



Standard Recovery Diodes (Hockey PUK Version), 3000 A



DO-200AC (K-PUK)

FEATURES

- Wide current range
- High voltage ratings up to 2500 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style DO-200AC (K-PUK)
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

| PRODUCT SUMMARY | |
|-----------------------|------------------|
| $I_{F(AV)}$ | 3000 A |
| Package | DO-200AC (K-PUK) |
| Circuit configuration | Single diode |

| MAJOR RATINGS AND CHARACTERISTICS | | | |
|-----------------------------------|-----------------|--------------|-------------------|
| PARAMETER | TEST CONDITIONS | VALUES | UNITS |
| $I_{F(AV)}$ | | 3000 | A |
| | T_{hs} | 55 | °C |
| $I_{F(RMS)}$ | | 5000 | A |
| | T_{hs} | 25 | °C |
| I_{FSM} | 50 Hz | 31 000 | A |
| | 60 Hz | 32 460 | |
| I^2t | 50 Hz | 4810 | kA ² s |
| | 60 Hz | 4390 | |
| V_{RRM} | Range | 1200 to 2500 | V |
| T_J | | -40 to 180 | °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 $T_J = 180$ °C mA |
| VS-SD2500C..K | 12 | 1200 | 1300 | 75 |
| | 16 | 1600 | 1700 | |
| | 20 | 2000 | 2100 | |
| | 25 | 2500 | 2600 | |



| FORWARD CONDUCTION | | | | | |
|---|---------------|--|---------------------------|---|--------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum average forward current at heatsink temperature | $I_{F(AV)}$ | 180° conduction, half sine wave Double side (single side) cooled | | 3000 (1550) | A |
| | | | | 55 (85) | °C |
| Maximum RMS forward current | $I_{F(RMS)}$ | 25 °C heatsink temperature double side cooled | | 5000 | |
| 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 | A |
| | | t = 8.3 ms | | | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | | |
| | | t = 8.3 ms | | | |
| Maximum I^2t for fusing | I^2t | t = 10 ms | No voltage reapplied | | kA ² s |
| | | t = 8.3 ms | | | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | | |
| | | t = 8.3 ms | | | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 to 10 ms, no voltage reapplied | | 48 100 | kA ² √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 | | 0.76 | V |
| High level value of threshold voltage | $V_{F(TO)2}$ | $(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | 0.97 | |
| 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 | | 0.16 | mW |
| High level value of forward slope resistance | r_{f2} | $(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | 0.13 | |
| Maximum forward voltage drop | V_{FM} | $I_{pk} = 4000$ A, $T_J = T_J$ maximum $t_p = 10$ ms sinusoidal wave | | 1.41 | V |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | | |
|--|--------------|---|--|------------------|--------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum junction operating temperature range | T_J | | | -40 to 180 | °C |
| Maximum storage temperature range | T_{Stg} | | | -55 to 200 | |
| Maximum thermal resistance, junction to heatsink | R_{thJ-hs} | DC operation single side cooled | | 0.042 | K/W |
| | | DC operation double side cooled | | 0.020 | |
| Mounting force, ± 10 % | | | | 22 250 (2250) | N (kg) |
| Approximate weight | | | | 425 | g |
| Case style | | See dimensions - link at the end of datasheet | | DO-200AC (K-PUK) | |

| ΔR_{thJ-hs} CONDUCTION | | | | | | |
|--------------------------------|-----------------------|-------------|------------------------|-------------|---------------------|-------|
| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION | | RECTANGULAR CONDUCTION | | TEST CONDITIONS | UNITS |
| | SINGLE SIDE | DOUBLE SIDE | SINGLE SIDE | DOUBLE SIDE | | |
| 180° | 0.002 | 0.002 | 0.001 | 0.001 | $T_J = T_J$ maximum | K/W |
| 120° | 0.002 | 0.002 | 0.002 | 0.002 | | |
| 90° | 0.003 | 0.003 | 0.003 | 0.003 | | |
| 60° | 0.004 | 0.004 | 0.004 | 0.004 | | |
| 30° | 0.007 | 0.007 | 0.007 | 0.007 | | |

