

## Surface Mount Standard Rectifiers



| PRIMARY CHARACTERISTICS                  |                     |
|--|---------------------|
| $I_{F(AV)}$                              | 1.0 A               |
| $V_{RRM}$                                | 200 V, 400 V, 600 V |
| $I_{FSM}$                                | 25 A                |
| $V_F$ at $I_F = 1.0$ A ( $T_A = 125$ °C) | 0.85 V              |
| $I_R$                                    | 5 $\mu$ A           |
| $T_J$ max.                               | 175 °C              |
| Package                                  | DO-219AB (SMF)      |
| Diode variations                         | Single die          |

### TYPICAL APPLICATIONS

General purpose, power line polarity protection, in commercial, industrial, and automotive applications.

### FEATURES

- Low profile package
- 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 available  
- Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - for halogen-free, RoHS-compliant

Base P/NHM3 - for halogen-free, RoHS-compliant, and AEC-Q101 qualified

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes the cathode end

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                           |                            |             |        |        |      |
|---|----------------------------|-------------|--------|--------|------|
| PARAMETER   | SYMBOL                     | SE10FD      | SE10FG | SE10FJ | UNIT |
| Device marking code   |                            | AD          | AG     | AJ     |      |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$                  | 200         | 400    | 600    | V    |
| Maximum average forward rectified current   | $I_{F(AV)}$ <sup>(1)</sup> | 1.0         |        |        | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$                  | 25          |        |        | A    |
| Operating junction and storage temperature range                                  | $T_J, T_{STG}$             | -55 to +175 |        |        | °C   |

### Notes

<sup>(1)</sup> Free air, mounted on recommended PCB, 2 oz. pad area

| ELECTRICAL CHARACTERISTICS ( $T_A = 25$ °C unless otherwise noted) |   |                |                      |      |      |         |
|--|---|----------------|----------------------|------|------|---------|
| PARAMETER  | TEST CONDITIONS                                 |                | SYMBOL               | TYP. | MAX. | UNIT    |
| Instantaneous forward voltage                                      | $I_F = 0.5$ A                                   | $T_A = 25$ °C  | $V_F$ <sup>(1)</sup> | 0.90 | -    | V       |
|  | $I_F = 1.0$ A                                   |                |                      | 0.95 | 1.05 |         |
|  | $I_F = 0.5$ A                                   | $T_A = 125$ °C |                      | 0.78 | -    |         |
|  | $I_F = 1.0$ A                                   |                |                      | 0.85 | 0.95 |         |
| Reverse current  | Rated $V_R$                                     | $T_A = 25$ °C  | $I_R$ <sup>(2)</sup> | -    | 5    | $\mu$ A |
|  |   | $T_A = 125$ °C |                      | 6.8  | 50   |         |
| Typical reverse recovery time                                      | $I_F = 0.5$ A, $I_R = 1.0$ A, $t_{rr} = 0.25$ A |                | $t_{rr}$             | 780  | -    | ns      |
| Typical junction capacitance                                       | 4.0 V, 1 MHz                                    |                | $C_J$                | 7.5  | -    | pF      |

### Notes

<sup>(1)</sup> Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  40 ms



| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                       |        |        |        |                    |
|--|-----------------------|--------|--------|--------|--------------------|
| PARAMETER  | SYMBOL                | SE10FD | SE10FG | SE10FJ | UNIT               |
| Typical thermal resistance   | $R_{\theta JA}^{(1)}$ | 130    |        |        | $^\circ\text{C/W}$ |
|  | $R_{\theta JM}^{(2)}$ | 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

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

| ORDERING INFORMATION (Example) |                 |                        |               |                                    |  |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|--|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |  |
| SE10FJ-M3/H                    | 0.015           | H                      | 3000          | 7" diameter plastic tape and reel  |  |
| SE10FJ-M3/I                    | 0.015           | I                      | 10 000        | 13" diameter plastic tape and reel |  |
| SE10FJHM3/H (1)                | 0.015           | H                      | 3000          | 7" diameter plastic tape and reel  |  |
| SE10FJHM3/I (1)                | 0.015           | I                      | 10 000        | 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)**

