# Standard Recovery Diodes (Hockey PUK Version), 1600 A

DO-200AB (B-PUK)

## FEATURES

- Wide current range
- High voltage ratings up to 3000 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style DO-200AB (B-PUK)
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free

RoHS COMPLIANT

## TYPICAL APPLICATIONS

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

| PRODUCT SUMMARY | |
|---|---|
| $I_{T(AV)}$ | 1600 A |
| Package | DO-200AB (B-PUK) |
| Circuit configuration | Single diode |

| MAJOR RATINGS AND CHARACTERISTICS | | | |
|---|---|---|---|
| PARAMETER | TEST CONDITIONS | VALUES | UNITS |
| $I_{F(AV)}$ | | 1600 | A |
| | $T_{hs}$ | 55 | °C |
| $I_{F(RMS)}$ | | 3010 | A |
| | $T_{hs}$ | 25 | °C |
| $I_{FSM}$ | 50 Hz | 16 600 | A |
| | 60 Hz | 17 400 | |
| $I^2t$ | 50 Hz | 1386 | $kA^2s$ |
| | 60 Hz | 1265 | |
| $V_{RRM}$ | Range | 400 to 3000 | 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 $T_J = T_J$ MAXIMUM mA |
| VS-SD1500C..L | 04 | 400 | 500 | 50 |
| | 08 | 800 | 900 | |
| | 12 | 1200 | 1300 | |
| | 16 | 1600 | 1700 | |
| | 20 | 2000 | 2100 | |
| | 25 | 2500 | 2600 | |
| | 30 | 3000 | 3100 | |



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| 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 | | | 1600 (820) | A |
| | | | | | 55 (85) | °C |
| Maximum RMS forward current | $I_{F(RMS)}$ | 25 °C heatsink temperature double side cooled | | | 3010 | A |
| Maximum peak, one cycle, non-repetitive surge current | $I_{FSM}$ | t = 10 ms | No voltage reapplied | Sinusoidal half wave, initial $T_J = T_J$ maximum | 16 600 | A |
| | | t = 8.3 ms | | | 17 400 | |
| | | t = 10 ms | 100 % $V_{RRM}$ reapplied | | 14 000 | |
| | | t = 8.3 ms | | | 14 700 | |
| Maximum $I^2t$ for fusing | $I^2t$ | t = 10 ms | No voltage reapplied | | 1386 | $kA^2s$ |
| | | t = 8.3 ms | | | 1265 | |
| | | t = 10 ms | 100 % $V_{RRM}$ reapplied | | 980 | |
| | | t = 8.3 ms | | | 895 | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 to 10 ms, no voltage reapplied | | | 13 860 | $kA^2\sqrt{s}$ |
| Low level value of threshold voltage | $V_{F(TO)1}$ | (16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum | | | 0.83 | V |
| High level value of threshold voltage | $V_{F(TO)2}$ | (I > π x $I_{F(AV)}$), $T_J = T_J$ maximum | | | 0.95 | |
| Low level value of forward slope resistance | $r_{f1}$ | (16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum | | | 0.27 | mΩ |
| High level value of forward slope resistance | $r_{f2}$ | (I > π x $I_{F(AV)}$), $T_J = T_J$ maximum | | | 0.25 | |
| Maximum forward voltage drop | $V_{FM}$ | $I_{pk}$ = 3000 A $T_J = T_J$ maximum, $t_p$ = 10 ms sinusoidal wave | | | 1.64 | 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 | 0.073 | K/W |
| | | DC operation double side cooled | 0.031 | |
| Mounting force, ± 10 % | | | 14 700 (1500) | N (kg) |
| Approximate weight | | | 255 | g |
| Case style | | See dimensions - link at the end of datasheet | DO-200AB (B-PUK) | |

| $\Delta R_{thJ-hs}$ CONDUCTION | | | | | | |
|---|---|---|---|---|---|---|
| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION | | RECTANGULAR CONDUCTION | | TEST CONDITIONS | UNITS |
| | Single Side | Double Side | Single Side | Double Side | | |
| 180° | 0.009 | 0.009 | 0.006 | 0.006 | $T_J = T_J$ maximum | K/W |
| 120° | 0.011 | 0.011 | 0.011 | 0.011 | | |
| 90° | 0.014 | 0.014 | 0.015 | 0.015 | | |
| 60° | 0.020 | 0.020 | 0.021 | 0.021 | | |
| 30° | 0.035 | 0.035 | 0.036 | 0.036 | | |

