

STANDARD RECOVERY DIODES

Hockey Puk Version

Features

- Wide current range
- High voltage ratings up to 3200V
- High surge current capabilities
- Diffused junction
- Hockey Puk version
- Case style B-43

1400A

Typical Applications

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



case style B-43

Major Ratings and Characteristics

| Parameters | 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} | @ 50Hz | 13000 | 10500 | A |
| | @ 60Hz | 13600 | 11000 | A |
| I^2t | @ 50Hz | 846 | 551 | KA ² s |
| | @ 60Hz | 772 | 503 | KA ² s |
| 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 rev. voltage V | I_{RRM} max. @ $T_J = T_J$ max. mA |
|-------------|--------------|--|---|--|
| SD1100C..C | 04 | 400 | 500 | 15 |
| | 08 | 800 | 900 | |
| | 12 | 1200 | 1300 | |
| | 16 | 1600 | 1700 | |
| | 20 | 2000 | 2100 | |
| | 25 | 2500 | 2600 | |
| | 30 | 3000 | 3100 | |
| | 32 | 3200 | 3300 | |

Forward Conduction

| Parameter | SD1100C..C | | Units | Conditions | | |
|---|------------|-----------|--------------------|---|----------------|--|
| | 04 to 20 | 25 to 32 | | | | |
| $I_{F(AV)}$ Max. average forward current @ Heatsink temperature | 1400(795) | 1100(550) | A | 180° conduction, half sine wave Double side (single side) cooled | | |
| | 55(85) | 55(85) | °C | | | |
| $I_{F(RMS)}$ Max. RMS forward current | 2500 | 2000 | A | @ 25°C heatsink temperature double side cooled | | |
| I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current | 13000 | 10500 | A | t = 10ms | No voltage | Sinusoidal halfwave, Initial $T_J = T_J$ max. |
| | 13600 | 11000 | | t = 8.3ms | reapplied | |
| | 10930 | 8830 | | t = 10ms | 100% V_{RRM} | |
| | 11450 | 9250 | | t = 8.3ms | reapplied | |
| I^2t Maximum I^2t for fusing | 846 | 551 | KA ² s | t = 10ms | No voltage | |
| | 772 | 503 | | t = 8.3ms | reapplied | |
| | 598 | 390 | | t = 10ms | 100% V_{RRM} | |
| | 546 | 356 | | t = 8.3ms | reapplied | |
| $I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing | 8460 | 5510 | KA ² /s | t = 0.1 to 10ms, no voltage reapplied | | |
| $V_{F(TO)1}$ Low level value of threshold voltage | 0.78 | 0.84 | V | (16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), $T_J = T_J$ max. | | |
| $V_{F(TO)2}$ High level value of threshold voltage | 0.94 | 0.88 | | (I $> \pi \times I_{F(AV)}$), $T_J = T_J$ max. | | |
| r_{f1} Low level value of forward slope resistance | 0.35 | 0.40 | mΩ | (16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), $T_J = T_J$ max. | | |
| r_{f2} High level value of forward slope resistance | 0.26 | 0.38 | | (I $> \pi \times I_{F(AV)}$), $T_J = T_J$ max. | | |
| V_{FM} Max. forward voltage drop | 1.31 | 1.44 | V | $I_{pk} = 1500A$, $T_J = T_J$ max, $t_p = 10ms$ sinusoidal wave | | |

