

## 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](http://www.vishay.com/doc?99912)


**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 <sup>2</sup> 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<br>V | $V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE<br>V | $I_{RRM}$ MAXIMUM AT $T_J = T_J$<br>MAXIMUM<br>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 <sub>F(AV)</sub>  | 180° conduction, half sine wave<br>Double side (single side) cooled                                       |                                   |                                                                       | 1600 (820) | A                  |                   |
|                                                         |                     |                                                                                                           |                                   |                                                                       | 55 (85)    | °C                 |                   |
| Maximum RMS forward current                             | I <sub>F(RMS)</sub> | 25 °C heatsink temperature double side cooled                                                             |                                   |                                                                       | 3010       | A                  |                   |
| Maximum peak, one cycle, non-repetitive surge current   | I <sub>FSM</sub>    | t = 10 ms                                                                                                 | No voltage reappplied             | Sinusoidal half wave, initial T <sub>J</sub> = T <sub>J</sub> maximum | 16 600     |                    |                   |
|                                                         |                     | t = 8.3 ms                                                                                                |                                   |                                                                       | 17 400     |                    |                   |
|                                                         |                     | t = 10 ms                                                                                                 | 100 % V <sub>RRM</sub> reappplied |                                                                       | 14 000     |                    |                   |
|                                                         |                     | t = 8.3 ms                                                                                                |                                   |                                                                       | 14 700     |                    |                   |
| Maximum I <sup>2</sup> t for fusing                     | I <sup>2</sup> t    | t = 10 ms                                                                                                 | No voltage reappplied             |                                                                       | 1386       |                    | kA <sup>2</sup> s |
|                                                         |                     | t = 8.3 ms                                                                                                |                                   |                                                                       | 1265       |                    |                   |
|                                                         |                     | t = 10 ms                                                                                                 | 100 % V <sub>RRM</sub> reappplied |                                                                       | 980        |                    |                   |
|                                                         |                     | t = 8.3 ms                                                                                                |                                   |                                                                       | 895        |                    |                   |
| Maximum I <sup>2</sup> √t for fusing                    | I <sup>2</sup> √t   | t = 0.1 to 10 ms, no voltage reappplied                                                                   |                                   |                                                                       | 13 860     | kA <sup>2</sup> √s |                   |
| Low level value of threshold voltage                    | V <sub>F(TO)1</sub> | (16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum |                                   |                                                                       | 0.83       | V                  |                   |
| High level value of threshold voltage                   | V <sub>F(TO)2</sub> | (I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> maximum                                    |                                   |                                                                       | 0.95       |                    |                   |
| Low level value of forward slope resistance             | r <sub>f1</sub>     | (16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum |                                   |                                                                       | 0.27       | mΩ                 |                   |
| High level value of forward slope resistance            | r <sub>f2</sub>     | (I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> maximum                                    |                                   |                                                                       | 0.25       |                    |                   |
| Maximum forward voltage drop                            | V <sub>FM</sub>     | I <sub>pk</sub> = 3000 A T <sub>J</sub> = T <sub>J</sub> maximum, t <sub>o</sub> = 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                |
|                                                  |              | DC operation double side cooled               |  |  | 0.031                |
| Mounting force, $\pm 10$ %                       |              |                                               |  |  | 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

