

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


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 |
|-------------|-----------------|-------------------|------------------|
| $I_{F(AV)}$ | | 12 | A |
| | T_C | 150 | °C |
| I_{FSM} | 50 Hz | 230 | A |
| | 60 Hz | 240 | |
| I^2t | 50 Hz | 260 | A ² s |
| | 60 Hz | 240 | |
| T_J | | -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 ($T_C = -65\text{ °C TO }200\text{ °C}$) V | $V_{R(RMS)}$, MAXIMUM RMS REVERSE VOLTAGE ($T_C = -65\text{ °C TO }200\text{ °C}$) V | V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE ($T_C = -65\text{ °C TO }200\text{ °C}$) V | V_{RM} , MAXIMUM DIRECT REVERSE VOLTAGE ($T_C = -65\text{ °C TO }200\text{ °C}$) V |
|-------------|--|---|--|--|
| VS-1N1199A | 50 | 35 | 100 | 50 |
| VS-1N1200A | 100 | 70 | 200 | 100 |
| VS-1N1201A | 150 | 105 | 300 | 150 |
| VS-1N1202A | 200 | 140 | 350 | 200 |
| VS-1N1203A | 300 | 210 | 450 | 300 |
| VS-1N1204A | 400 | 280 | 600 | 400 |
| VS-1N1205A | 500 | 350 | 700 | 500 |
| VS-1N1206A | 600 | 420 | 800 | 600 |
| VS-1N3670A | 700 | 490 | 900 | 700 |
| VS-1N3671A | 800 | 560 | 1000 | 800 |
| VS-1N3672A | 900 | 630 | 1100 | 900 |
| VS-1N3673A | 1000 | 700 | 1200 | 1000 |
| VS-1N3624 | 1000 | 1200 | 1400 | 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., 1N1199RA



| 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 $T_J = 200\text{ °C}$ | 260 | A ² s |
| | | t = 8.3 ms | | 240 | |
| Maximum I^2t for individual device fusing | | 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 ² √s |
| Maximum forward voltage drop | V_{FM} | $I_{F(AV)} = 12\text{ A}$ (38 A peak), $T_C = 25\text{ °C}$ | | 1.35 | V |
| Maximum average reverse current | $I_{R(AV)}^{(2)}$ | Maximum rated $I_{F(AV)}$ and T_C | $V_{RRM} = 50\text{ V}$ | 3.0 | mA |
| | | | $V_{RRM} = 100\text{ V}$ | 2.5 | |
| | | | $V_{RRM} = 150\text{ V}$ | 2.25 | |
| | | | $V_{RRM} = 200\text{ V}$ | 2.0 | |
| | | | $V_{RRM} = 300\text{ V}$ | 1.75 | |
| | | | $V_{RRM} = 400\text{ V}$ | 1.5 | |
| | | | $V_{RRM} = 500\text{ V}$ | 1.25 | |
| | | | $V_{RRM} = 600\text{ V}$ | 1.0 | |
| | | | $V_{RRM} = 700\text{ V}$ | 0.9 | |
| | | | $V_{RRM} = 800\text{ V}$ | 0.8 | |
| | | | $V_{RRM} = 900\text{ V}$ | 0.7 | |
| $V_{RRM} = 1000\text{ V}$ | 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_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 | |
| 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-4 (DO-203AA) | |

Note

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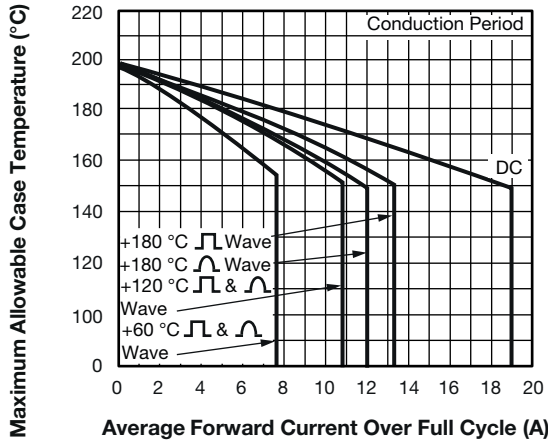