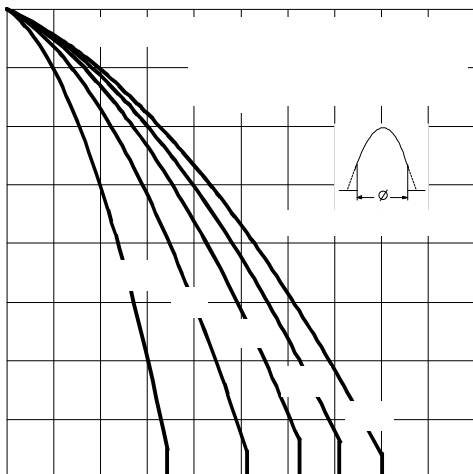


Fig. 3 - Current Ratings Characteristics

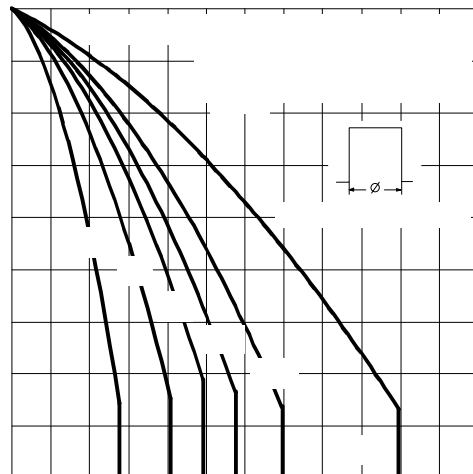


Fig. 4 - Current Ratings Characteristics

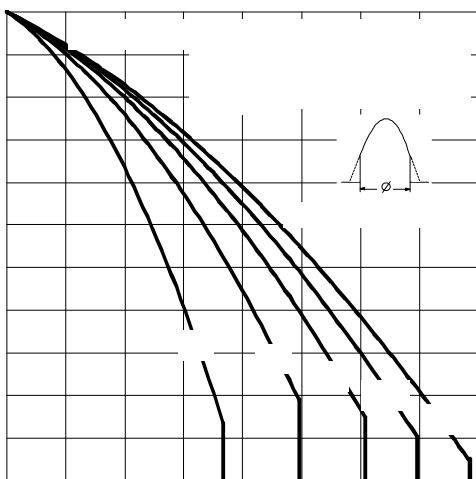


Fig. 5 - Current Ratings Characteristics

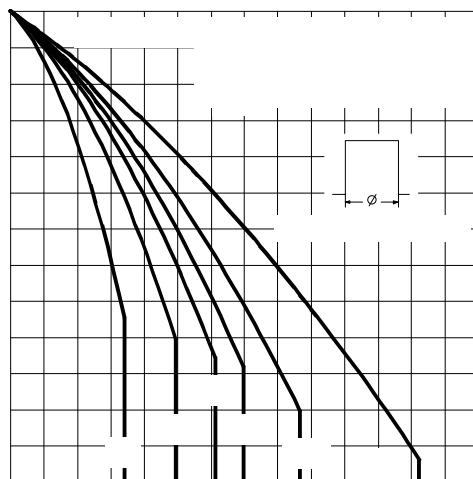


Fig. 6 - Current Ratings Characteristics

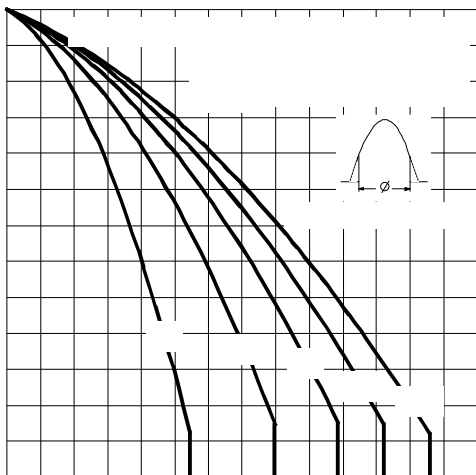


Fig. 7 - Current Ratings Characteristics

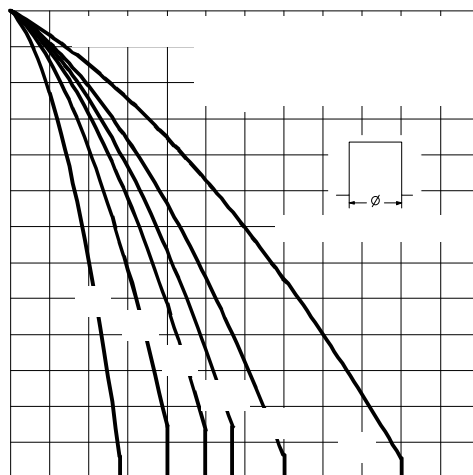


Fig. 8 - Current Ratings Characteristics

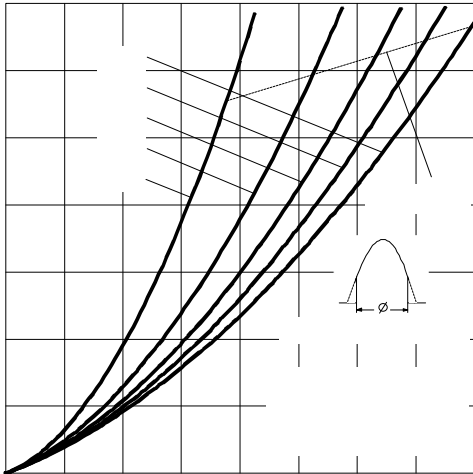


Fig. 9 - Forward Power Loss Characteristics

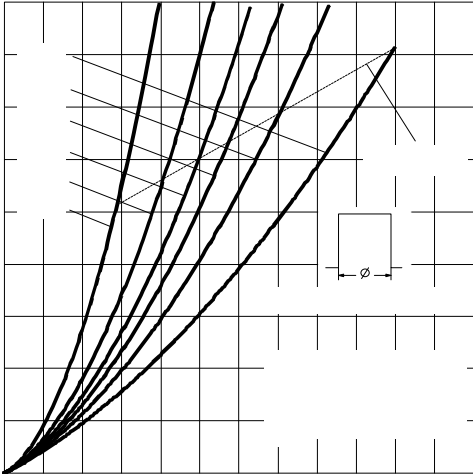


Fig. 10 - Forward Power Loss Characteristics

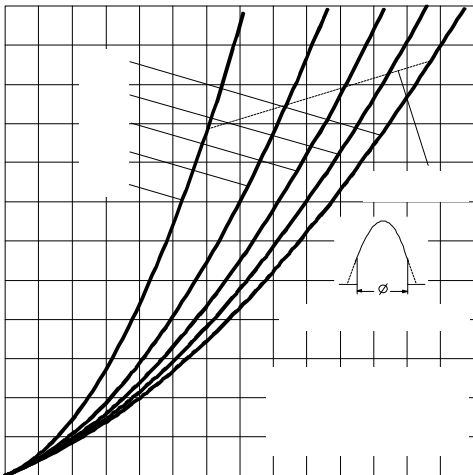


Fig. 11 - Forward Power Loss Characteristics

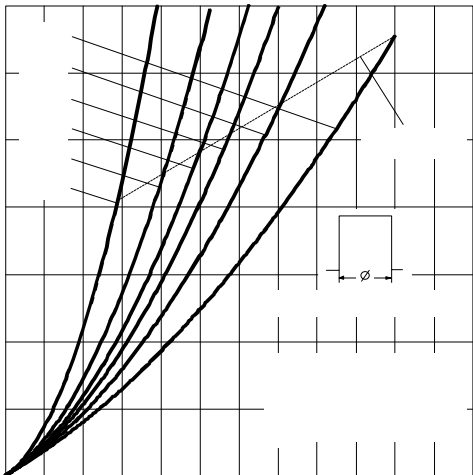


Fig. 12 - Forward Power Loss Characteristics

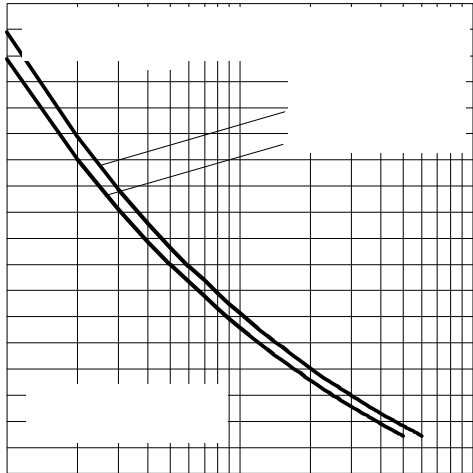


