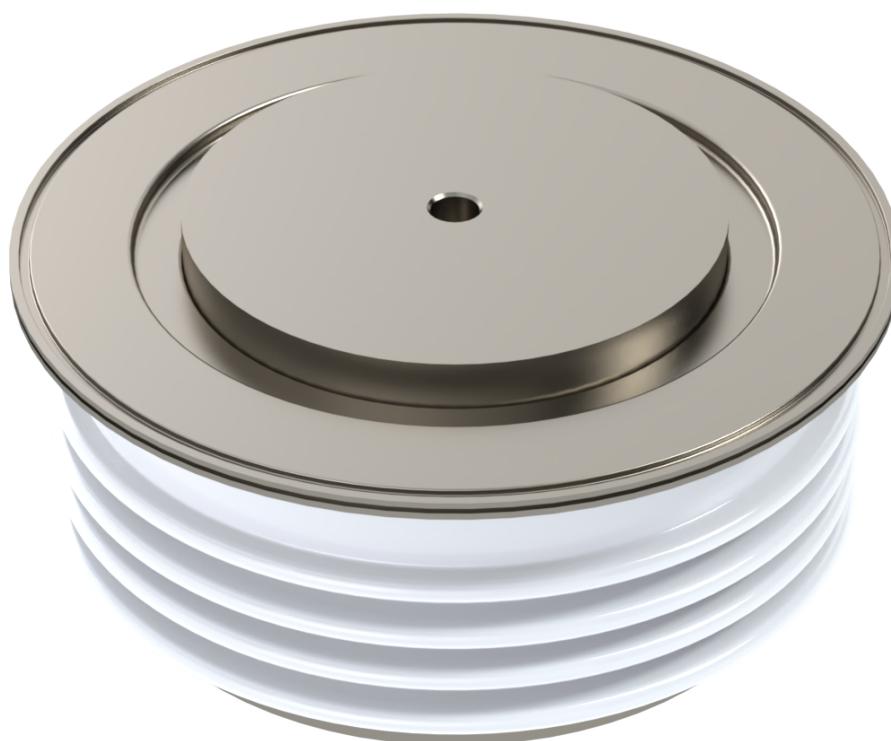


**Soft Recovery
Diode
Type SA42YP0659Z0**

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Date: July, 2020
Data Sheet Issue: 1



| ORDERING INFORMATION | | | | | | (Please quote 12 to 15 digit code as below) |
|----------------------|--------------|--------------|--------------|-----------|--------------|---|
| SA | 42 | YP | 0659 | 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) | 4200 | V |
| V_{RSM} | Non-repetitive peak reverse voltage, (note 1) | 4300 | V |
| V_{RDC} | Maximum reverse D.C. Voltage, (note 1) | 2040 | 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, $T_{sink} = 55^{\circ}C$, (note 1) | 659 | A |
| $I_{F(AV)M}$ | Maximum average forward current, $T_{sink} = 100^{\circ}C$, (note 1) | 312 | A |
| $I_{F(AV)M}$ | Maximum average forward current, $T_{sink} = 100^{\circ}C$, (note 2) | 178 | A |
| $I_{F(RMS)}$ | Nominal RMS forward current, $T_{sink} = 25^{\circ}C$ (note 1) | 1315 | A |
| $I_{f(d.c.)}$ | D.C. forward current, $T_{sink} = 25^{\circ}C$ (note 3) | 1108 | A |
| I_{FSM} | Peak non-repetitive surge current $t_p = 10ms$, $V_{RM} = 60\%V_{RRM}$, (note 4) | 7.62 | kA |
| I_{FSM2} | Peak non-repetitive surge current $t_p = 10ms$, $V_{RM} \leq 10V$, (note 4) | 8.47 | kA |
| I^2t | I^2t capacity for fusing $t_p = 10ms$, $V_{RM} = 60\%V_{RRM}$, (note 4) | $290 \cdot 10^3$ | A^2s |
| I^2t | I^2t capacity for fusing $t_p = 10ms$, $V_{RM} \leq 10V$, (note 4) | $359 \cdot 10^3$ | A^2s |
| T_{jop} | Operating temperature range | -40 to +125 | °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, 125°C T_j initial. | | |

