Case: SMPC (TO-277A)

Molding compound meets UL 94 V-0 flammability rating
 Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade
 Base P/NHM3_X - halogen-free, RoHS-compliant and AEC-Q101 qualified
 ("_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	AU3PD	AU3PG	AU3PJ	UNIT
Device marking code		AU3D	AU3G	AU3J	
Maximum repetitive peak reverse voltage	V_{RRM}	200	400	600	V
Maximum DC forward current (fig. 1)	I_F ⁽¹⁾	3.0			A
	I_F ⁽²⁾	1.7			
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	45			A
Non-repetitive avalanche energy at $T_J = 25$ °C	E_{AS}	20			mJ
		30			
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175			°C

Notes

(1) Mounted on 14 mm x 14 mm pad areas, 1 oz. FR4 PCB

(2) Free air, mounted on recommended pad area

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

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 3.0 \text{ A}$	$T_A = 25^\circ\text{C}$ $T_A = 125^\circ\text{C}$	V_F ⁽¹⁾	1.53	1.9
				1.13	1.4
Reverse current	Rated V_R	$T_A = 25^\circ\text{C}$ $T_A = 125^\circ\text{C}$	I_R ⁽²⁾	0.41	10
				70	250
Maximum reverse recovery time	$I_F = 0.5 \text{ A}$, $I_R = 1.0 \text{ A}$, $I_{rr} = 0.25 \text{ A}$	t_{rr}	66	75	ns
Typical junction capacitance per diode	Rated $V_R = 4.0 \text{ V}$, 1 MHz	C_J	72	-	pF

Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width $\leq 40 \text{ ms}$

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

PARAMETER	SYMBOL	AU3PD	AU3PG	AU3PJ	UNIT
Typical thermal resistance	$R_{\theta JA}$ ⁽¹⁾	85			$^\circ\text{C/W}$
	$R_{\theta JM}$ ⁽²⁾	5			

Notes

(1) Free air, mounted on recommended PCB 1 oz. pad are; thermal resistance $R_{\theta JA}$ - junction to ambient

(2) Units mounted on PCB with 14 mm x 14 mm copper pad areas; $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
AU3PJ-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
AU3PJ-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
AU3PJHM3_A/H ⁽¹⁾	0.10	H	1500	7" diameter plastic tape and reel
AU3PJHM3_A/I ⁽¹⁾	0.10	I	6500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

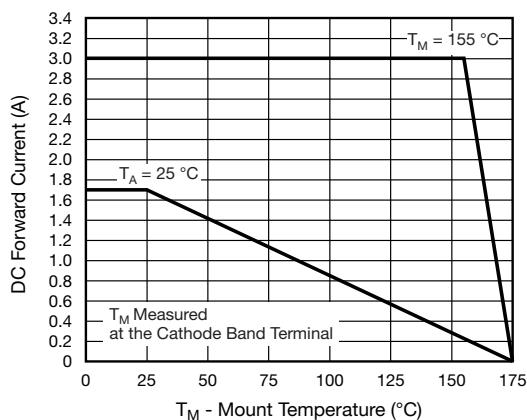
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