Fig. 13 - Maximum Non-Repetitive Surge Current

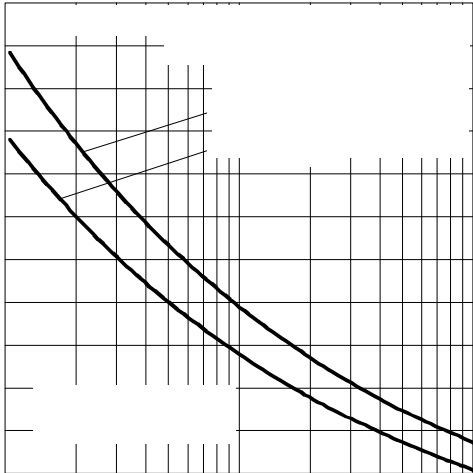


Fig. 14 - Maximum Non-Repetitive Surge Current

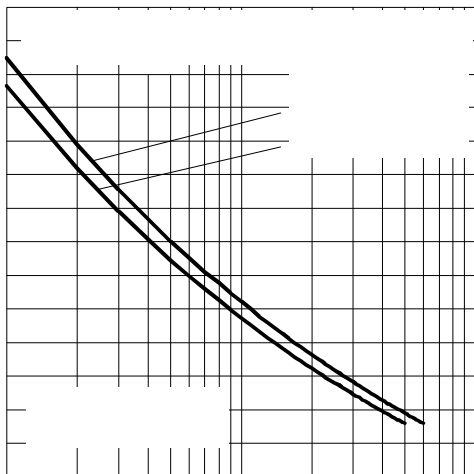


Fig. 15 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

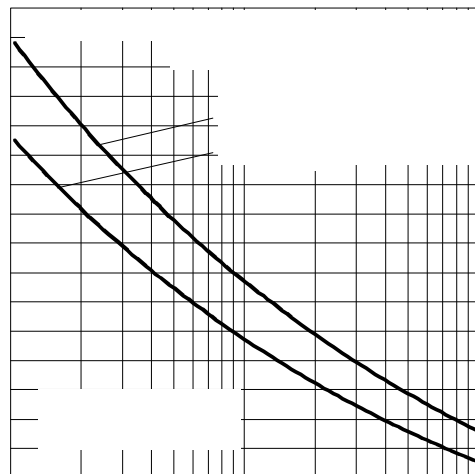


Fig. 16 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

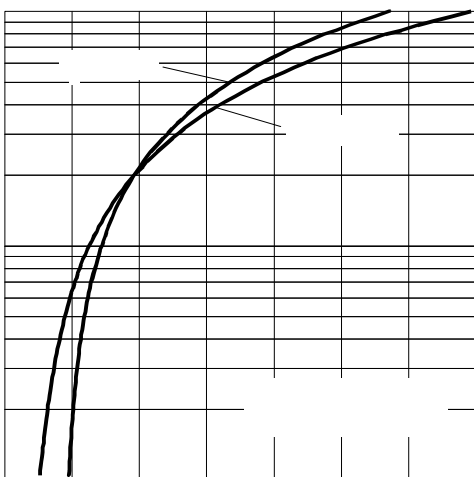


Fig. 17 - Forward Voltage Drop Characteristics

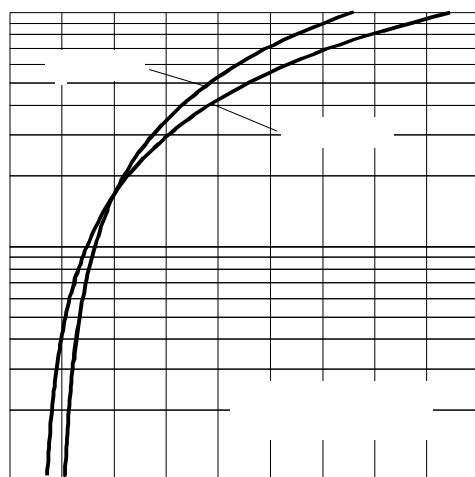


Fig. 18 - Forward Voltage Drop Characteristics

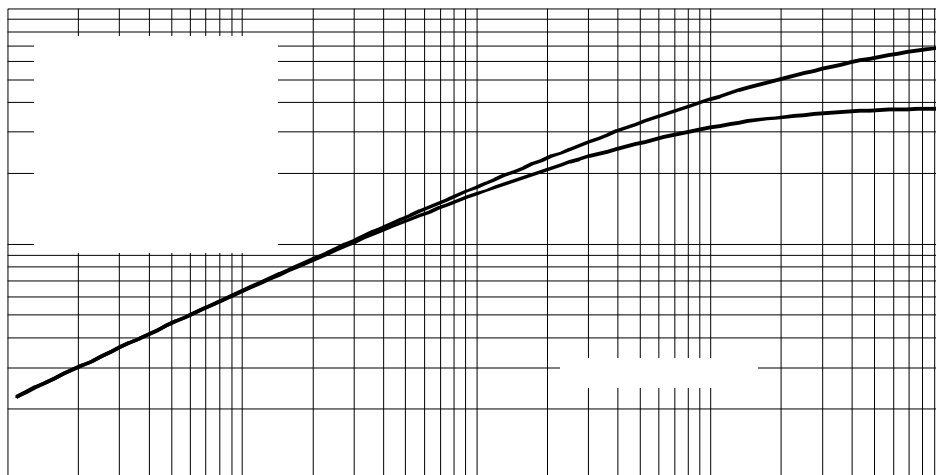


Fig. 19 - Thermal Impedance Z_{thJC} Characteristics

Thermal and Mechanical Specifications

| Parameter | SD1100C..C | | Units | Conditions |
|--|----------------|------------|-----------|--|
| | 04 to 20 | 25 to 32 | | |
| T_J Max. junction operating temperature range | -40 to 180 | -40 to 150 | °C | |
| T_{stg} Max. storage temperature range | -55 to 200 | -55 to 200 | | |
