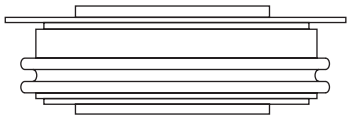
# Standard Recovery Diodes (Hockey PUK Version), 1400 A



B-43

## FEATURES

- Wide current range
- High voltage ratings up to 3200 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style B-43
- Lead (Pb)-free

Pb-free

RoHS COMPLIANT

## TYPICAL APPLICATIONS

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

| PRODUCT SUMMARY | |
|---|---|
| $I_{F(AV)}$ | 1400 A |

| MAJOR RATINGS AND CHARACTERISTICS | | | | |
|---|---|---|---|---|
| PARAMETER | TEST CONDITIONS | SD1100C..C | | UNITS |
| | | 04 TO 20 | 25 TO 32 | |
| $I_{F(AV)}$ | | 1400 | 1100 | A |
| | $T_{hs}$ | 55 | 55 | °C |
| $I_{F(RMS)}$ | | 2500 | 2000 | A |
| | $T_{hs}$ | 25 | 25 | °C |
| $I_{FSM}$ | 50 Hz | 13 000 | 10 500 | A |
| | 60 Hz | 13 600 | 11 000 | |
| $I^2t$ | 50 Hz | 846 | 551 | $kA^2s$ |
| | 60 Hz | 772 | 503 | |
| $V_{RRM}$ | Range | 400 to 2000 | 2500 to 3200 | V |
| $T_J$ | | - 40 to 180 | - 40 to 150 | °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 |
| SD1100C..C | 04 | 400 | 500 | 35 |
| | 08 | 800 | 900 | |
| | 12 | 1200 | 1300 | |
| | 16 | 1600 | 1700 | |
| | 20 | 2000 | 2100 | |
| | 25 | 2500 | 2600 | |
| | 30 | 3000 | 3100 | |
| | 32 | 3200 | 3300 | |

## FORWARD CONDUCTION

| PARAMETER | SYMBOL | TEST CONDITIONS | | | SD1100C..C | | UNITS |
|---|---|---|---|---|---|---|---|
| | | | | | 04 TO 20 | 25 TO 32 | |
| Maximum average forward current at heatsink temperature | $I_{F(AV)}$ | 180° conduction, half sine wave Double side (single side) cooled | | | 1400 (795) | 1100 (550) | A |
| | | | | | 55 (85) | 55 (85) | °C |
| Maximum RMS forward current | $I_{F(RMS)}$ | 25 °C heatsink temperature double side cooled | | | 2500 | 2000 | A |
| Maximum peak, one-cycle forward, non-repetitive current | $I_{FSM}$ | t = 10 ms | No voltage reapplied | Sinusoidal half wave, initial $T_J = T_J$ maximum | 13 000 | 10 500 | |
| | | t = 8.3 ms | | | 13 600 | 11 000 | |
| | | t = 10 ms | 100 % $V_{RRM}$ reapplied | | 10 930 | 8830 | |
| | | t = 8.3 ms | | | 11 450 | 9250 | |
| Maximum $I^2t$ for fusing | $I^2t$ | t = 10 ms | No voltage reapplied | | 846 | 551 | $kA^2s$ |
| | | t = 8.3 ms | | | 772 | 503 | |
| | | t = 10 ms | 100 % $V_{RRM}$ reapplied | | 598 | 390 | |
| | | t = 8.3 ms | | | 546 | 356 | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 to 10 ms, no voltage reapplied | | | 8460 | 5510 | $kA^2\sqrt{s}$ |
| 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 | | | 0.78 | 0.84 | V |
| High level value of threshold voltage | $V_{F(TO)2}$ | (I > π x $I_{F(AV)}$), $T_J = T_J$ maximum | | | 0.94 | 0.88 | |
| 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 | | | 0.35 | 0.40 | mΩ |
| High level value of forward slope resistance | $r_{f2}$ | (I > π x $I_{F(AV)}$), $T_J = T_J$ maximum | | | 0.26 | 0.38 | |
| Maximum forward voltage drop | $V_{FM}$ | $I_{pk}$ = 1500 A, $T_J = T_J$ maximum $t_p$ = 10 ms sinusoidal wave | | | 1.31 | 1.44 | V |

