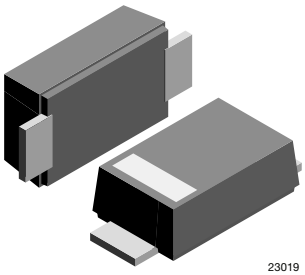
# Ultrafast Rectifier Surface-Mount

**eSMP® Series**



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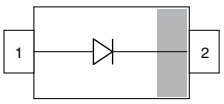


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**SMF (DO-219AB)**

## FEATURES

- For surface mounted applications
- Low profile package
- Ideal for automated placement
- Glass passivated pellet chip junction
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Meets JESD 201 class 2 whisker test
- Wave and reflow solderable
- AEC-Q101 qualified
- Compatible to SOD-123W package case outline or SOD-123F and SOD-123FL
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

HALOGEN FREE

## LINKS TO ADDITIONAL RESOURCES

3D Models

## MECHANICAL DATA

**Case:** SMF (DO-219AB)

**Polarity:** band denotes cathode end

**Weight:** approx. 15 mg

**Packaging codes / options:**
18/10K per 13" reel (8 mm tape)
08/3K per 7" reel (8 mm tape)

**Circuit configuration:** single

## PARTS TABLE

| PART | ORDERING CODE | MARKING | REMARKS |
|---|---|---|---|
| ES07B-M | ES07B-M-18 or ES07B-M-08 | GB | Tape and reel |
| ES07D-M | ES07D-M-18 or ES07D-M-08 | GD | Tape and reel |

## ABSOLUTE MAXIMUM RATINGS ($T_{amb}$ = 25 °C, unless otherwise specified)

| ^TRPARAMETER | TEST CONDITION | PART | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | | ES07B-M | $V_{RRM}$ | 100 | V |
| | | ES07D-M | $V_{RRM}$ | 200 | V |
| Maximum RMS voltage | | ES07B-M | $V_{RMS}$ | 70 | V |
| | | ES07D-M | $V_{RMS}$ | 140 | V |
| Maximum DC blocking voltage | | ES07B-M | $V_{DC}$ | 100 | V |
| | | ES07D-M | $V_{DC}$ | 200 | V |
| Maximum average forward rectified current | $T_L$ = 109 °C | | $I_{F(AV)}$ | 1.2 | A |
| | $T_A$ = 65 °C (1) | | $I_{F(AV)}$ | 0.5 | A |
| Peak forward surge current 8.3 ms single half sine-wave | $T_L$ = 25 °C | | $I_{FSM}$ | 30 | A |

**Note**

(1) Mounted on epoxy glass PCB with 3 mm x 3 mm Cu pads (≥ 40 µm thick)

## THERMAL CHARACTERISTICS ($T_{amb}$ = 25 °C, unless otherwise specified)

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|
| Thermal resistance junction to ambient air (1) | | $R_{thJA}$ | 180 | K/W |
| Operating junction and storage temperature range | | $T_j$, $T_{stg}$ | -55 to 150 | °C |

**Note**

(1) Mounted on epoxy glass PCB with 3 mm x 3 mm Cu pads (≥ 40 µm thick)



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| **ELECTRICAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **PART** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Instantaneous forward voltage | $I_F$ = 1 A (1) | ES07B-M | $V_F$ | | | 0.98 | V |
| | | ES07D-M | $V_F$ | | | 0.98 | V |
| Maximum DC reverse current at rated DC blocking voltage | $T_A$ = 25 °C | ES07B-M | $I_R$ | | | 10 | µA |
| | | ES07D-M | $I_R$ | | | 10 | µA |
| | $T_A$ = 100 °C | ES07B-M | $I_R$ | | | 50 | µA |
| | | ES07D-M | $I_R$ | | | 50 | µA |
| Reverse recovery time | $I_F$ = 0.5 A, $I_R$ = 1 A, $I_{rr}$ = 0.25 A | ES07B-M | $t_{rr}$ | | | 25 | ns |
| | | ES07D-M | $t_{rr}$ | | | 25 | ns |
| Typical capacitance | 4 V, 1 MHz | ES07B-M | $C_j$ | | 4 | | pF |
| | | ES07D-M | $C_j$ | | 4 | | pF |