Note

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

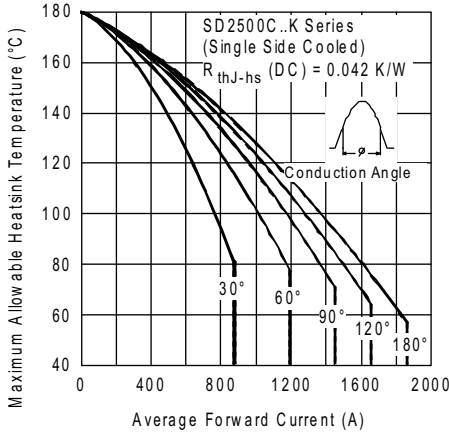


Fig. 1 - Current Ratings Characteristics

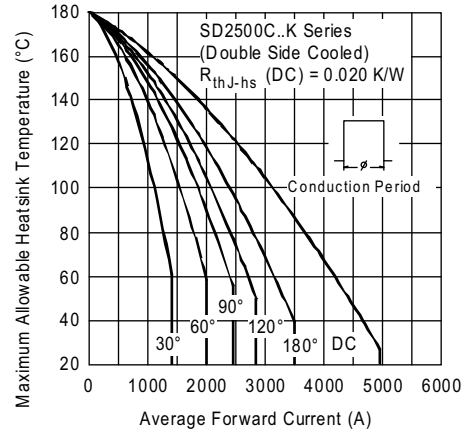


Fig. 4 - Current Ratings Characteristics

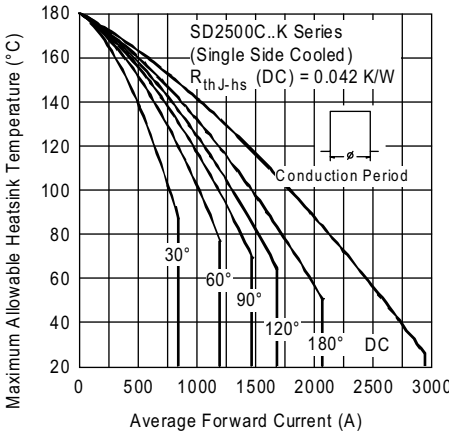


Fig. 2 - Current Ratings Characteristics

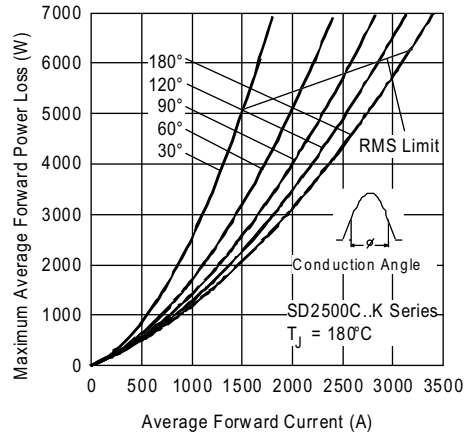


Fig. 5 - Forward Power Loss Characteristics

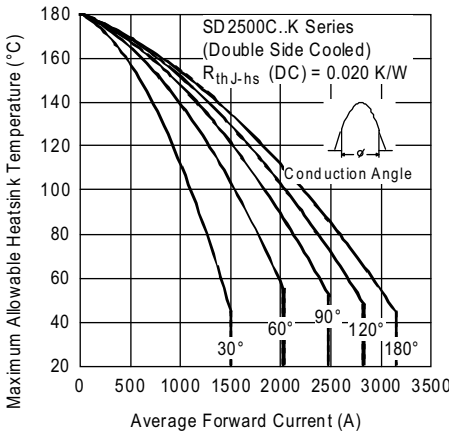


Fig. 3 - Current Ratings Characteristics

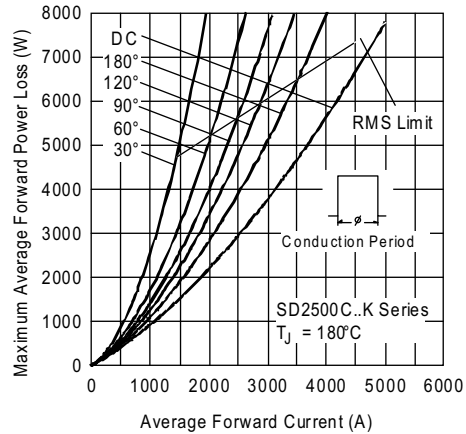


Fig. 6 - Forward Power Loss Characteristics

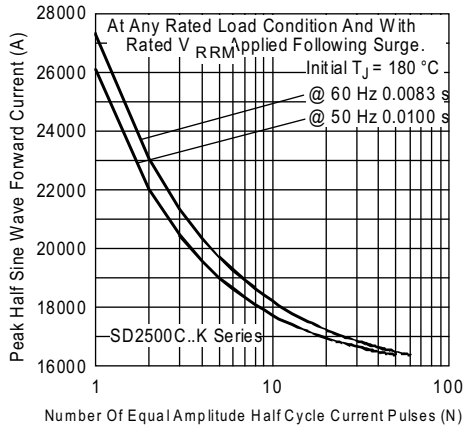


Fig. 7 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

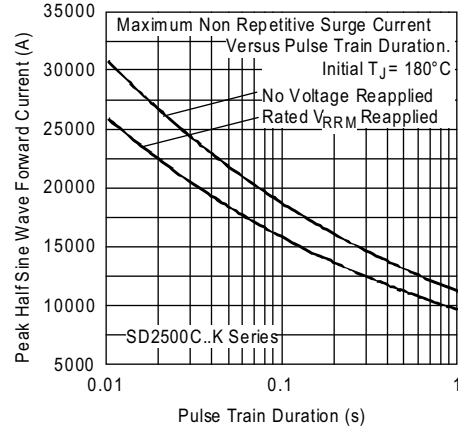


Fig. 8 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

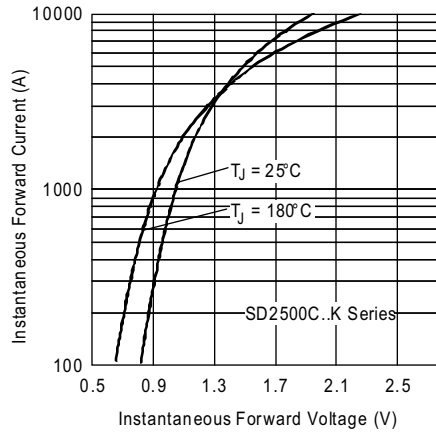


