

Standard Recovery Diodes (Stud Version), 25 A



DO-203AA (DO-4)

FEATURES

- High surge current capability
- Stud cathode and stud anode version
- Wide current range
- Types up to 1200 V V_{RRM}
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

TYPICAL APPLICATIONS

- Battery charges
- Converters
- Power supplies
- Machine tool controls

PRODUCT SUMMARY

| | |
|-----------------------|-----------------|
| $I_{F(AV)}$ | 25 A |
| Package | DO-203AA (DO-4) |
| Circuit configuration | Single diode |

MAJOR RATINGS AND CHARACTERISTICS

| PARAMETER | TEST CONDITIONS | VALUES | UNITS |
|--------------|-----------------|-------------|------------------|
| $I_{F(AV)}$ | | 25 | A |
| | T_C | 120 | °C |
| $I_{F(RMS)}$ | | 40 | A |
| I_{FSM} | 50 Hz | 356 | A |
| | 60 Hz | 373 | |
| I^2t | 50 Hz | 636 | A ² s |
| | 60 Hz | 580 | |
| V_{RRM} | Range | 100 to 1200 | V |
| T_J | | -65 to +175 | °C |

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS

| TYPE NUMBER | VOLTAGE CODE | V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V | V_{RSM} , MAXIMUM NON-REPETITIVE PEAK VOLTAGE V | I_{RRM} MAXIMUM AT $T_J = 175^\circ\text{C}$ mA |
|-------------|--------------|--|--|--|
| VS-25F(R) | 10 | 100 | 150 | 12 |
| | 20 | 200 | 275 | |
| | 40 | 400 | 500 | |
| | 60 | 600 | 725 | |
| | 80 | 800 | 950 | |
| | 100 | 1000 | 1200 | |
| | 120 | 1200 | 1400 | |



| FORWARD CONDUCTION | | | | | | |
|---|---------------------|--|----------------------------------|---|--------|-------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | | VALUES | UNITS |
| Maximum average forward current at case temperature | I _{F(AV)} | 180° conduction, half sine wave | | | 25 | A |
| | | | | | 120 | °C |
| Maximum RMS forward current | I _{F(RMS)} | | | | 40 | A |
| Maximum peak, one-cycle forward, non-repetitive surge current | I _{FSM} | t = 10 ms | No voltage reapplied | Sinusoidal half wave, initial T _J = T _J maximum | 356 | A |
| | | t = 8.3 ms | | | 373 | |
| | | t = 10 ms | 100 % V _{RRM} reapplied | | 300 | |
| | | t = 8.3 ms | | | 314 | |
| Maximum I ² t for fusing | I ² t | t = 10 ms | No voltage reapplied | | 636 | A ² s |
| | | t = 8.3 ms | | | 580 | |
| | | t = 10 ms | 100 % V _{RRM} reapplied | | 450 | |
| | | t = 8.3 ms | | | 410 | |
| Maximum I ² √t for fusing | I ² √t | t = 0.1 to 10 ms, no voltage reapplied | | | 6360 | A ² √s |
| Low level value of threshold voltage | V _{F(TO)1} | (16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J maximum | | | 0.80 | V |
| High level value of threshold voltage | V _{F(TO)2} | (I > π × I _{F(AV)}), T _J = T _J maximum | | | 0.90 | |
| Low level value of forward slope resistance | r _{f1} | (16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J maximum | | | 6.80 | mΩ |
| High level value of forward slope resistance | r _{f2} | (I > π × I _{F(AV)}), T _J = T _J maximum | | | 5.70 | |
| Maximum forward voltage drop | V _{FM} | I _{pk} = 78 A, T _J = 25 °C, t _p = 400 μs rectangular wave | | | 1.30 | V |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | |
|---|------------|---|------------------------|---------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
| Maximum junction operating temperature range | T_J | | -65 to +175 | °C |
| Maximum storage temperature range | T_{Stg} | | -65 to +200 | |
| Maximum thermal resistance, junction to case | R_{thJC} | DC operation | 1.5 | K/W |
| Maximum thermal resistance, case to heat sink | R_{thCS} | Mounting surface, smooth, flat and greased | 0.5 | |
| Allowable mounting torque | | Not lubricated threads | 1.5 + 0 - 10 % (13) | N · m (lbf · in) |
| | | Lubricated threads | 1.2 + 0 - 10 % (10) | N · m (lbf · in) |
| Approximate weight | | | 7 | g |
| | | | 0.25 | oz. |
| Case style | | See dimensions - link at the end of datasheet | DO-203AA (DO-4) | |

