

# ANTREX Electronics

Electronic Components Sourcing Information

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## Product Reference Information

**Part Number:** V8P12-M3/87A

**Manufacturer:** Vishay General Semiconductor - Diodes Division

**Package:** TO-277, 3-PowerDFN

**Availability:** Please confirm with sales

### Product Page:

<https://antrexco.com/product/details/vishay-general-semiconductor-diodes-division/v8p12-m3-87a.html>

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New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

Secure sourcing support for OEM / EMS projects

### Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

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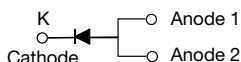
# High Current Density Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low  $V_F = 0.53 \text{ V}$  at  $I_F = 4 \text{ A}$

## eSMP® Series



## SMPC (TO-277A)



## ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS        |                |
|--------------------------------|----------------|
| $I_{F(AV)}$                    | 8.0 A          |
| $V_{RRM}$                      | 120 V          |
| $I_{FSM}$                      | 140 A          |
| $E_{AS}$                       | 100 mJ         |
| $V_F$ at $I_F = 8.0 \text{ A}$ | 0.63 V         |
| $T_J \text{ max.}$             | 150 °C         |
| Package                        | SMPC (TO-277A) |
| Circuit configuration          | Single         |

## FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- 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

For use in low voltage high frequency inverters, freewheeling, DC/DC converters and polarity protection applications.

## MECHANICAL DATA

### Case: SMPC (TO-277A)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

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

("\_X" denotes revision code e.g. A, B,.....)

**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

| MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)                                                   |                |             |      |
|-------------------------------------------------------------------------------------------------------------------|----------------|-------------|------|
| PARAMETER                                                                                                         | SYMBOL         | V8P12       | UNIT |
| Device marking code                                                                                               |                | V812        |      |
| Maximum repetitive peak reverse voltage                                                                           | $V_{RRM}$      | 120         | V    |
| Maximum average forward rectified current (fig. 1)                                                                | $I_{F(AV)}$    | 8.0         | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load                                 | $I_{FSM}$      | 140         | A    |
| Non-repetitive avalanche energy at $I_{AS} = 2.0 \text{ A}$ , $T_J = 25 \text{ °C}$                               | $E_{AS}$       | 100         | mJ   |
| Peak repetitive reverse current at $t_p = 2 \text{ } \mu\text{s}$ , 1 kHz, $T_J = 38 \text{ °C} \pm 2 \text{ °C}$ | $I_{RRM}$      | 0.5         | A    |
| Operating junction and storage temperature range                                                                  | $T_J, T_{STG}$ | -40 to +150 | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                         |                         |                               |               |      |      |
|----------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------------|---------------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS         |                         | SYMBOL                        | TYP.          | MAX. | UNIT |
| Breakdown voltage                                                          | I <sub>R</sub> = 1.0 mA | T <sub>A</sub> = 25 °C  | V <sub>BR</sub>               | 120 (minimum) | -    | V    |
| Instantaneous forward voltage                                              | I <sub>F</sub> = 4 A    | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.59          | -    | V    |
|                                                                            | I <sub>F</sub> = 8 A    |                         |                               | 0.77          | 0.84 |      |
|                                                                            | I <sub>F</sub> = 4 A    | T <sub>A</sub> = 125 °C |                               | 0.53          | -    |      |
|                                                                            | I <sub>F</sub> = 8 A    |                         |                               | 0.63          | 0.71 |      |
| Reverse current                                                            | V <sub>R</sub> = 90 V   | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 5             | -    | μA   |
|                                                                            |                         | T <sub>A</sub> = 125 °C |                               | 3             | -    | mA   |
|                                                                            | V <sub>R</sub> = 120 V  | T <sub>A</sub> = 25 °C  |                               | 15            | 300  | μA   |
|                                                                            |                         | T <sub>A</sub> = 125 °C |                               | 6             | 20   | mA   |

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

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                       |       |                      |
|---------------------------------------------------------------------------------------------|-----------------------|-------|----------------------|
| PARAMETER                                                                                   | SYMBOL                | V8P12 | UNIT                 |
| Typical thermal resistance                                                                  | $R_{\theta JA}^{(1)}$ | 60    | $^{\circ}\text{C/W}$ |
|                                                                                             | $R_{\theta JL}$       | 4     |                      |