Fig. 1 - Average Forward Current vs. Maximum Allowable Case Temperature

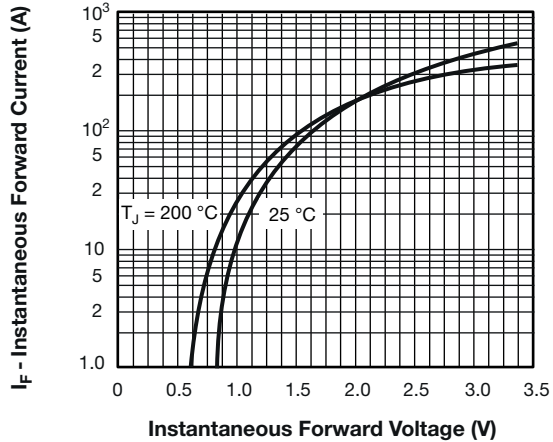


Fig. 4 - Maximum Forward Voltage vs. Forward Current

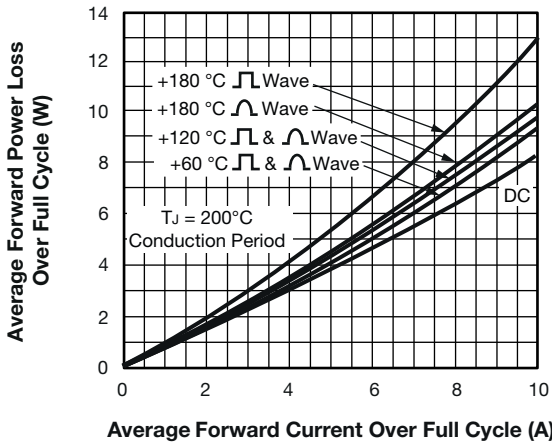


Fig. 2 - Maximum Low Level Forward Power Loss vs. Average Forward Current

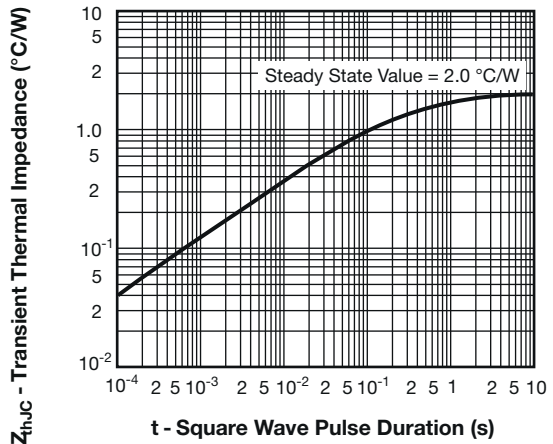


Fig. 5 - Maximum Transient Thermal Impedance, Junction to Case vs. Pulse Duration

