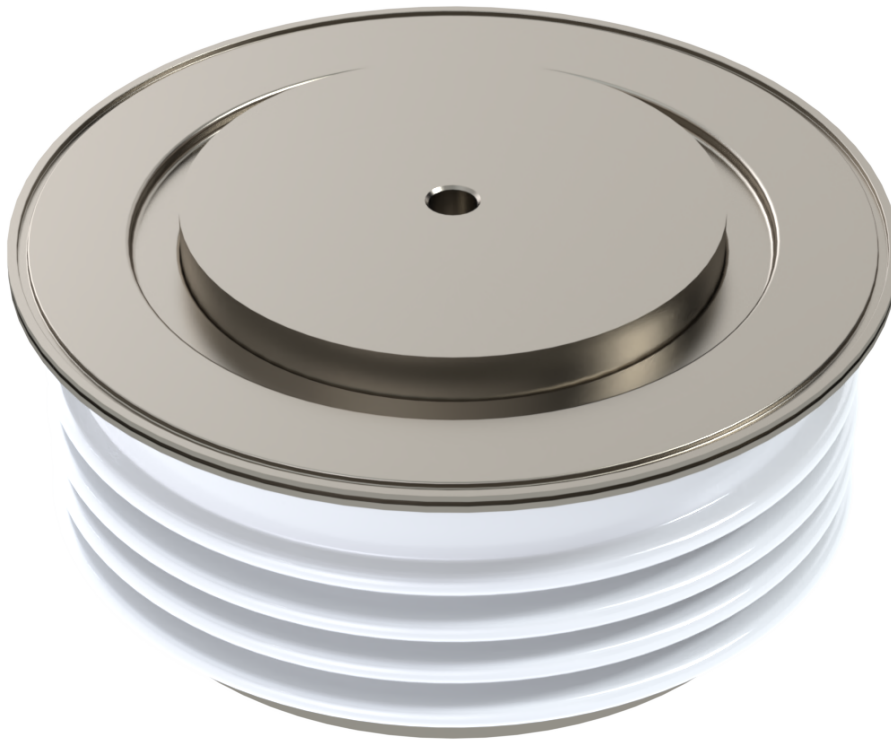


**Fast Recovery
Diode
Type SA45YP0659Z0PNQ**

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Date: March, 2020
Data Sheet Issue: 1



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SA	45	YP	0659	Z	0	PNQ
-	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)	4500	V
V_{RSM}	Non-repetitive peak reverse voltage, (note 1)	4600	V
V_{RDC}	Maximum reverse D.C. Voltage, (note 1)	2100	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)	659	A
$I_{F(AV)M}$	Maximum average forward current, $T_{sink} = 100^\circ\text{C}$, (note 1)	312	A
$I_{F(AV)M}$	Maximum average forward current, $T_{sink} = 100^\circ\text{C}$, (note 2)	178	A
$I_{F(RMS)}$	Nominal RMS forward current, $T_{sink} = 25^\circ\text{C}$ (note 1)	1315	A
$I_{f(d.c.)}$	D.C. forward current, $T_{sink} = 25^\circ\text{C}$ (note 3)	1108	A
I_{FSM}	Peak non-repetitive surge current $t_p = 10\text{ms}$, $V_{RM} = 60\%V_{RRM}$, (note 4)	7.62	kA
I_{FSM2}	Peak non-repetitive surge current $t_p = 10\text{ms}$, $V_{RM} \leq 10\text{V}$, (note 4)	8.47	kA
I^2t	I^2t capacity for fusing $t_p = 10\text{ms}$, $V_{RM} = 60\%V_{RRM}$, (note 4)	$290 \cdot 10^3$	A^2s
I^2t	I^2t capacity for fusing $t_p = 10\text{ms}$, $V_{RM} \leq 10\text{V}$, (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.		

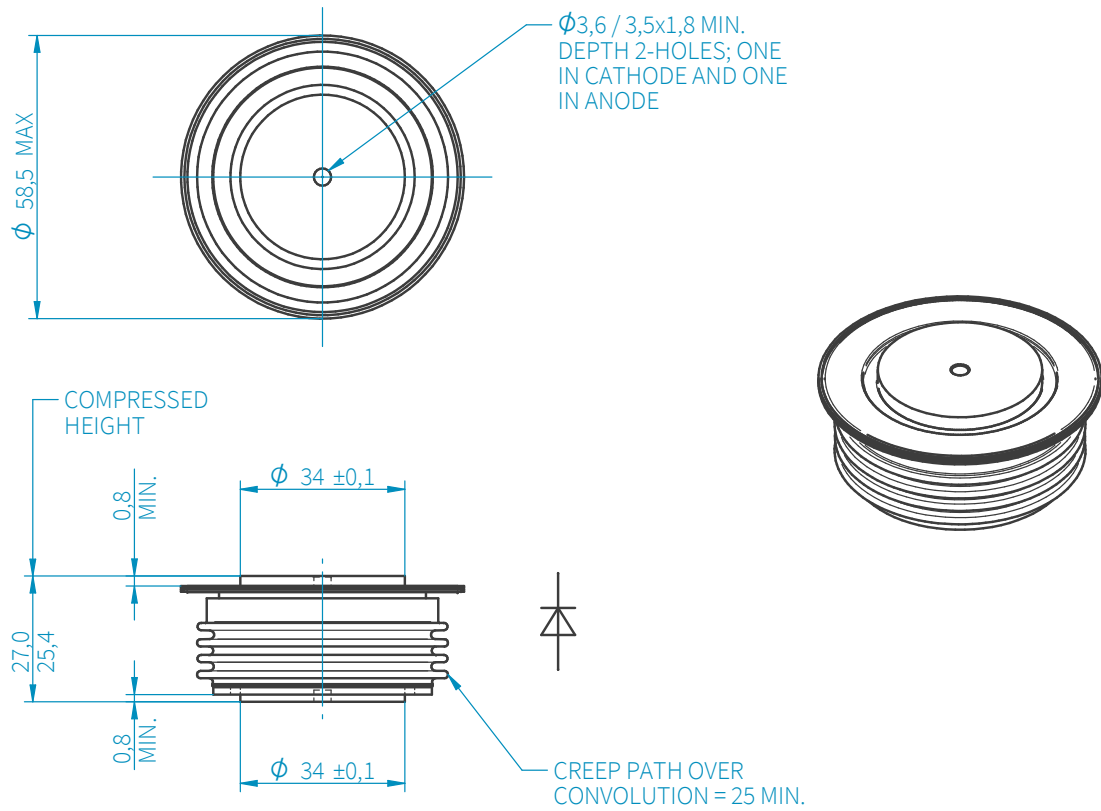
Characteristics

	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}	-	-	100	mA
		Rated V _{RRM} , T _j = 25°C	-	-	100	mA
Q _{rr}	Recovered charge		-	800	-	μC
Q _{ra}	Recovered charge, 50% Chord	I _{FM} = 1000A, t _p = 1000μs, di/dt = 60A/μs, V _R = 50V, 50% Chord.	-	270	350	μC
I _{rm}	Reverse recovery current		-	130	-	A
t _{rr}	Reverse recovery time, 50% Chord		-	4.2	-	μs
R _{thJK}	Thermal resistance, junction to heatsink	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 clamp forces consult factory					

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