## THERMAL AND MECHANICAL SPECIFICATIONS

| PARAMETER | SYMBOL | TEST CONDITIONS | SD1100C..C | | UNITS |
|---|---|---|---|---|---|
| | | | 04 TO 20 | 25 TO 32 | |
| Maximum junction operating temperature range | $T_J$ | | - 40 to 180 | - 40 to 150 | °C |
| Maximum storage temperature range | $T_{Stg}$ | | - 55 to 200 | | |
| Maximum thermal resistance, junction to heatsink | $R_{thJ-hs}$ | DC operation single side cooled | 0.076 | | K/W |
| | | DC operation double side cooled | 0.038 | | |
| Mounting force, ± 10 % | | | 9800 (1000) | | N (kg) |
| Approximate weight | | | 83 | | g |
| Case style | | See dimensions - link at the end of datasheet | B-43 | | |

## $\Delta R_{thJ-hs}$ CONDUCTION

| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION | | RECTANGULAR CONDUCTION | | TEST CONDITIONS | UNITS |
|---|---|---|---|---|---|---|
| | SINGLE SIDE | DOUBLE SIDE | SINGLE SIDE | DOUBLE SIDE | | |
| 180° | 0.007 | 0.007 | 0.005 | 0.005 | $T_J = T_J$ maximum | K/W |
| 120° | 0.008 | 0.008 | 0.008 | 0.008 | | |
| 90° | 0.010 | 0.010 | 0.011 | 0.011 | | |
| 60° | 0.015 | 0.015 | 0.016 | 0.016 | | |
| 30° | 0.026 | 0.026 | 0.026 | 0.026 | | |