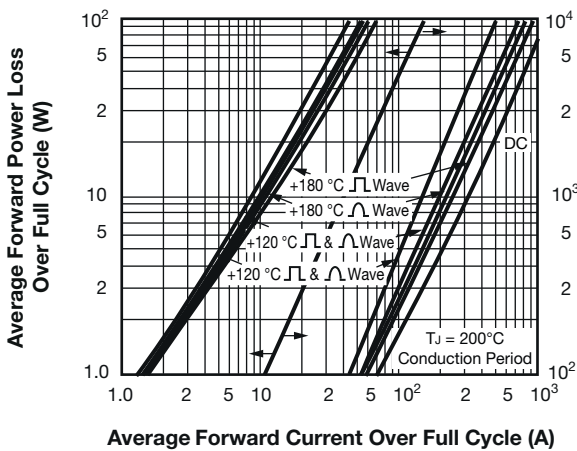


Fig. 3 - Maximum High Level Forward Power Loss vs. Average Forward Current

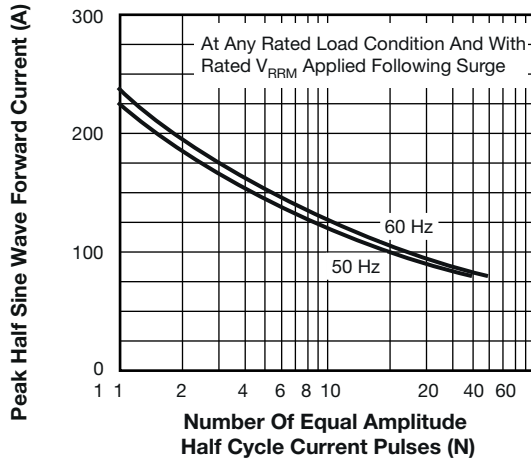


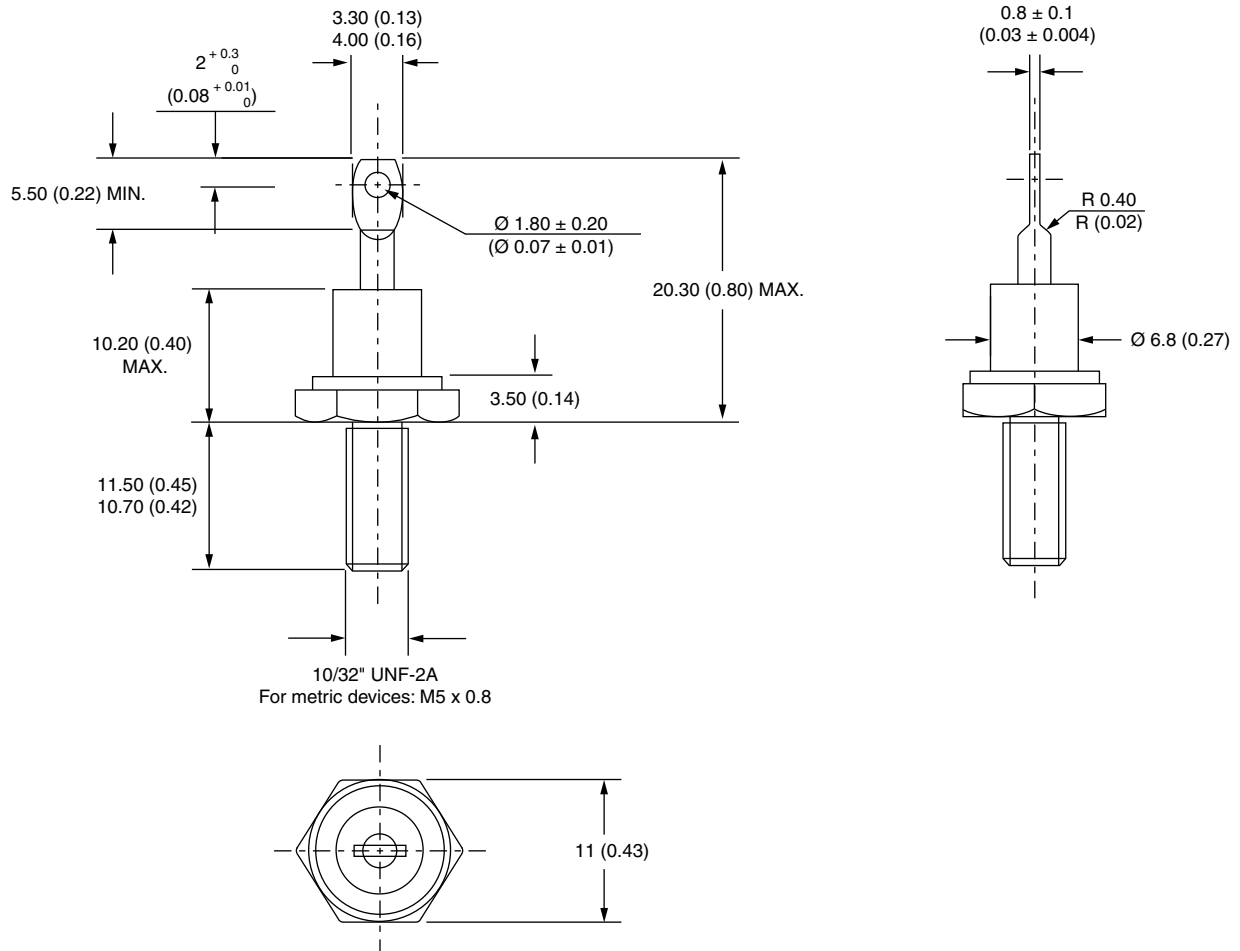
Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current vs. Number of Current Pulses

LINKS TO RELATED DOCUMENTS

| | |
|------------|--|
| Dimensions | www.vishay.com/doc?95311 |
|------------|--|

DO-203AA (DO-4)

DIMENSIONS in millimeters (inches)





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