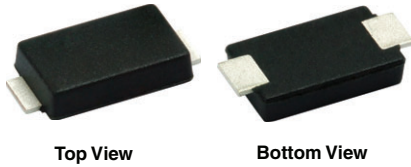




Surface-Mount ESD Capability Rectifiers

eSMP® Series



SlimSMA (DO-221AC)



FEATURES

- Very low profile - typical height of 0.95 mm
- Ideal for automated placement
- Oxide planar chip junction
- Low forward voltage drop, low leakage current
- ESD capability
- 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



LINKS TO ADDITIONAL RESOURCES



TYPICAL APPLICATIONS

General purpose, power line polarity protection, in both consumer and automotive applications.

MECHANICAL DATA

Case: SlimSMA (DO-221AC)

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 AEC-Q101 qualified

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 the cathode end

| PRIMARY CHARACTERISTICS | |
|--|----------------------------|
| $I_{F(AV)}$ | 2.0 A |
| V_{RRM} | 100 V, 200 V, 400 V, 600 V |
| I_{FSM} | 35 A |
| V_F at $I_F = 2.0$ A ($T_A = 125$ °C) | 0.86 V |
| I_R | 5 μ A |
| T_J max. | 175 °C |
| Package | SlimSMA (DO-221AC) |
| Circuit configuration | Single |

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | | | | |
|---|----------------|-------------|---------|---------|---------|------|
| PARAMETER | SYMBOL | SE20AFB | SE20AFD | SE20AFG | SE20AFJ | UNIT |
| Device marking code | | S2B | S2D | S2G | S2J | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 100 | 200 | 400 | 600 | V |
| Maximum DC forward current | $I_F^{(1)}$ | 2.0 | | | | A |
| | $I_F^{(2)}$ | 1.3 | | | | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 35 | | | | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +175 | | | | °C |

Notes

- (1) Mounted on 5.0 mm x 5.0 mm pad areas, 2 oz. FR4 PCB
- (2) Free air, mounted on recommended copper pad area



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|--|-----------------------------------|-------------|------|------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | $I_F = 1.0\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.91 | - | V |
| | $I_F = 2.0\text{ A}$ | | | 0.96 | 1.1 | |
| | $I_F = 1.0\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.79 | - | |
| | $I_F = 2.0\text{ A}$ | | | 0.86 | 0.98 | |
| Reverse current | Rated V_R | $T_A = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | - | 5.0 | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 8 | 100 | |
| Typical reverse recovery time | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$ | | t_{rr} | 1.2 | - | μs |
| Typical junction capacitance | 4.0 V, 1 MHz | | C_J | 12 | - | pF |

Notes(1) Pulse test: 300 μs 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 | SE20AFB | SE20AFD | SE20AFG | SE20AFJ | UNIT |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 125 | | | | $^\circ\text{C/W}$ |
| | $R_{\theta JM}^{(2)}$ | 12 | | | | |

Notes(1) Free air, mounted on recommended PCB, 1 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient(2) Mounted on 5.0 mm x 5.0 mm pad areas, 2 oz. FR4 PCB; $R_{\theta JM}$ - junction to mount

| IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|---------------------------------|---|--------|-------|-----------------|
| STANDARD | TEST TYPE | TEST CONDITIONS | SYMBOL | CLASS | VALUE |
| AEC-Q101-001 | Human body model (contact mode) | $C = 100\text{ pF}, R = 1.5\text{ k}\Omega$ | V_C | H3B | $> 8\text{ kV}$ |

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SE20AFJ-M3/6A | 0.032 | 6A | 3500 | 7" diameter plastic tape and reel |
| SE20AFJ-M3/6B | 0.032 | 6B | 14 000 | 13" diameter plastic tape and reel |
| SE20AFJHM3/6A ⁽¹⁾ | 0.032 | 6A | 3500 | 7" diameter plastic tape and reel |
| SE20AFJHM3/6B ⁽¹⁾ | 0.032 | 6B | 14 000 | 13" diameter plastic tape and reel |