**Note**

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

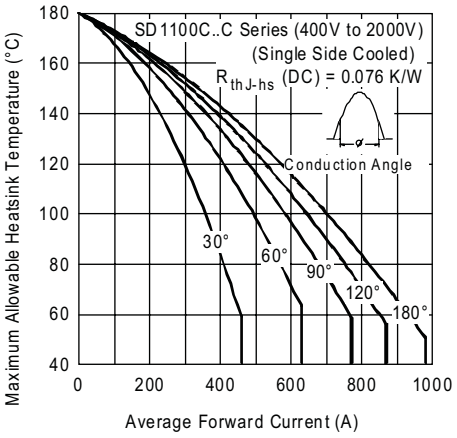



Fig. 1 - Current Ratings Characteristics

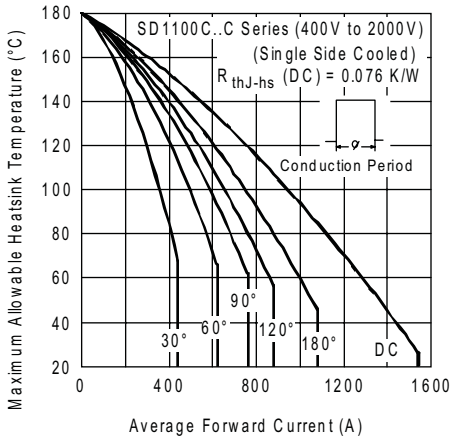



Fig. 2 - Current Ratings Characteristics

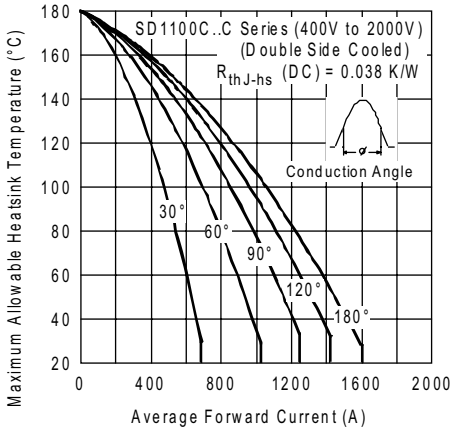



Fig. 3 - Current Ratings Characteristics

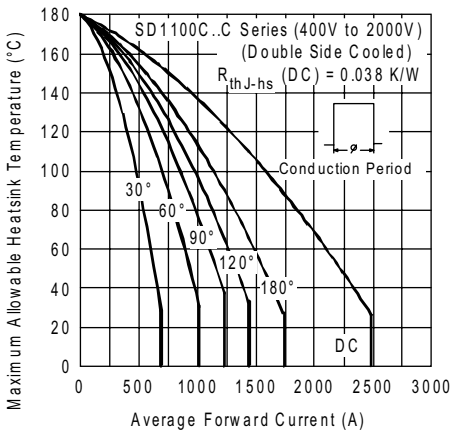



Fig. 4 - Current Ratings Characteristics

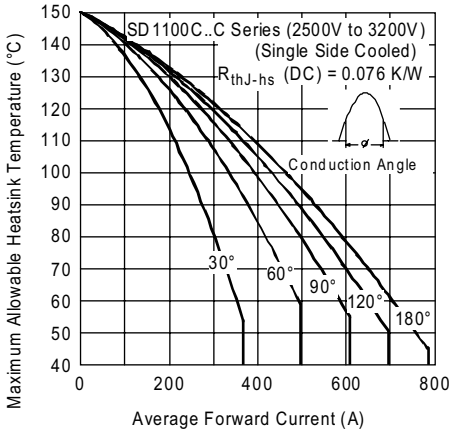



Fig. 5 - Current Ratings Characteristics

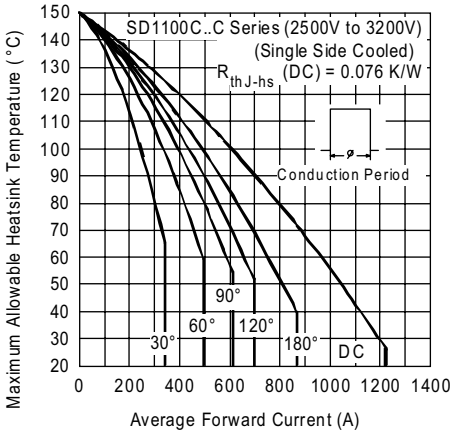



Fig. 6 - Current Ratings Characteristics

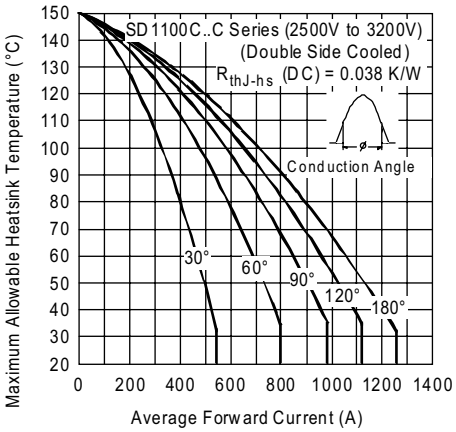



Fig. 7 - Current Ratings Characteristics

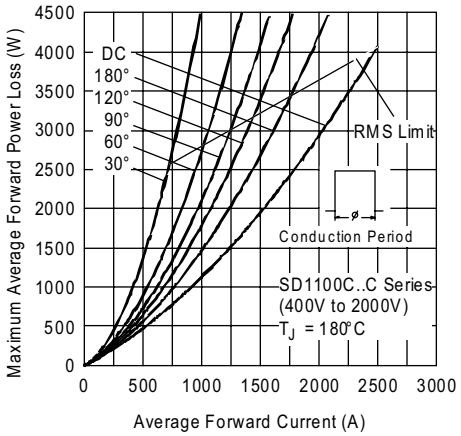



Fig. 10 - Forward Power Loss Characteristics

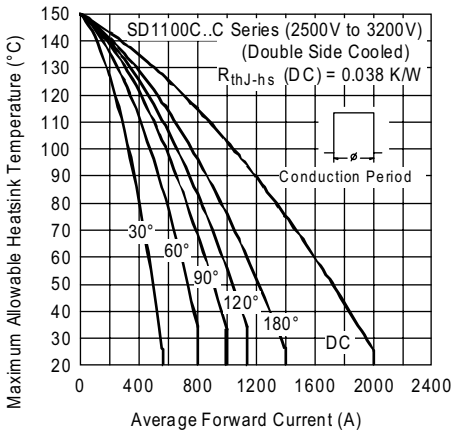



