

# ANTREX Electronics

## Electronic Components Sourcing Information

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### Product Reference Information

|                      |                                                |
|----------------------|------------------------------------------------|
| <b>Part Number:</b>  | V20D202C-M3/I                                  |
| <b>Manufacturer:</b> | Vishay General Semiconductor - Diodes Division |
| <b>Package:</b>      | Tape & Reel (TR), Cut Tape (CT)                |
| <b>Availability:</b> | Please confirm with sales                      |

#### Product Page:

<https://antrexco.com/product/details/vishay-general-semiconductor-diodes-division/v20d202c-m3-i.html>



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#### Request a Quote:

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### Contact Information

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New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

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#### Note:

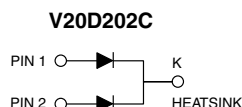
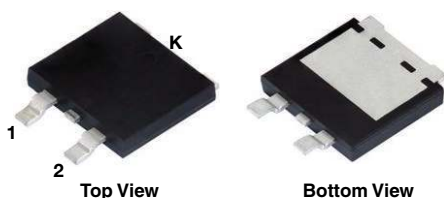
This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

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# Dual High-Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

## eSMP® Series SMPD (TO-263AC)



## LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS                   |                 |
|-------------------------------------------|-----------------|
| $I_{F(AV)}$                               | 2 x 10 A        |
| $V_{RRM}$                                 | 200 V           |
| $I_{FSM}$                                 | 150 A           |
| $V_F$ at $I_F = 10.0$ A ( $T_A = 125$ °C) | 0.68 V          |
| $T_J$ max.                                | 175 °C          |
| Package                                   | SMPD (TO-263AC) |
| Circuit configuration                     | Common cathode  |

## FEATURES

- Trench MOS Schottky technology generation 2
- Very low profile - typical height of 1.7 mm
- Ideal for automated placement
- 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 high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

## MECHANICAL DATA

**Case:** SMPD (TO-263AC)

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 JESD 22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** As marked

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                            |                |             |            |
|------------------------------------------------------------------------------------|----------------|-------------|------------|
| PARAMETER                                                                          | SYMBOL         | V20D202C    | UNIT       |
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 200         | V          |
| Maximum average forward rectified current<br>(fig. 1)                              | $I_{F(AV)}$    | 20          | A          |
|                                                                                    |                | 10          |            |
| Maximum DC reverse voltage                                                         | $V_{DC}$       | 160         | V          |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 150         | A          |
| Voltage rate of change (rated $V_R$ )                                              | $dV/dt$        | 10 000      | V/ $\mu$ s |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -40 to +175 | °C         |

| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                               |      |      |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL                        | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode                                    | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.75 | -    | V    |
|                                                                            | I <sub>F</sub> = 10 A  |                         |                               | 0.83 | 0.9  |      |
|                                                                            | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 125 °C |                               | 0.6  | -    |      |
|                                                                            | I <sub>F</sub> = 10 A  |                         |                               | 0.68 | 0.76 |      |
| Reverse current at rated V <sub>R</sub> per diode                          | V <sub>R</sub> = 160 V | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 0.8  | -    | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 1    | -    | mA   |
|                                                                            | V <sub>R</sub> = 200 V | T <sub>A</sub> = 25 °C  |                               | -    | 150  | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 2.5  | 10   | mA   |

**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 noted) |            |                          |          |                      |
|---------------------------------------------------------------------------------------------|------------|--------------------------|----------|----------------------|
| PARAMETER                                                                                   |            | SYMBOL                   | V20D202C | UNIT                 |
| Typical thermal resistance                                                                  | per diode  | $R_{\theta JC}$          | 2.8      | $^{\circ}\text{C/W}$ |
|                                                                                             | per device |                          | 1.5      |                      |
|                                                                                             | per device | $R_{\theta JA}^{(1)(2)}$ | 58       |                      |

**Notes**

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

(2) Free air, without heatsink

| <b>ORDERING INFORMATION</b> (Example) |                 |              |               |                                    |
|---------------------------------------|-----------------|--------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| V20D202C-M3/I                         | 0.55            | I            | 2000/reel     | 13" diameter plastic tape and reel |
| V20D202CHM3_B/I <sup>(1)</sup>        | 0.55            | I            | 2000/reel     | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

