

# ANTREX Electronics

Electronic Components Sourcing Information

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## Product Reference Information

**Part Number:** V5PA22HM3/I  
**Manufacturer:** Vishay General Semiconductor - Diodes Division  
**Package:** DO-221BC, SMA Flat Leads Exposed Pad  
**Availability:** Please confirm with sales

**Product Page:**

<https://antrexco.com/product/details/vishay-general-semiconductor-diodes-division/v5pa22hm3-i.html>



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## Contact Information

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## Quality & Trust

New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

Secure sourcing support for OEM / EMS projects

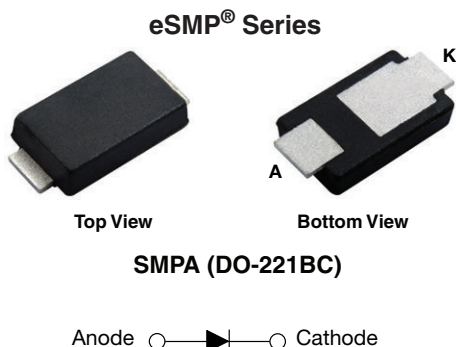
**Note:**

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

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



## FEATURES

- Very low profile - typical height of 0.95 mm
- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
- Automotive ordering code: P/NHM3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

**AUTOMOTIVE  
GRADE**  
Available



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

## TYPICAL APPLICATIONS

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

## MECHANICAL DATA

**Case:** SMPA (DO-221BC)

Molding compound meets UL 94 V-0 flammability rating

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

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 JESD22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

## LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS                  |                 |
|------------------------------------------|-----------------|
| $I_{F(AV)}$                              | 5.0 A           |
| $V_{RRM}$                                | 200 V           |
| $I_{FSM}$                                | 90 A            |
| $V_F$ at $I_F = 5.0$ A ( $T_A = 125$ °C) | 0.69 V          |
| $T_J$ max.                               | 175 °C          |
| Package                                  | SMPA (DO-221BC) |
| Circuit configuration                    | Single          |

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                            |                   |             |      |
|------------------------------------------------------------------------------------|-------------------|-------------|------|
| PARAMETER                                                                          | SYMBOL            | V5PA22      | UNIT |
| Device marking code                                                                |                   | V522        |      |
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$         | 200         | V    |
| Maximum DC forward current                                                         | $I_{F(AV)}^{(1)}$ | 5.0         | A    |
|                                                                                    | $I_{F(AV)}^{(2)}$ | 2.3         |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$         | 90          | A    |
| Operating junction temperature range                                               | $T_J^{(3)}$       | -40 to +175 | °C   |
| Storage temperature range                                                          | $T_{STG}$         | -40 to +175 | °C   |

### Notes

(1) Mounted on 3 cm x 3 cm copper pad area PCB

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

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

| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                               |       |      |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|-------------------------------|-------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL                        | TYP.  | MAX. | UNIT |
| Instantaneous forward voltage                                              | I <sub>F</sub> = 2.5 A | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.76  | -    | V    |
|                                                                            | I <sub>F</sub> = 5.0 A |                         |                               | 0.82  | 0.9  |      |
|                                                                            | I <sub>F</sub> = 2.5 A | T <sub>A</sub> = 125 °C |                               | 0.61  | -    |      |
|                                                                            | I <sub>F</sub> = 5.0 A |                         |                               | 0.69  | 0.77 |      |
| Reverse current                                                            | V <sub>R</sub> = 160 V | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 0.001 | -    | mA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 0.3   | -    |      |
|                                                                            | V <sub>R</sub> = 200 V | T <sub>A</sub> = 25 °C  |                               | -     | 0.05 |      |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 0.7   | 3.0  |      |
| Typical junction capacitance                                               | 4.0 V, 1 MHz           |                         | C <sub>J</sub>                | 240   | -    | pF   |

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
(2) Pulse test: Pulse width  $\leq 5\text{ ms}$

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise specified) |                          |        |                      |
|-------------------------------------------------------------------------------------------------|--------------------------|--------|----------------------|
| PARAMETER                                                                                       | SYMBOL                   | V5PA22 | UNIT                 |
| Typical thermal resistance                                                                      | $R_{\theta JA}^{(1)(2)}$ | 100    | $^{\circ}\text{C/W}$ |
|                                                                                                 | $R_{\theta JM}^{(3)}$    | 5      |                      |