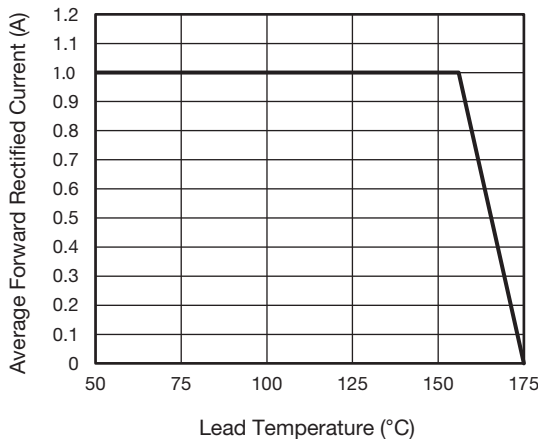


Fig. 1 - Maximum Forward Current Derating Curve

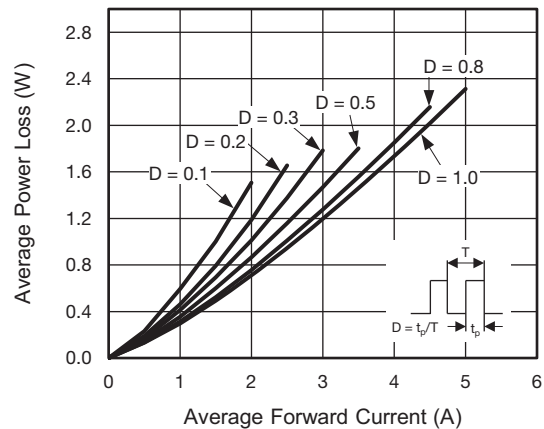


Fig. 2 - Average Power Loss Characteristics

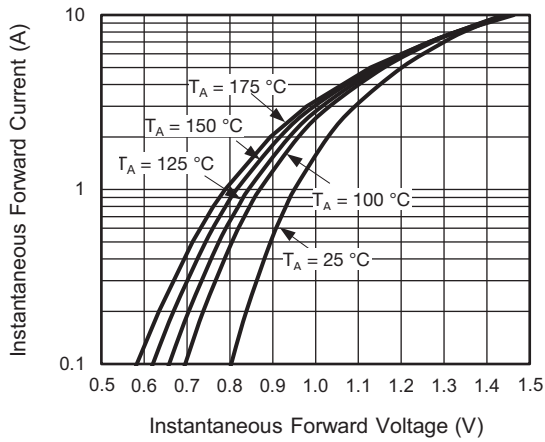


Fig. 3 - Typical Instantaneous Forward Characteristics

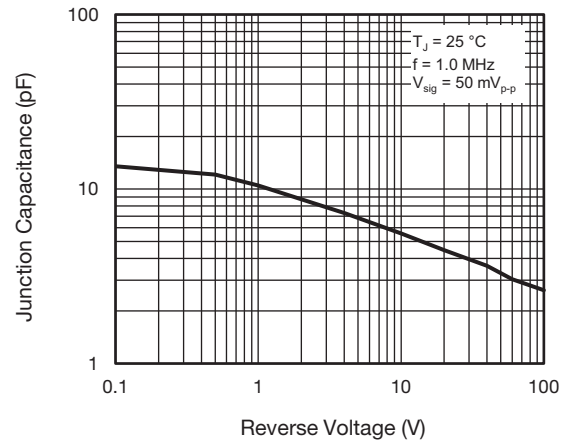