**Note**

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

## TYPICAL CHARACTERISTICS ($T_{amb}$ = 25 °C, unless otherwise specified)

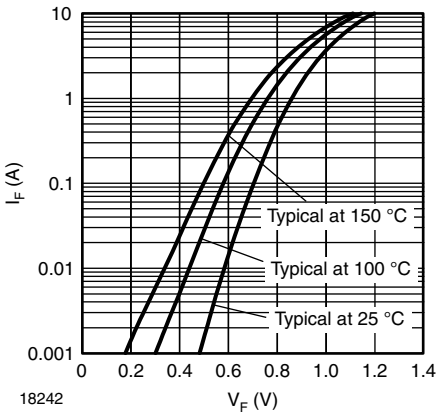


Fig. 1 - Typical Forward Characteristics

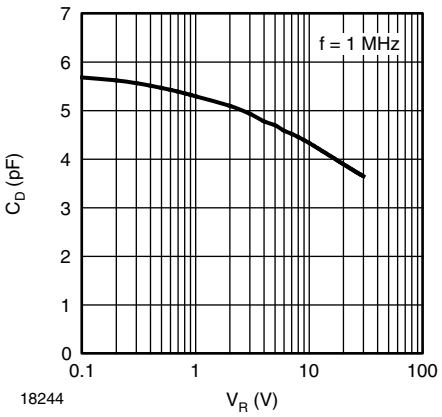


Fig. 3 - Typical Diode Capacitance vs. Reverse Voltage

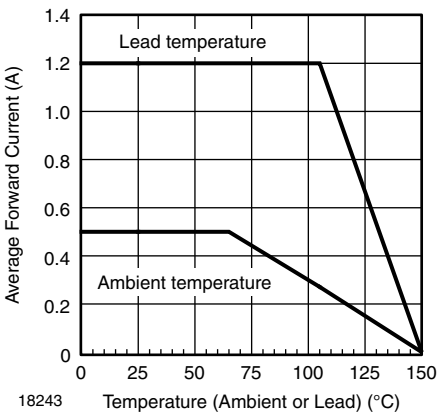


Fig. 2 - Forward Current Derating Curve

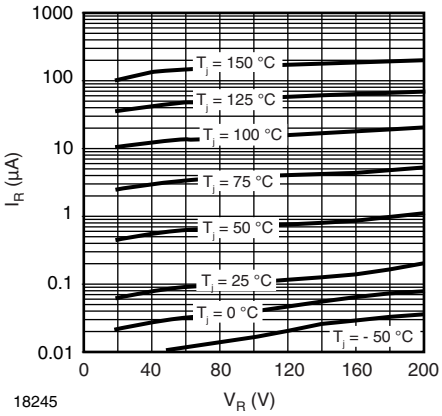


Fig. 4 - Typical Reverse Characteristics



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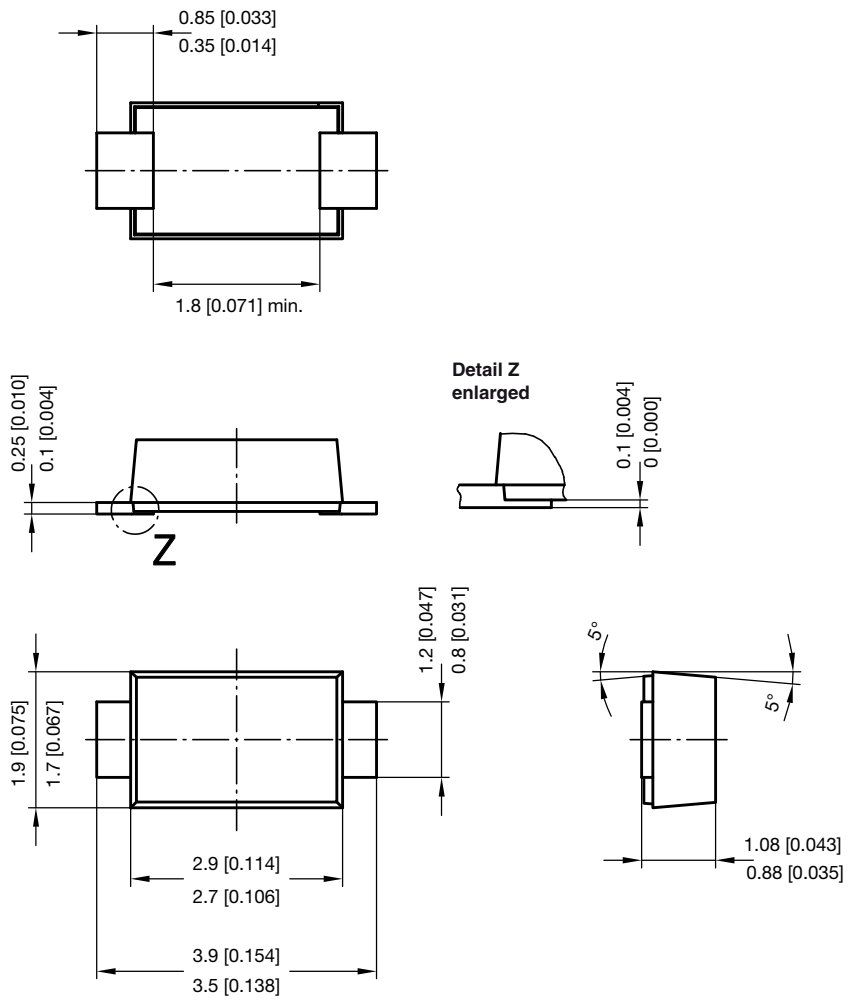
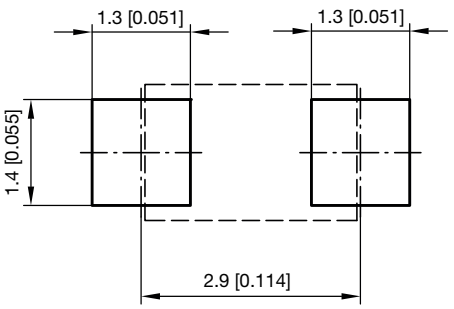
**PACKAGE DIMENSIONS** in millimeters (inches): **SMF (DO-219AB)**




foot print recommendation:

Reflow soldering

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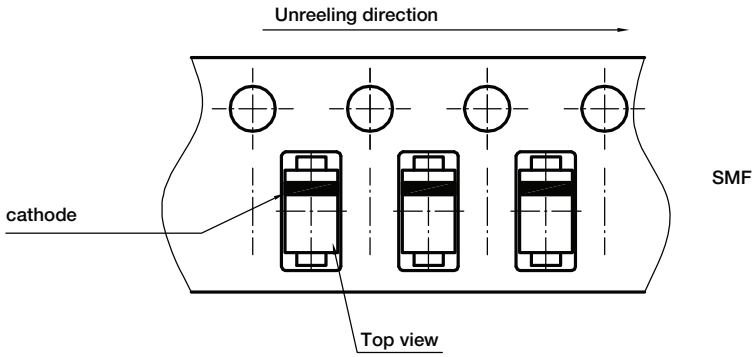
## ORIENTATION IN CARRIER TAPE - SMF (DO-219AB)

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