

Medium Power Silicon Rectifier Diodes, 12 A



DO-203AA (DO-4)

FEATURES

- Voltage ratings from 50 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
- RoHS compliant



PRODUCT SUMMARY

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

MAJOR RATINGS AND CHARACTERISTICS

| PARAMETER | TEST CONDITIONS | VALUES | UNITS |
|-------------|-----------------|---------------------------|------------------|
| $I_{F(AV)}$ | | 12 ⁽¹⁾ | A |
| | T_C | 150 ⁽¹⁾ | °C |
| I_{FSM} | 50 Hz | 230 | A |
| | 60 Hz | 240 ⁽¹⁾ | |
| I^2t | 50 Hz | 260 | A ² s |
| | 60 Hz | 240 | |
| T_C | | - 65 to 200 | °C |
| V_{RRM} | Range | 50 to 1000 ⁽¹⁾ | V |

Note

⁽¹⁾ JEDEC registered values

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS

| TYPE NUMBER ⁽²⁾ | V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V | $V_{R(RMS)}$, MAXIMUM RMS REVERSE VOLTAGE V | V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V | V_{RM} , MAXIMUM DIRECT REVERSE VOLTAGE V |
|----------------------------|--|---|--|--|
| | $T_C = - 65\text{ °C TO } 200\text{ °C}$ | $T_C = - 65\text{ °C TO } 200\text{ °C}$ | $T_C = - 65\text{ °C TO } 200\text{ °C}$ | $T_C = - 65\text{ °C TO } 200\text{ °C}$ |
| 1N1199A | 50 ⁽¹⁾ | 35 ⁽¹⁾ | 100 ⁽¹⁾ | 50 ⁽¹⁾ |
| 1N1200A | 100 ⁽¹⁾ | 70 ⁽¹⁾ | 200 ⁽¹⁾ | 100 ⁽¹⁾ |
| 1N1201A | 150 ⁽¹⁾ | 105 ⁽¹⁾ | 300 ⁽¹⁾ | 150 ⁽¹⁾ |
| 1N1202A | 200 ⁽¹⁾ | 140 ⁽¹⁾ | 350 ⁽¹⁾ | 200 ⁽¹⁾ |
| 1N1203A | 300 ⁽¹⁾ | 210 ⁽¹⁾ | 450 ⁽¹⁾ | 300 ⁽¹⁾ |
| 1N1204A | 400 ⁽¹⁾ | 280 ⁽¹⁾ | 600 ⁽¹⁾ | 400 ⁽¹⁾ |
| 1N1205A | 500 ⁽¹⁾ | 350 ⁽¹⁾ | 700 ⁽¹⁾ | 500 ⁽¹⁾ |
| 1N1206A | 600 ⁽¹⁾ | 420 ⁽¹⁾ | 800 ⁽¹⁾ | 600 ⁽¹⁾ |
| 1N3670A | 700 ⁽¹⁾ | 490 | 900 ⁽¹⁾ | 700 ⁽¹⁾ |
| 1N3671A | 800 ⁽¹⁾ | 560 | 1000 ⁽¹⁾ | 800 ⁽¹⁾ |
| 1N3672A | 900 ⁽¹⁾ | 630 | 1100 ⁽¹⁾ | 900 ⁽¹⁾ |
| 1N3673A | 1000 ⁽¹⁾ | 700 | 1200 ⁽¹⁾ | 1000 ⁽¹⁾ |

Notes

⁽¹⁾ JEDEC registered values

⁽²⁾ Basic part number indicates cathode to case; for anode to case, add "R" to part number, e.g., 1N1199RA

