

# ANTREX Electronics

Electronic Components Sourcing Information

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## Product Reference Information

**Part Number:** VS-1N1201RA  
**Manufacturer:** Vishay General Semiconductor - Diodes Division  
**Package:** DO-203AA, DO-4, Stud  
**Availability:** Please confirm with sales

### Product Page:

<https://antrexco.com/product/details/vishay-general-semiconductor-diodes-division-vs-1n1201ra.html>

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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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# Medium Power Silicon Rectifier Diodes, (Stud Version), 12 A



DO-4 (DO-203AA)

## FEATURES

- Voltage ratings from 50 V to 1000 V
- High surge capability
- Low thermal impedance
- High temperature rating
- Can be supplied as JAN and JAN-TX devices in accordance with MIL-S-19500/260
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

## PRIMARY CHARACTERISTICS

|                       |                 |
|-----------------------|-----------------|
| $I_{F(AV)}$           | 12 A            |
| Package               | DO-4 (DO-203AA) |
| Circuit configuration | Single          |

## MAJOR RATINGS AND CHARACTERISTICS

| PARAMETER   | TEST CONDITIONS | VALUES            | UNITS            |
|-------------|-----------------|-------------------|------------------|
| $I_{F(AV)}$ |                 | <b>12</b>         | A                |
|             | $T_C$           | <b>150</b>        | °C               |
| $I_{FSM}$   | 50 Hz           | 230               | A                |
|             | 60 Hz           | <b>240</b>        |                  |
| $I^2t$      | 50 Hz           | 260               | A <sup>2</sup> s |
|             | 60 Hz           | 240               |                  |
| $T_J$       |                 | -65 to +200       | °C               |
| $V_{RRM}$   | Range           | <b>50 to 1000</b> | V                |

### Note

- JEDEC® registered values are in bold

## ELECTRICAL SPECIFICATIONS

### VOLTAGE RATINGS

| TYPE NUMBER | $V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE<br>( $T_C = -65\text{ °C TO }200\text{ °C}$ )<br>V | $V_{R(RMS)}$ , MAXIMUM RMS REVERSE VOLTAGE<br>( $T_C = -65\text{ °C TO }200\text{ °C}$ )<br>V | $V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE<br>( $T_C = -65\text{ °C TO }200\text{ °C}$ )<br>V | $V_{RM}$ , MAXIMUM DIRECT REVERSE VOLTAGE<br>( $T_C = -65\text{ °C TO }200\text{ °C}$ )<br>V |
|-------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| VS-1N1199A  | <b>50</b>                                                                                              | <b>35</b>                                                                                     | <b>100</b>                                                                                                 | <b>50</b>                                                                                    |
| VS-1N1200A  | <b>100</b>                                                                                             | <b>70</b>                                                                                     | <b>200</b>                                                                                                 | <b>100</b>                                                                                   |
| VS-1N1201A  | <b>150</b>                                                                                             | <b>105</b>                                                                                    | <b>300</b>                                                                                                 | <b>150</b>                                                                                   |
| VS-1N1202A  | <b>200</b>                                                                                             | <b>140</b>                                                                                    | <b>350</b>                                                                                                 | <b>200</b>                                                                                   |
| VS-1N1203A  | <b>300</b>                                                                                             | <b>210</b>                                                                                    | <b>450</b>                                                                                                 | <b>300</b>                                                                                   |
| VS-1N1204A  | <b>400</b>                                                                                             | <b>280</b>                                                                                    | <b>600</b>                                                                                                 | <b>400</b>                                                                                   |
| VS-1N1205A  | <b>500</b>                                                                                             | <b>350</b>                                                                                    | <b>700</b>                                                                                                 | <b>500</b>                                                                                   |
| VS-1N1206A  | <b>600</b>                                                                                             | <b>420</b>                                                                                    | <b>800</b>                                                                                                 | <b>600</b>                                                                                   |
| VS-1N3670A  | <b>700</b>                                                                                             | <b>490</b>                                                                                    | <b>900</b>                                                                                                 | <b>700</b>                                                                                   |
| VS-1N3671A  | <b>800</b>                                                                                             | <b>560</b>                                                                                    | <b>1000</b>                                                                                                | <b>800</b>                                                                                   |
| VS-1N3672A  | <b>900</b>                                                                                             | <b>630</b>                                                                                    | <b>1100</b>                                                                                                | <b>900</b>                                                                                   |
| VS-1N3673A  | <b>1000</b>                                                                                            | <b>700</b>                                                                                    | <b>1200</b>                                                                                                | <b>1000</b>                                                                                  |
| VS-1N3624   | <b>1000</b>                                                                                            | <b>1200</b>                                                                                   | <b>1400</b>                                                                                                | <b>1000</b>                                                                                  |