| R_{thJ-hs} Max. thermal resistance, junction to heatsink | 0.076 0.038 | | K/W | DC operation single side cooled DC operation double side cooled |
| F Mounting force, $\pm 10\%$ | 9800 (1000) | | N (Kg) | |
| wt Approximate weight | 83 | | g | |
| Case style | B - 43 | | | See Outline Table |

 ΔR_{thJ-hs} Conduction

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

| Conduction angle | Sinusoidal conduction | | Rectangular conduction | | Units | Conditions |
|------------------|-----------------------|-------------|------------------------|-------------|-------|--------------------------|
| | Single Side | Double Side | Single Side | Double Side | | |
| 180° | 0.007 | 0.007 | 0.005 | 0.005 | K/W | $T_J = T_J \text{ max.}$ |
| 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 | | |

Ordering Information Table

| Device Code | | | | | | | | | | | | | |
|---|-----|-----|---|----|----|---|---|---|---|---|---|---|--|
| <table border="1" style="margin: auto;"> <tr> <td style="background-color: black; color: white; padding: 5px;">SD</td> <td style="background-color: black; color: white; padding: 5px;">110</td> <td style="background-color: black; color: white; padding: 5px;">0</td> <td style="background-color: black; color: white; padding: 5px;">C</td> <td style="background-color: black; color: white; padding: 5px;">32</td> <td style="background-color: black; color: white; padding: 5px;">C</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> </tr> </table> | SD | 110 | 0 | C | 32 | C | ① | ② | ③ | ④ | ⑤ | ⑥ | <ul style="list-style-type: none"> 1 - Diode 2 - Essential part number 3 - 0 = Standard recovery 4 - C = Ceramic Puk 5 - Voltage code: Code x 100 = V_{RRM} (See Voltage Ratings table) 6 - C = Puk Case B - 43 |
| SD | 110 | 0 | C | 32 | C | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | | | | | | | | |

