

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 DO-200AA

Typical Applications

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

650A



case style DO-200AA

Major Ratings and Characteristics

| Parameters | SD300C..C | | Units |
|-----------------|-------------|--------------|-------------------|
| | 04 to 20 | 25 to 32 | |
| $I_{F(AV)}$ | 650 | 540 | A |
| @ T_{hs} | 55 | 55 | °C |
| $I_{F(RMS)}$ | 1150 | 995 | A |
| @ T_{hs} | 25 | 25 | °C |
| I_{FSM} | @ 50Hz | 6050 | A |
| | @ 60Hz | 6335 | A |
| I^2t | @ 50Hz | 183 | KA ² s |
| | @ 60Hz | 167 | 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 |
|-------------|--------------|--|---|--|
| SD300C..C | 04 | 400 | 500 | 15 |
| | 08 | 800 | 900 | |
| | 12 | 1200 | 1300 | |
| | 16 | 1600 | 1700 | |
| | 20 | 2000 | 2100 | |
| | 25 | 2500 | 2600 | |
| | 28 | 2800 | 2900 | |
| | 32 | 3200 | 3300 | |

Forward Conduction

| Parameter | SD300C..C | | Units | Conditions | | |
|---|-----------|----------|--------------------|---|----------------|--|
| | 04 to 20 | 25 to 32 | | | | |
| $I_{F(AV)}$ Max. average forward current @ Heatsink temperature | 650(380) | 540(250) | A | 180° conduction, half sine wave Double side (single side) cooled | | |
| | 55(65) | 55(85) | °C | | | |
| $I_{F(RMS)}$ Max. RMS forward current | 1150 | 995 | A | @ 25°C heatsink temperature double side cooled | | |
| I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current | 6050 | 6050 | A | t = 10ms | No voltage | Sinusoidal halfwave, Initial $T_J = T_J$ max. |
| | 6335 | 6335 | | t = 8.3ms | reapplied | |
| | 5090 | 5090 | | t = 10ms | 100% V_{RRM} | |
| | 5330 | 5330 | | t = 8.3ms | reapplied | |
| I^2t Maximum I^2t for fusing | 183 | 183 | KA ² s | t = 10ms | No voltage | |
| | 167 | 167 | | t = 8.3ms | reapplied | |
| | 129 | 129 | | t = 10ms | 100% V_{RRM} | |
| | 118 | 118 | | t = 8.3ms | reapplied | |
| $I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing | 1830 | 1830 | KA ² /s | t = 0.1 to 10ms, no voltage reapplied | | |
| $V_{F(TO)1}$ Low level value of threshold voltage | 0.95 | 0.95 | 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 | 1.00 | 1.00 | | (I > $\pi \times I_{F(AV)}$), $T_J = T_J$ max. | | |
| r_{f1} Low level value of forward slope resistance | 0.75 | 0.75 | 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 | 0.72 | 0.72 | | (I > $\pi \times I_{F(AV)}$), $T_J = T_J$ max. | | |
| V_{FM} Max. forward voltage drop | 2.08 | 2.08 | V | $I_{pk} = 1500A$, $T_J = T_J$ max, $t_p = 10ms$ sinusoidal wave | | |