1N1...A, 1N36..A Series



Vishay High Power Products

Medium Power
Silicon Rectifier Diodes, 12 A

| FORWARD CONDUCTION | | | | | |
|---|------------------------------|--|---|---------------------|---------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum average forward current at case temperature | $I_{F(AV)}$ | 180° sinusoidal conduction | | 12 ⁽¹⁾ | A |
| | | | | 150 ⁽¹⁾ | °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 | | 240 ⁽¹⁾ | |
| | | Half cycle 50 Hz sine wave or 6 ms rectangular pulse | Following any rated load condition and with V_{RRM} applied following surge = 0 | 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 $T_J = 200$ °C | 260 | A ² s |
| | | t = 8.3 ms | | 240 | |
| Maximum I^2t for individual device fusing | I^2t | t = 10 ms | With $V_{RRM} = 0$ following surge, initial $T_J = 200$ °C | 370 | |
| | | t = 8.3 ms | | 340 | |
| Maximum $I^2\sqrt{t}$ for individual device fusing | $I^2\sqrt{t}$ ⁽²⁾ | t = 0.1 to 10 ms, $V_{RRM} = 0$ following surge | | 3715 | A ² √s |
| Maximum forward voltage drop | V_{FM} | $I_{F(AV)} = 12$ A (38 A peak), $T_C = 25$ °C | | 1.35 ⁽¹⁾ | V |
| Maximum average reverse current | $I_{R(AV)}$ ⁽³⁾ | Maximum rated $I_{F(AV)}$ and T_C | | $V_{RRM} = 50$ | 3.0 ⁽¹⁾ |
| | | | | $V_{RRM} = 100$ | 2.5 ⁽¹⁾ |
| | | | | $V_{RRM} = 150$ | 2.25 ⁽¹⁾ |
| | | | | $V_{RRM} = 200$ | 2.0 ⁽¹⁾ |
| | | | | $V_{RRM} = 300$ | 1.75 ⁽¹⁾ |
| | | | | $V_{RRM} = 400$ | 1.5 ⁽¹⁾ |
| | | | | $V_{RRM} = 500$ | 1.25 ⁽¹⁾ |
| | | | | $V_{RRM} = 600$ | 1.0 ⁽¹⁾ |
| | | | | $V_{RRM} = 700$ | 0.9 ⁽¹⁾ |
| | | | | $V_{RRM} = 800$ | 0.8 ⁽¹⁾ |
| | | | | $V_{RRM} = 900$ | 0.7 ⁽¹⁾ |
| | | | | $V_{RRM} = 1000$ | 0.6 ⁽¹⁾ |

Notes

⁽¹⁾ JEDEC registered values

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

⁽³⁾ 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} | | - 65 to 200 ⁽¹⁾ | °C |
| Maximum internal thermal resistance, junction to case | R_{thJC} | DC operation | 2.0 ⁽¹⁾ | °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 (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

⁽¹⁾ JEDEC registered values

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



Fig. 4 - Maximum Forward Voltage vs. Forward Current

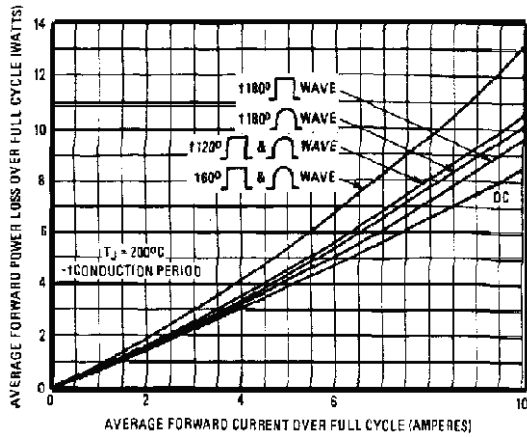


Fig. 2 - Maximum Low Level Forward Power Loss vs. Average Forward Current

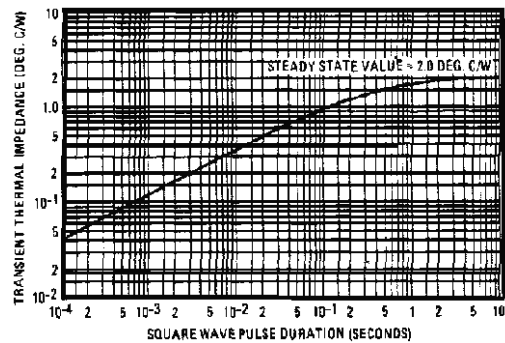


Fig. 5 - Maximum Transient Thermal Impedance, Junction to Case vs. Pulse Duration

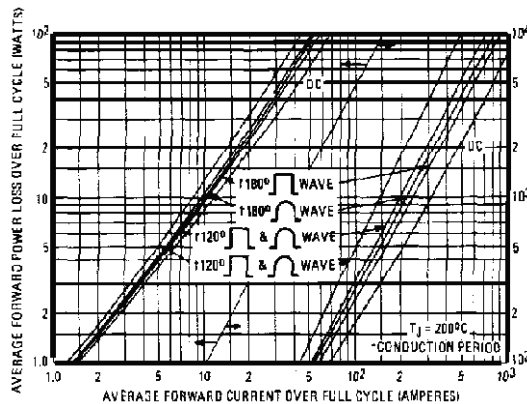


Fig. 3 - Maximum High Level Forward Power Loss vs. Average Forward Current

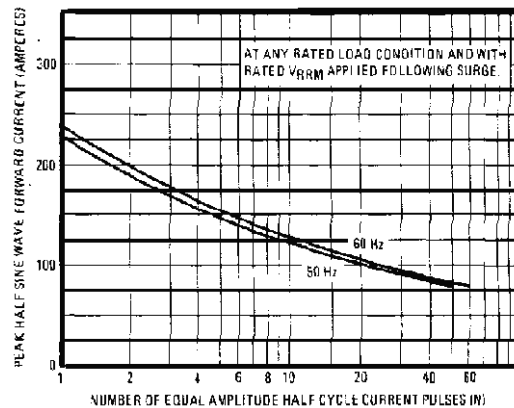


Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current vs. Number of Current Pulses