Outline Table

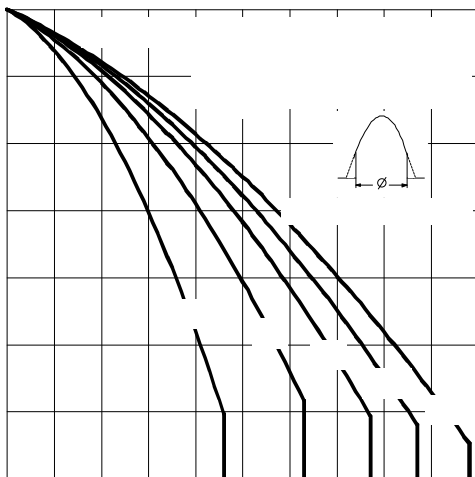
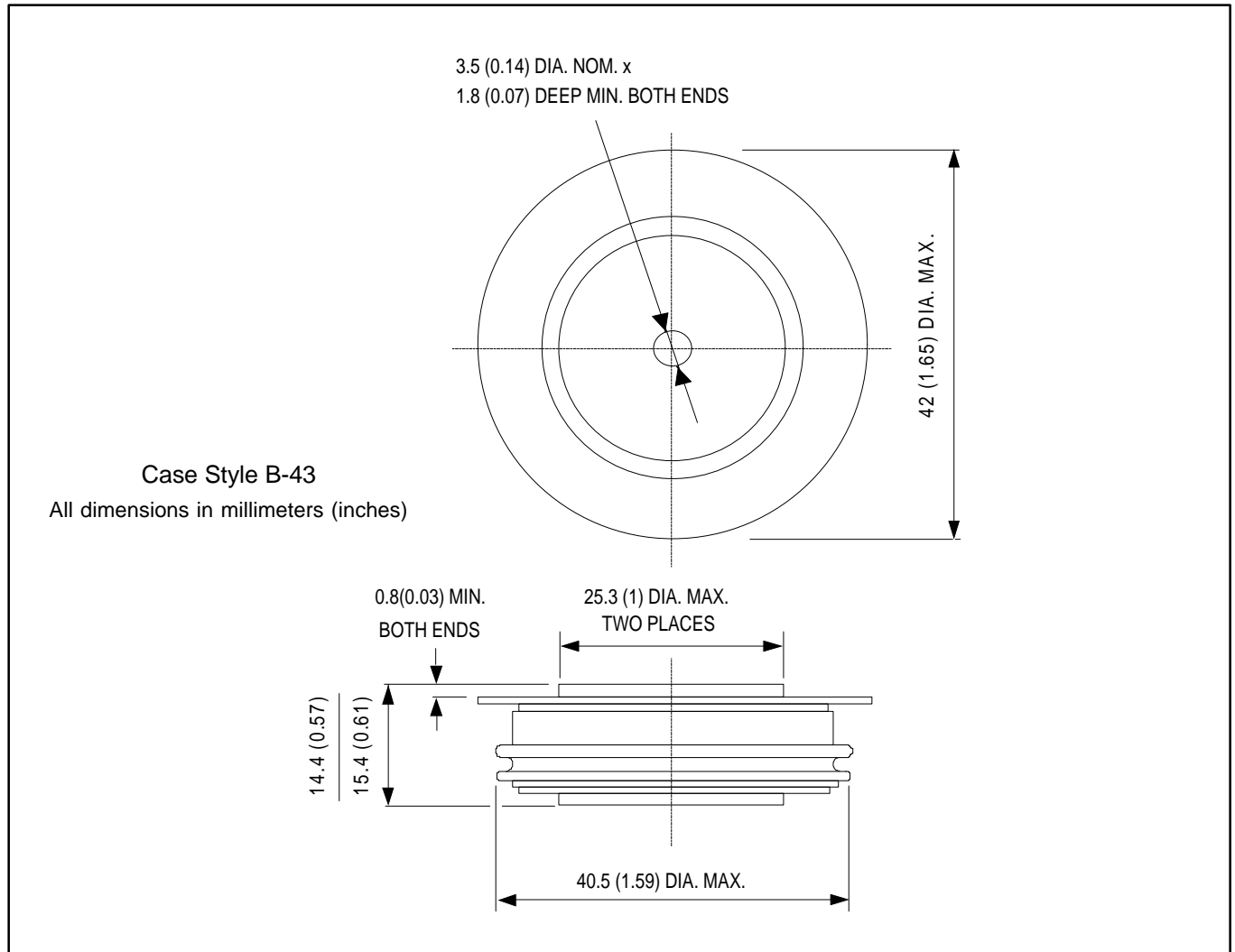


Fig. 1 - Current Ratings Characteristics

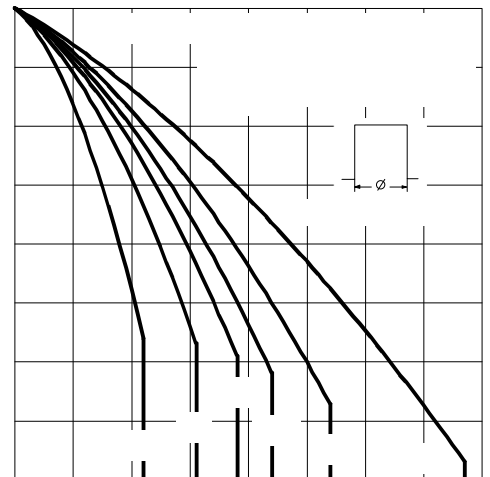


Fig. 2 - Current Ratings Characteristics