

# AS1PD, AS1PG, AS1PJ, AS1PK, AS1PM

Vishay General Semiconductor

AUTOMOTIVE

RoHS

COMPLIANT

HALOGEN

### **Standard Avalanche Surface Mount Rectifiers**



#### ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	1.5 A				
$V_{RRM}$	200 V, 400 V, 600 V, 800 V, 1000 V				
I <sub>FSM</sub>	30 A				
I <sub>R</sub>	0.3 μΑ				
$V_F$ at $I_F = 1.5 A$	0.89 V				
E <sub>AS</sub> 20 mJ					
T <sub>J</sub> 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 <a href="https://www.vishay.com/doc?99912">www.vishay.com/doc?99912</a>

#### **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 <sub>A</sub> = 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 <sub>F</sub> <sup>(1)</sup>	1.5				Α	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	30			Α		
Non-repetitive avalanche energy at I <sub>AS</sub> = 1.0 A, T <sub>A</sub> = 25 °C	E <sub>AS</sub>	20			mJ		
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175				°C	

#### Note

<sup>(1)</sup> Mounted on 5 mm x 5 mm pad areas PCB

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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT		
Instantaneous forward voltage	I <sub>F</sub> = 1.0 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.95	-			
		T <sub>A</sub> = 125 °C		0.84	-	V		
	I <sub>F</sub> = 1.5 A	T <sub>A</sub> = 25 °C		0.99	1.15	V		
		T <sub>A</sub> = 125 °C		0.89	1.0			
Reverse current	Rated V <sub>R</sub>	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	1 (2)	0.3	5		
		T <sub>A</sub> = 125 °C		35	100	μΑ		
Typical reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	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 ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °c unless otherwise noted)							
PARAMETER	SYMBOL	MBOL AS1PD AS1PG AS1PJ AS1PK AS1		AS1PM	UNIT		
Typical thermal resistance	R <sub>0JA</sub> (1)	115					°C/W
Typical trieffial resistance	$R_{\theta JM}$ (1)		•	15	•		C/VV

#### Note

<sup>(1)</sup> Unit mounted on PCB with 5 mm x 5 mm copper pad areas. Thermal resistance R<sub>BJA</sub> - junction to ambient, R<sub>BJM</sub> - 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

### RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

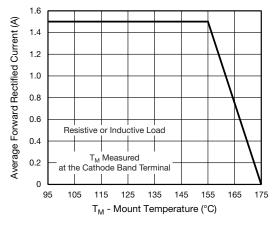


Fig. 1 - Max. Forward Current Derating Curve

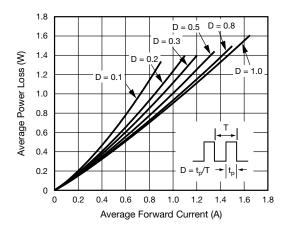


Fig. 2 - Forward Power Loss Characteristics

<sup>(1)</sup> AEC-Q101 qualified

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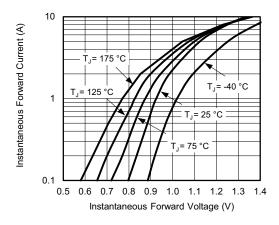


Fig. 3 - Typical Instantaneous Forward Characteristics

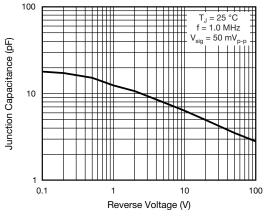


Fig. 5 - Typical Junction Capacitance

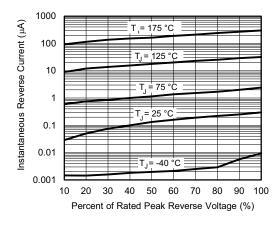


Fig. 4 - Typical Reverse Characteristics

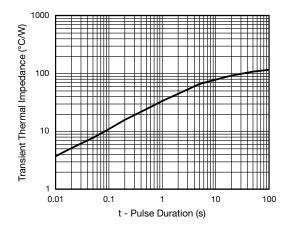


Fig. 6 - Typical Transient Thermal Impedance

#### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

#### **SMP (DO-220AA)** 0.012 (0.30) REF. Cathode Band 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) 0.025 0.030 (0.635) (0.762) 0.105 0.013 (0.35) 0.004 (0.10) 0.045 (1.15) 0.033 (0.85) 0.100 (2.54) 0.050 (1.27) 0.012 (0.30) 0.018 (0.45) 0.000 (0.00) 0.006 (0.15)



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