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AS1PD, AS1PG, AS1PJ, AS1PK, AS1PM

Vishay General Semiconductor

Standard Avalanche Surface Mount Rectifiers



Cathode O Anode

ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS						
I _{F(AV)}	1.5 A					
V _{RRM}	200 V, 400 V, 600 V, 800 V, 1000 V					
I _{FSM}	30 A					
I _R	0.3 μA					
V _F at I _F = 1.5 A	0.89 V					
E _{AS}	20 mJ					
T _J max.	175 °C					
Package	SMP (DO-220AA)					
Circuit configuration	Single					

FEATURES

- · Glass passivated pellet chip junction
- Very low profile typical height of 1.0 mm
- Ideal for automated placement
- Controlled avalanche characteristics
- Low forward voltage drop
- Low leakage 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 <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

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

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 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)							
PARAMETER	SYMBOL	AS1PD	AS1PG	AS1PJ	AS1PK	AS1PM	UNIT
Device marking code		ASD	ASG	ASJ	ASK	ASM	
Max. repetitive peak reverse voltage	V _{RRM}	200	400	600	800	1000	V
Max. DC forward current (see fig. 1)	I _F ⁽¹⁾	1.5					А
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	30					А
Non-repetitive avalanche energy at $I_{AS} = 1.0 \text{ A}, T_A = 25 ^{\circ}\text{C}$	E _{AS}	20				mJ	
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +175				°C	

Note

⁽¹⁾ Mounted on 5 mm x 5 mm pad areas PCB

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COMPLIANT





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ELECTRICAL CHARACTERISTICS ($T_A = 25$ °C unless otherwise noted)								
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT		
Instantaneous forward voltage	I _F = 1.0 A	T _A = 25 °C	V _F ⁽¹⁾	0.95	-			
		T _A = 125 °C		0.84	-	v		
	I _F = 1.5 A	T _A = 25 °C		0.99	1.15	V		
		T _A = 125 °C		0.89	1.0			
Reverse current	Rated V _R	T _A = 25 °C T _A = 125 °C	I _R ⁽²⁾	0.3	5			
		T _A = 125 °C		35	100	μΑ		
Typical reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		t _{rr}	1.5	-	μs		
Typical junction capacitance	4.0 V, 1 MHz		CJ	10.4	-	pF		

Notes

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

⁽²⁾ Pulse test: Pulse width \leq 40 ms

THERMAL CHARACTERISTICS ($T_A = 25$ °c unless otherwise noted)							
PARAMETER	SYMBOL	AS1PD	AS1PG	AS1PJ	AS1PK	AS1PM	UNIT
	R _{0JA} ⁽¹⁾	115					°C/W
Typical thermal resistance	R _{0JM} ⁽¹⁾	15					0/10

Note

⁽¹⁾ Unit mounted on PCB with 5 mm x 5 mm copper pad areas. Thermal resistance $R_{\theta JA}$ - junction to ambient, $R_{\theta JM}$ - junction to mount at the terminal of cathode band

ORDERING INFORMATION (Example)							
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE			
AS1PJ-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel			
AS1PJ-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel			
AS1PJHM3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel			
AS1PJHM3/85A (1)	0.024	85A	10 000	13" diameter plastic tape and reel			

Note

(1) AEC-Q101 qualified

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

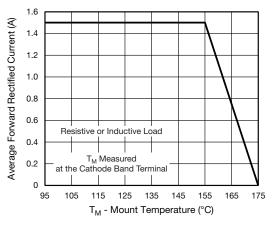


Fig. 1 - Max. Forward Current Derating Curve

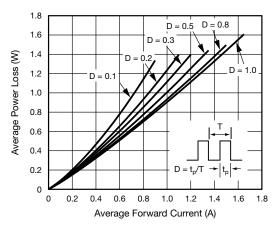


Fig. 2 - Forward Power Loss Characteristics

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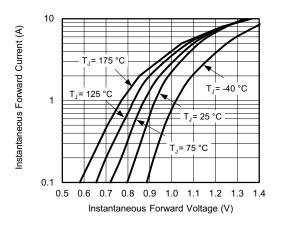


Fig. 3 - Typical Instantaneous Forward Characteristics

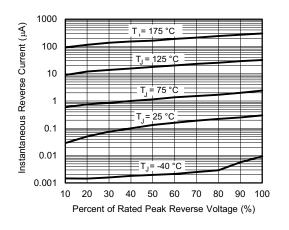


Fig. 4 - Typical Reverse Characteristics

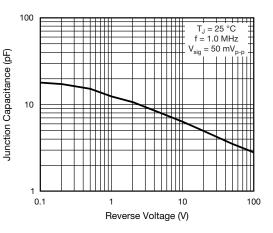


Fig. 5 - Typical Junction Capacitance

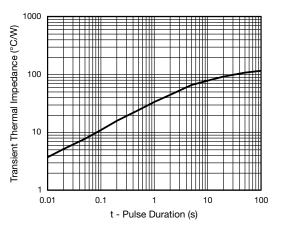
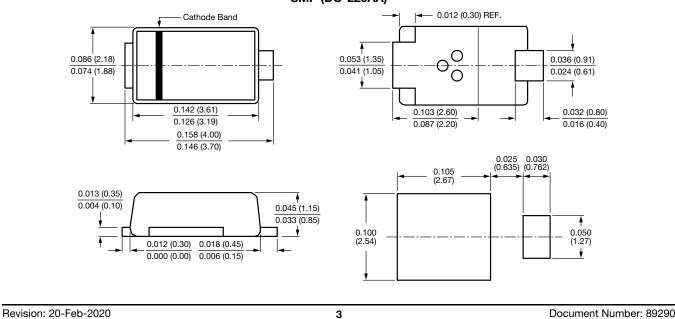


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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SMP (DO-220AA)



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