**Note**

(1) Units mounted on recommended PCB 1 oz. pad layout

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| V8P12-M3/86A                          | 0.10            | 86A                    | 1500          | 7" diameter plastic tape and reel  |
| V8P12-M3/87A                          | 0.10            | 87A                    | 6500          | 13" diameter plastic tape and reel |
| V8P12HM3_A/H <sup>(1)</sup>           | 0.10            | H                      | 1500          | 7" diameter plastic tape and reel  |
| V8P12HM3_A/I <sup>(1)</sup>           | 0.10            | I                      | 6500          | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

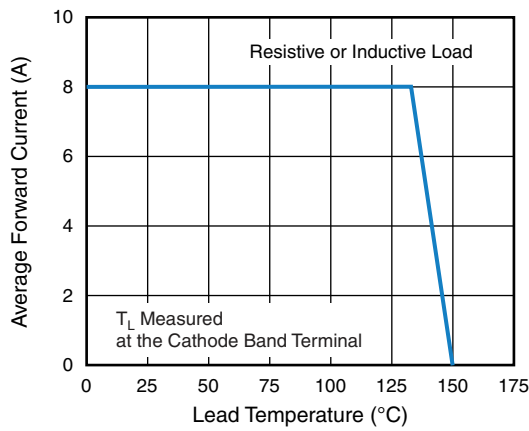
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