Fig. 5 - Typical Junction Capacitance

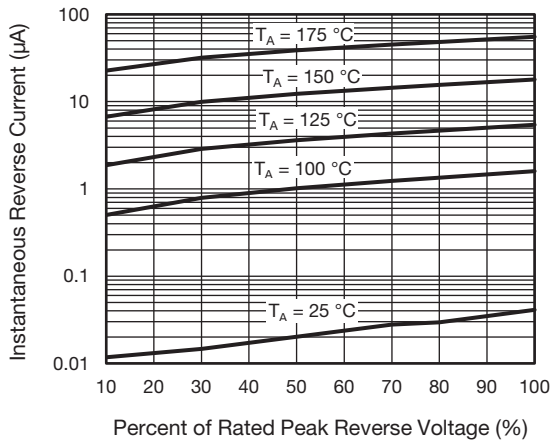


Fig. 4 - Typical Reverse Leakage Characteristics

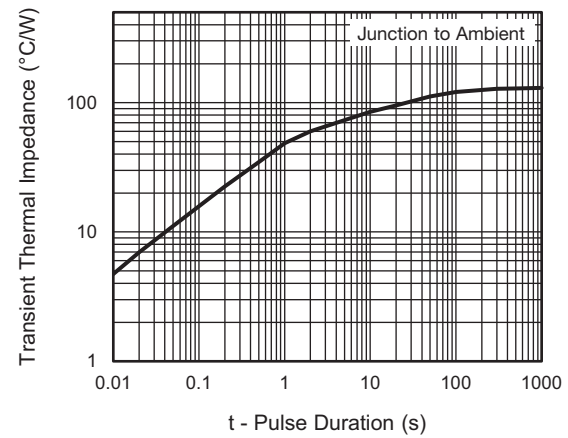
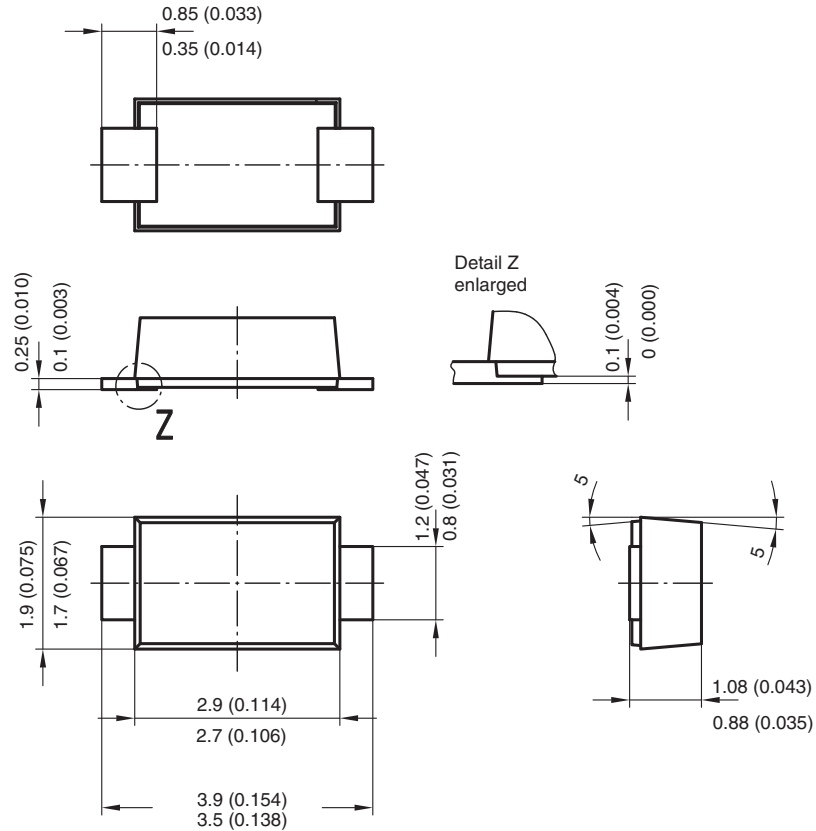


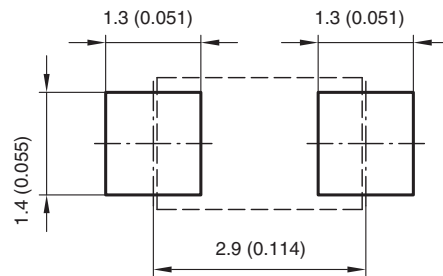
Fig. 6 - Typical Transient Thermal Impedance