**Note**

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



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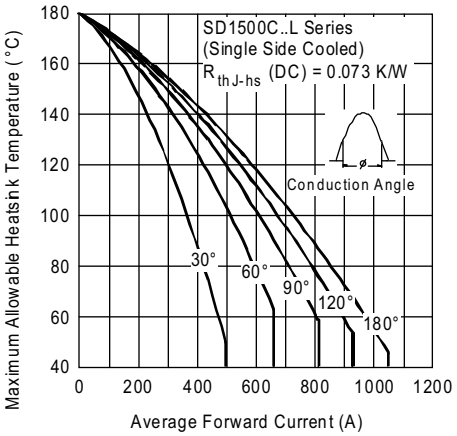


Fig. 1 - Current Ratings Characteristics

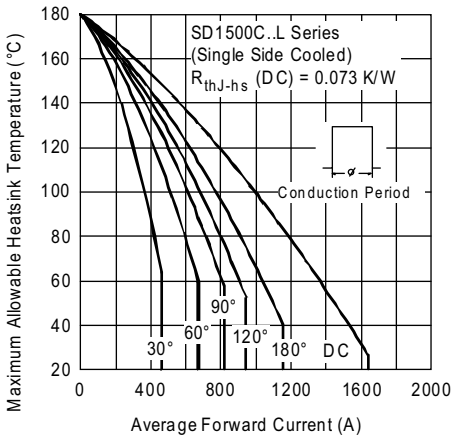


Fig. 2 - Current Ratings Characteristics

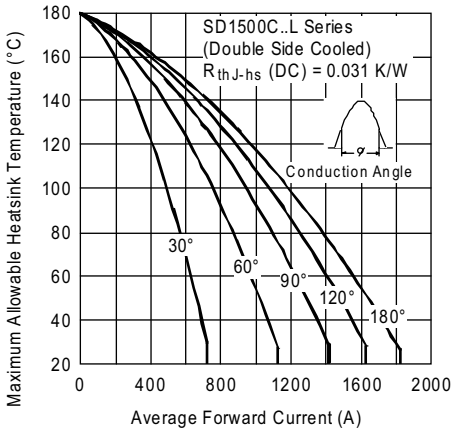


Fig. 3 - Current Ratings Characteristics

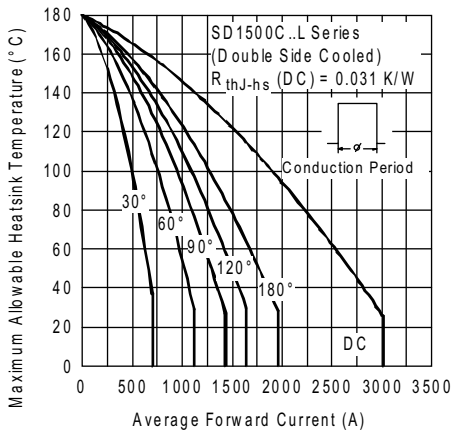


Fig. 4 - Current Ratings Characteristics

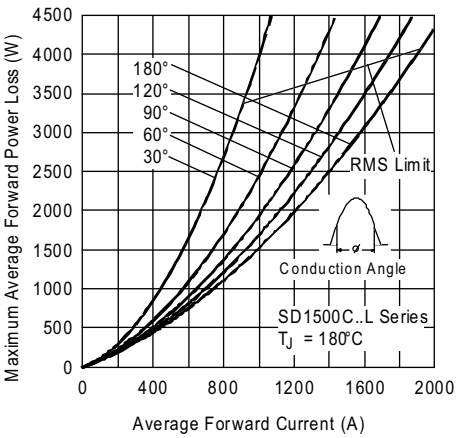


Fig. 5 - Forward Power Loss Characteristics

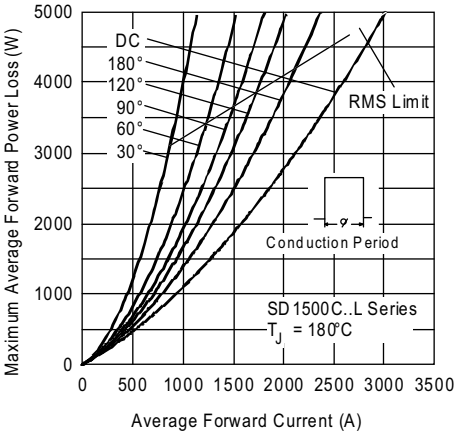


Fig. 6 - Forward Power Loss Characteristics


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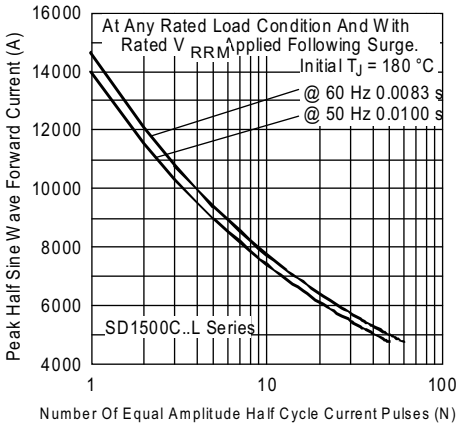


