

AU1PD, AU1PG, AU1PJ, AU1PK, AU1PM

Vishay General Semiconductor

Surface Mount Ultrafast Avalanche Rectifiers



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS						
I _{F(AV)}	1.0 A					
V_{RRM}	200 V, 400 V, 600 V, 800 V, 1000 V					
I _{FSM}	30 A, 25 A					
t _{rr}	75 ns					
I _R	1 μΑ					
E _{AS}	20 mJ					
V_F at $I_F = 1.0 A$	1.6 V					
T _J max.	175 °C					
Package	SMP (DO-220AA)					
Circuit configuration Single						

FEATURES

- Very low profile typical height of 1.0 mm
- · Ideal for automated placement
- · Glass passivated pellet chip junction
- Ultrafast recovery times for high frequency
- Low reverse current
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



AUTOMOTIVE

TYPICAL APPLICATIONS

For use in secondary rectification and freewheeling for ultrafast switching speeds of AC/AC and DC/DC converters in high temperature conditions for both consumer and automotive applications.

MECHANICAL DATA

Case: SMP (DO-220AA)

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 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	AU1PD	AU1PG	AU1PJ	AU1PK	AU1PM	UNIT	
Device marking code		AUD	AUG	AUJ	AUK	AUM		
Maximum repetitive peak reverse voltage	V_{RRM}	200	400	600	800	1000	V	
Average forward current	I _{F(AV)}	1.0			Α			
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	30 2		5	А			
Non-repetitive avalanche energy at I _{AS} = 1.0 A, T _A = 25 °C	E _{AS}	20				mJ		
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175				°C		



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)									
PARAMETER	TEST CO	ONDITIONS	SYMBOL	AU1PD AU1PG AU1PJ		AU1PK	AU1PM	UNIT	
Maximum instantaneous	num instantaneous		V _F ⁽¹⁾	1.5		1.85		V	
forward voltage	IF = 1.0 A	$T_A = 25 ^{\circ}\text{C}$ $T_A = 125 ^{\circ}\text{C}$	VF		1.4		1.6		\ \ \
Maximum reverse current	Rated V _R	T _A = 25 °C	I _R ⁽²⁾	1.0					
Maximum reverse current hated v _F		T _A = 125 °C	'R ` ′	100					μA
Maximum reverse recovery time	$I_F = 0.5 A,$ $I_{rr} = 0.25 A$		t _{rr}	75			ns		
Typical junction capacitance	4.0 V, 1 MH	-lz	CJ	11 7.5			.5	pF	

Notes

- (1) Pulse test:300 µs pulse width, 1 % duty cycle
- (2) Pulse test: pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °c unless otherwise noted)								
PARAMETER	SYMBOL	OL AU1PD AU1PG AU1PJ AU1PK AU				AU1PM	UNIT	
Typical thermal resistance	R _{0JA} (1)	132					°C/W	
Typical trieffial resistance	R _{θJM} ⁽¹⁾	15					O/ VV	

Note

(1) Free air, mounted on recommended copper pad area. Thermal resistance R_{θJA} - junction to ambient, R_{θJM} - junction to mount at the terminal cathode band

ORDERING INFORMATION (Example)								
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE				
AU1PJ-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel				
AU1PJ-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel				
AU1PJHM3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel				
AU1PJHM3/85A (1)	0.024	85A	10 000	13" diameter plastic tape and reel				

Note

(1) AEC-Q101 qualified



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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °c unless otherwise noted)

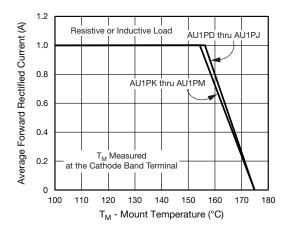


Fig. 1 - Maximum Forward Current Derating Curve

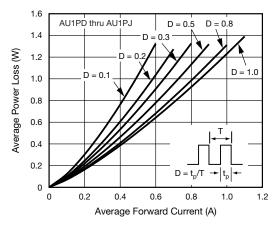


Fig. 2 - Forward Power Loss Characteristics

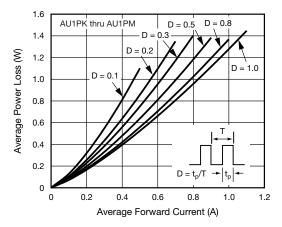


Fig. 3 - Forward Power Loss Characteristics

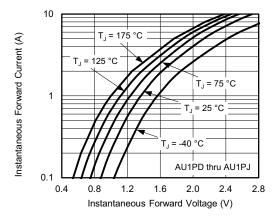


Fig. 4 - Typical Instantaneous Forward Characteristics

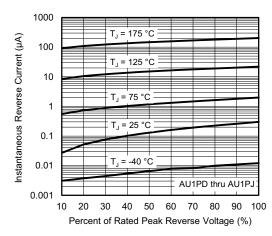


Fig. 5 - Typical Instantaneous Forward Characteristics

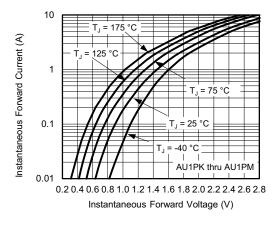


Fig. 6 - Typical Reverse Characteristics

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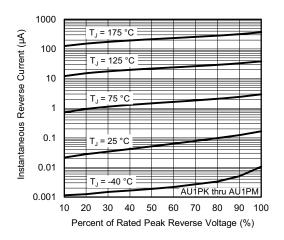


Fig. 7 - Typical Reverse Characteristics

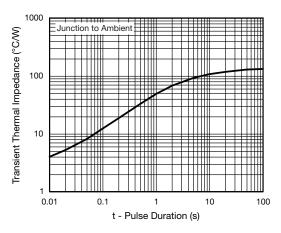


Fig. 9 - Typical Transient Thermal Impedance

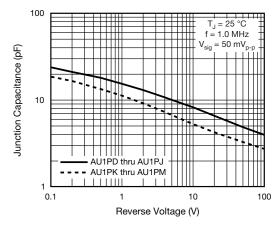


Fig. 8 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA) - 0.012 (0.30) REF. Cathode Band Θ^{.Ο} 0.086 (2.18) 0.053 (1.35) 0.036 (0.91) 0.074 (1.88) 0.041 (1.05) 0.024 (0.61) 0.142 (3.61) 0.103 (2.60) 0.032 (0.80) 0.126 (3.19) 0.087 (2.20) 0.016 (0.40) 0.158 (4.00) 0.146 (3.70) Mounting pad layout 0.025 0.030 (0.635) (0.762) 0.105 (2.67) 0.013 (0.35) 0.004 (0.10) 0.045 (1.15) 0.033 (0.85) 0.100 (2.54) 0.050 0.012 (0.30) 0.018 (0.45) 0.000 (0.00) 0.006 (0.15)





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