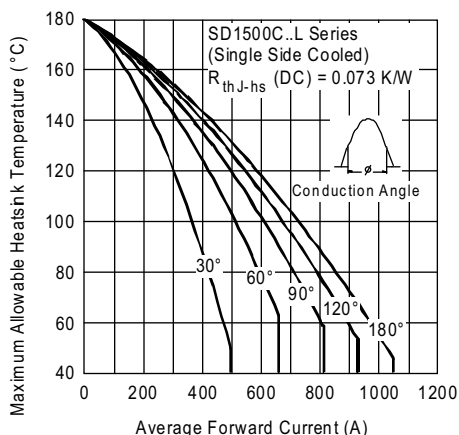


Fig. 1 - Current Ratings Characteristics

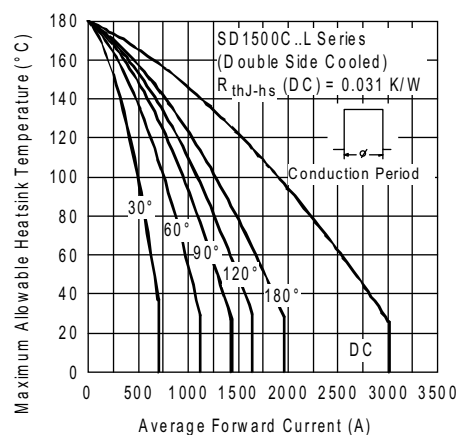


Fig. 4 - Current Ratings Characteristics

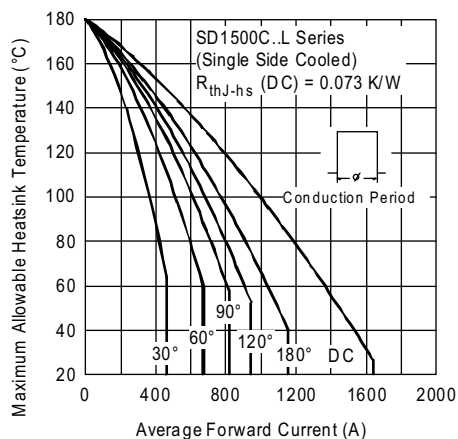


Fig. 2 - Current Ratings Characteristics

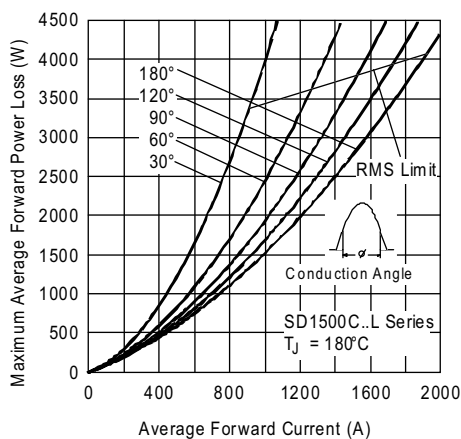


Fig. 5 - Forward Power Loss Characteristics

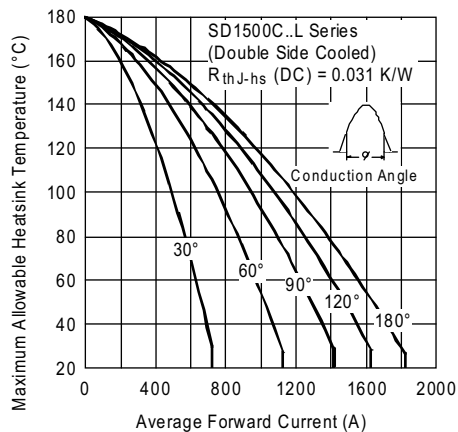


Fig. 3 - Current Ratings Characteristics

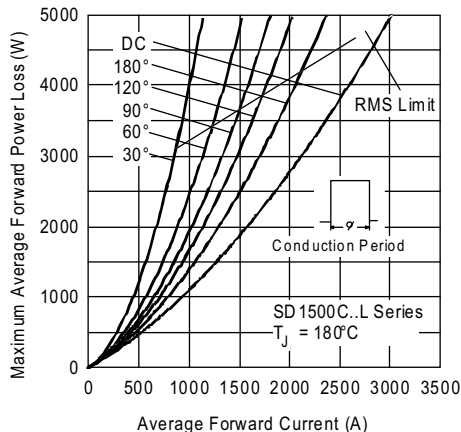


Fig. 6 - Forward Power Loss Characteristics

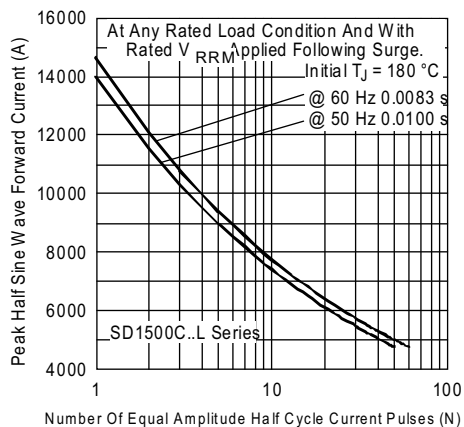


Fig. 7 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

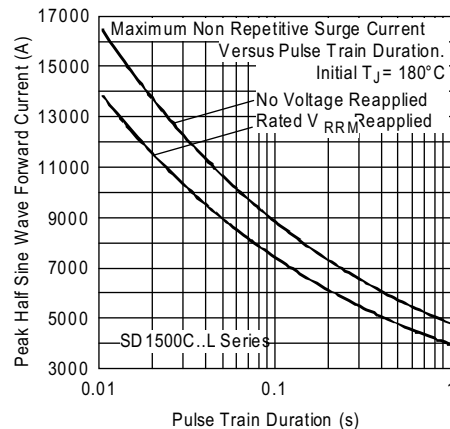


Fig. 8 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

