VS-SD2000C..L Series

Vishay Semiconductors

Standard Recovery Diodes, (Hockey PUK Version), 2100 A



B-PUK (DO-200AB)

| PRIMARY CHARACTERISTICS | | | | | |
|------------------------------|------------------|--|--|--|--|
| I _{F(AV)} 2100 A | | | | | |
| Package | B-PUK (DO-200AB) | | | | |
| Circuit configuration Single | | | | | |

FEATURES

- Wide current range
- High voltage ratings up to 1000 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style B-PUK (DO-200AB)
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

- Converters
- Power supplies
- High power drives
- · Auxiliary system supplies for traction applications

| MAJOR RATINGS AND CHARACTERISTICS | | | | | | |
|-----------------------------------|-----------------|-------------|---------------------|--|--|--|
| PARAMETER | TEST CONDITIONS | VALUES | UNITS | | | |
| 1 | | 2100 | A | | | |
| IF(AV) | T _{hs} | 55 | °C | | | |
| 1 | | 3900 | A | | | |
| IF(RMS) | T _{hs} | 25 | °C | | | |
| I _{FSM} | 50 Hz | 23 900 | | | | |
| | 60 Hz | 25 000 | — A | | | |
| l ² t | 50 Hz | 2857 | – kA ² s | | | |
| 1-1 | 60 Hz | 2608 | KA2S | | | |
| V _{RRM} | Range | 400 to 1000 | V | | | |
| TJ | | -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 | | | | |
| | 04 | 400 | 500 | | | | | |
| VS-SD2000CL | 08 | 800 | 900 | 60 | | | | |
| | 10 | 1000 | 1100 | | | | | |

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| FORWARD CONDUCTION | | | | | | |
|--|---------------------|--|---|--|-------------|------------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | | VALUES | UNITS |
| Maximum average forward current | 1 | 180° conduction, half sine wave | | | 2100 (1040) | А |
| at heatsink temperature | I _{F(AV)} | Double side (s | single side) coole | ed | 55 (85) | °C |
| Maximum RMS forward current | I _{F(RMS)} | 25 °C heatsin | k temperature de | ouble side cooled | 3900 | |
| | | t = 10 ms | No voltage | | 23 900 | A kA ² s |
| Maximum peak, one-cycle forward, | | t = 8.3 ms | reapplied | | 25 000 | |
| non-repetitive surge current | I _{FSM} | t = 10 ms | 100 % V _{RRM} | | 20 100 | |
| | | t = 8.3 ms | reapplied | Sinusoidal half wave, initial T _J = T _J maximum | 21 000 | |
| | l ² t | t = 10 ms | No voltage | | 2857 | |
| Maximum I ² t for fusing | | t = 8.3 ms | reapplied | | 2608 | |
| | | t = 10 ms | 100 % V _{RRM} reapplied | | 2020 | |
| | | t = 8.3 ms | | | 1844 | |
| Maximum I ² √t for fusing | l²√t | t = 0.1 to 10 n | ns, no voltage re | applied | 28 570 | kA²√s |
| Low level value of threshold voltage | V _{F(TO)1} | (16.7 % x π x | $I_{F(AV)} < I < \pi \times I_{F(AV)}$ | 0.74 | V | |
| High level value of threshold voltage | V _{F(TO)2} | $(I > \pi \times I_{F(AV)}),$ | T _J = T _J maximur | 0.86 | v | |
| 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 | | | 0.13 | mW |
| High level value of forward slope resistance | r _{f2} | $(I > \pi \times I_{F(AV)}),$ | T _J = T _J maximur | n | 0.12 | 11177 |
| Maximum forward voltage drop | V _{FM} | I _{pk} = 6000 A, T | J = TJ maximum | , t _p = 10 ms sinusoidal wave | 1.55 | V |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | | |
|--|------------------|---|------------------|-----------|--|
| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS | |
| Maximum junction operating temperature range | TJ | | -40 to +180 | °C | |
| Maximum storage temperature range | T _{Stg} | | -55 to +200 | | |
| Maximum thermal resistance, | | DC operation single side cooled | 0.073 | K/W | |
| unction to heatsink R _{thJ-hs} | | DC operation double side cooled | 0.031 | r\/ vv | |
| 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-200AE | | -200AB) | |

| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION RECTANGULAR CONDUCTION | | | | | | |
|------------------|--|-------------|-------------|-------------|---------------------|-------|--|
| CONDUCTION ANGLE | SINGLE SIDE | DOUBLE SIDE | SINGLE SIDE | DOUBLE SIDE | TEST CONDITIONS | UNITS | |
| 180° | 0.009 | 0.009 | 0.006 | 0.006 | | | |
| 120° | 0.011 | 0.011 | 0.011 | 0.011 | | K/W | |
| 90° | 0.014 | 0.014 | 0.015 | 0.015 | $T_J = T_J maximum$ | | |
| 60° | 0.020 | 0.020 | 0.021 | 0.021 | | | |
| 30° | 0.036 | 0.036 | 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



