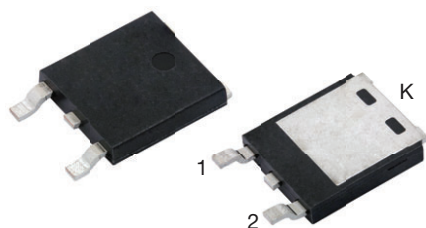
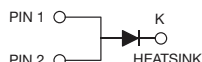


## Surface-Mount ESD Capability Rectifier

### eSMP® Series



SlimDPAK (TO-252AE)



### LINKS TO ADDITIONAL RESOURCES



### FEATURES

- Very low profile - typical height of 1.3 mm
- Ideal for automated placement
- Oxide planar chip junction
- Low forward voltage drop
- 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

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** SlimDPAK (TO-252AE)

Molding compound meets UL 94 V-0 flammability rating

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

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 and HM3 suffix meets JESD 201 class 2 whisker test

| PRIMARY CHARACTERISTICS                |                            |
|----------------------------------------|----------------------------|
| $I_{F(AV)}$                            | 8 A                        |
| $V_{RRM}$                              | 100 V, 200 V, 400 V, 600 V |
| $I_{FSM}$                              | 110 A                      |
| $V_F$ at $I_F = 8$ A ( $T_A = 125$ °C) | 0.92 V                     |
| $T_J$ max.                             | 175 °C                     |
| Package                                | SlimDPAK (TO-252AE)        |
| Circuit configurations                 | Single                     |

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)                    |                                   |             |         |         |         |      |
|------------------------------------------------------------------------------------|-----------------------------------|-------------|---------|---------|---------|------|
| PARAMETER                                                                          | SYMBOL                            | SE80PWB     | SE80PWD | SE80PWG | SE80PWJ | UNIT |
| Device marking code                                                                |                                   | SE80PWB     | SE80PWD | SE80PWG | SE80PWJ |      |
| Maximum repetitive peak reverse voltage                                            | V <sub>RRM</sub>                  | 100         | 200     | 400     | 600     | V    |
| Maximum average forward rectified current (Fig. 1)                                 | I <sub>F(AV)</sub> <sup>(1)</sup> | 8.0         |         |         |         | A    |
|                                                                                    | I <sub>F(AV)</sub> <sup>(2)</sup> | 3.5         |         |         |         |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>                  | 110         |         |         |         | A    |
| Operating junction and storage temperature range                                   | T <sub>J</sub> , T <sub>STG</sub> | -40 to +175 |         |         |         | °C   |

### Notes

(1) With infinite heatsink

(2) Free air, mounted on recommended copper pad area



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                                                          |                         |                               |      |      |      |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                          |                         | SYMBOL                        | TYP. | MAX. | UNIT |
| Maximum Instantaneous forward voltage                                      | I <sub>F</sub> = 4.0 A                                                   | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.93 | -    | V    |
|                                                                            | I <sub>F</sub> = 8.0 A                                                   |                         |                               | 1.01 | 1.12 |      |
|                                                                            | I <sub>F</sub> = 4.0 A                                                   | T <sub>A</sub> = 125 °C |                               | 0.82 | -    |      |
|                                                                            | I <sub>F</sub> = 8.0 A                                                   |                         |                               | 0.92 | 1.07 |      |
| Reverse current                                                            | Rated V <sub>R</sub>                                                     | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | -    | 15   | μA   |
|                                                                            |                                                                          | T <sub>A</sub> = 125 °C |                               | 19   | 150  |      |
| Typical reverse recovery time                                              | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A |                         | t <sub>rr</sub>               | 2400 | -    | ns   |
| Typical junction capacitance                                               | 4.0 V, 1 MHz                                                             |                         | C <sub>J</sub>                | 58   | -    | pF   |

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
 (2) Pulse test: pulse width  $\leq 40\text{ ms}$

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                    |         |         |         |         |      |
|-------------------------------------------------------------------------|------------------------------------|---------|---------|---------|---------|------|
| PARAMETER                                                               | SYMBOL                             | SE80PWB | SE80PWD | SE80PWG | SE80PWJ | UNIT |
| Typical thermal resistance                                              | R <sub>θJA</sub> <sup>(1)(2)</sup> | 60      |         |         |         | °C/W |
|                                                                         | R <sub>θJM</sub> <sup>(3)</sup>    | 2.2     |         |         |         |      |