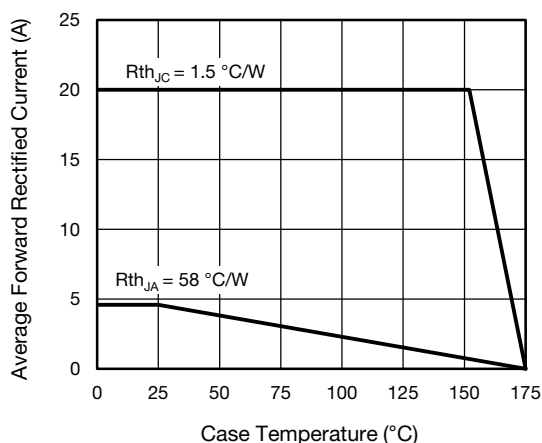
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

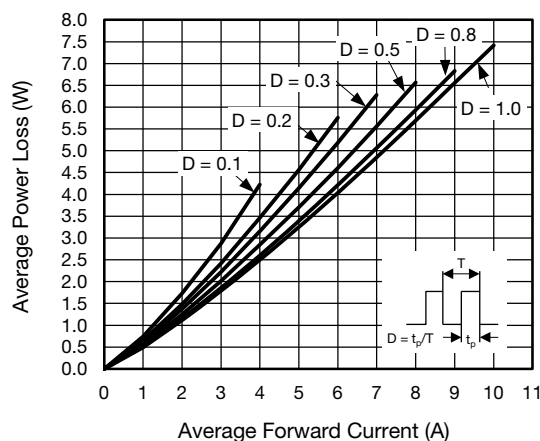


Fig. 2 - Forward Power Loss Characteristics

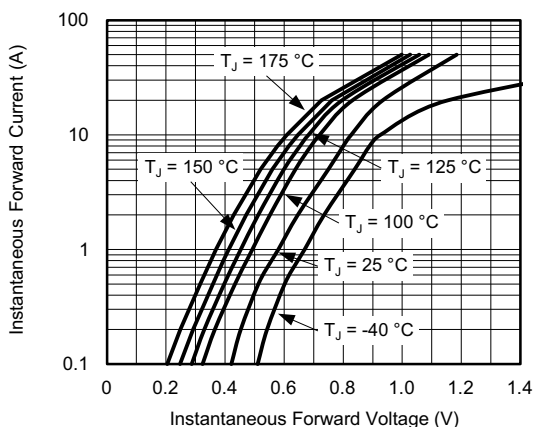


Fig. 3 - Typical Instantaneous Forward Characteristics

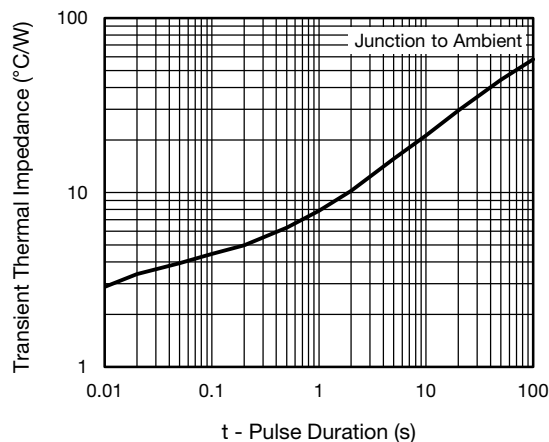


Fig. 6 - Typical Transient Thermal Impedance

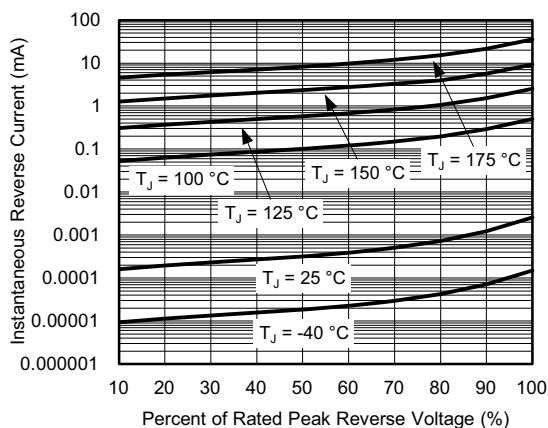


Fig. 4 - Typical Reverse Characteristics