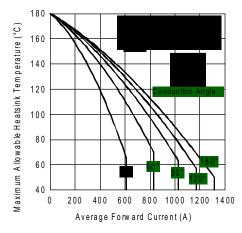


Fig. 1 - Current Ratings Characteristics

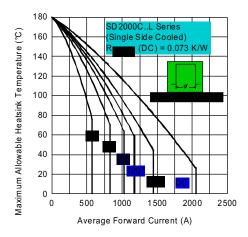


Fig. 2 - Current Ratings Characteristics

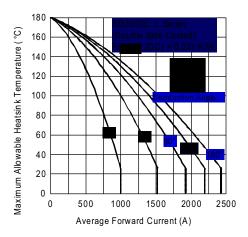


Fig. 3 - Current Ratings Characteristics

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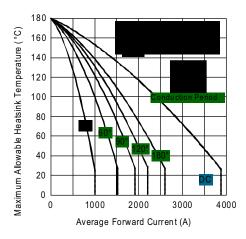


Fig. 4 - Current Ratings Characteristics

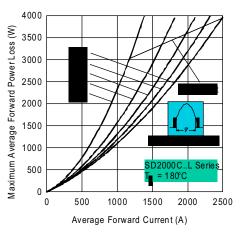


Fig. 5 - Forward Power Loss Characteristics

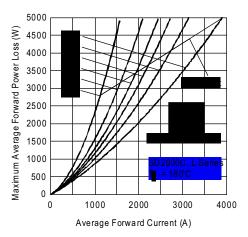


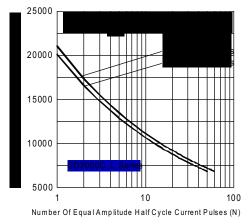
Fig. 6 - Forward Power Loss Characteristics

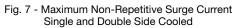
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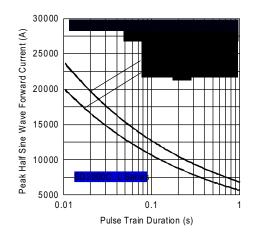


Fig. 8 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

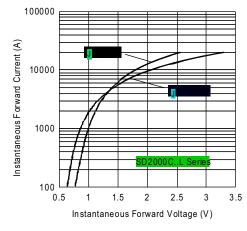


Fig. 9 - Forward Voltage Drop Characteristics

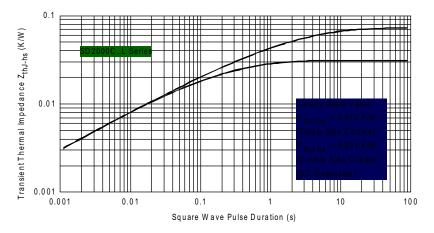


Fig. 10 - Thermal Impedance Z_{thJ-hs} Characteristics

 Revision: 11-Jan-18
 4
 Document Number: 93540

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| Device code | VS- | SD | 200 | 0 | с | 10 | L |
|-------------|--|-------------------------|---------|-------------------|-----------|--------|----------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| ļ | 1 - | | - | niconduc | ctors pro | oduct | |
| | 2 - Diode 3 - Essential part number | | | | | | |
| [| - | - 0 = standard recovery | | | | | |
| l | 5 - 6 - | - | ceramic | c PUK le x 100 | | (see V | oltage F |
| [| - 7 - | | • | se B-PU | | • • | • |

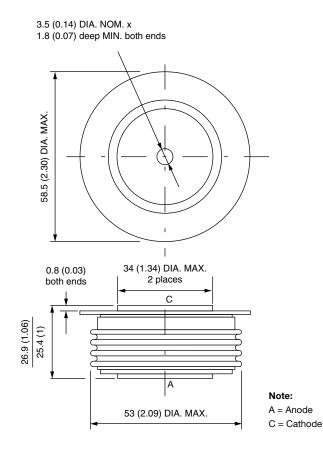
| LINKS TO RELATED DOCUMENTS | | | | |
|----------------------------|--------------------------|--|--|--|
| Dimensions | www.vishay.com/doc?95246 | | | |





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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