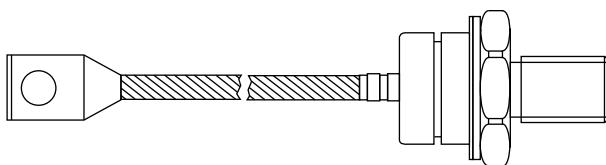


Standard Recovery Diodes (Stud Version), 200 A



DO-205AC (DO-30)

FEATURES

- Wide current range
- High voltage ratings up to 2400 V
- High surge current capabilities
- Stud cathode and stud anode version
- Standard JEDEC® types
- Compression bonded encapsulations
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



| PRODUCT SUMMARY | |
|-----------------------|------------------|
| I _{F(AV)} | 200 A |
| Package | DO-205AC (DO-30) |
| Circuit configuration | Single diode |

TYPICAL APPLICATIONS

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications

| PARAMETER | TEST CONDITIONS | VS-SD200N/R | | UNITS |
|---------------------|-----------------|--------------|------|-------------------|
| | | 1600 to 2000 | 2400 | |
| I _{F(AV)} | | 200 | | A |
| | T _C | 110 | | °C |
| I _{F(RMS)} | | 314 | | |
| I _{FSM} | 50 Hz | 4700 | | A |
| | 60 Hz | 4920 | | |
| I ² t | 50 Hz | 110 | | kA ² s |
| | 60 Hz | 101 | | |
| V _{RRM} | Range | 1600 to 2000 | 2400 | V |
| T _J | | -40 to 180 | 150 | °C |

ELECTRICAL SPECIFICATIONS

| VOLTAGE RATINGS | | | | |
|-----------------|--------------|--|--|--|
| TYPE NUMBER | VOLTAGE CODE | V _{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V | V _{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V | I _{RRM} MAXIMUM AT T _J = T _J MAXIMUM mA |
| VS-SD200N/R | 16 | 1600 | 1700 | 15 |
| | 20 | 2000 | 2100 | |
| | 24 | 2400 | 2500 | |

| FORWARD CONDUCTION | | | | | | | | | |
|---|---------------|--|---------------------------|--|--------|------------------------------|--|--|--|
| PARAMETER | SYMBOL | TEST CONDITIONS | | | VALUES | UNITS | | | |
| Maximum average forward current at case temperature | $I_{F(AV)}$ | 180° conduction, half sine wave | | | 200 | A | | | |
| Maximum average forward current at case temperature | | | | | 110 | °C | | | |
| Maximum average forward current at case temperature | | | | | 220 | A | | | |
| Maximum average forward current at case temperature | | | | | 100 | °C | | | |
| Maximum RMS forward current | $I_{F(RMS)}$ | DC at 95 °C case temperature | | | 314 | A | | | |
| Maximum peak, one-cycle forward, non-repetitive surge current | I_{FSM} | $t = 10 \text{ ms}$ | No voltage reapplied | Sinusoidal half wave, initial $T_J = T_J$ maximum | 4700 | | | | |
| | | $t = 8.3 \text{ ms}$ | | | 4920 | | | | |
| | | $t = 10 \text{ ms}$ | 100 % V_{RRM} reapplied | | 3950 | | | | |
| | | $t = 8.3 \text{ ms}$ | | | 4140 | | | | |
| Maximum I^2t for fusing | I^2t | $t = 10 \text{ ms}$ | No voltage reapplied | | 110 | kA^2s | | | |
| | | $t = 8.3 \text{ ms}$ | | | 101 | | | | |
| | | $t = 10 \text{ ms}$ | 100 % V_{RRM} reapplied | | 78 | | | | |
| | | $t = 8.3 \text{ ms}$ | | | 71 | | | | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | $t = 0.1 \text{ to } 10 \text{ ms}$, no voltage reapplied | | | 1100 | $\text{kA}^2\sqrt{\text{s}}$ | | | |
| Low level value of threshold voltage | $V_{F(TO)1}$ | $(16.7 \% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | | 0.90 | V | | | |
| High level value of threshold voltage | $V_{F(TO)2}$ | $(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | | 1.00 | | | | |
| Low level value of forward slope resistance | r_{f1} | $(16.7 \% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | | 0.79 | $\text{m}\Omega$ | | | |
| High level value of forward slope resistance | r_{f2} | $(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | | 0.64 | | | | |
| Maximum forward voltage drop | V_{FM} | $I_{pk} = 630 \text{ A}$, $T_J = T_J$ maximum, $t_p = 10 \text{ ms}$ sinusoidal wave | | | 1.40 | V | | | |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | | |
|---|------------|---|------------------|------------|-------|
| PARAMETER | SYMBOL | TEST CONDITIONS | SD200N/R | | UNITS |
| | | | 1600 to 2000 | 2400 | |
| Maximum junction operating temperature range | T_J | | -40 to 180 | -40 to 150 | °C |
| Maximum storage temperature range | T_{Stg} | | -55 to 200 | | |
| Maximum thermal resistance, junction to case | R_{thJC} | DC operation | 0.23 | | K/W |
| Maximum thermal resistance, case to heatsink | R_{thCS} | Mounting surface, smooth, flat and greased | 0.08 | | |
| Maximum allowed mounting torque $\pm 10 \text{ \%}$ | | Not-lubricated threads | 14 | | Nm |
| Approximate weight | | | 120 | | g |
| Case style | | See dimensions (link at the end of datasheet) | DO-205AC (DO-30) | | |