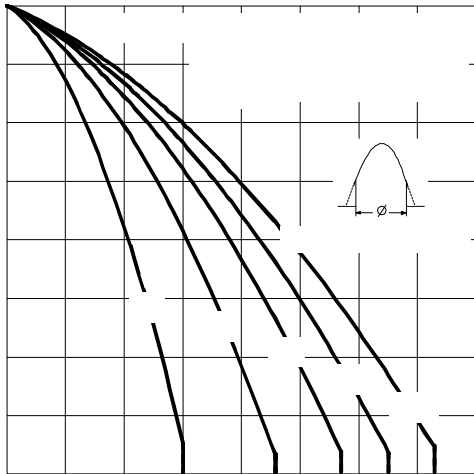


Fig. 3 - Current Ratings Characteristics

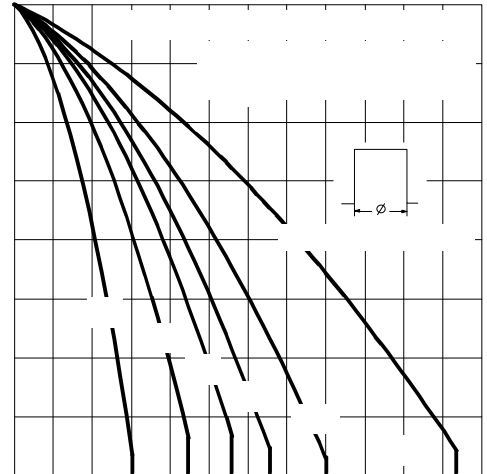


Fig. 4 - Current Ratings Characteristics

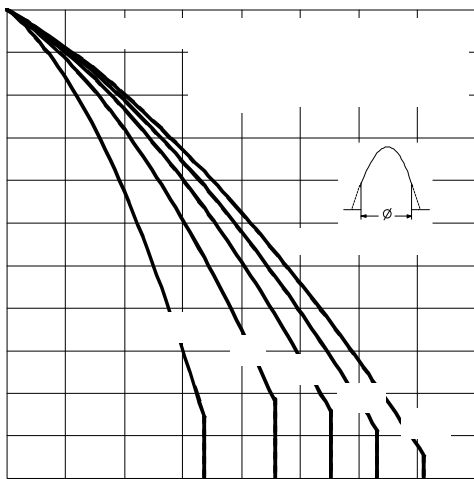


Fig. 5 - Current Ratings Characteristics

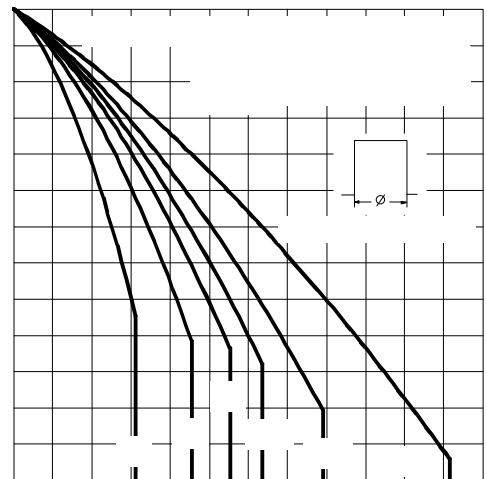


Fig. 6 - Current Ratings Characteristics

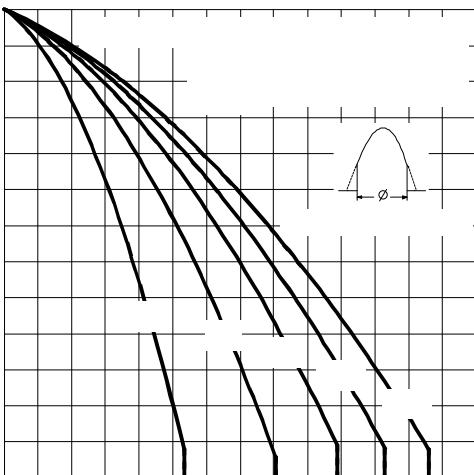


Fig. 7 - Current Ratings Characteristics

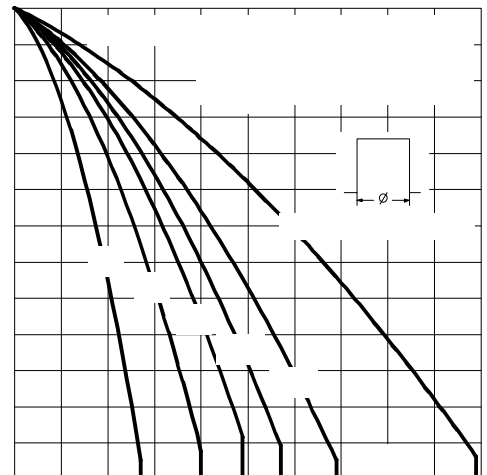


Fig. 8 - Current Ratings Characteristics

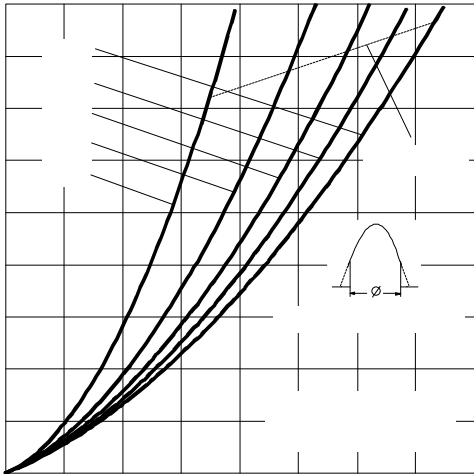


Fig. 9 - Forward Power Loss Characteristics