### Notes

- JEDEC® registered values are in bold
- Basic part number indicates cathode to case; for anode to case, add "R" to part number, e.g., 1N1199RA



| FORWARD CONDUCTION                                     |                                   |                                                               |                                                                                            |                           |                   |    |
|--------------------------------------------------------|-----------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------|-------------------|----|
| PARAMETER                                              | SYMBOL                            | TEST CONDITIONS                                               |                                                                                            | VALUES                    | UNITS             |    |
| Maximum average forward current at case temperature    | I <sub>F(AV)</sub>                | 180° sinusoidal conduction                                    |                                                                                            | 12                        | A                 |    |
|                                                        |                                   |                                                               |                                                                                            | 150                       | °C                |    |
| Maximum peak one cycle non-repetitive surge current    | I <sub>FSM</sub>                  | Half cycle 50 Hz sine wave or 6 ms rectangular pulse          | Following any rated load condition and with rated V <sub>RRM</sub> applied                 | 230                       | A                 |    |
|                                                        |                                   | Half cycle 60 Hz sine wave or 5 ms rectangular pulse          |                                                                                            | 240                       |                   |    |
|                                                        |                                   | Half cycle 50 Hz sine wave or 6 ms rectangular pulse          | Following any rated load condition and with V <sub>RRM</sub> applied following surge = 0 V | 275                       |                   |    |
|                                                        |                                   | Half cycle 60 Hz sine wave or 5 ms rectangular pulse          |                                                                                            | 285                       |                   |    |
| Maximum I <sup>2</sup> t for fusing                    | I <sup>2</sup> t                  | t = 10 ms                                                     | With rated V <sub>RRM</sub> applied following surge, initial T <sub>J</sub> = 200 °C       | 260                       | A <sup>2</sup> s  |    |
|                                                        |                                   | t = 8.3 ms                                                    |                                                                                            | 240                       |                   |    |
| Maximum I <sup>2</sup> t for individual device fusing  |                                   | t = 10 ms                                                     | With V <sub>RRM</sub> = 0 V following surge, initial T <sub>J</sub> = 200 °C               | 370                       |                   |    |
|                                                        |                                   | t = 8.3 ms                                                    |                                                                                            | 340                       |                   |    |
| Maximum I <sup>2</sup> √t for individual device fusing | I <sup>2</sup> √t <sup>(1)</sup>  | t = 0.1 ms to 10 ms, V <sub>RRM</sub> = 0 V following surge   |                                                                                            | 3715                      | A <sup>2</sup> √s |    |
| Maximum forward voltage drop                           | V <sub>FM</sub>                   | I <sub>F(AV)</sub> = 12 A (38 A peak), T <sub>C</sub> = 25 °C |                                                                                            | 1.35                      | V                 |    |
| Maximum average reverse current                        | I <sub>R(AV)</sub> <sup>(2)</sup> | Maximum rated I <sub>F(AV)</sub> and T <sub>C</sub>           |                                                                                            | V <sub>RRM</sub> = 50 V   | 3.0               | mA |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 100 V  | 2.5               |    |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 150 V  | 2.25              |    |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 200 V  | 2.0               |    |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 300 V  | 1.75              |    |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 400 V  | 1.5               |    |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 500 V  | 1.25              |    |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 600 V  | 1.0               |    |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 700 V  | 0.9               |    |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 800 V  | 0.8               |    |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 900 V  | 0.7               |    |
|                                                        |                                   |                                                               |                                                                                            | V <sub>RRM</sub> = 1000 V | 0.6               |    |