ΔR_{thJC} CONDUCTION

| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION | RECTANGULAR CONDUCTION | TEST CONDITIONS | UNITS |
|------------------|-----------------------|------------------------|---------------------|-------|
| 180° | 0.041 | 0.030 | $T_J = T_J$ maximum | K/W |
| 120° | 0.049 | 0.051 | | |
| 90° | 0.063 | 0.068 | | |
| 60° | 0.093 | 0.096 | | |
| 30° | 0.156 | 0.157 | | |

Note

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

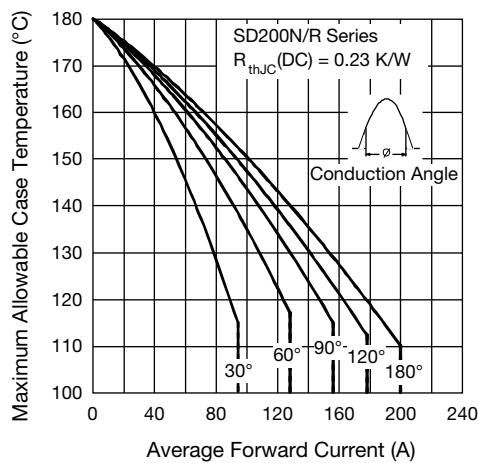


Fig. 1 - Current Ratings Characteristics

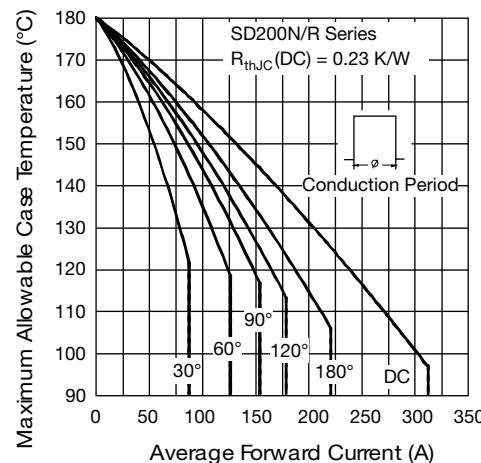


Fig. 2 - Current Ratings Characteristics

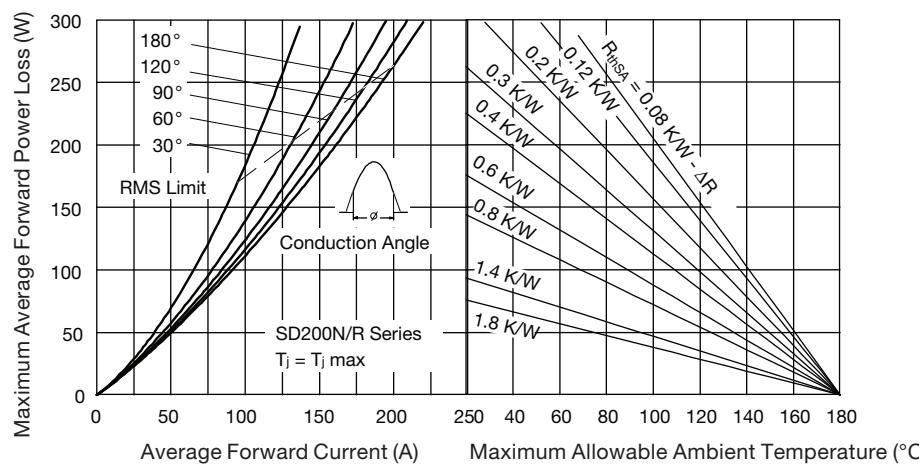


Fig. 3 - Forward Power Loss Characteristics

