



# Medium Power Silicon Rectifier Diodes, 12 A



DO-203AA (DO-4)

### 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

| PRODUCT SUMMARY |      |
|-----------------|------|
| $I_{F(AV)}$     | 12 A |

| 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               |                  |
| $T_C$                             |                 | - 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 |
| 1N1199A         | <b>50</b>  | <b>35</b>   | <b>100</b>   | <b>50</b>  |
| 1N1200A         | <b>100</b>   | <b>70</b>   | <b>200</b>   | <b>100</b>   |
| 1N1201A         | <b>150</b>   | <b>105</b>  | <b>300</b>   | <b>150</b>   |
| 1N1202A         | <b>200</b>   | <b>140</b>  | <b>350</b>   | <b>200</b>   |
| 1N1203A         | <b>300</b>   | <b>210</b>  | <b>450</b>   | <b>300</b>   |
| 1N1204A         | <b>400</b>   | <b>280</b>  | <b>600</b>   | <b>400</b>   |
| 1N1205A         | <b>500</b>   | <b>350</b>  | <b>700</b>   | <b>500</b>   |
| 1N1206A         | <b>600</b>   | <b>420</b>  | <b>800</b>   | <b>600</b>   |
| 1N3670A         | <b>700</b>   | <b>490</b>  | <b>900</b>   | <b>700</b>   |
| 1N3671A         | <b>800</b>   | <b>560</b>  | <b>1000</b>  | <b>800</b>   |
| 1N3672A         | <b>900</b>   | <b>630</b>  | <b>1100</b>  | <b>900</b>   |
| 1N3673A         | <b>1000</b>  | <b>700</b>  | <b>1200</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 | $I_{F(AV)}$       | 180° sinusoidal conduction                                  |   | <b>12</b>                | A                 |             |
|   |                   |   |   | <b>150</b>               | °C                |             |
| Maximum peak one cycle non-repetitive surge current | $I_{FSM}$         | Half cycle 50 Hz sine wave or 6 ms rectangular pulse        | Following any rated load condition and with rated $V_{RRM}$ applied                 | 230                      | A                 |             |
|   |                   | Half cycle 60 Hz sine wave or 5 ms rectangular pulse        |   | <b>240</b>               |                   |             |
|   |                   | Half cycle 50 Hz sine wave or 6 ms rectangular pulse        | Following any rated load condition and with $V_{RRM}$ applied following surge = 0 V | 275                      |                   |             |
|   |                   | Half cycle 60 Hz sine wave or 5 ms rectangular pulse        |   | 285                      |                   |             |
| Maximum $I^2t$ for fusing                           | $I^2t$            | t = 10 ms   | With rated $V_{RRM}$ applied following surge, initial $T_J = 200\text{ °C}$         | 260                      | A <sup>2</sup> s  |             |
|   |                   | t = 8.3 ms  |   | 240                      |                   |             |
| Maximum $I^2t$ for individual device fusing         | $I^2t$            | t = 10 ms   | With $V_{RRM} = 0\text{ V}$ following surge, initial $T_J = 200\text{ °C}$          | 370                      |                   |             |
|   |                   | t = 8.3 ms  |   | 340                      |                   |             |
| Maximum $I^2\sqrt{t}$ for individual device fusing  | $I^2\sqrt{t}$ (1) | t = 0.1 ms to 10 ms, $V_{RRM} = 0\text{ V}$ following surge |   | 3715                     | A <sup>2</sup> √s |             |
| Maximum forward voltage drop                        | $V_{FM}$          | $I_{F(AV)} = 12\text{ A}$ (38 A peak), $T_C = 25\text{ °C}$ |   | <b>1.35</b>              | V                 |             |
| Maximum average reverse current                     | $I_{R(AV)}$ (2)   | Maximum rated $I_{F(AV)}$ and $T_C$                         |   | $V_{RRM} = 50\text{ V}$  | mA                |             |
|   |                   |   |   | $V_{RRM} = 100\text{ V}$ |                   | <b>3.0</b>  |
|   |                   |   |   | $V_{RRM} = 150\text{ V}$ |                   | <b>2.5</b>  |
|   |                   |   |   | $V_{RRM} = 200\text{ V}$ |                   | <b>2.25</b> |
|   |                   |   |   | $V_{RRM} = 300\text{ V}$ |                   | <b>2.0</b>  |
|   |                   |   |   | $V_{RRM} = 400\text{ V}$ |                   | <b>1.75</b> |
|   |                   |   |   | $V_{RRM} = 500\text{ V}$ |                   | <b>1.5</b>  |
|   |                   |   |   | $V_{RRM} = 600\text{ V}$ |                   | <b>1.25</b> |
|   |                   |   |   | $V_{RRM} = 700\text{ V}$ |                   | <b>1.0</b>  |
|   |                   |   |   | $V_{RRM} = 800\text{ V}$ |                   | <b>0.9</b>  |
|   |                   |   |   | $V_{RRM} = 900\text{ V}$ |                   | <b>0.8</b>  |
| $V_{RRM} = 1000\text{ V}$                           | <b>0.7</b>        |   |   |                          |                   |             |
|   |                   |   | <b>0.6</b>  |                          |                   |             |

