

12 Amp Medium Power Silicon Rectifier Diodes

Conforms to JEDEC Outline DO-203AA (DO-4)
All Dimensions in Millimeters and (Inches)

VOLTAGE RATINGS

| Part Number ① | V_{RRM} - Max. Repetitive Peak Reverse Voltage (V) $T_C = -65^\circ\text{C to } 200^\circ\text{C}$ | $V_{R(RMS)}$ - Max. RMS Reverse Voltage (V) $T_C = -65^\circ\text{C to } 200^\circ\text{C}$ | V_{RSM} - Max. Non-Repetitive Peak Reverse Voltage (V) $T_C = 0^\circ\text{C to } 200^\circ\text{C}$ | V_R - Max. Direct Reverse Voltage (V) $T_C = -65^\circ\text{C to } 200^\circ\text{C}$ |
|---------------|--|--|--|---|
| 1N199A | 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* |

① Basic part number indicates cathode-to-case. For anode-to-case, add "R" to part number, e.g., 1N199RA.

ELECTRICAL SPECIFICATIONS

| | | 1N199A 1N3670A | Units | Conditions |
|---------------|--|--|---------------|--|
| $I_{F(AV)}$ | Max. average forward current @ T_C max. = | 12* 150* | A °C | 180° sinusoidal conduction |
| I_{FSM} | Max. peak one-cycle non-repetitive surge current | 230 240* 275 285 | A | Half cycle 50 Hz sine wave or 6 ms rectangular pulse Following any rated load condition and with rated V_{RRM} reapplied Half cycle 60 Hz sine wave or 5 ms rectangular pulse Half cycle 50 Hz sine wave or 6 ms rectangular pulse Following any rated load condition and with V_{RRM} applied following surge = 0 Half cycle 60 Hz sine wave or 5 ms rectangular pulse |
| I^2t | Max. I^2t for fusing Max. I^2t for individual device fusing | 260 240 370 340 | A^2s | $t = 10\text{ms}$ With rated V_{RRM} applied following surge, initial $T_J = 200^\circ\text{C}$ $t = 6.3\text{ms}$ $t = 10\text{ms}$ With $V_{RRM} = 0$ following surge, initial $T_J = 200^\circ\text{C}$ $t = 6.3\text{ms}$ |
| $I^2\sqrt{t}$ | Max. $I^2\sqrt{t}$ for individual device fusing ① | 3715 | $A^2\sqrt{s}$ | $t = 0.1$ to 10ms , $V_{RRM} = 0$ following surge |
| V_{FM} | Max. peak forward voltage | 1.35* | V | $I_{F(AV)} = 12\text{A}$ (38A peak), $T_C = 25^\circ\text{C}$ |
| $I_{R(AV)}$ | Max. average reverse current $V_{RRM} = 50$ = 100 = 150 = 200 = 300 | 3.0* 2.5* 2.25* 2.0* 1.75* | mA | Max. rated $I_{F(AV)}$ and T_C Note: Max. peak reverse current, I_{RM} , under same conditions $\approx 2 \times$ rated $I_{R(AV)}$. |

*JEDEC registered value.

① I^2t for time $t_x = I^2\sqrt{t} \div \sqrt{t_x}$

ELECTRICAL SPECIFICATIONS (Continued)

| | 1N1199A 1N3670A | Units | Conditions |
|--|---|-------|--|
| $I_{R(AV)}$ Max. average reverse current (Continued) $V_{RRM} = 400$ = 500 = 600 = 700 = 800 = 900 = 1000 | 1.5* 1.25* 1.0* 0.9* 0.8* 0.7* 0.6* | mA | Max. rated $I_{F(AV)}$ and T_C Note: Max. peak reverse current, I_{RM} , under same conditions $\approx 2 \times$ rated $I_{R(AV)}$. |

THERMAL-MECHANICAL SPECIFICATIONS

| | | | | |
|------------|--|-----------------|--------------|--|
| T_C | Max. operating case temperature range | -65* to 200* | °C | |
| T_{stg} | Max. storage temperature range | -65* to 200* | °C | |
| R_{thJC} | Max. internal thermal resistance, junction-to-case | 2.0* | deg. C/W | DC operation |
| R_{thCS} | Thermal resistance, case-to-sink | 0.5 | deg. C/W | Mounting surface flat, smooth, and greased. |
| T | Mounting torque | Min. | 1.36 (12) | Torque applied to nut. Non-lubricated threads. |
| | | Max. | 1.69 (15) | |
| | | Min. | 1.07 (9.45) | Torque applied to nut. Lubricated threads. |
| | | Max. | 1.30 (11.55) | |
| | | Min. | 1.17 (10.35) | Torque applied to device case. Lubricated threads. |
| | | Max. | 1.43 (12.65) | |
| wt | Approximate weight | 7.0 (0.25) | g (oz.) | |
| | Case style | DO-203AA (DO-4) | | JEDEC |

* JEDEC registered value.

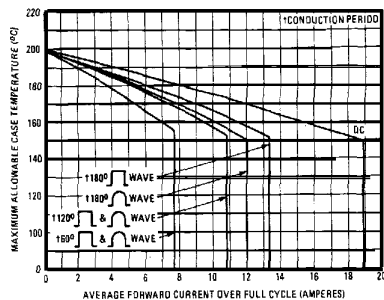


Fig. 1 - Average Forward Current Vs. Maximum Allowable Case Temperature

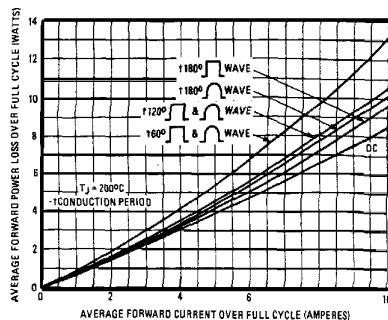


Fig. 2 - Maximum Low Level Forward Power Loss Vs. Average Forward Current

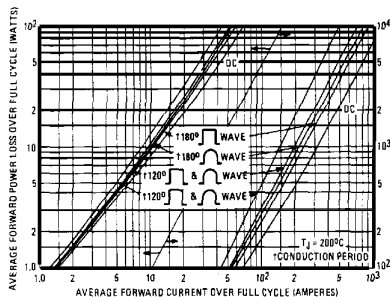


Fig. 3 - Maximum High Level Forward Power Loss Vs. Average Forward Current

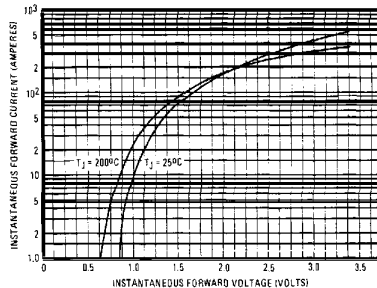


Fig. 4 - Maximum Forward Voltage Vs. Forward Current

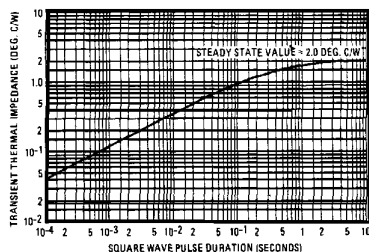


Fig. 5 - Maximum Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration

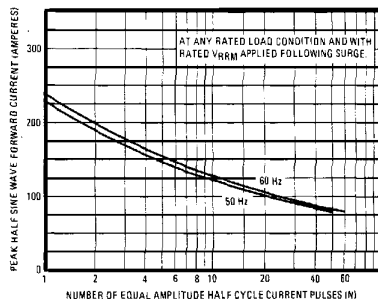


Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current Vs. Number of Current Pulses