**Notes**

- (1) The heat generated must be less than the 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) Units mounted on 3 cm x 3 cm aluminum PCB; thermal resistance  $R_{\theta JM}$  - junction to mount

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| V5PA22-M3/I                           | 0.032           | I                      | 14 000        | 13" diameter plastic tape and reel |
| V5PA22HM3_A/I <sup>(1)</sup>          | 0.032           | I                      | 14 000        | 13" diameter plastic tape and reel |

**Note**

- (1) AEC-Q101 qualified

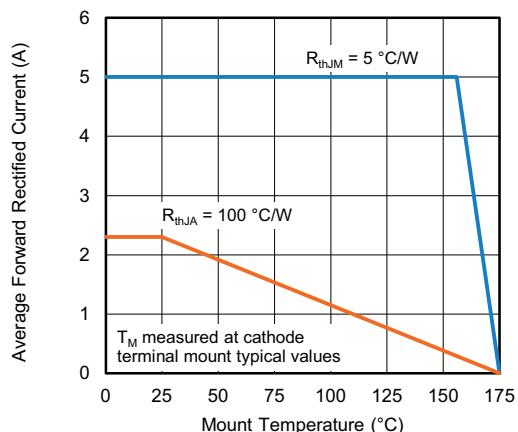
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)


Fig. 1 - Maximum Forward Current Derating Curve

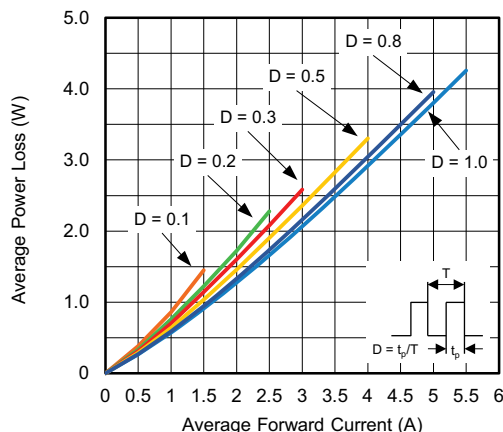


Fig. 2 - Forward Power Loss Characteristics