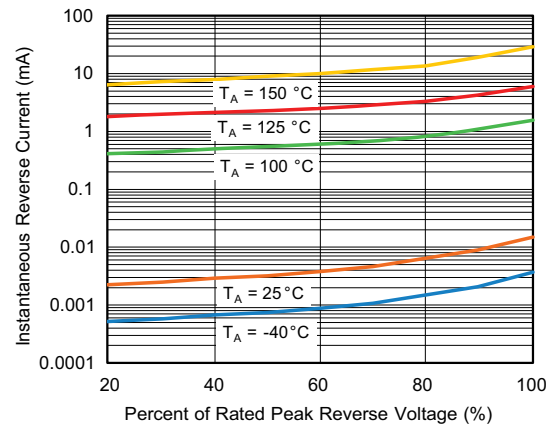


Fig. 4 - Typical Reverse Characteristics

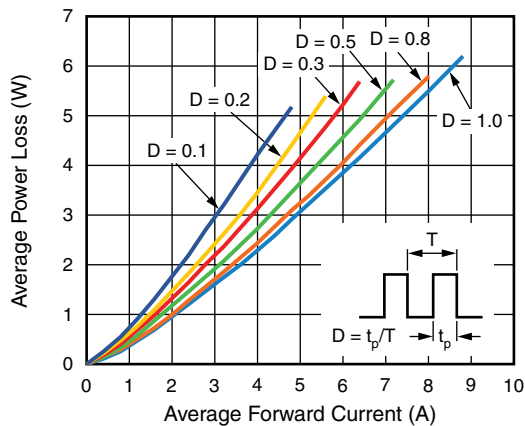


Fig. 2 - Forward Power Loss Characteristics

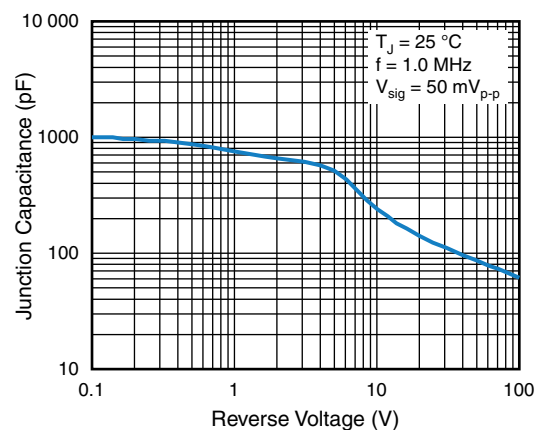


Fig. 5 - Typical Junction Capacitance

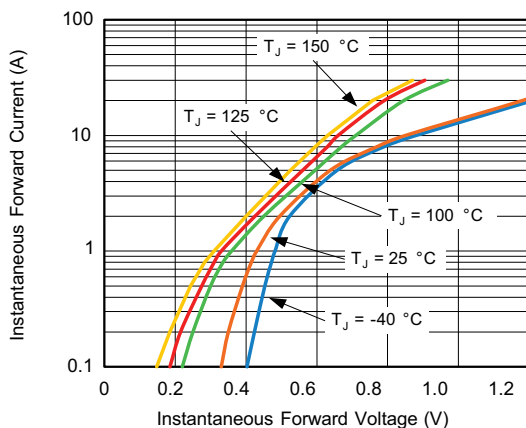


Fig. 3 - Typical Instantaneous Forward Characteristics

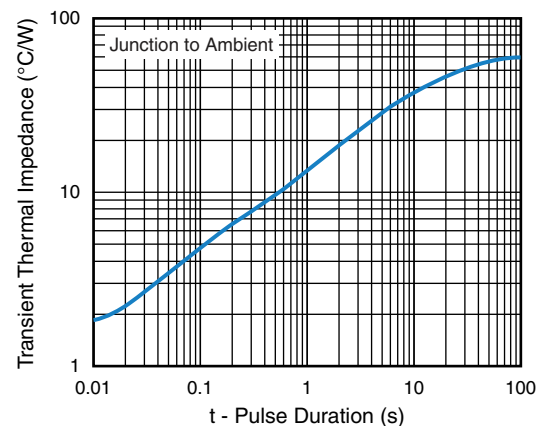
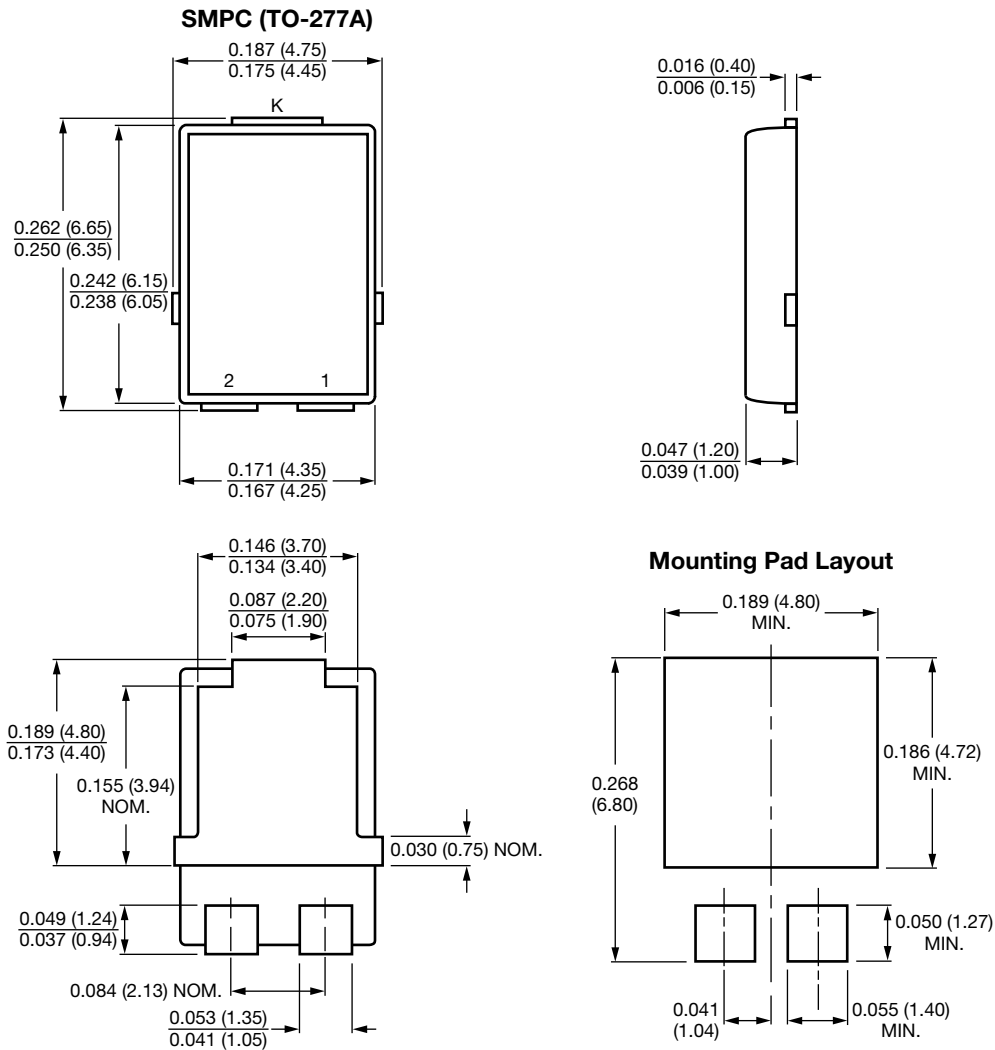


Fig. 6 - Typical Transient Thermal Impedance

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


Conform to JEDEC® TO-277A



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