Note

(1) AEC-Q101 qualified



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

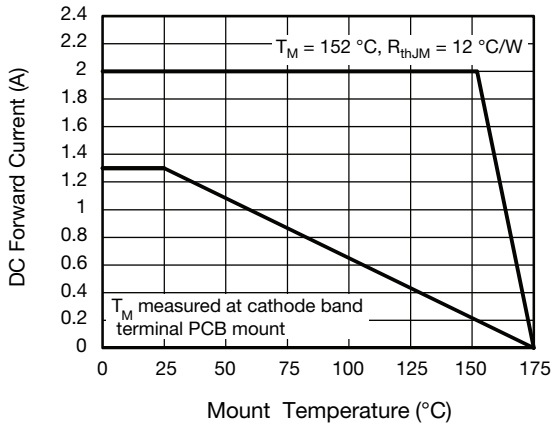


Fig. 1 - Maximum Forward Current Derating Curve

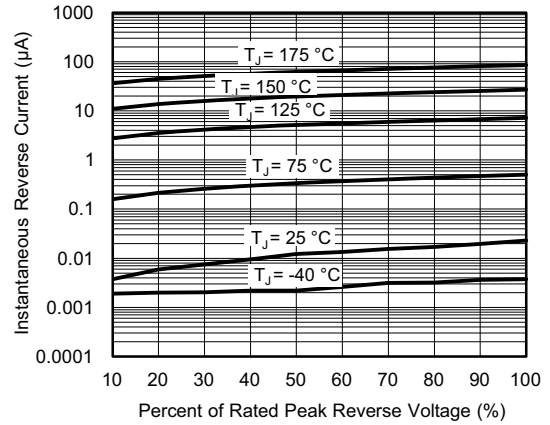


Fig. 4 - Typical Reverse Leakage Characteristics

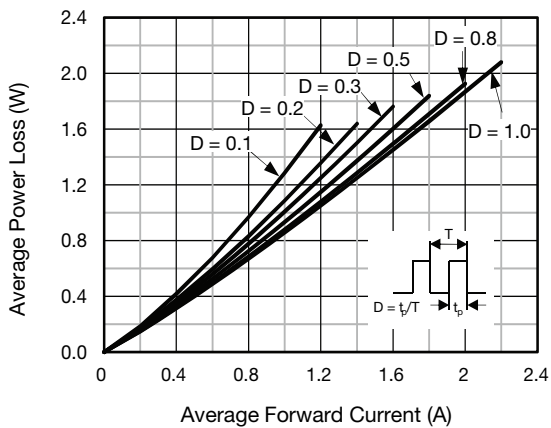


Fig. 2 - Forward Power Loss Characteristics

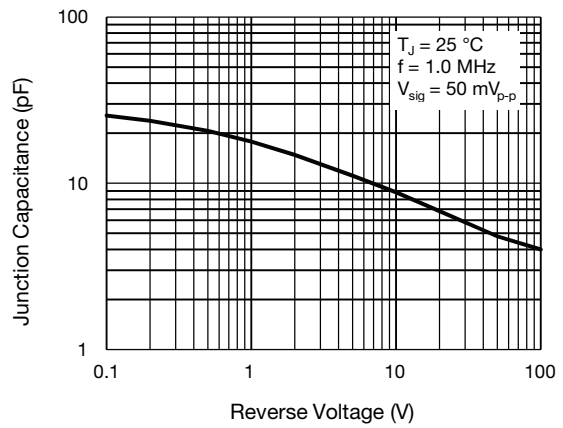


Fig. 5 - Typical Junction Capacitance