| ΔR_{thJC} CONDUCTION | | | | |
|------------------------------|-----------------------|------------------------|---------------------|-------|
| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION | RECTANGULAR CONDUCTION | TEST CONDITIONS | UNITS |
| 180° | 0.28 | 0.24 | $T_J = T_J$ maximum | K/W |
| 120° | 0.39 | 0.41 | | |
| 90° | 0.50 | 0.54 | | |
| 60° | 0.73 | 0.75 | | |
| 30° | 1.20 | 1.21 | | |

Note

- The table above shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

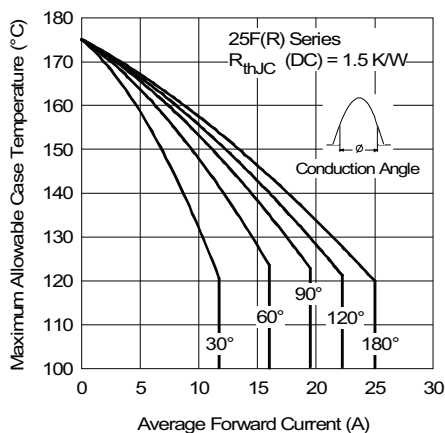


Fig. 1 - Current Ratings Characteristics

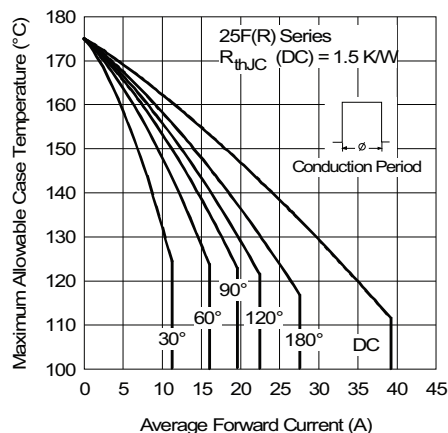


Fig. 2 - Current Ratings Characteristics

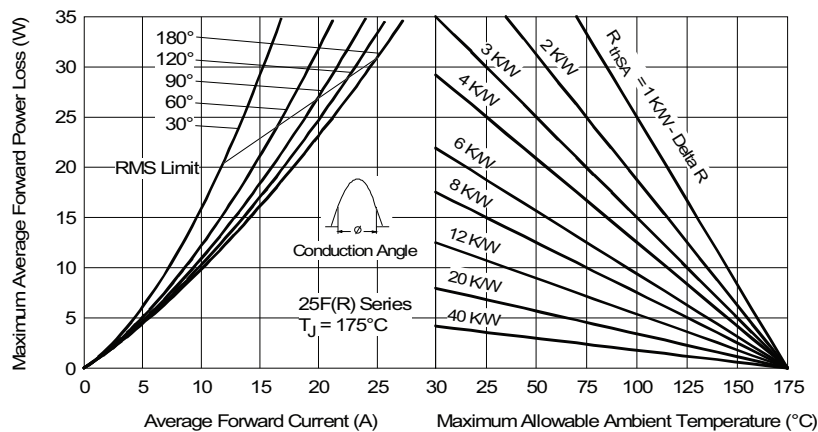


Fig. 3 - Forward Power Loss Characteristics

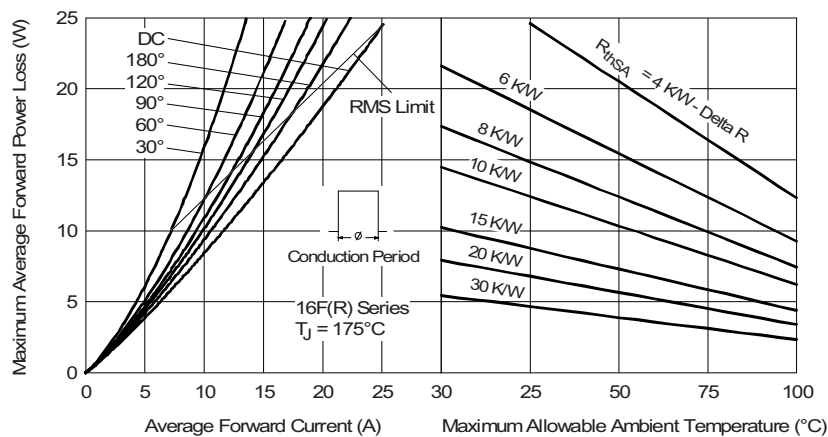


Fig. 4 - Forward Power Loss Characteristics

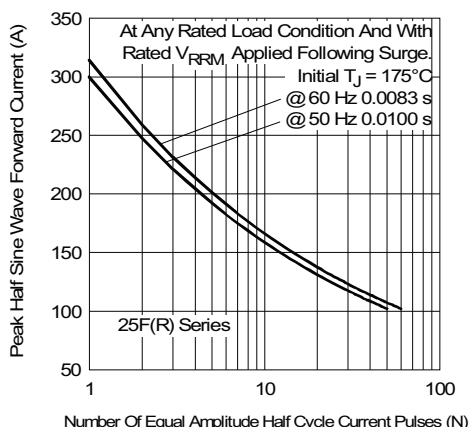


Fig. 5 - Maximum Non-Repetitive Surge Current