**Notes**

- JEDEC® registered values are in bold

(1)  $I^2t$  for time  $t_x = I^2\sqrt{t} \times \sqrt{t_x}$

(2) Maximum peak reverse current ( $I_{RM}$ ) under same conditions  $\approx 2 \times$  rated  $I_{R(AV)}$

| THERMAL AND MECHANICAL SPECIFICATIONS                 |         |                                   |                                                   |                 |                     |
|-------------------------------------------------------|---------|-----------------------------------|---------------------------------------------------|-----------------|---------------------|
| PARAMETER                                             |         | SYMBOL                            | TEST CONDITIONS                                   | VALUES          | UNITS               |
| Maximum operating case and storage temperature range  |         | T <sub>C</sub> , T <sub>Stg</sub> |                                                   | -65 to 200      | °C                  |
| Maximum internal thermal resistance, junction to case |         | R <sub>thJC</sub>                 | DC operation                                      | 2.0             | °C/W                |
| Thermal resistance, case to sink                      |         | R <sub>thCS</sub>                 | Mounting surface, smooth, flat and greased        | 0.5             |                     |
| Mounting torque                                       | minimum |                                   | Torque applied to nut; non-lubricated threads     | 1.36 (12)       | N · m<br>(lbf · in) |
|                                                       | maximum |                                   |                                                   | 1.69 (15)       |                     |
|                                                       | minimum |                                   | Torque applied to nut; lubricated threads         | 1.07 (9.45)     |                     |
|                                                       | maximum |                                   |                                                   | 1.30 (11.55)    |                     |
|                                                       | minimum |                                   | Torque applied to device case; lubricated threads | 1.17 (10.35)    |                     |
|                                                       | maximum |                                   |                                                   | 1.43 (12.65)    |                     |
| Approximate weight                                    |         |                                   |                                                   | 7.0             | g                   |
|                                                       |         |                                   |                                                   | 0.25            | oz.                 |
| Case style                                            |         |                                   | JEDEC®                                            | DO-4 (DO-203AA) |                     |