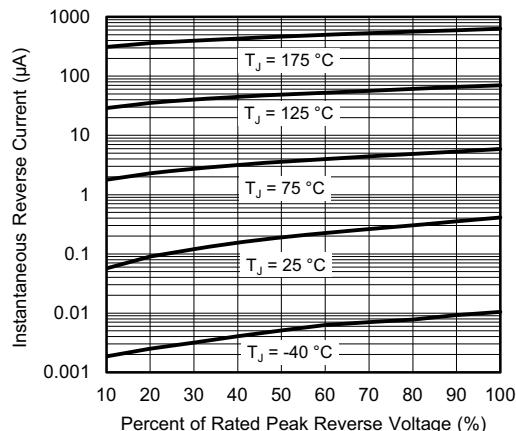


Fig. 4 - Typical Reverse Leakage Characteristics

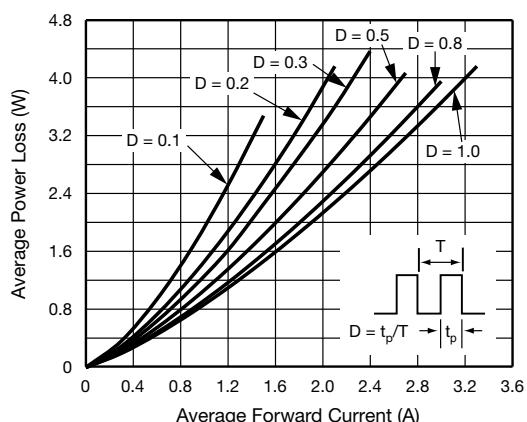


Fig. 2 - Average Power Loss Characteristics

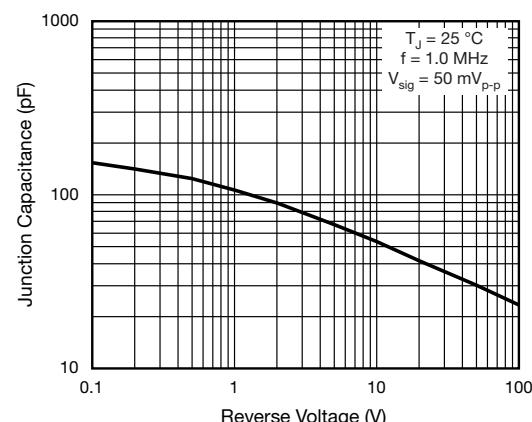


Fig. 5 - Typical Junction Capacitance

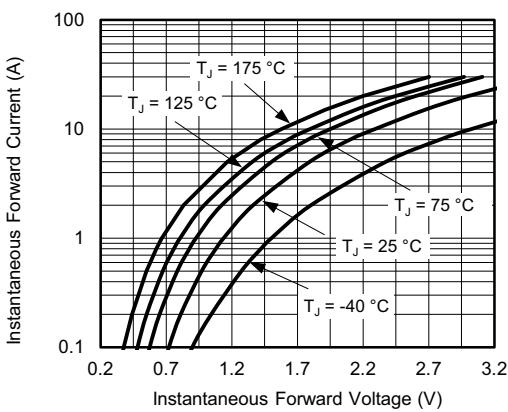


Fig. 3 - Typical Instantaneous Forward Characteristics

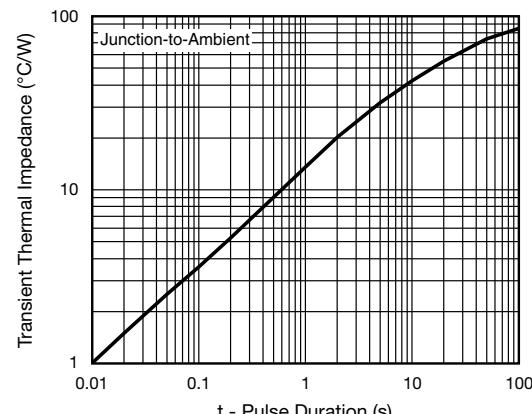
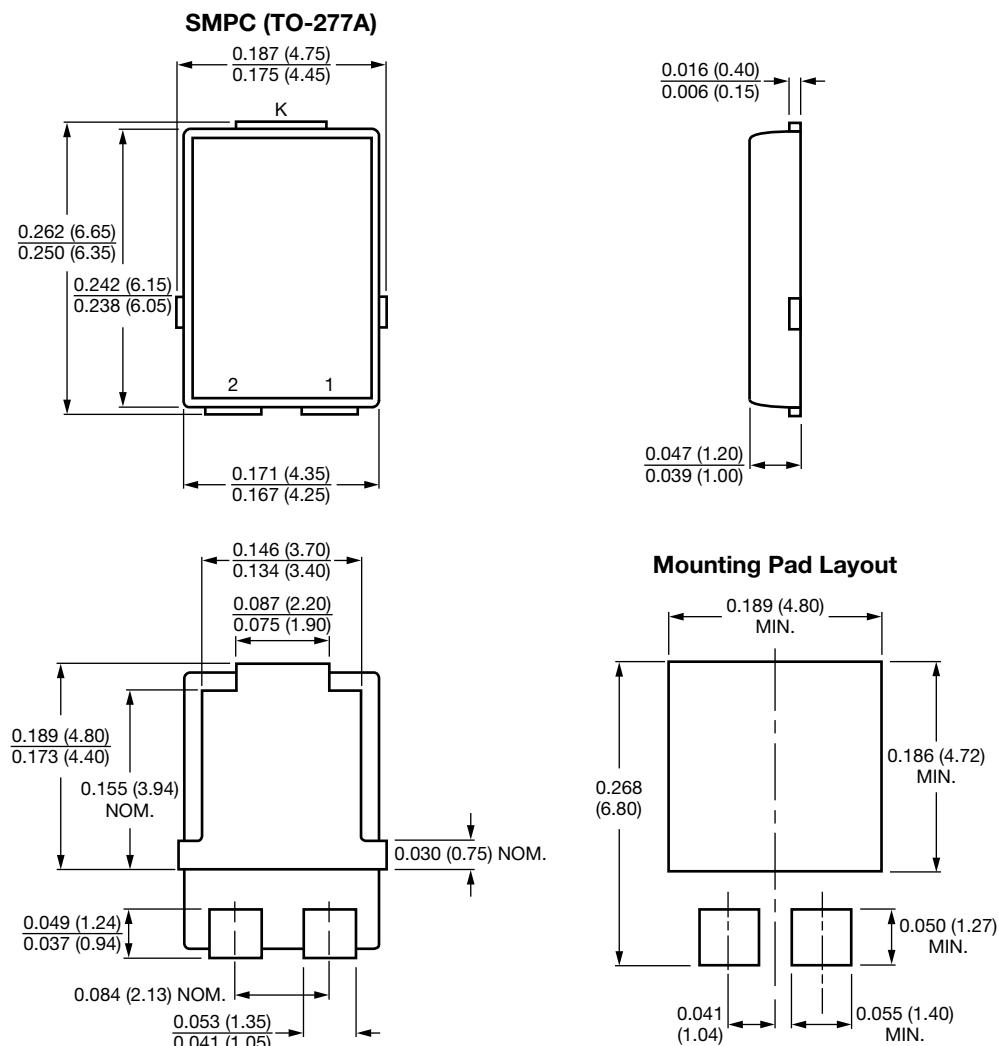


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)


Conform to JEDEC® TO-277A

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