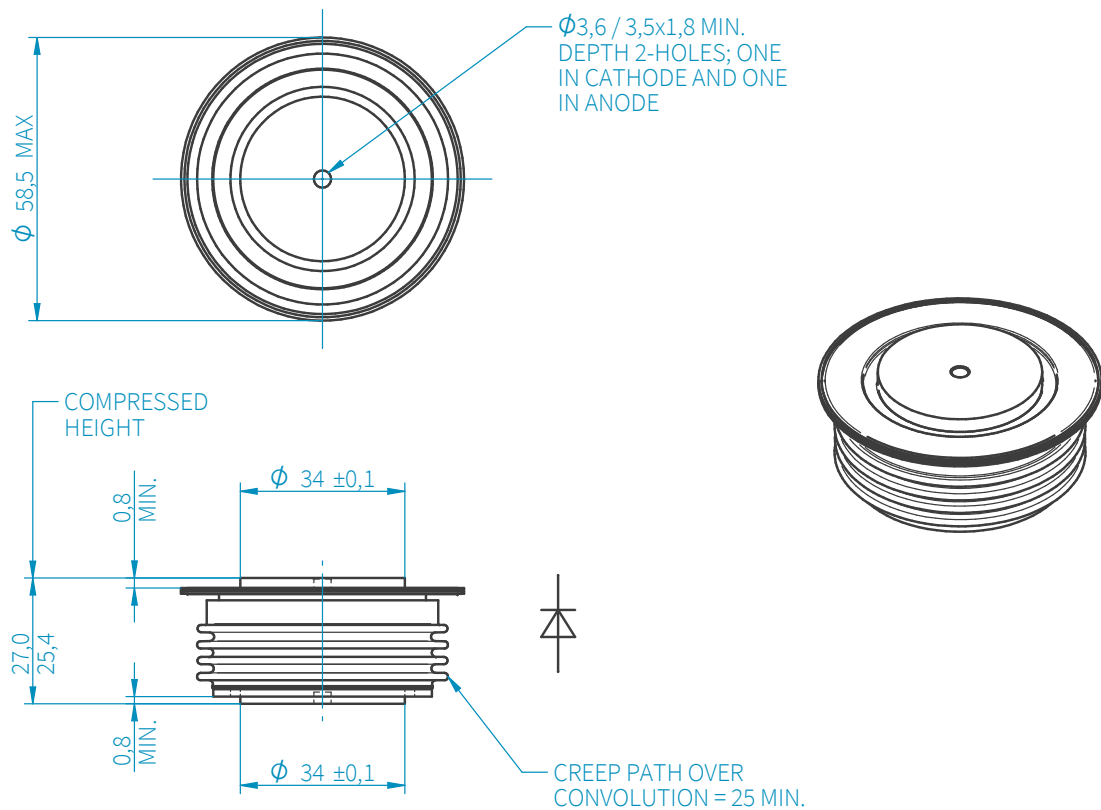
Characteristics

| PARAMETER | | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|-------------------|---|--|-----|-----|-------|-------|
| V _{FM} | Maximum peak forward voltage | I _{FM} =1400A | - | - | 3.0 | V |
| | | I _{FM} =1320A | - | - | 2.95 | V |
| V _{T0} | Threshold Voltage | | - | - | 1.71 | V |
| r _T | Slope resistance | | - | - | 0.925 | mΩ |
| V _{FRM} | Maximum forward recovery voltage | di/dt = 1000A/μs, T _j = 25°C | - | - | 110 | V |
| | | di/dt = 1000A/μs | - | - | 180 | V |
| I _{RRM} | Peak reverse current | Rated V _{RRM} , T _j = 25°C | - | - | 100 | mA |
| | | Rated V _{RRM} | - | - | 100 | mA |
| Q _{rr} | Recovered charge | | - | 80 | - | μC |
| Q _{ra} | Recovered charge, 50% Chord | I _{FM} = 1000A, t _p = 1000μs, di/dt = 60A/μs, V _r = 50V, | - | 270 | 350 | μC |
| I _{rm} | Reverse recovery current | 50% Chord. | - | 130 | - | A |
| t _{rr} | Reverse recovery time, 50% Chord | | - | 4.2 | - | μs |
| R _{thJK} | Thermal resistance, junction to sink | Double side cooled | - | - | 0.033 | K/W |
| | | Single side cooled | - | - | 0.066 | K/W |
| F | Mounting force | (note 2) | 10 | - | 20 | kN |
| W _t | Weight | | - | 340 | - | g |
| note 1) | Unless otherwise indicated T _j = 125°C | | | | | |
| note 2) | For other clamping forces, consult factory. | | | | | |

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