

## Standard Avalanche Surface Mount Rectifiers

### eSMP® Series



DO-220AA (SMP)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.5 A
$V_{RRM}$	200 V to 1000 V
$I_{FSM}$	30 A
$I_R$	0.3 $\mu$ A
$V_F$ at $I_F = 1.5$ A	0.89 V
$E_{AS}$	20 mJ
$T_J$ max.	175 °C

### TYPICAL APPLICATIONS

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

### FEATURES

- 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
- 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**

### MECHANICAL DATA

**Case:** DO-220AA (SMP)

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	
Maximum repetitive peak reverse voltage	$V_{RRM}$	200	400	600	800	1000	V
Maximum DC forward current (see fig. 1)	$I_F^{(1)}$	1.5					A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	30					A
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

### Note

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

## AS1PD thru AS1PM

Vishay General Semiconductor



ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 1.0\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.95	-	V
		$T_A = 125\text{ }^\circ\text{C}$		0.84	-	
	$I_F = 1.5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$		0.99	1.15	
		$T_A = 125\text{ }^\circ\text{C}$		0.89	1.0	
Reverse current	Rated $V_R$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	0.3	5	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		35	100	
Typical reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $t_{rr} = 0.25\text{ A}$		$t_{rr}$	1.5	-	$\mu\text{s}$
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	10.4	-	pF

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
 (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	AS1PD	AS1PG	AS1PJ	AS1PK	AS1PM	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	115					$^\circ\text{C/W}$
	$R_{\theta JM}^{(1)}$	15					

**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 <sup>(1)</sup>	0.024	84A	3000	7" diameter plastic tape and reel
AS1PJHM3/85A <sup>(1)</sup>	0.024	85A	10 000	13" diameter plastic tape and reel

