## Surface-Mount Fast Switching Rectifiers

**eSMP® Series**



Top view Bottom view

**SMF (DO-219AB)**




### LINKS TO ADDITIONAL RESOURCES

3D Models

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 1 A |
| $V_{RRM}$ | 200 V, 400 V, 600 V, 800 V, 1000 V |
| $I_{FSM}$ | 35 A |
| $I_R$ | 0.2 µA |
| $V_F$ at $I_F$ = 1 A | 0.84 V |
| $T_J$ max. | 150 °C |
| Package | SMF (DO-219AB) |
| Circuit configuration | Single |

### FEATURES

- Glass passivated pellet chip junction
- Ideal for automated placement
- Meets MSL level 1, per J-STD-020; LF maximum peak of 260 °C
- Wave and reflow solderable
- Compatible to SOD-123W package case outline
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** SMF (DO-219AB)
Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 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** | **RS1FLD** | **RS1FLG** | **RS1FLJ** | **RS1FLK** | **RS1FLM** | **UNIT** |
| Device marking code | | RLD | RLG | RLJ | RLK | RLM | |
| Max. repetitive peak reverse voltage | $V_{RRM}$ | 200 | 400 | 600 | 800 | 1000 | V |
| Max. DC forward current (see fig. 1) | $I_F$ (1) | 1 | | | | | A |
| 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 +150 | | | | | °C |

**Note**

(1) Free air, mounted on recommended PCB, 2 oz. pad area



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| **ELECTRICAL CHARACTERISTICS** ($T_J$ = 25 °C unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITIONS** | | **SYMBOL** | **TYP.** | **MAX.** | **UNIT** |
| Instantaneous forward voltage | $I_F$ = 1.0 A | $T_J$ = 25 °C | $V_F$ (1) | 0.96 | 1.2 | V |
| | | $T_J$ = 125 °C | | 0.84 | 1.1 | |
| | $I_F$ = 2.0 A | $T_J$ = 25 °C | | 1.04 | - | |
| | | $T_J$ = 125 °C | | 0.93 | - | |
| Reverse current | Rated $V_R$ | $T_J$ = 25 °C | $I_R$ (2) | 0.2 | 5.0 | µA |
| | | $T_J$ = 125 °C | | 20 | 200 | |
| Typical reverse recovery time | $I_F$ = 0.5 A, $I_R$ = 1.0 A, $I_{rr}$ = 0.25 A | | $t_{rr}$ | - | 500 | ns |
| Typical junction capacitance | 4.0 V, 1 MHz | | $C_J$ | 7 | - | 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** | **RS1FLD** | **RS1FLG** | **RS1FLJ** | **RS1FLK** | **RS1FLM** | **UNIT** |
| Typical thermal resistance | $R_{\theta JA}$ (1)(2) | 130 | | | | | °C/W |
| | $R_{\theta JM}$ (1) | 20 | | | | | |

**Notes**

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

(2) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$

| **ORDERING INFORMATION** (Example) | | | | |
|---|---|---|---|---|
| **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PREFERRED PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| RS1FLM-M3/H | 0.0145 | H | 3000 | 7" diameter plastic tape and reel |
| RS1FLM-M3/I | 0.0145 | I | 10 000 | 13" diameter plastic tape and reel |


