# Rectifier Diode
# Type SA52UN3090J0

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Date: March, 2020
Data Sheet Issue: 1

| ORDERING INFORMATION | | | | | (Please quote 12 to 15 digit code as below) | |
|---|---|---|---|---|---|---|
| SA | 52 | UN | 3090 | J | 0 | |
| - | Voltage Code | Outline Code | Current code | Type code | Special code | Optional code |

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**Absolute Maximum Ratings**

| | VOLTAGE RATINGS | MAXIMUM LIMITS | UNITS |
|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage, (note 1) | 5200 | V |
| $V_{RSM}$ | Non-repetitive peak reverse voltage, (note 1) | 5300 | V |
| $V_{RDC}$ | Maximum reverse D.C. Voltage, (note 1) | 3500 | V |
| note 1) | De-Rating factor of 0.13% per °C is applicable for $T_j$ below 25°C | | |

| | OTHER RATINGS | MAXIMUM LIMITS | UNITS |
|---|---|---|---|
| $I_{F(AV)M}$ | Maximum average forward current, $T_{sink}$ = 55°C, (note 1) | 3110 | A |
| $I_{F(AV)M}$ | Maximum average forward current, $T_{sink}$ = 100°C, (note 1) | 2105 | A |
| $I_{F(AV)M}$ | Maximum average forward current, $T_{sink}$ = 100°C, (note 2) | 1120 | A |
| $I_{F(RMS)}$ | Nominal RMS forward current, $T_{sink}$ = 25°C (note 1) | 5740 | A |
| $I_{f(d.c.)}$ | D.C. forward current, $T_{sink}$ = 25°C (note 3) | 5240 | A |
| $I_{FSM}$ | Peak non-repetitive surge current $t_p$ = 10ms, $V_{RM}$ = 60%$V_{RRM}$, (note 4) | 32 | kA |
| $I_{FSM2}$ | Peak non-repetitive surge current $t_p$ = 10ms, $V_{RM} \leq$ 10V, (note 4) | 36 | kA |
| $I^2t$ | $I^2t$ capacity for fusing $t_p$ = 10ms, $V_{RM}$ = 60%$V_{RRM}$, (note 4) | $5.12 \cdot 10^6$ | $A^2s$ |
| $I^2t$ | $I^2t$ capacity for fusing $t_p$ = 10ms, $V_{RM} \leq$ 10V, (note 4) | $6.48 \cdot 10^6$ | $A^2s$ |
| $T_{jop}$ | Operating temperature range | -40 to +150 | °C |
| $T_{stg}$ | Storage temperature range | -55 to +150 | °C |
| note 1) | Double-side cooled, single phase, 50Hz, 180° half-sinewave. | | |
| note 2) | Single-side cooled, single phase, 50Hz, 180° half-sinewave. | | |
| note 3) | Double-side cooled. | | |
| note 4) | Half-sinewave, 150°C $T_j$ initial. | | |

**Characteristics**

| | PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| $V_{FM}$ | Maximum peak forward voltage | $I_{FM}$=3000A | - | - | 1.70 | V |
| | | $I_{FM}$=8450A | - | - | 3.05 | V |
| $V_{T0}$ | Threshold Voltage | Valid from 2000A to 6000A | - | - | 0.91 | V |
| $r_T$ | Slope resistance | | - | - | 0.26 | mΩ |
| $I_{RRM}$ | Peak reverse current | Rated $V_{RRM}$ | - | - | 100 | mA |
| $Q_{rr}$ | Recovered charge | $I_{FM}$ = 3000A, $t_p$ = 2000µs, di/dt = 10A/µs, $V_R$ = 100V | - | 8000 | 10000 | µC |
| $Q_{ra}$ | Recovered charge, 50% Chord | | - | 4300 | - | µC |
| $I_{rm}$ | Reverse recovery current | | - | 210 | - | A |
| $t_{rr}$ | Reverse recovery time, 50% Chord | | - | 41 | - | µs |
| $R_{thJK}$ | Thermal resistance, junction to heatsink | Double side cooled | - | - | 10.5 | K/kW |
| | | Anode side cooled | - | - | 17.3 | K/kW |
| | | Cathode side cooled | - | - | 27.3 | K/kW |
| F | Mounting force | note 2) | 32 | - | 40 | kN |
| $W_t$ | Weight | | - | 1200 | - | g |
| note 1) | Unless otherwise indicated $T_j$ = 150°C | | | | | |
| note 2) | For other clamp forces consult factory | | | | | |

