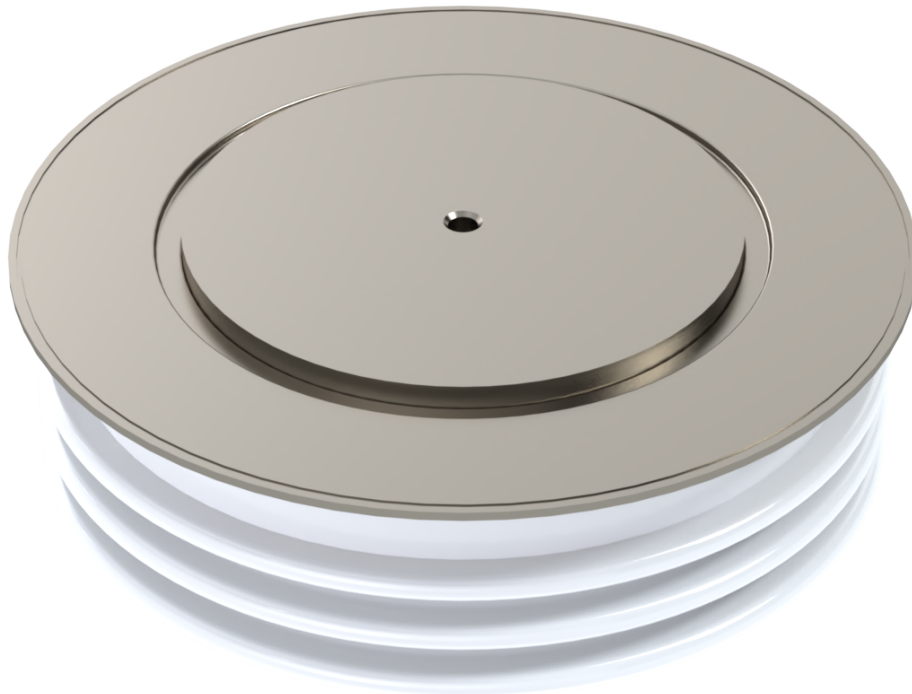


**Fast Recovery  
Diode  
Type SA40IP1583Z0**

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Date: February, 2020  
Data Sheet Issue: 1



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|    |              |              |              |           |              |               |
|----|--------------|--------------|--------------|-----------|--------------|---------------|
| SA | 40           | IP           | 1583         | Z         | 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)                           | 4000           | V     |
| $V_{RSM}$       | Non-repetitive peak reverse voltage, (note 1)                       | 4100           | V     |
| $V_{RDC}$       | Maximum reverse D.C. Voltage, (note 1)                              | 2000           | 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, $T_{sink} = 55^\circ\text{C}$ , (note 1)                   | 1583              | A                    |
| $I_{F(AV)M}$  | Maximum average forward current, $T_{sink} = 100^\circ\text{C}$ , (note 1)                  | 1030              | A                    |
| $I_{F(AV)M}$  | Maximum average forward current, $T_{sink} = 100^\circ\text{C}$ , (note 2)                  | 624               | A                    |
| $I_{F(RMS)}$  | Nominal RMS forward current, $T_{sink} = 25^\circ\text{C}$ (note 1)                         | 2963              | A                    |
| $I_{f(d.c.)}$ | D.C. forward current, $T_{sink} = 25^\circ\text{C}$ (note 3)                                | 2569              | A                    |
| $I_{FSM}$     | Peak non-repetitive surge current $t_p = 10\text{ms}$ , $V_{RM} = 60\%V_{RRM}$ , (note 4)   | 24.8              | kA                   |
| $I_{FSM2}$    | Peak non-repetitive surge current $t_p = 10\text{ms}$ , $V_{RM} \leq 10\text{V}$ , (note 4) | 27.3              | kA                   |
| $I^2t$        | $I^2t$ capacity for fusing $t_p = 10\text{ms}$ , $V_{RM} = 60\%V_{RRM}$ , (note 4)          | $3.08 \cdot 10^6$ | $\text{A}^2\text{s}$ |
| $I^2t$        | $I^2t$ capacity for fusing $t_p = 10\text{ms}$ , $V_{RM} \leq 10\text{V}$ , (note 4)        | $3.73 \cdot 10^6$ | $\text{A}^2\text{s}$ |
| $T_{jop}$     | Operating temperature range   | -40 to +150       | °C                   |
| $T_{stg}$     | Storage temperature range   | -40 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.   |                   |                      |

