# 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

RoHS COMPLIANT

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

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

**Note**

- JEDEC registered values are in bold

## ELECTRICAL SPECIFICATIONS

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

**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., 1N1199**R**A

| FORWARD CONDUCTION | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITIONS** | | **VALUES** | **UNITS** |
| Maximum average forward current at case temperature | $I_{F(AV)}$ | 180° sinusoidal conduction | | **12** | A |
| | | | | **150** | °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** | |
| | | 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 °C | 260 | $A^2s$ |
| | | t = 8.3 ms | | 240 | |
| Maximum $I^2t$ for individual device fusing | | t = 10 ms | With $V_{RRM}$ = 0 V following surge, initial $T_J$ = 200 °C | 370 | |
| | | t = 8.3 ms | | 340 | |
| Maximum $I^2\sqrt{t}$ for individual device fusing | $I^2\sqrt{t}$ (1) | t = 0.1 ms to 10 ms, $V_{RRM}$ = 0 V following surge | | 3715 | $A^2\sqrt{s}$ |
| Maximum forward voltage drop | $V_{FM}$ | $I_{F(AV)}$ = 12 A (38 A peak), $T_C$ = 25 °C | | **1.35** | V |
| Maximum average reverse current | $I_{R(AV)}$ (2) | Maximum rated $I_{F(AV)}$ and $T_C$ | $V_{RRM}$ = 50 V | **3.0** | mA |
| | | | $V_{RRM}$ = 100 V | **2.5** | |
| | | | $V_{RRM}$ = 150 V | **2.25** | |
| | | | $V_{RRM}$ = 200 V | **2.0** | |
| | | | $V_{RRM}$ = 300 V | **1.75** | |
| | | | $V_{RRM}$ = 400 V | **1.5** | |
| | | | $V_{RRM}$ = 500 V | **1.25** | |
| | | | $V_{RRM}$ = 600 V | **1.0** | |
| | | | $V_{RRM}$ = 700 V | **0.9** | |
| | | | $V_{RRM}$ = 800 V | **0.8** | |
| | | | $V_{RRM}$ = 900 V | **0.7** | |
| | | | $V_{RRM}$ = 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 ≈ 2 x 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** | °C |
| Maximum internal thermal resistance, junction to case | | $R_{thJC}$ | DC operation | **2.0** | °C/W |
| Thermal resistance, case to sink | | $R_{thCS}$ | Mounting surface, smooth, flat and greased | 0.5 | °C/W |
| 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**

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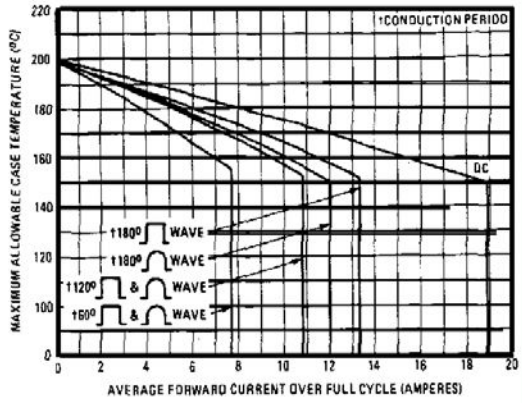



Fig. 1 - Average Forward Current vs. Maximum Allowable Case Temperature

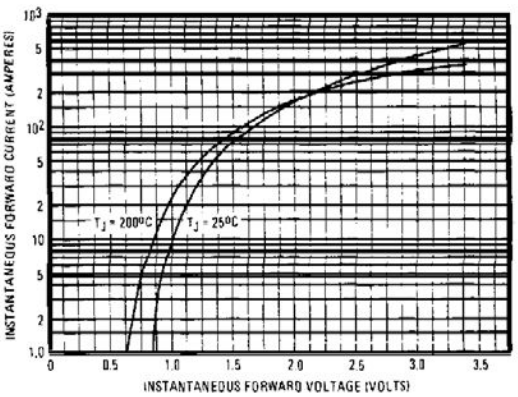



Fig. 4 - Maximum Forward Voltage vs. Forward Current

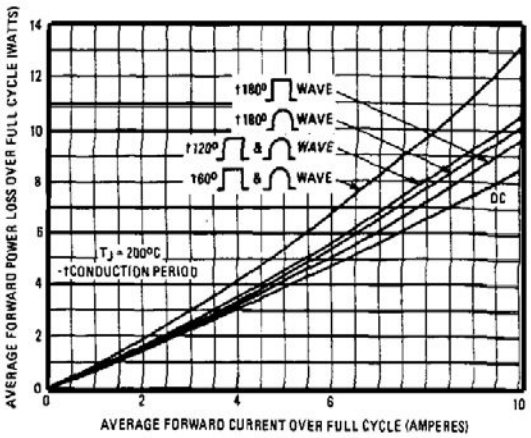



Fig. 2 - Maximum Low Level Forward Power Loss vs. Average Forward Current

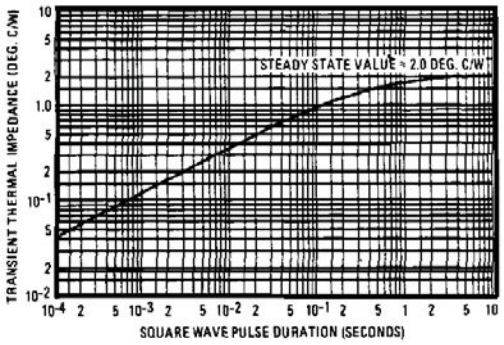



Fig. 5 - Maximum Transient Thermal Impedance, Junction to Case vs. Pulse Duration