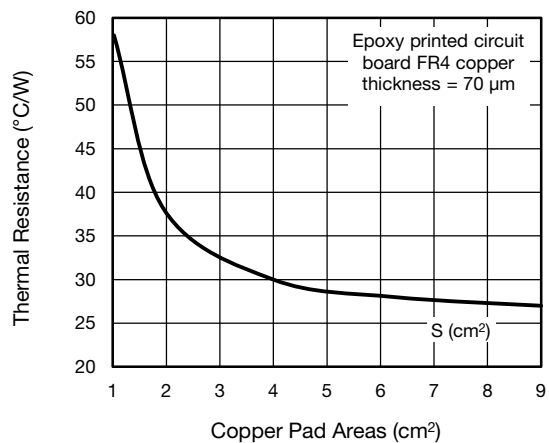


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

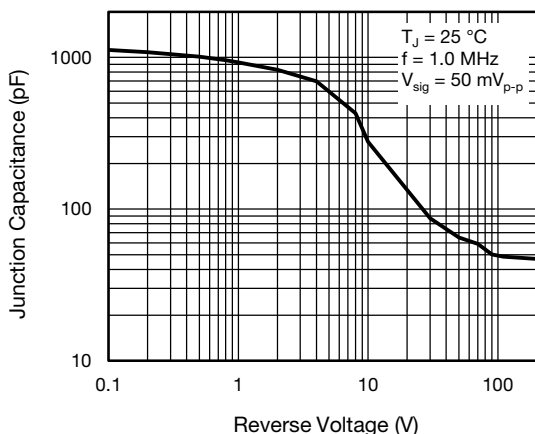
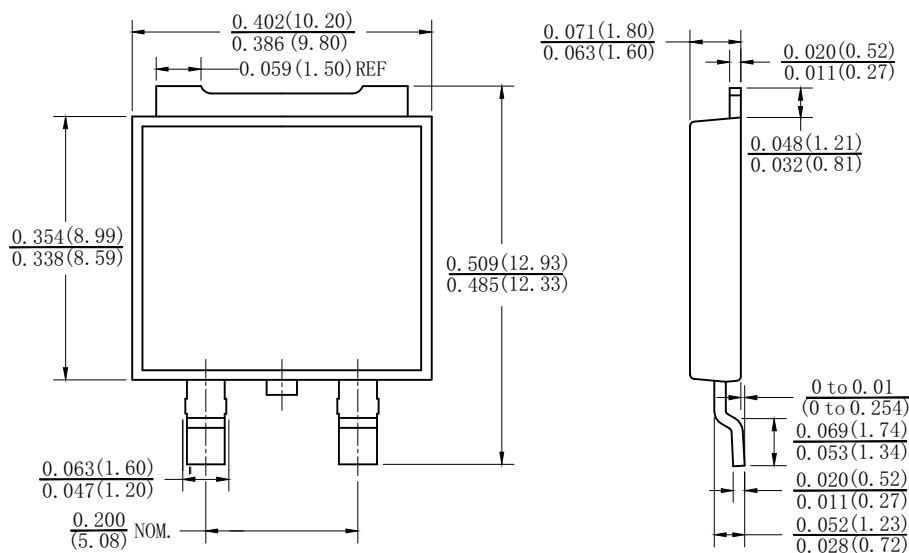
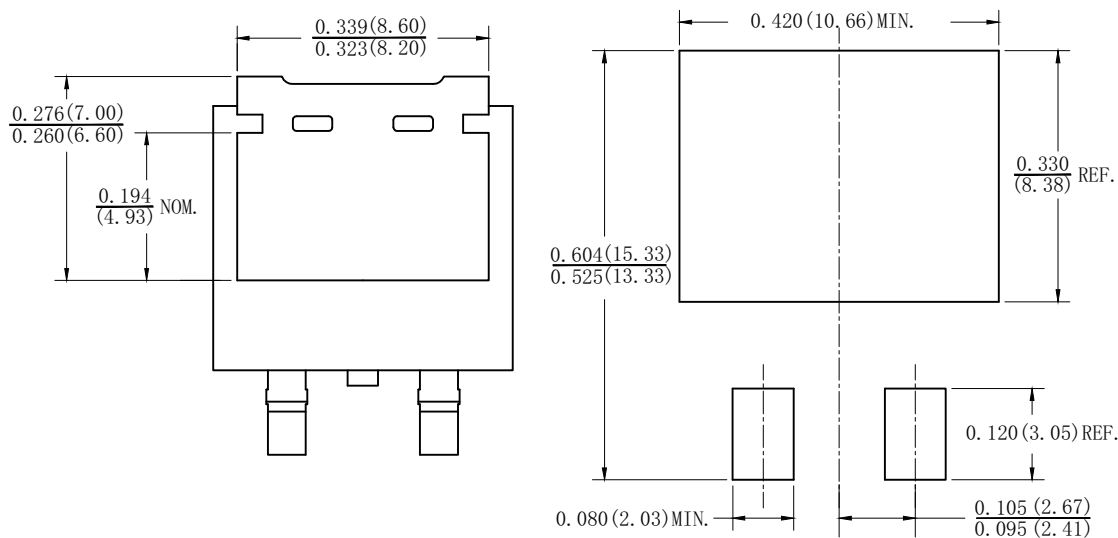


Fig. 5 - Typical Junction Capacitance

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

**SMPD (TO-263AC)**

**Mounting Pad Layout**




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