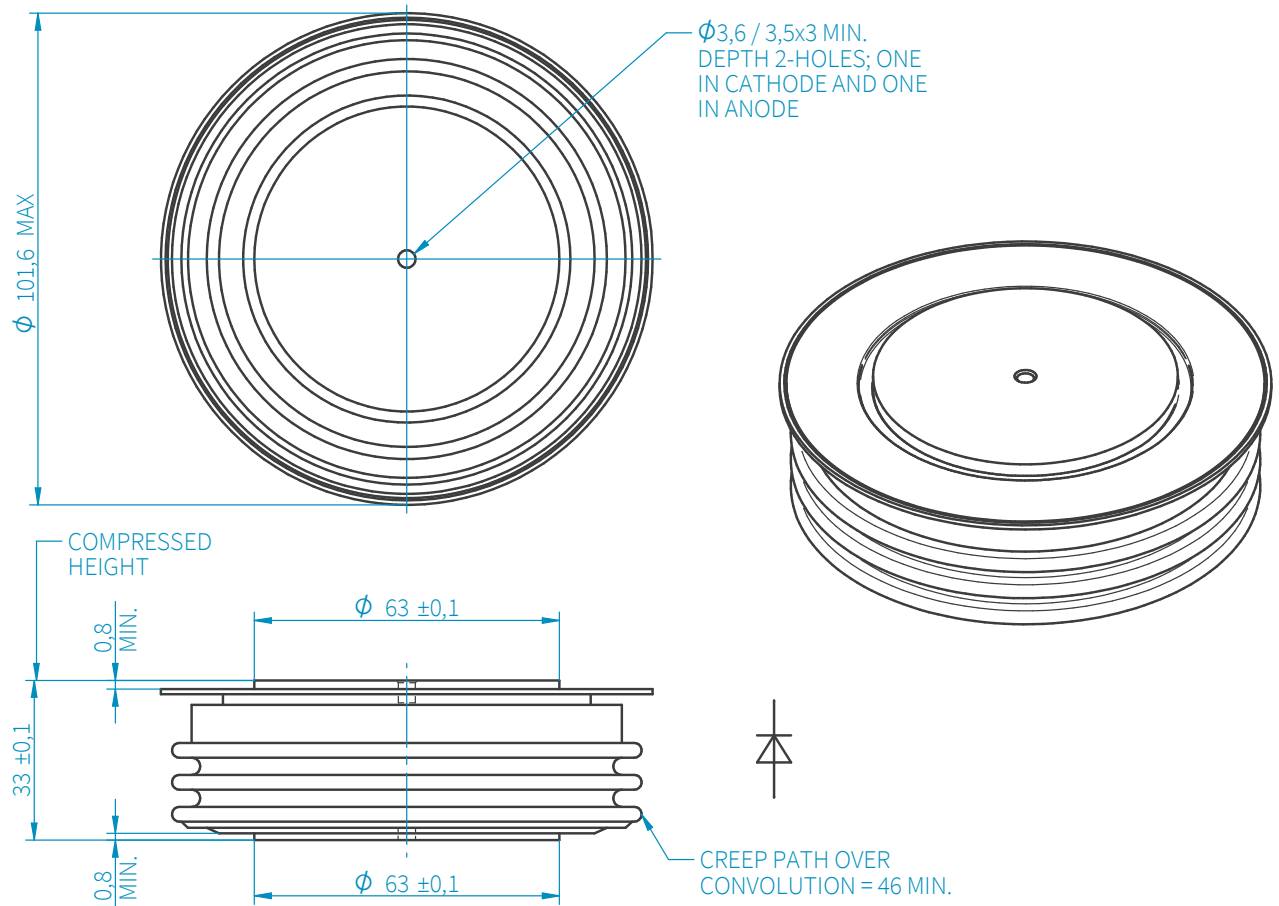
## Characteristics

|                   | PARAMETER   | TEST CONDITIONS  | MIN | TYP  | MAX   | UNITS |
|-------------------|---|--|-----|------|-------|-------|
| V <sub>FM</sub>   | Maximum peak forward voltage                      | I <sub>FM</sub> =2000A   | -   | -    | 2.8   | V     |
| V <sub>T0</sub>   | Threshold Voltage                                 |  | -   | -    | 1.693 | V     |
| r <sub>T</sub>    | Slope resistance                                  |  | -   | -    | 0.525 | mΩ    |
| V <sub>FRM</sub>  | Maximum forward recovery voltage                  | di/dt = 1000A/μs, T <sub>j</sub> = 25°C  | -   | -    | 70    | V     |
|                   |   | di/dt = 1000A/μs   | -   | -    | 110   | V     |
| I <sub>RRM</sub>  | Peak reverse current                              | Rated V <sub>RRM</sub>   | -   | -    | 150   | mA    |
| Q <sub>rr</sub>   | Recovered charge                                  |  | -   | 2000 | -     | μC    |
| Q <sub>ra</sub>   | Recovered charge, 50% Chord                       | I <sub>FM</sub> = 1000A, t <sub>p</sub> = 500μs,<br>di/dt = 200A/μs, V <sub>R</sub> = 50V,<br>50% Chord. | -   | 1100 | 1500  | μC    |
| I <sub>rm</sub>   | Reverse recovery current                          |  | -   | 500  | -     | A     |
| t <sub>rr</sub>   | Reverse recovery time, 50% Chord                  |  | -   | 5.0  | -     | μs    |
| R <sub>thJK</sub> | Thermal resistance, junction to heatsink          | Double side cooled   | -   | -    | 0.016 | K/W   |
|                   |   | Single side cooled   | -   | -    | 0.032 | K/W   |
| F                 | Mounting force                                    | note 2)  | 27  | -    | 34    | kN    |
| W <sub>t</sub>    | Weight  |  | -   | 1000 | -     | g     |
| note 1)           | Unless otherwise indicated T <sub>j</sub> = 150°C |  |     |      |       |       |
| note 2)           | For other clamp forces consult factory            |  |     |      |       |       |

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## Outline Drawing



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