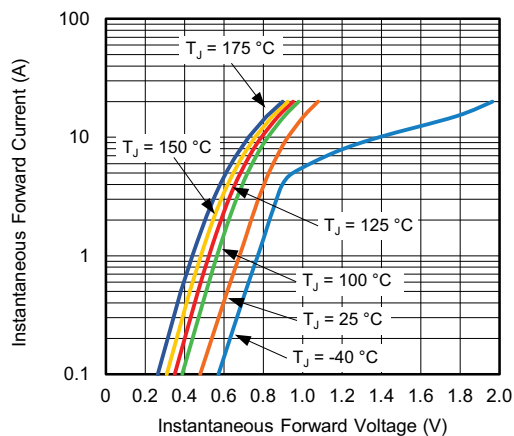


Fig. 3 - Typical Instantaneous Forward Characteristics

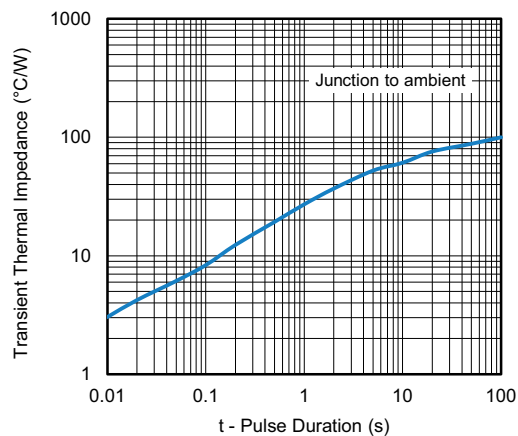


Fig. 6 - Typical Transient Thermal Impedance

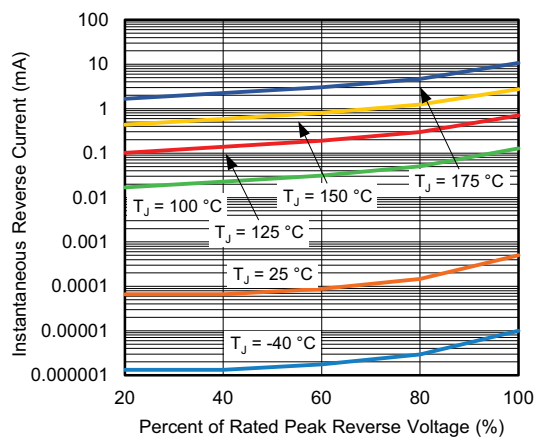


Fig. 4 - Typical Reverse Leakage Characteristics

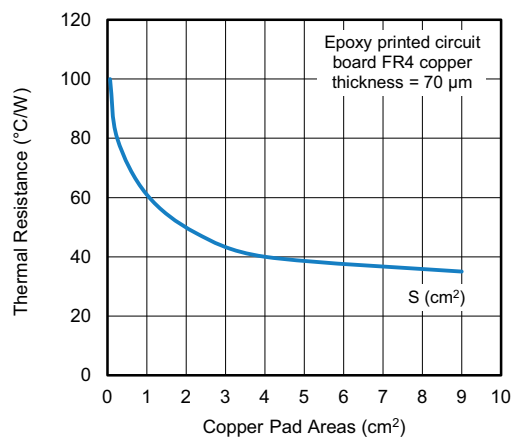


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Areas

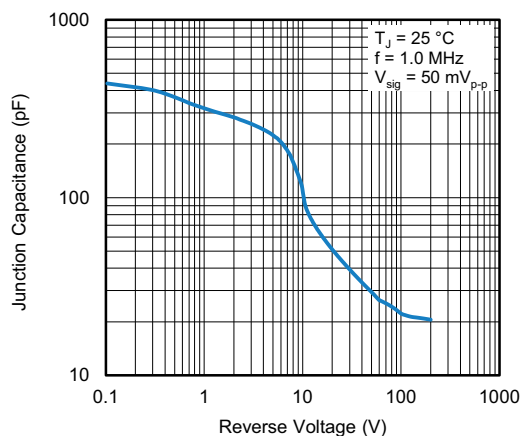
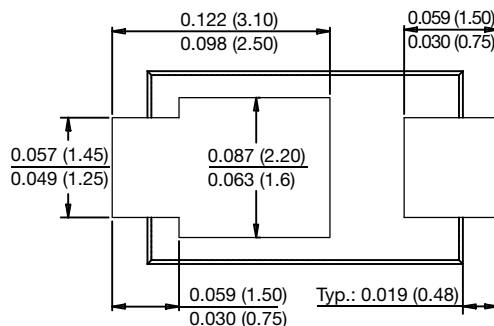
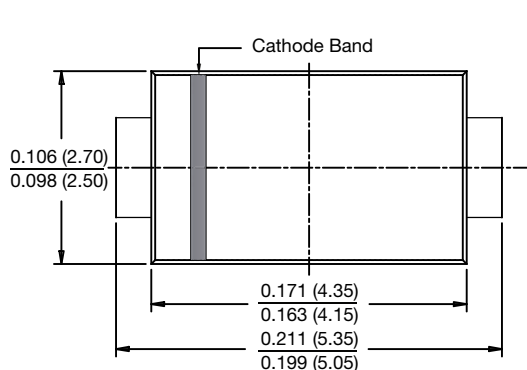
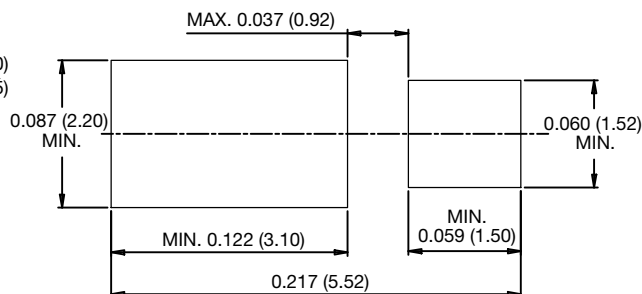
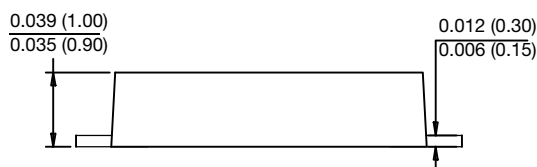


Fig. 5 - Typical Junction Capacitance

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

**SMPA (DO-221BC)**

**Mounting Pad Layout**




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