Fig. 9 - Forward Voltage Drop Characteristics

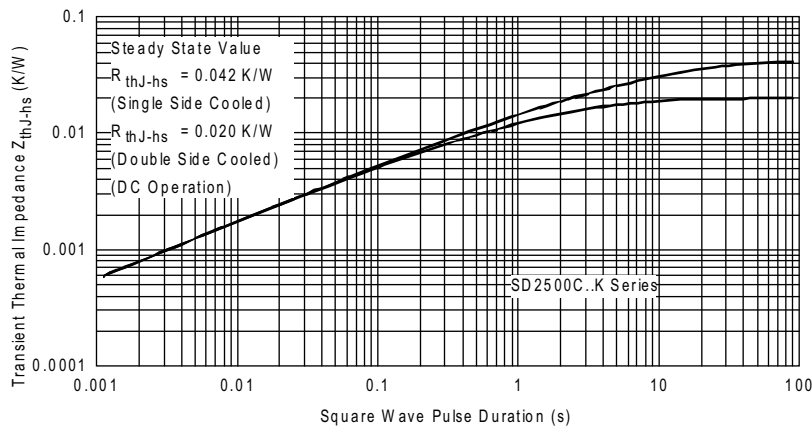
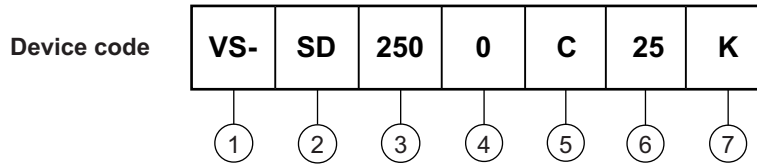


Fig. 10 - Thermal Impedance Z_{thJ-hs} Characteristics



ORDERING INFORMATION TABLE

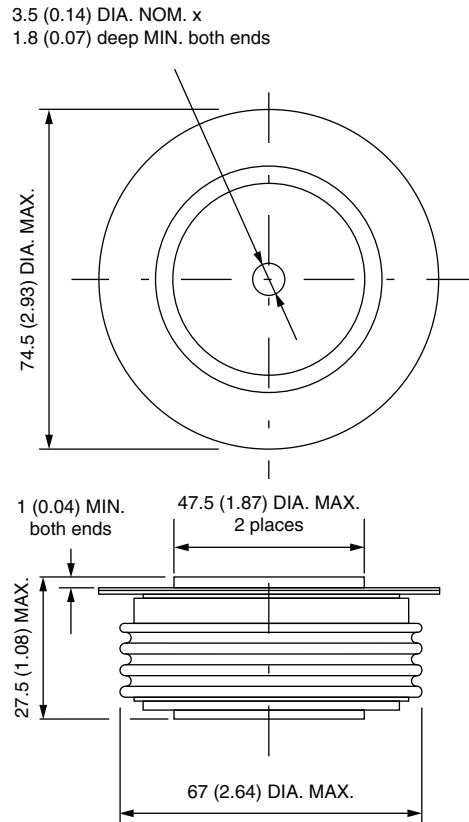


- 1** - Vishay Semiconductors product
- 2** - Diode
- 3** - Essential part number
- 4** - 0 = Standard recovery
- 5** - C = Ceramic PUK
- 6** - Voltage code x 100 = V_{RRM} (see Voltage Ratings table)
- 7** - K = PUK case DO-200AC (K-PUK)

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|--|
| Dimensions | www.vishay.com/doc?95247 |

DO-200AC (K-PUK)

DIMENSIONS in millimeters (inches)



Quote between upper and lower pole pieces has to be considered after application of mounting force (see Thermal and Mechanical Specifications)



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