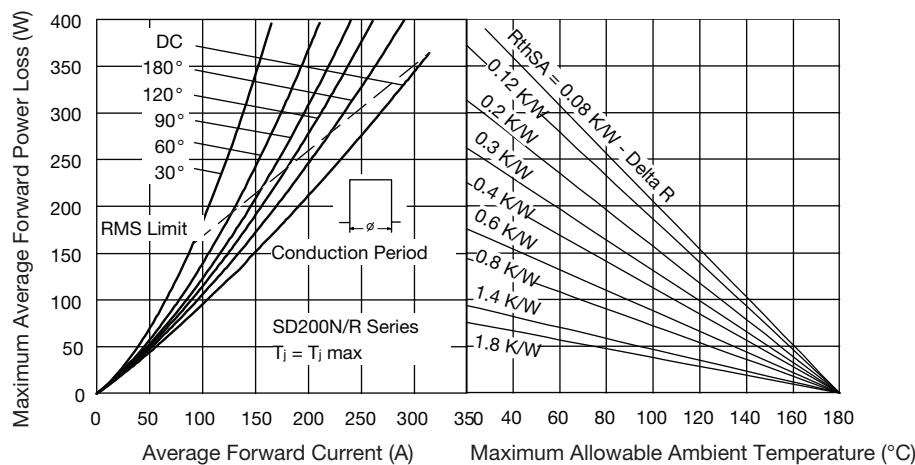


Fig. 4 - Forward Power Loss Characteristics

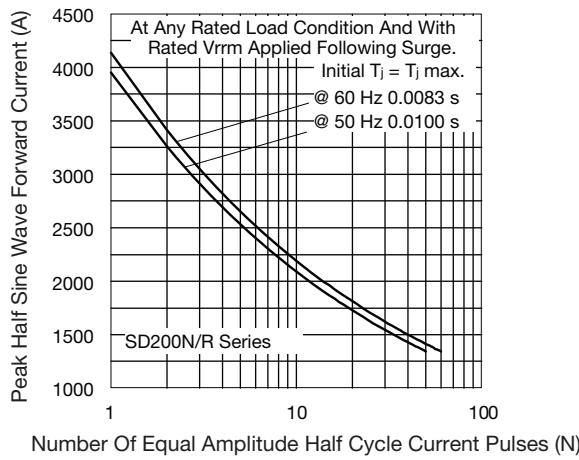


Fig. 5 - Maximum Non-Repetitive Surge Current

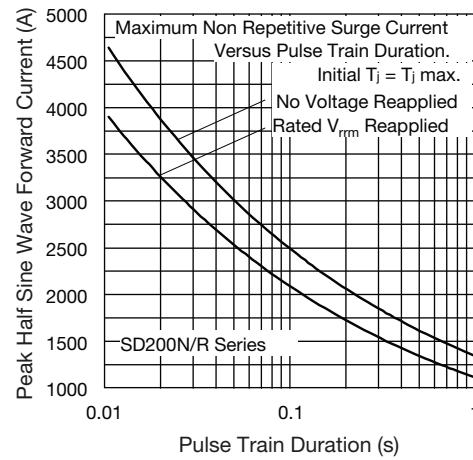


Fig. 6 - Maximum Non-Repetitive Surge Current

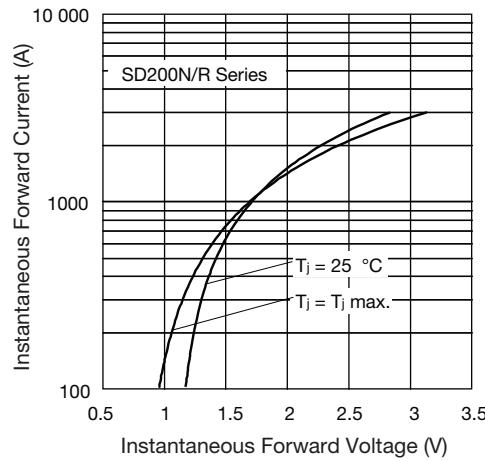


Fig. 7 - Forward Voltage Drop Characteristics

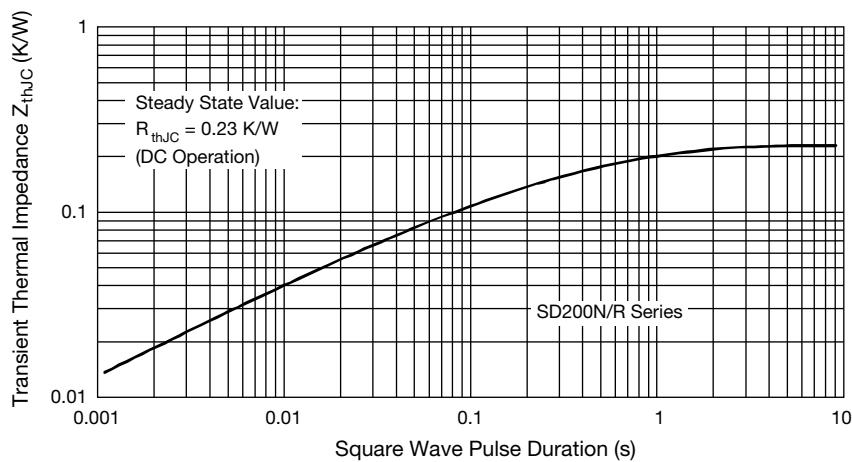


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

ORDERING INFORMATION TABLE

| | | | | | | | | |
|-------------|------------|-----------|-----------|----------|----------|-----------|----------|----------|
| Device code | VS- | SD | 20 | 0 | N | 24 | P | C |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |

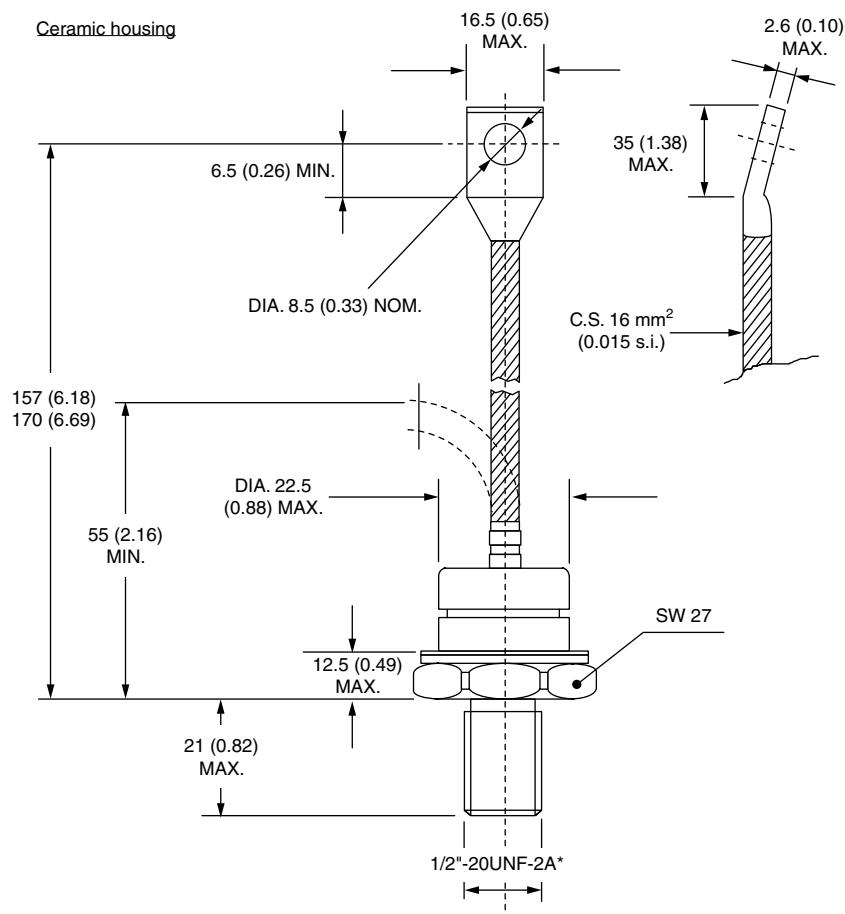
- 1** - Vishay Semiconductors product
- 2** - Diode
- 3** - Essential part number
- 4** - 0 = Standard recovery
- 5** - • N = Stud normal polarity (cathode to stud)
• R = Stud reverse polarity (anode to stud)
- 6** - Voltage code x 100 = V_{RRM} (see Voltage Ratings table)
- 7** - • P = Stud base DO-205AC (DO-30) 1/2" 20UNF-2A
• M = Stud base DO-205AC (DO-30) M12 x 1.75
- 8** - C = Ceramic housing

For metric device M12 x 1.75 contact factory

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|--|
| Dimensions | www.vishay.com/doc?95302 |

DO-205AC (DO-30)

DIMENSIONS in millimeters (inches)



*For metric device: M12 x 1.75
contact factory

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