Fig. 8 - Current Ratings Characteristics

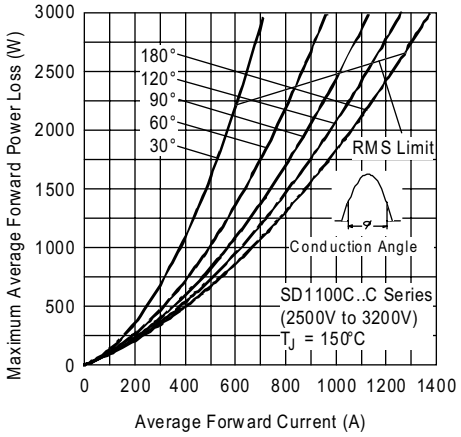



Fig. 11 - Forward Power Loss Characteristics

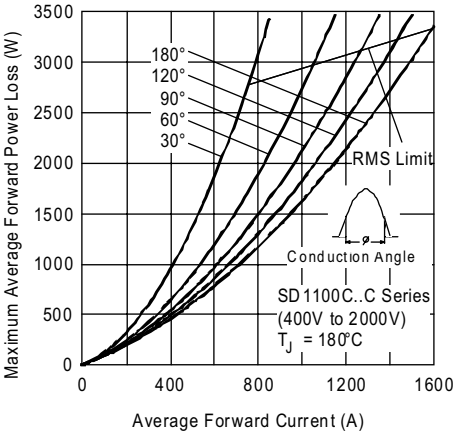



Fig. 9 - Forward Power Loss Characteristics

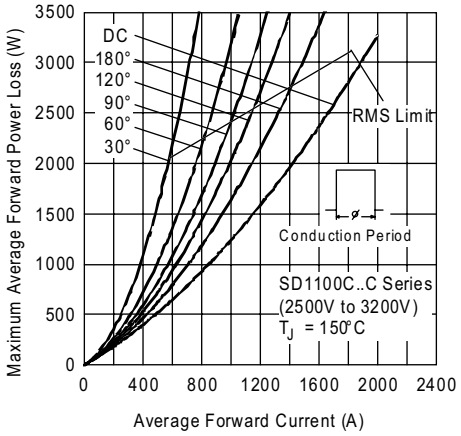



Fig. 12 - Forward Power Loss Characteristics

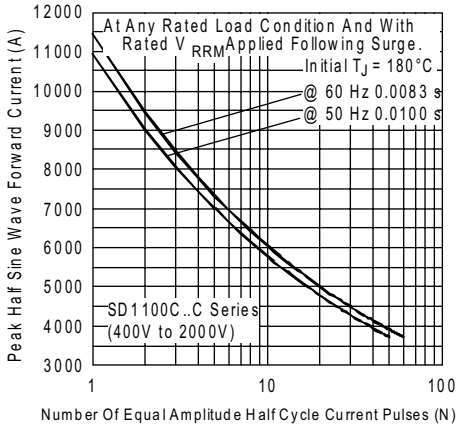



Fig. 13 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

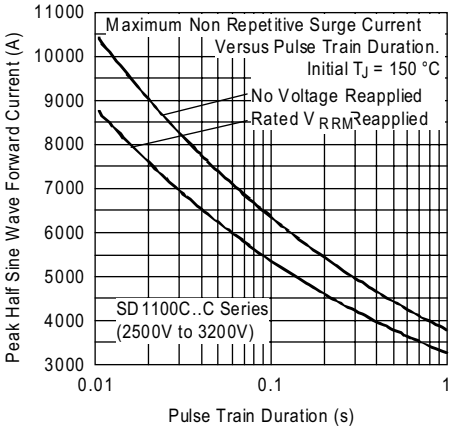



Fig. 16 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

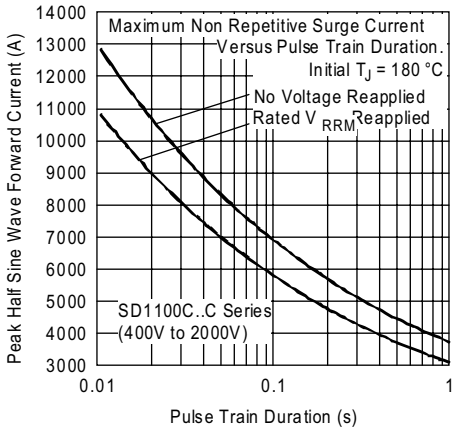



Fig. 14 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

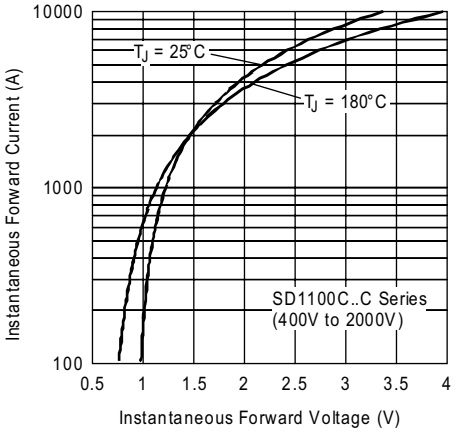



Fig. 17 - Forward Voltage Drop Characteristics

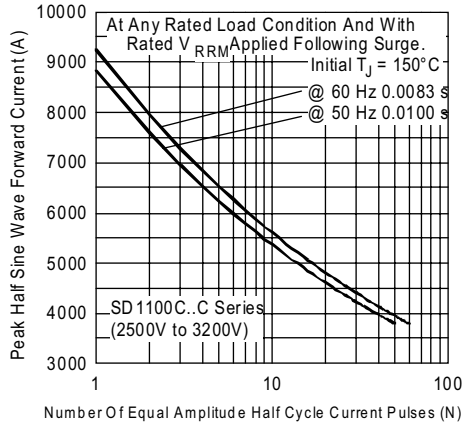



Fig. 15 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