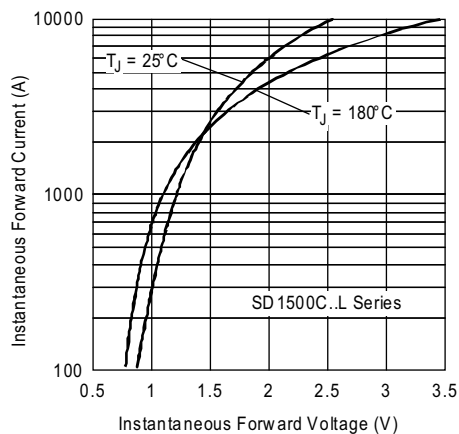


Fig. 9 - Forward Voltage Drop Characteristics

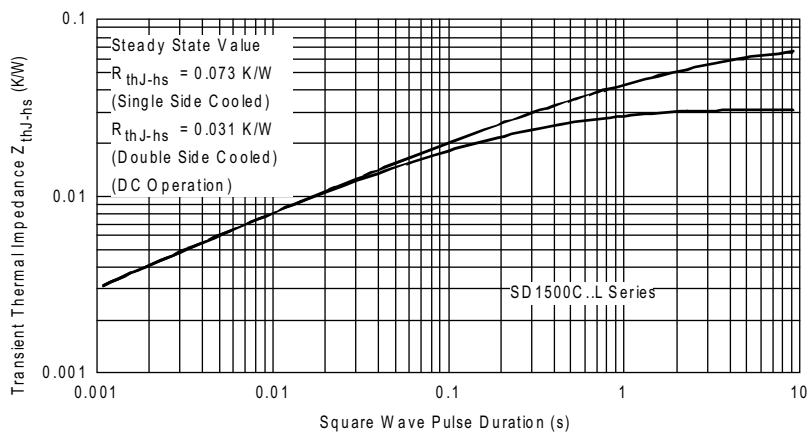


Fig. 10 - Thermal Impedance  $Z_{thJC}$  Characteristics



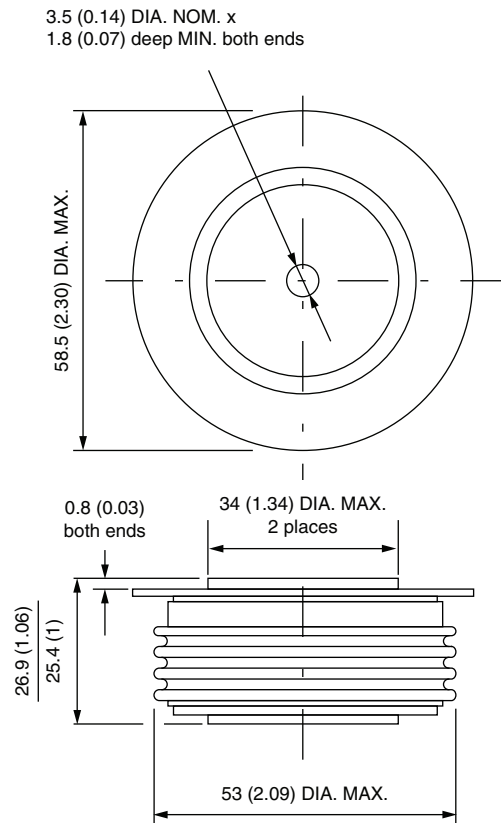
## ORDERING INFORMATION TABLE

|             |                                                              |    |     |   |   |    |   |
|-------------|--------------------------------------------------------------|----|-----|---|---|----|---|
| 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                 | <a href="http://www.vishay.com/doc?95246">www.vishay.com/doc?95246</a> |

## 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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