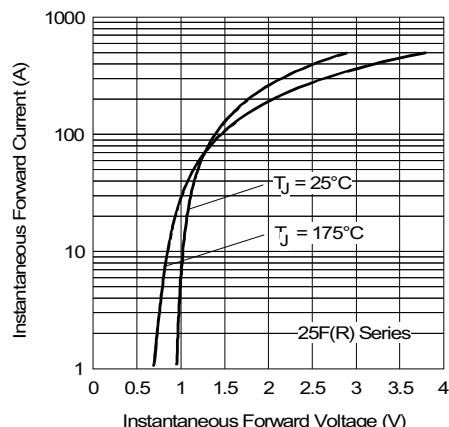


Fig. 7 - Forward Voltage Drop Characteristics

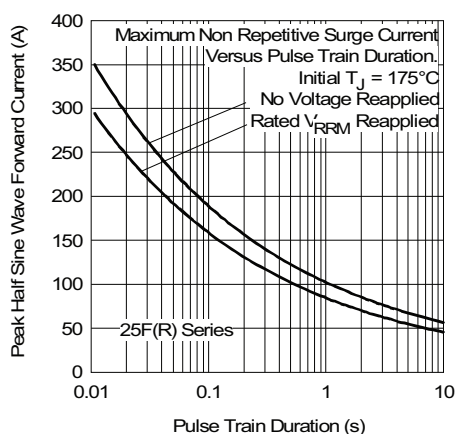


Fig. 6 - Maximum Non-Repetitive Surge Current

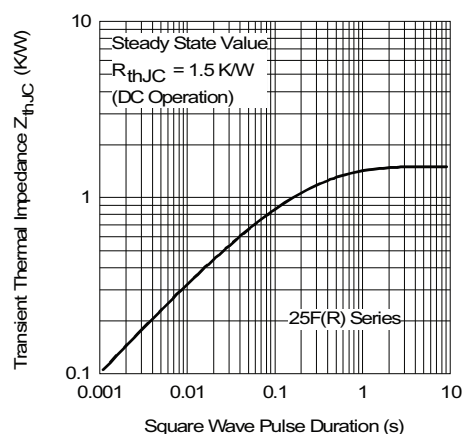


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code

| VS- | 25 | F | R | 120 | M |
|-----|----|---|---|-----|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

- 1** - Vishay Semiconductors product
- 2** - Current rating: code = $I_{F(AV)}$
- 3** - F = standard device
- 4** - None = stud normal polarity (cathode to stud)
R = stud reverse polarity (anode to stud)
- 5** - Voltage code $\times 10 = V_{RRM}$ (see Voltage Ratings table)
- 6** - None = stud base DO-203AA (DO-4) 10-32UNF-2A
M = stud base DO-203AA (DO-4) M5 X 0.8

LINKS TO RELATED DOCUMENTS

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

DIMENSIONS in millimeters (inches)





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