Fig. 7 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

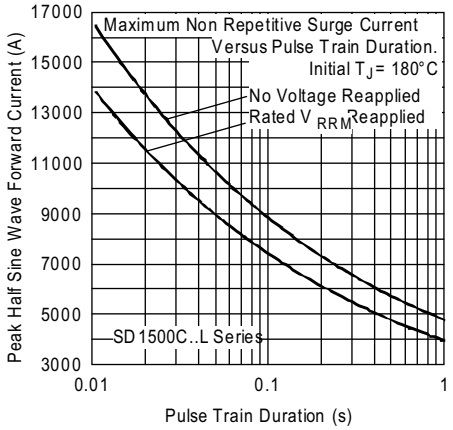


Fig. 8 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

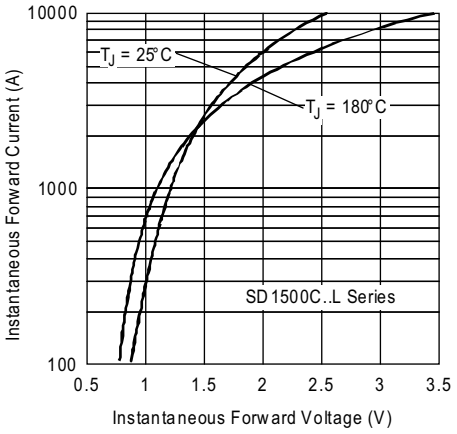


Fig. 9 - Forward Voltage Drop Characteristics

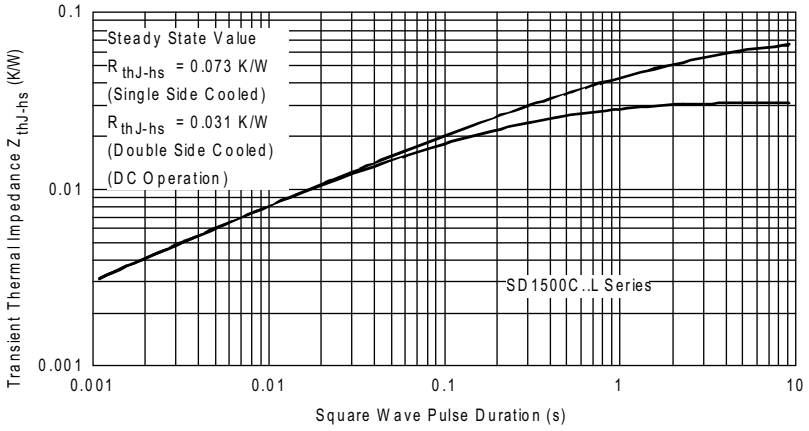


Fig. 10 - Thermal Impedance $Z_{thJC}$ Characteristics


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## ORDERING INFORMATION TABLE

Device code

| VS- | SD | 150 | 0 | C | 30 | L |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- 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 - L = PUK case DO-200AB (B-PUK)

| LINKS TO RELATED DOCUMENTS | |
|---|---|
| Dimensions | www.vishay.com/doc?95246 |


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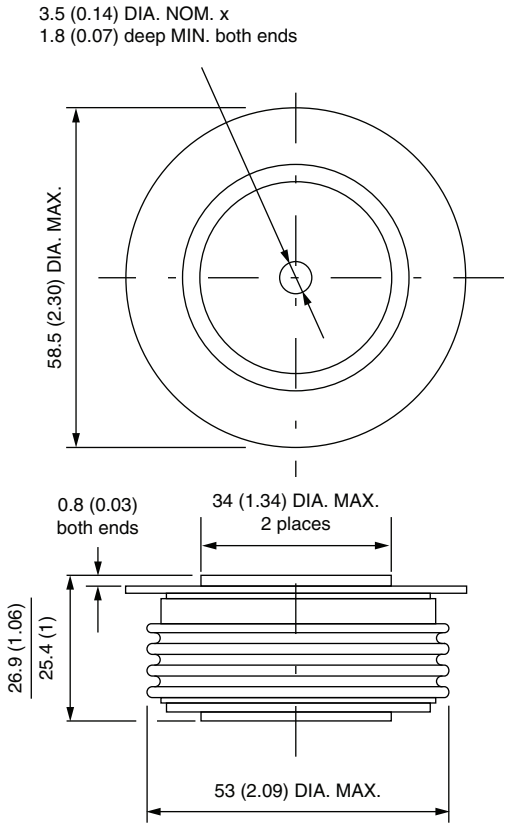
# DO-200AB (B-PUK)

**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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