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

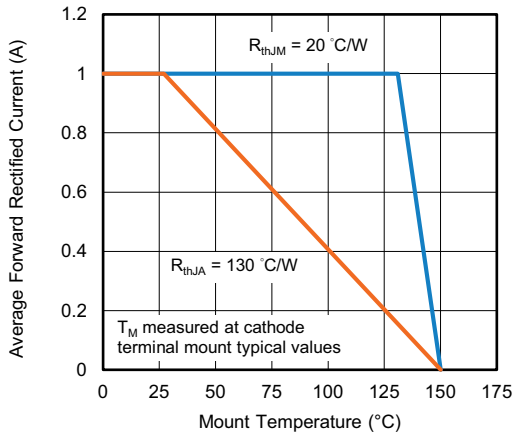


Fig. 1 - Max. Forward Current Derating Curve

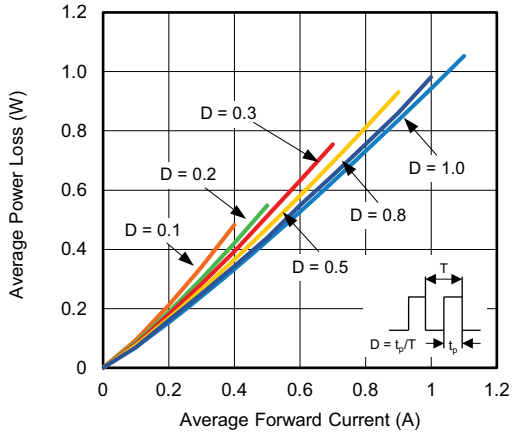


Fig. 2 - Forward Power Loss Characteristics

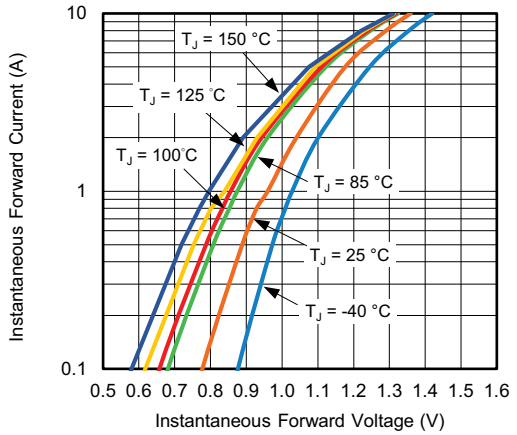


Fig. 3 - Typical Instantaneous Forward Characteristics

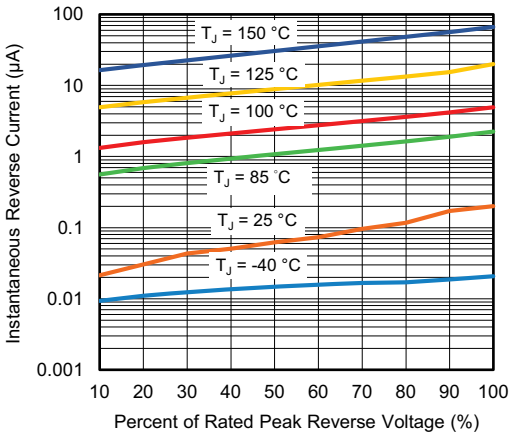


Fig. 4 - Typical Reverse Characteristics

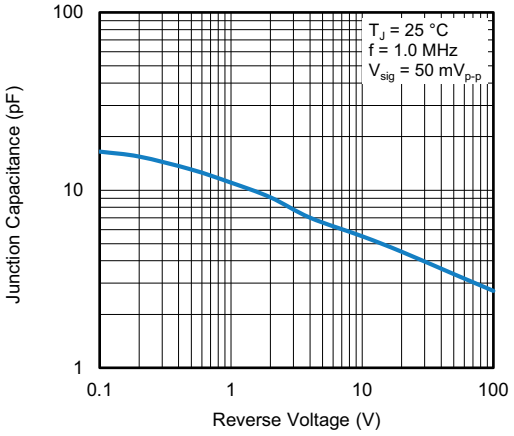


Fig. 5 - Typical Junction Capacitance

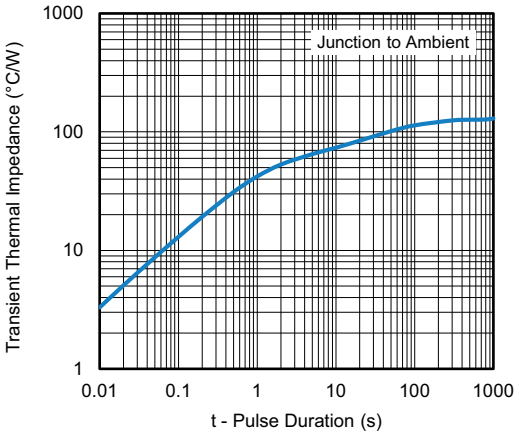


Fig. 6 - Typical Transient Thermal Impedance


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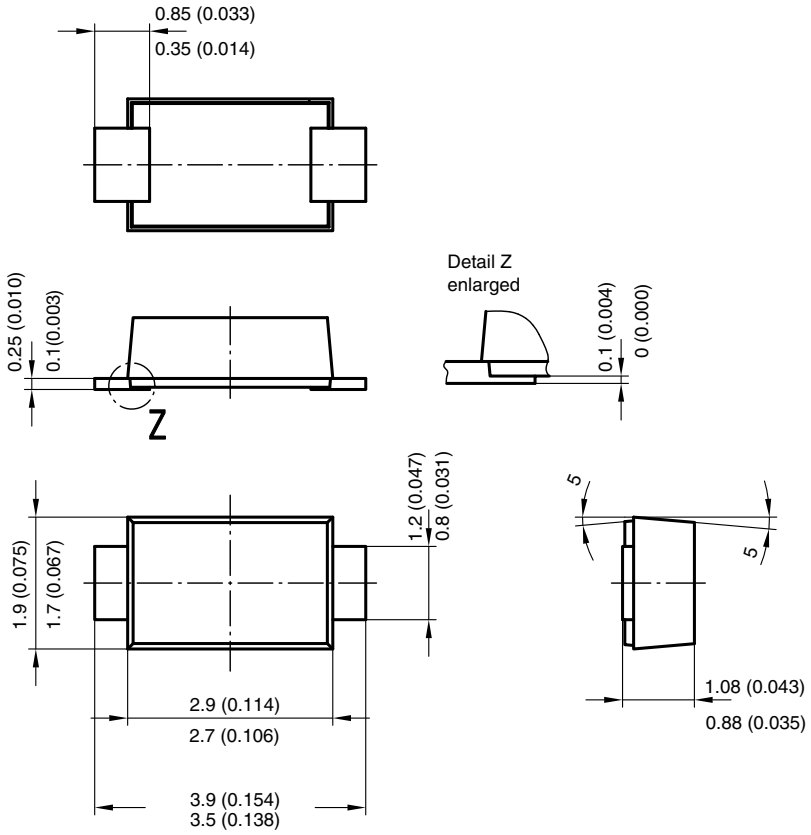
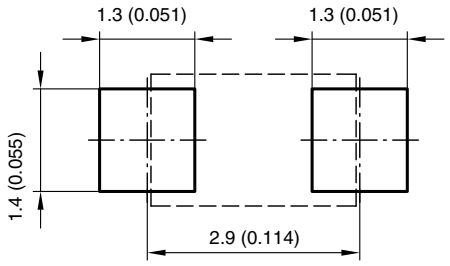
**PACKAGE OUTLINE DIMENSIONS** in millimeters (inches)




Foot print recommendation:

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