**Note**

- JEDEC registered values are in bold

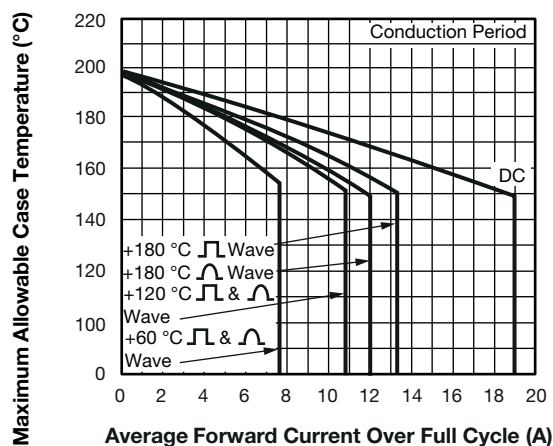


Fig. 1 - Average Forward Current vs. Maximum Allowable Case Temperature

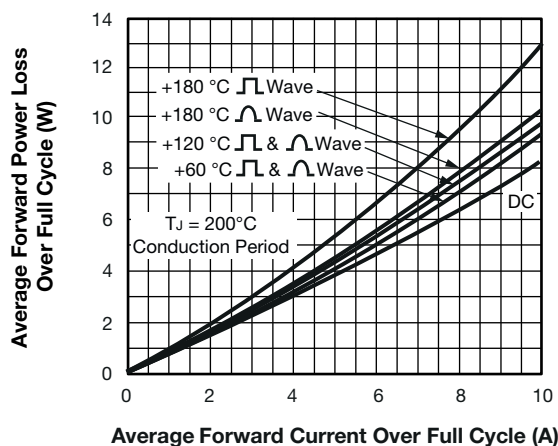


Fig. 2 - Maximum Low Level Forward Power Loss vs. Average Forward Current

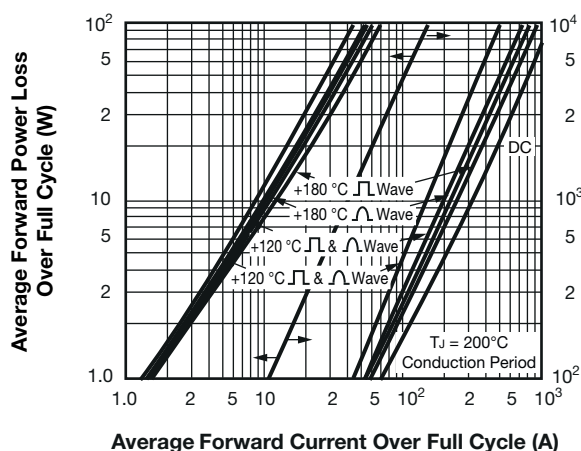


Fig. 3 - Maximum High Level Forward Power Loss vs. Average Forward Current

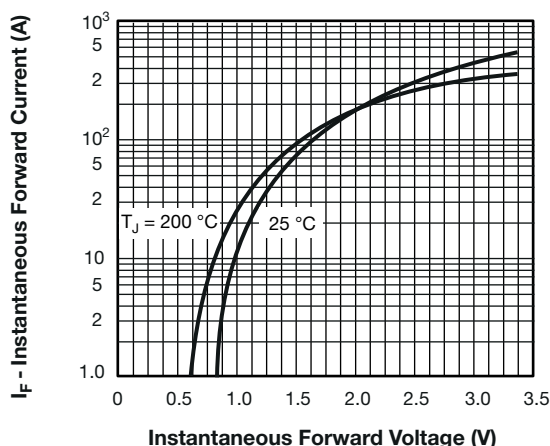


Fig. 4 - Maximum Forward Voltage vs. Forward Current

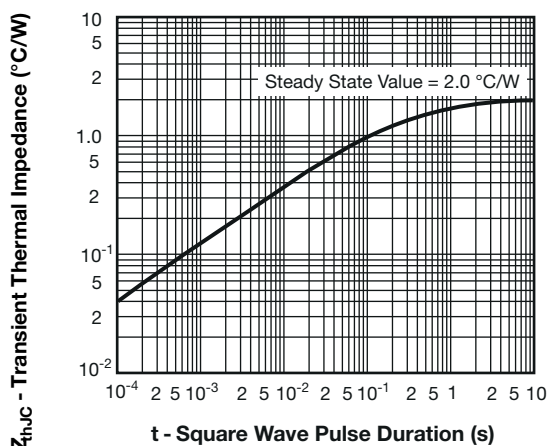


Fig. 5 - Maximum Transient Thermal Impedance, Junction to Case vs. Pulse Duration

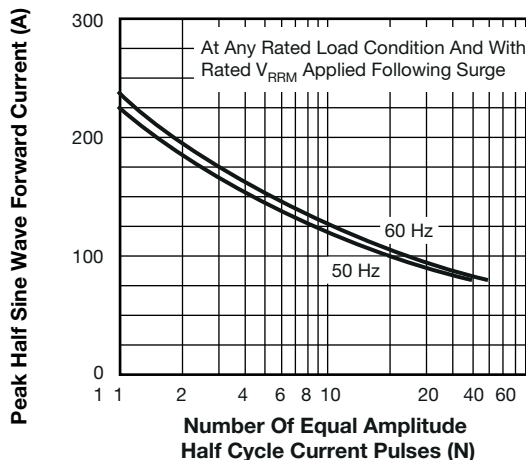


Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current vs. Number of Current Pulses

## LINKS TO RELATED DOCUMENTS

Dimensions

[www.vishay.com/doc?95311](http://www.vishay.com/doc?95311)

**DIMENSIONS** in millimeters (inches)





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