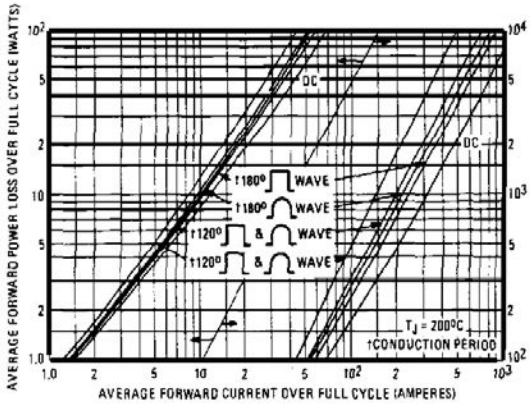



Fig. 3 - Maximum High Level Forward Power Loss vs. Average Forward Current

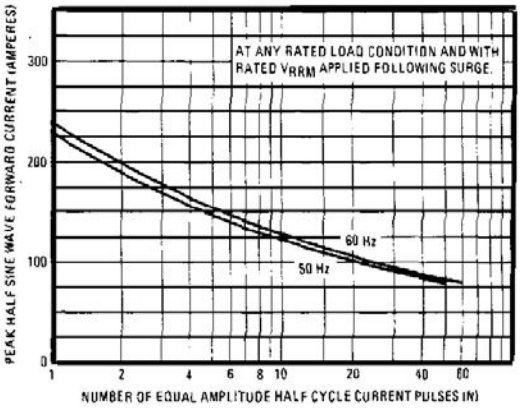
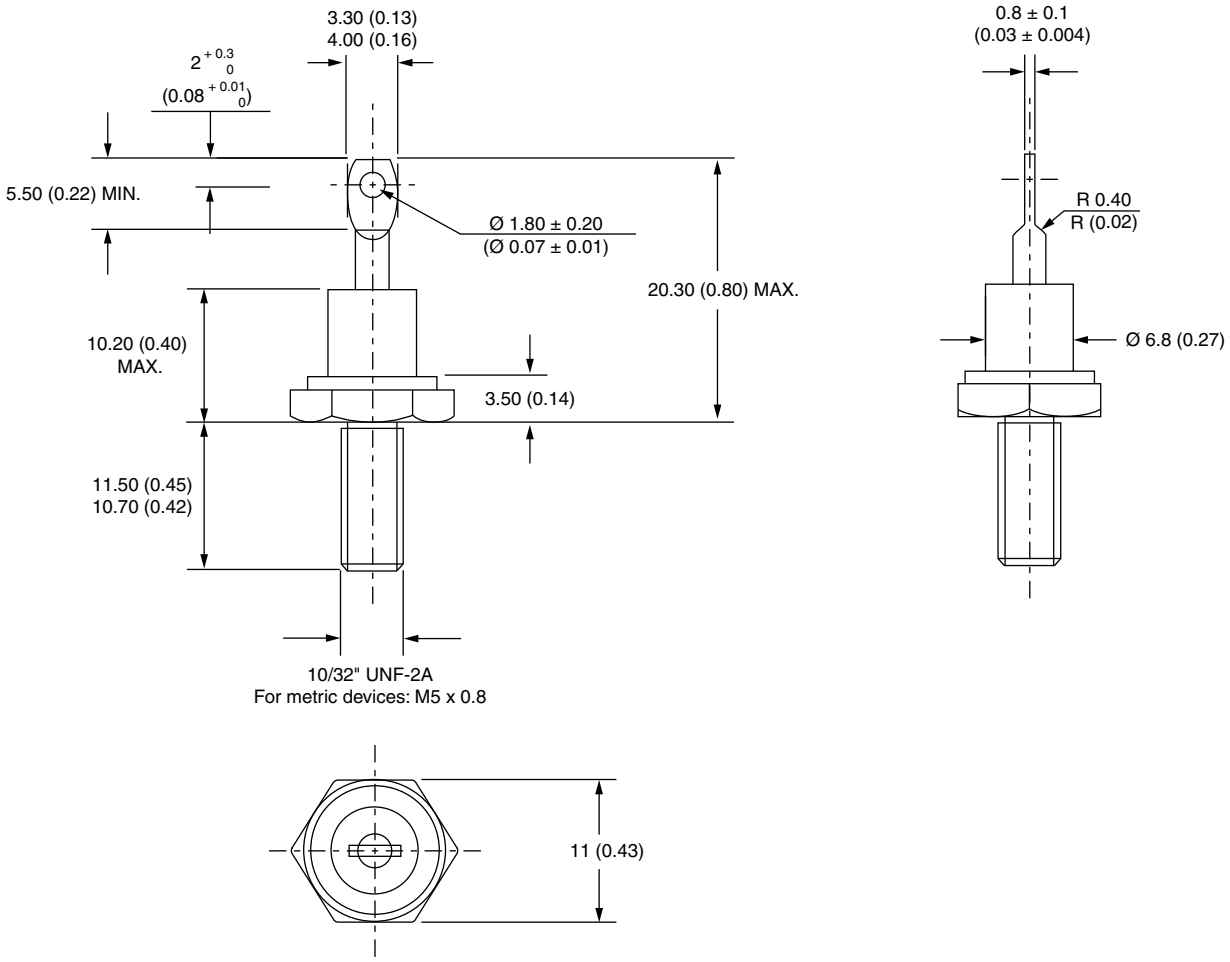



Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current vs. Number of Current Pulses

| LINKS TO RELATED DOCUMENTS | |
|---|---|
| Dimensions | www.vishay.com/doc?95311 |

# DO-203AA (DO-4)

**DIMENSIONS** in millimeters (inches)



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