### PACKAGE OUTLINE DIMENSIONS in millimeters (inches)



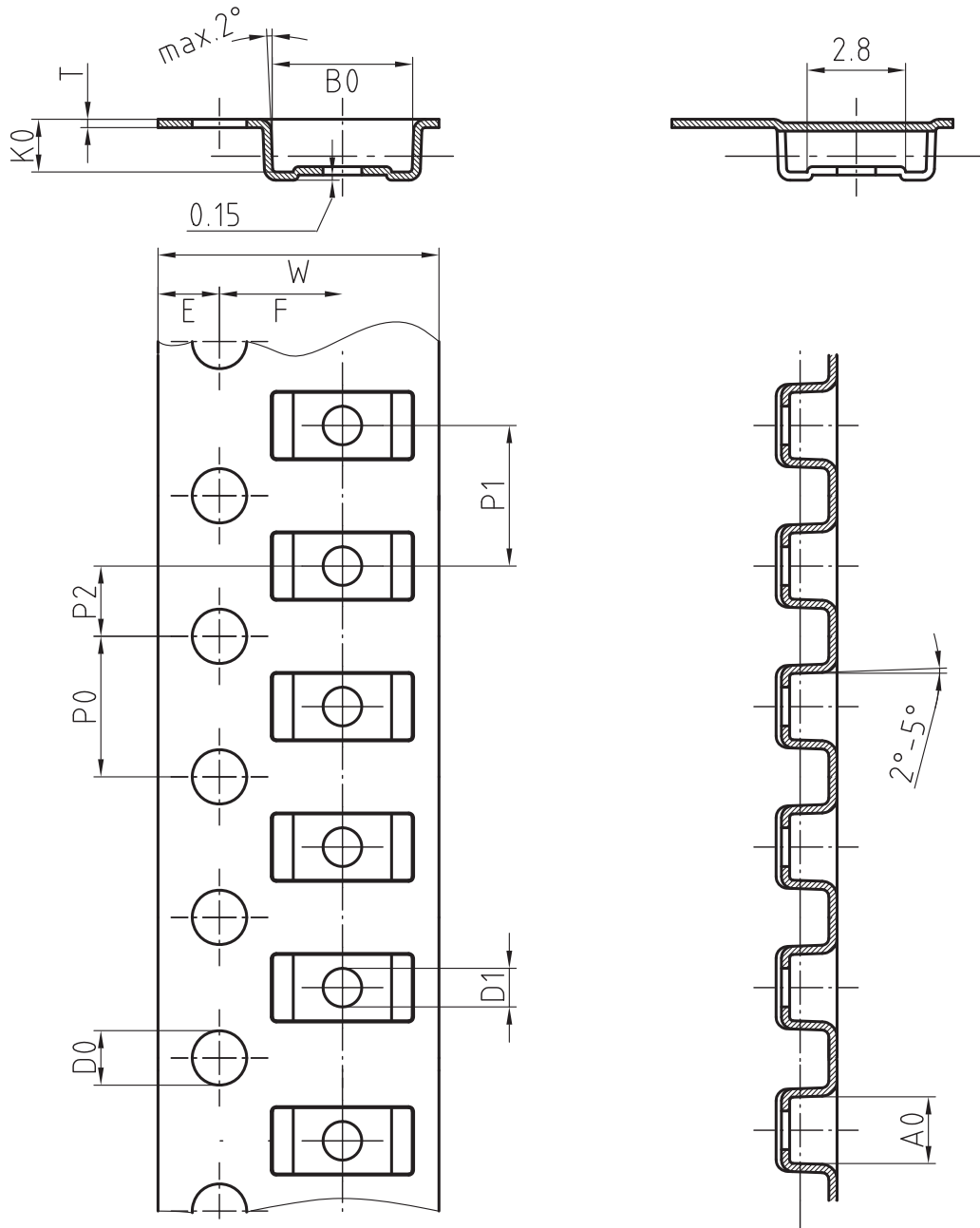
Foot print recommendation:



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 17247



BLISTERTAPE DIMENSIONS in millimeters: DO-219AB (SMF)



| Mat: | A0  | B0  | K0  | W   | T     | P0  | P2  | P1  | D0  | D1 | E    | F   |
|------|-----|-----|-----|-----|-------|-----|-----|-----|-----|----|------|-----|
| PS   | 1.9 | 4.0 | 1.5 | 8.0 | 0.235 | 4.0 | 2.0 | 4.0 | 1.5 | 1  | 1.75 | 3.5 |

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