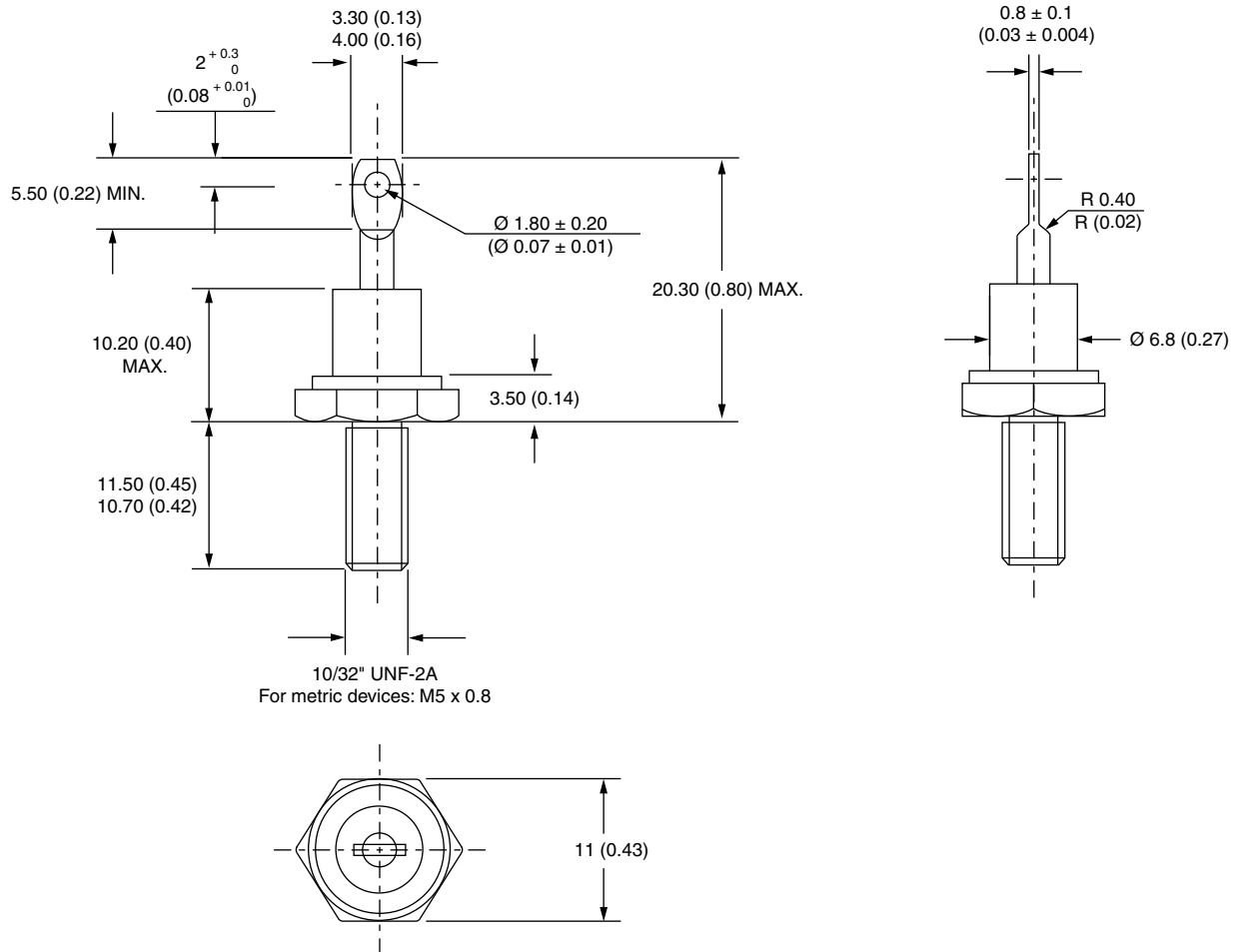
LINKS TO RELATED DOCUMENTS

Dimensions

<http://www.vishay.com/doc?95311>

DO-203AA (DO-4)

DIMENSIONS in millimeters (inches)





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