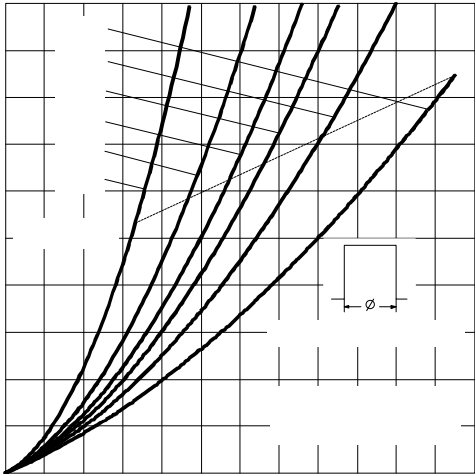


Fig. 10 - Forward Power Loss Characteristics

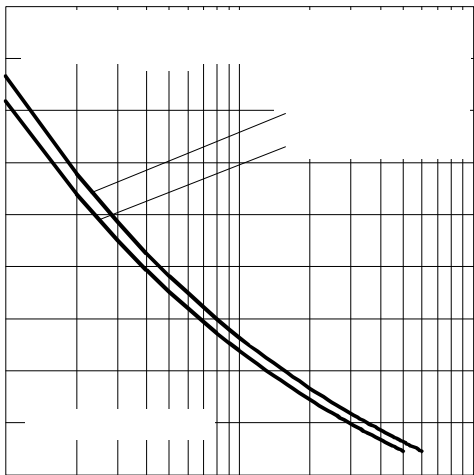


Fig. 11 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

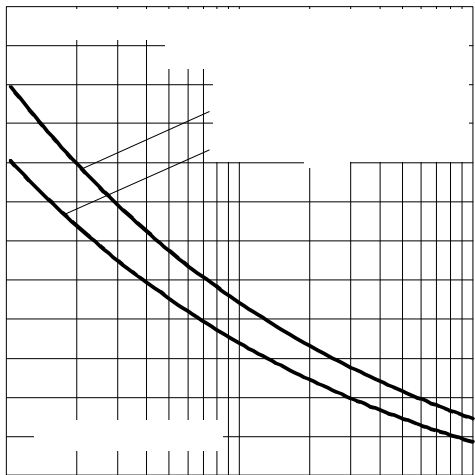


Fig. 12 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

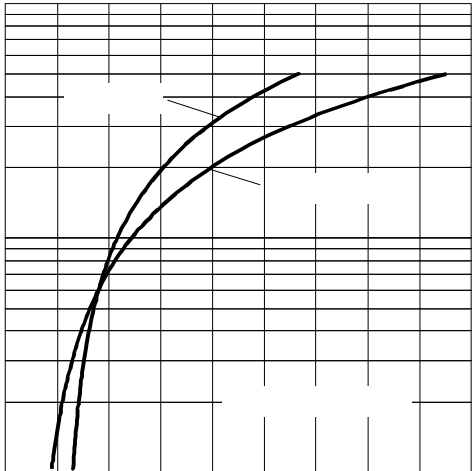


Fig. 13 - Forward Voltage Drop Characteristics

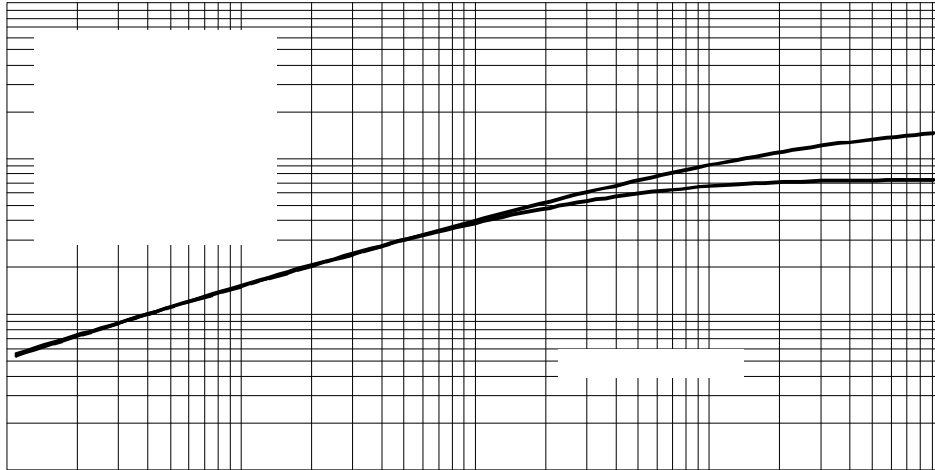


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

Thermal and Mechanical Specifications

| Parameter | SD300C..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 | 0.163 0.073 | | K/W | DC operation single side cooled DC operation double side cooled |
| F Mounting force, $\pm 10\%$ | 4900 (500) | | N (Kg) | |
| wt Approximate weight | 70 | | g | |
| Case style | DO-200AA | | See Outline Table | |

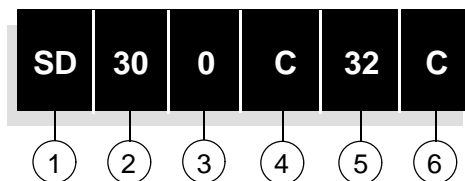
 ΔR_{thJ-hs} Conduction

(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° | 0.017 | 0.017 | 0.011 | 0.012 | K/W | $T_J = T_J \text{ max.}$ |
| 120° | 0.020 | 0.020 | 0.020 | 0.020 | | |
| 90° | 0.025 | 0.025 | 0.027 | 0.027 | | |
| 60° | 0.036 | 0.036 | 0.038 | 0.038 | | |
| 30° | 0.064 | 0.062 | 0.065 | 0.062 | | |