**Note**

- (1) Automotive grade



**RATINGS AND CHARACTERISTICS CURVES**

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

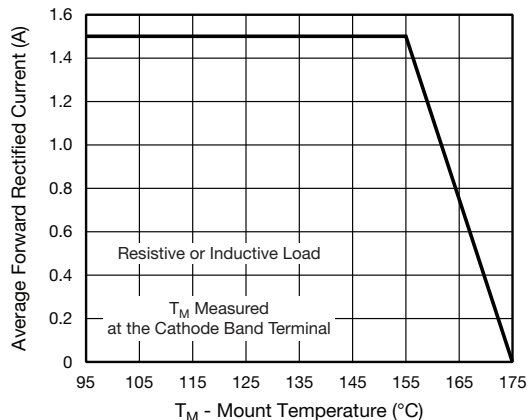


Fig. 1 - Maximum Forward Current Derating Curve

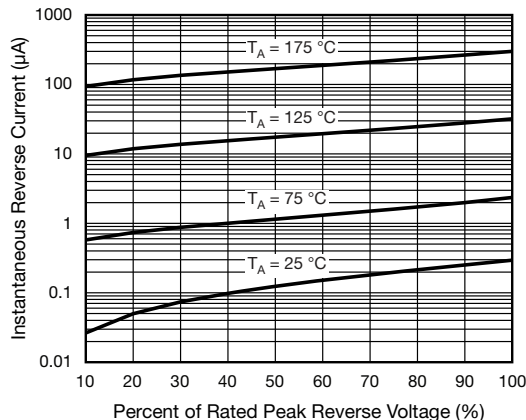


Fig. 4 - Typical Reverse Characteristics

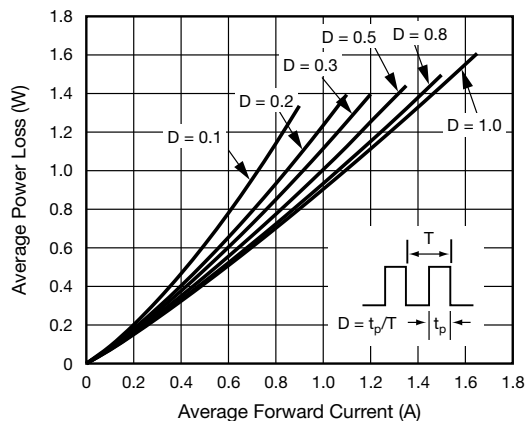


Fig. 2 - Forward Power Loss Characteristics

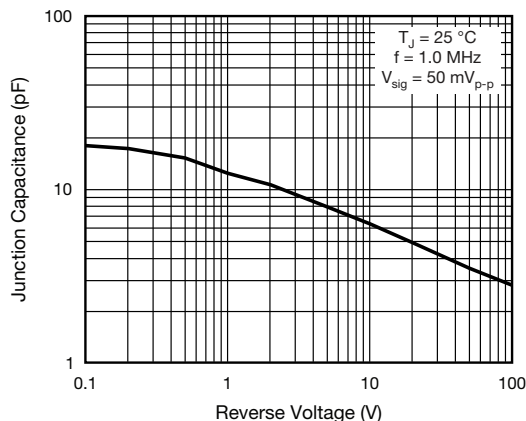


Fig. 5 - Typical Junction Capacitance

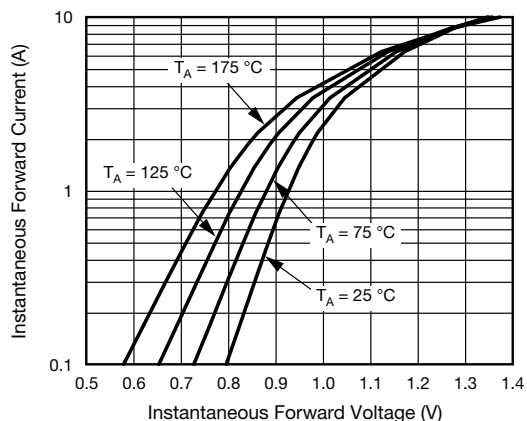


Fig. 3 - Typical Instantaneous Forward Characteristics

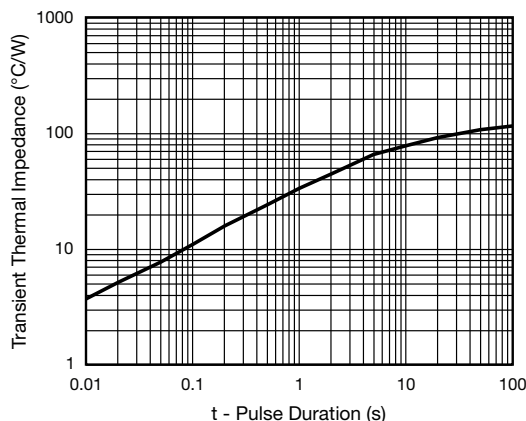


Fig. 6 - Typical Transient Thermal Impedance

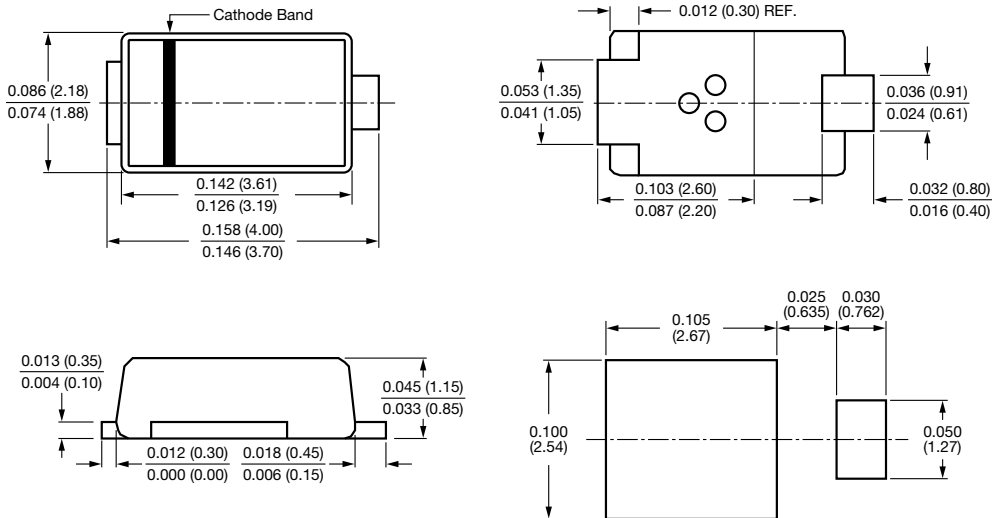
# AS1PD thru AS1PM

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## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-220AA (SMP)





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