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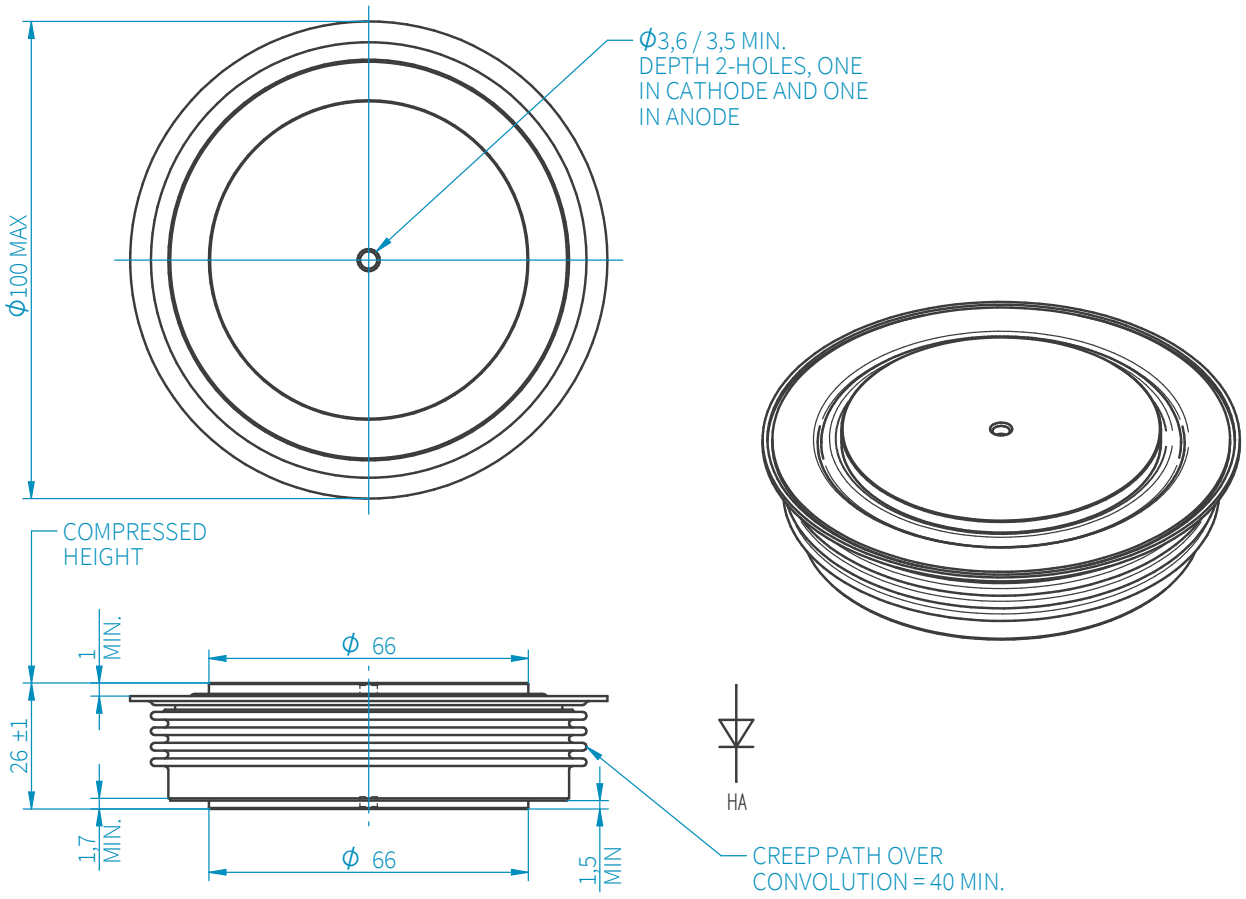
**Outline Drawing**




SANCONA®
technical solutions

**SANCONA GmbH**
An der Hebemärchte 26
D-04316 Leipzig

// +49 341 652355-0
+49 341 652355-99
info@sancona.com
www.sancona.com

// Registry Court: Leipzig HRB 32946
VAT Reg No.: DE308741810
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