**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  | $T_C, T_{Stg}$ |   | <b>- 65 to 200</b> | °C                  |
| Maximum internal thermal resistance, junction to case | $R_{thJC}$     | DC operation                                      | <b>2.0</b>         | °C/W                |
| Thermal resistance, case to sink                      | $R_{thCS}$     | 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-203AA (DO-4)    |                     |

Note

- JEDEC registered values are in bold

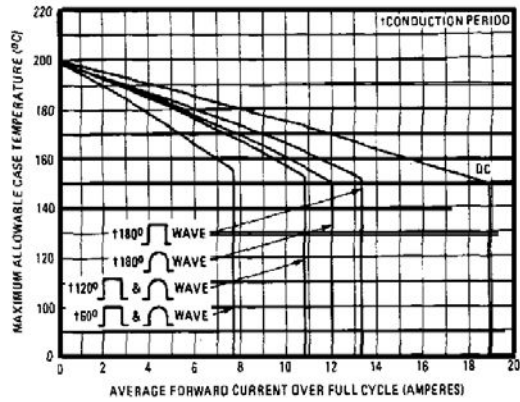


Fig. 1 - Average Forward Current vs. Maximum Allowable Case Temperature

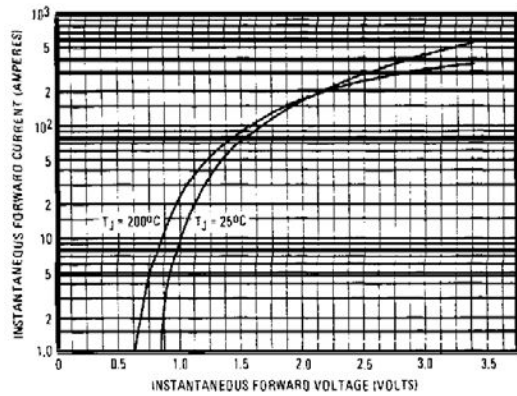


Fig. 4 - Maximum Forward Voltage vs. Forward Current

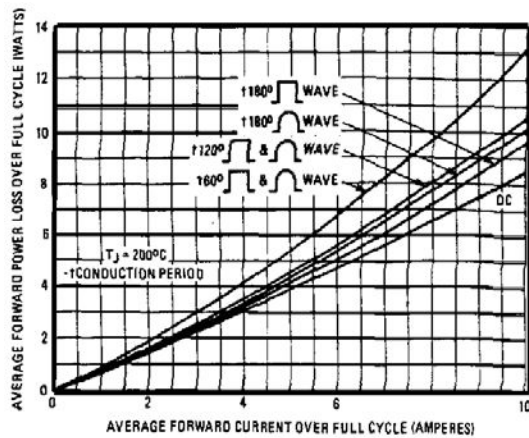


Fig. 2 - Maximum Low Level Forward Power Loss vs. Average Forward Current

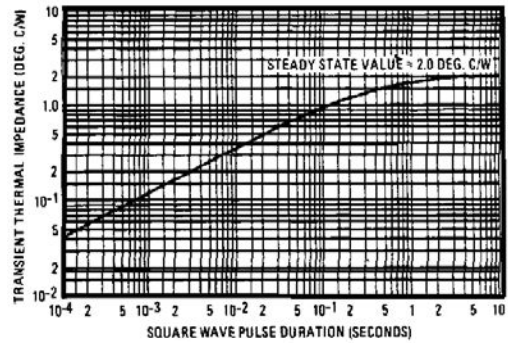


Fig. 5 - Maximum Transient Thermal Impedance, Junction to Case vs. Pulse Duration

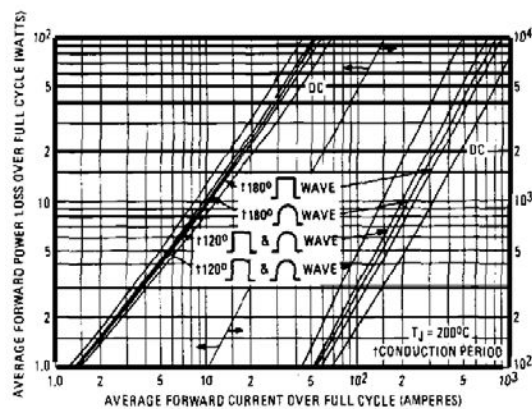


Fig. 3 - Maximum High Level Forward Power Loss vs. Average Forward Current

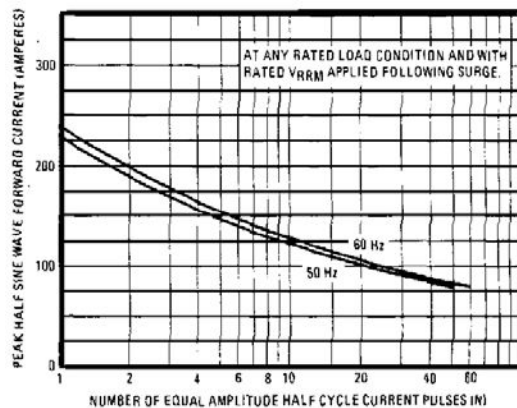


Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current vs. Number of Current Pulses

### LINKS TO RELATED DOCUMENTS

Dimensions

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

## DO-203AA (DO-4)

**DIMENSIONS** in millimeters (inches)





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