

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



B-PUK (DO-200AB)

FEATURES

- Wide current range
- High voltage ratings up to 3000 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style B-PUK (DO-200AB)
- 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

PRIMARY CHARACTERISTICS

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

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 ² s |
| | 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 | |



| 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 | 16 600 | |
| | | t = 8.3 ms | No voltage reapplied | 17 400 | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | 14 000 | |
| | | t = 8.3 ms | 100 % V_{RRM} reapplied | 14 700 | |
| Maximum I^2t for fusing | I^2t | t = 10 ms | No voltage reapplied | 1386 | kA ² s |
| | | t = 8.3 ms | No voltage reapplied | 1265 | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | 980 | |
| | | t = 8.3 ms | 100 % V_{RRM} reapplied | 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 √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 | | 0.83 | V |
| High level value of threshold voltage | $V_{F(TO)2}$ | (I > $\pi \times I_{F(AV)}$), $T_J = T_J$ maximum | | 0.95 | |
| 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 | | 0.27 | mΩ |
| High level value of forward slope resistance | r_{f2} | (I > $\pi \times I_{F(AV)}$), $T_J = T_J$ 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 | | B-PUK (DO-200AB) | |

| ΔR_{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



Fig. 1 - Current Ratings Characteristics

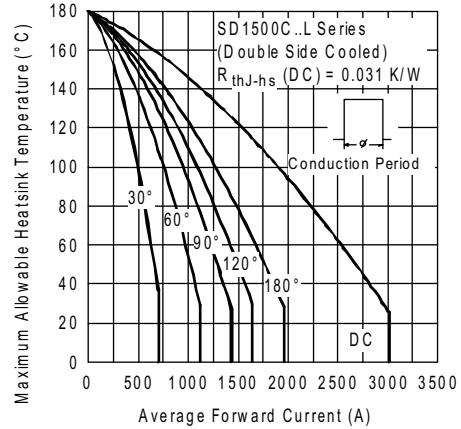


Fig. 4 - Current Ratings Characteristics

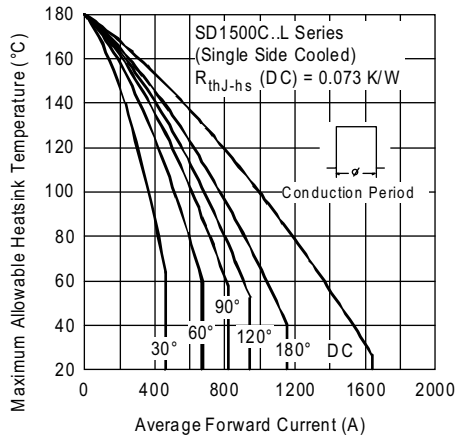


Fig. 2 - Current Ratings Characteristics

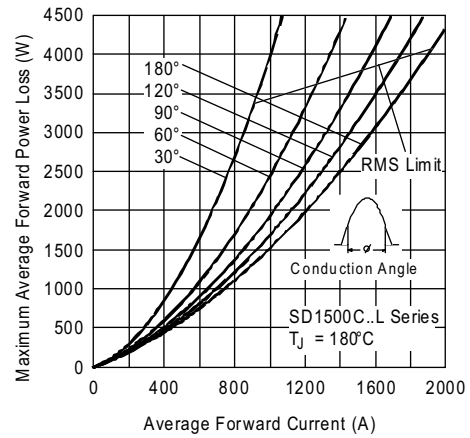


Fig. 5 - Forward Power Loss Characteristics

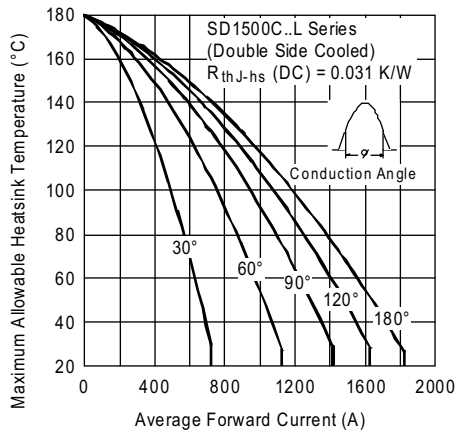


Fig. 3 - Current Ratings Characteristics

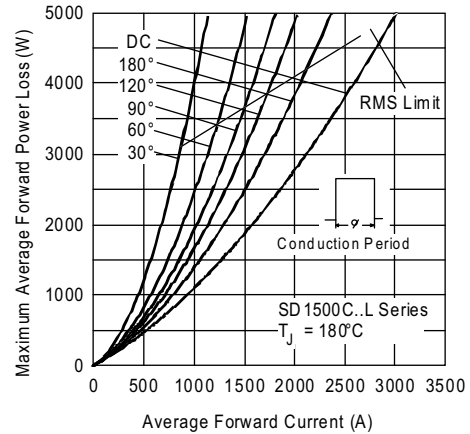


Fig. 6 - Forward Power Loss Characteristics

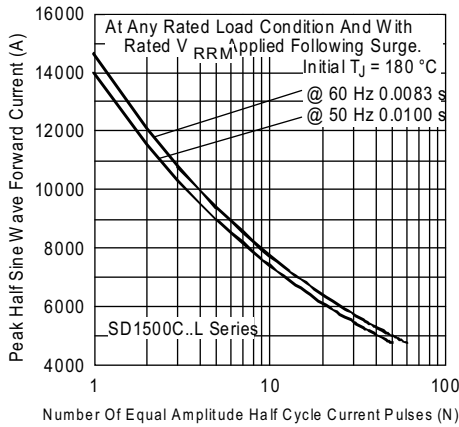


Fig. 7 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

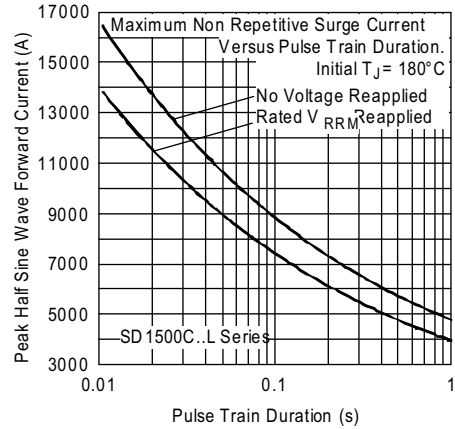


Fig. 8 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

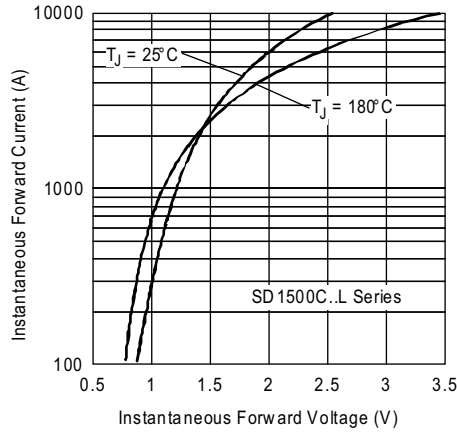


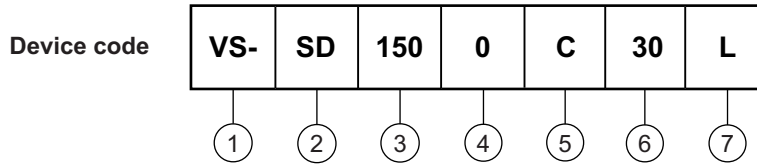
Fig. 9 - Forward Voltage Drop Characteristics



Fig. 10 - Thermal Impedance Z_{thJC} 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** - L = PUK case B-PUK (DO-200AB)

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



B-PUK (DO-200AB)

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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