Ordering Information Table

Device Code



- 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 DO-200AA

Outline Table

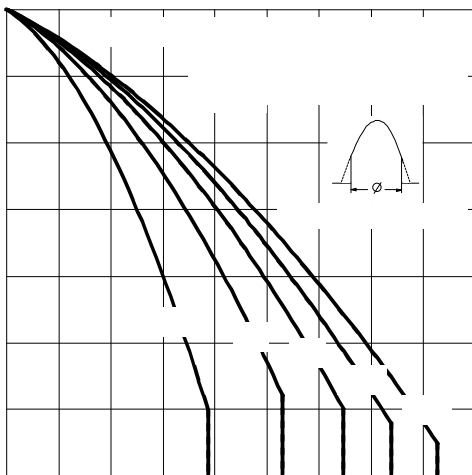
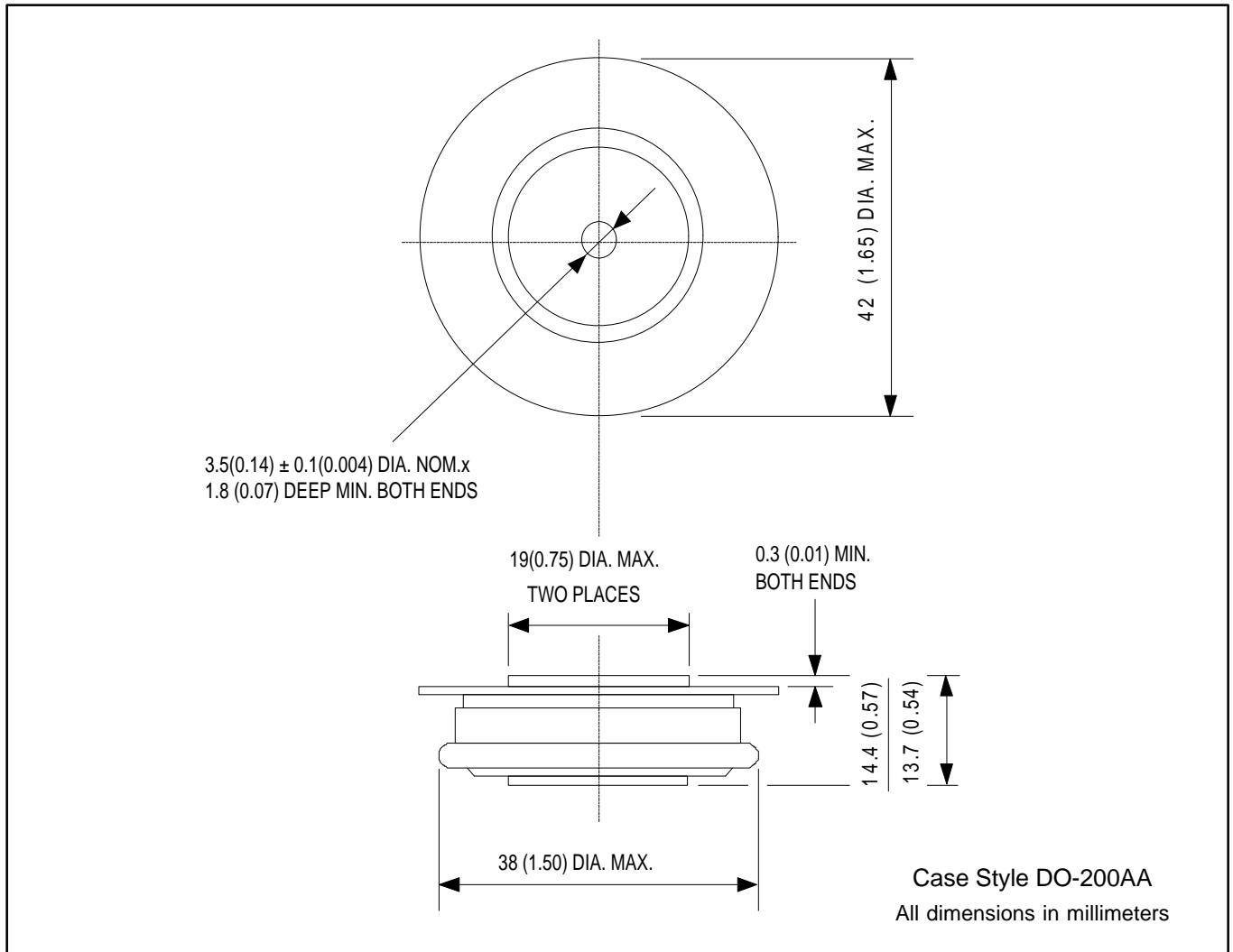


Fig. 1 - Current Ratings Characteristics

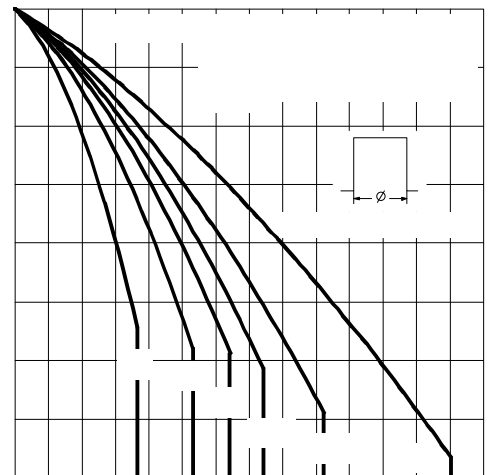


Fig. 2 - Current Ratings Characteristics