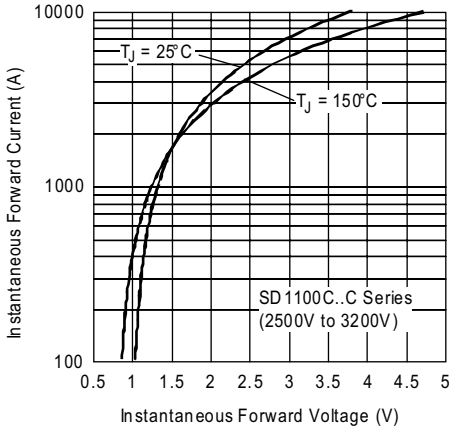



Fig. 18 - Forward Voltage Drop Characteristics

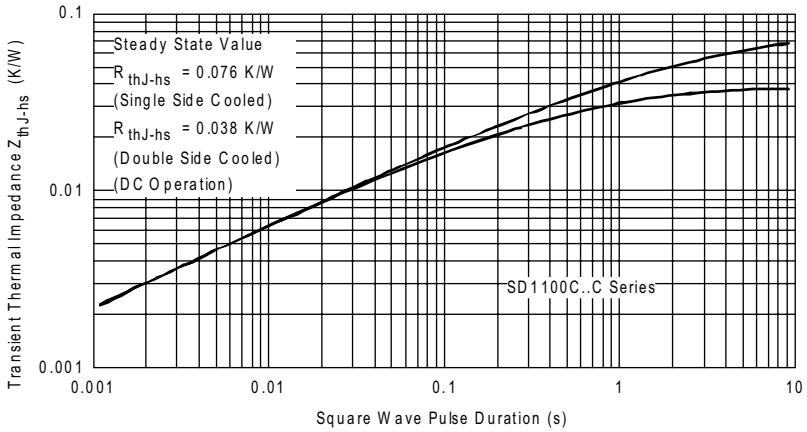



Fig. 19 - Thermal Impedance $Z_{thJ\text{-}hs}$ Characteristics

## ORDERING INFORMATION TABLE

**Device code**

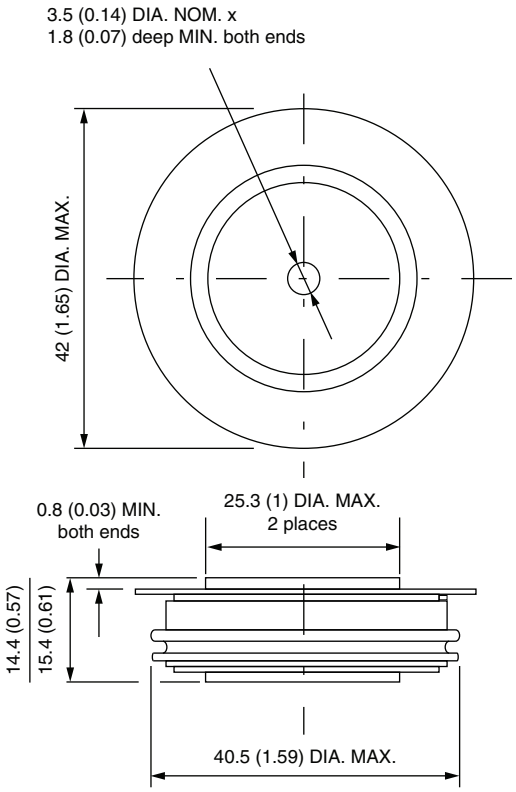
| SD | 110 | 0 | C | 32 | C |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

| | | |
|---|---|---|
| 1 | - | Diode |
| 2 | - | Essential part number |
| 3 | - | 0 = Standard recovery |
| 4 | - | C = Ceramic PUK |
| 5 | - | Voltage code x 100 = $V_{RRM}$ (see Voltage Ratings table) |
| 6 | - | C = PUK case B-43 |

| LINKS TO RELATED DOCUMENTS | |
|---|---|
| Dimensions | http://www.vishay.com/doc?95249 |

# B-43

**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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