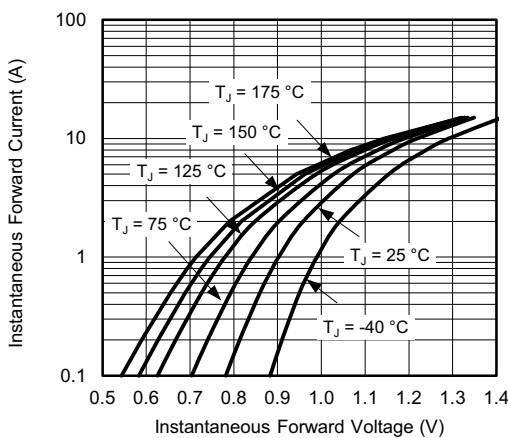


Fig. 3 - Typical Instantaneous Forward Characteristics

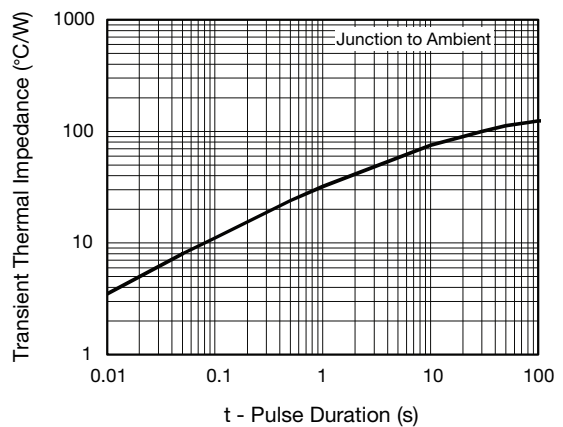


Fig. 6 - Typical Junction Capacitance

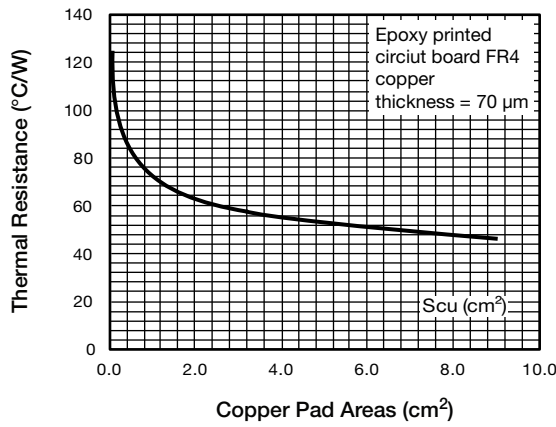
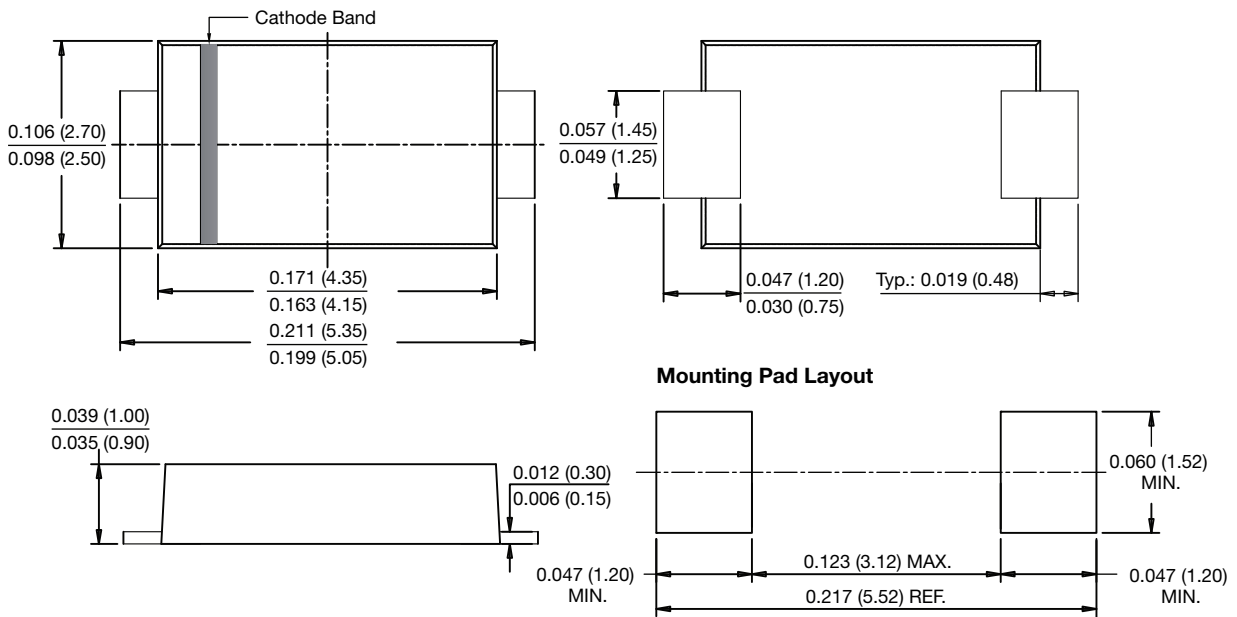


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Areas

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimSMA (DO-221AC)





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