**Notes**

- (1) The heat generated must be less than thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$   
 (2) Free air, mounted on recommended copper pad area; thermal resistance  $R_{\theta JA}$  - junction to ambient  
 (3) Mounted on infinite heat sink; thermal resistance  $R_{\theta JM}$  - 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) | $C = 100\text{ pF}$ , $R = 1.5\text{ k}\Omega$ | $V_C$  | H3B   | $> 8\text{ kV}$ |

| ORDERING INFORMATION (Example) |                 |                        |               |                                    |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| SE80PWJ-M3/I                   | 0.20            | I                      | 4500          | 13" diameter plastic tape and reel |
| SE80PWJHM3/I <sup>(1)</sup>    | 0.20            | I                      | 4500          | 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)

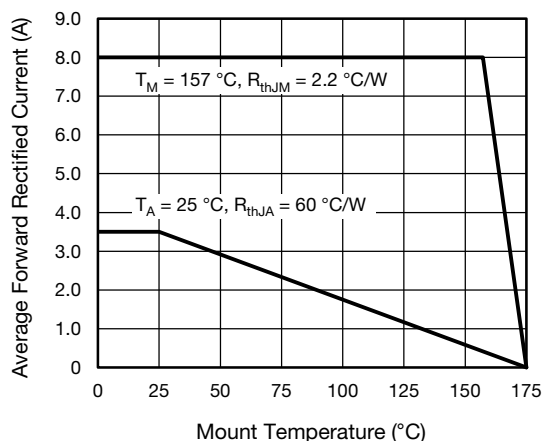


Fig. 1 - Maximum Forward Current Derating Curve

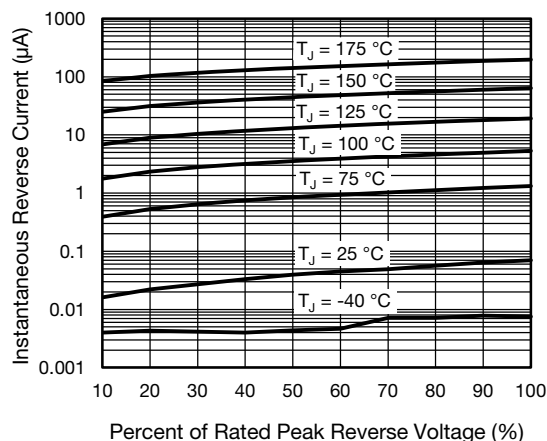


Fig. 4 - Typical Reverse Leakage Characteristics

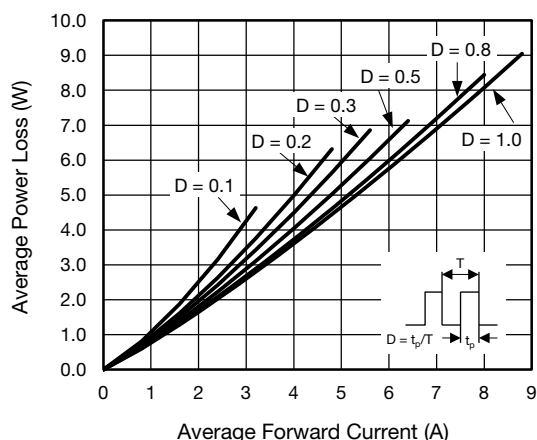


Fig. 2 - Forward Power Loss Characteristics

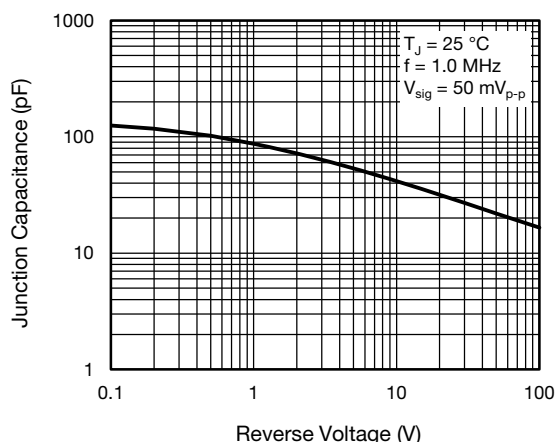


Fig. 5 - Typical Junction Capacitance

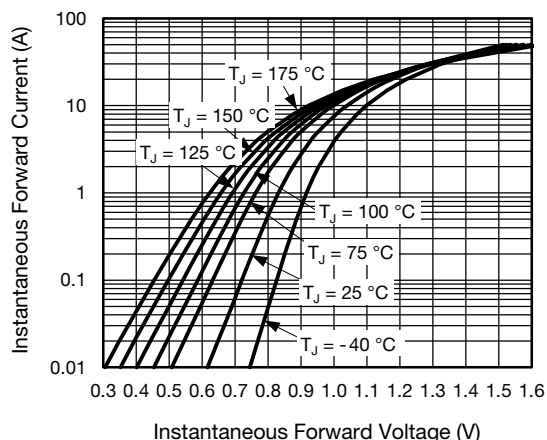


Fig. 3 - Typical Instantaneous Forward Characteristics

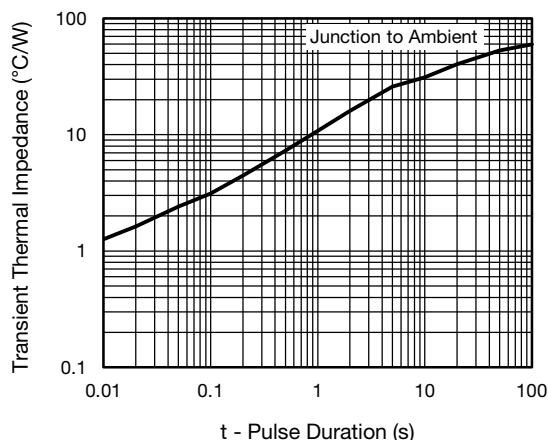
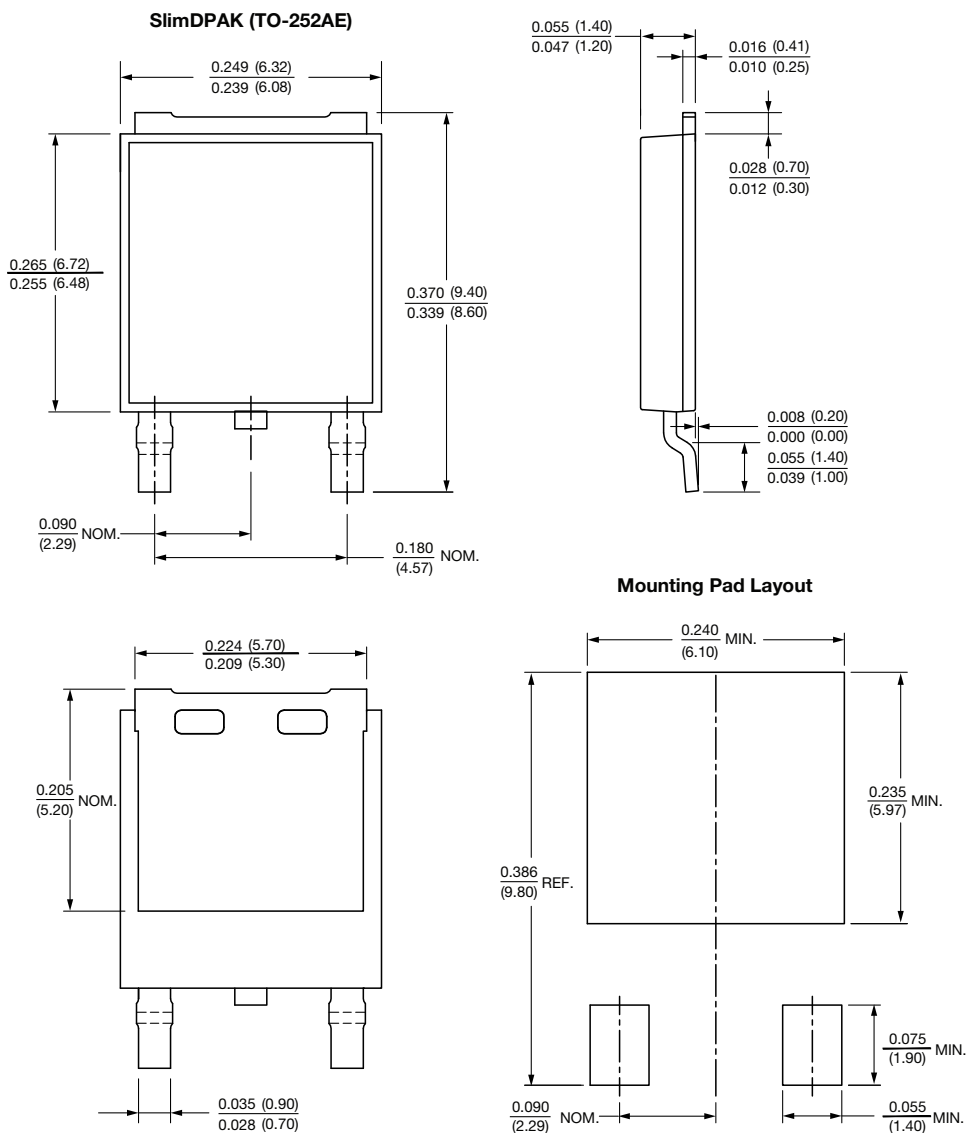


Fig. 6 - Typical Transient Thermal Impedance



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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