

AS1PD, AS1PG, AS1PJ, AS1PK, AS1PM

Vishay General Semiconductor

AUTOMOTIVE GRADE

COMPLIANT

HALOGEN FREE

Standard Avalanche Surface Mount Rectifiers



DO-220AA (SMP)

| 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 μΑ | | | | | |
| V _F at I _F = 1.5 A | 0.89 V | | | | | |
| E _{AS} | 20 mJ | | | | | |
| T _J max. | 175 °C | | | | | |
| Package | DO-220AA (SMP) | | | | | |
| Diode variations | Single die | | | | | |

TYPICAL APPLICATIONS

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

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.vishav.com/doc?99912</u>

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 | |
| 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 | | | | Α | |
| 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 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

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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 | | VF (*) | 0.99 | 1.15 | V | |
| | | T _A = 125 °C | | 0.89 | 1.0 | 1 | | |
| Reverse current | Rated V _R | T _A = 25 °C | I _R ⁽²⁾ | 1 (2) | 0.3 | 5 | | |
| Reverse current | | 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 ≤ 40 ms

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

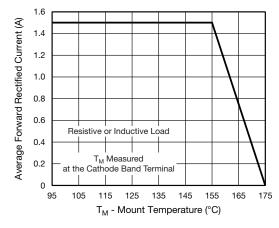
Note

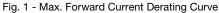
(1) Unit mounted on PCB with 5 mm x 5 mm copper pad areas. Thermal resistance R_{0JA} - junction to ambient, R_{0JM} - junction to mount at the terminal of cathode band

| 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 ($T_A = 25$ °C unless otherwise noted)





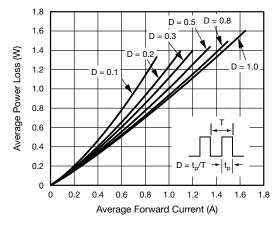


Fig. 2 - Forward Power Loss Characteristics

⁽¹⁾ AEC-Q101 qualified

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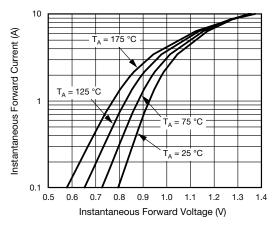


Fig. 3 - Typical Instantaneous Forward Characteristics

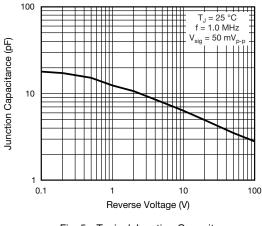


Fig. 5 - Typical Junction Capacitance

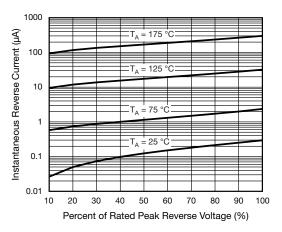


Fig. 4 - Typical Reverse Characteristics

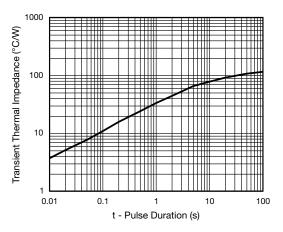
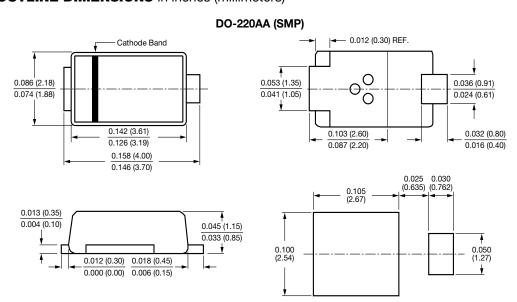


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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