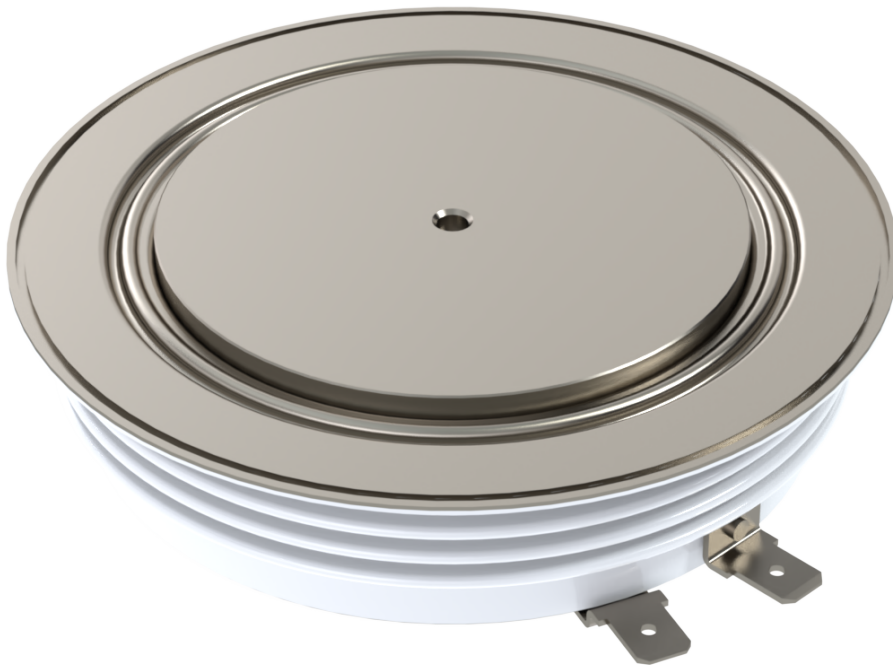


# Anode Shorted Gate Turn-Off Thyristor Type SA25US2000T0

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Date: June, 2020  
Data Sheet Issue: 1



## ORDERING INFORMATION

(Please quote 12 to 15 digit code as below)

SA	25	US	2000	T	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
$V_{DRM}$	Repetitive peak off-state voltage, (note 1)	2500	V
$V_{RSM}$	Non-repetitive peak off-state voltage, (note 1)	2500	V
$V_{RRM}$	Repetitive peak reverse voltage	18	V
$V_{RSM}$	Non-repetitive peak reverse voltage	18	V
$V_{DC-link}$	Maximum continuous DC-link voltage	1250	V
note 1)	$V_{GK} = -2V$		

OTHER RATINGS		MAXIMUM LIMITS	UNITS
$I_{TGQ}$	Peak turn-off current (note 1)	2000	A
$L_S$	Snubber loop impedance, $I_{TM} = I_{TGQ}$ (note 1)	200	nH
$I_{T(AV)M}$	Mean on-state current, $T_{sink} = 55^{\circ}C$ , (note 2)	1030	A
$I_{T(RMS)}$	Nominal RMS on-state current, $T_{sink} = 25^{\circ}C$ (note 2)	2050	A
$I_{TSM}$	Peak non-repetitive surge current $t_p = 10ms$ (note 3)	16	kA
$I_{TSM2}$	Peak non-repetitive surge current $t_p = 2ms$ (note 3)	18	kA
$I^2t$	$I^2t$ capacity for fusing $t_p = 10ms$	$1.28 \cdot 10^6$	$A^2s$
$(di/dt)_{cr}$	Critical rate of rise of on-state current, (note 4)	500	$A/\mu s$
$P_{FGM}$	Peak forward gate power	120	W
$P_{RGM}$	Peak reverse gate power	12	kW
$I_{FGM}$	Peak forward gate current	60	A
$V_{RGM}$	Peak reverse gate voltage (note 5)	18	V
$T_{jop}$	Operating temperature range	-40 to +125	$^{\circ}C$
$T_{stg}$	Storage temperature range	-40 to +125	$^{\circ}C$
note 1)	$T_j = 125^{\circ}C$ , $V_D = 1250V$ , $V_{DM} \leq 2500V$ , $di_{GQ}/dt = 30A/\mu s$ , $I_{TGQ} = 2500A$ and $C_S = 4\mu F$		
note 2)	Double-side cooled, single phase, 50Hz, 180° half-sinewave.		
note 3)	$T_{j(initial)} = 125^{\circ}C$ , single phase, 50Hz, 180° sinewave, re-applied voltage $V_D = V_R \leq 10V$		
note 4)	$I_T = 2000A$ repetitive, $I_{GM} = 25A$ , $di_{GM}/dt = 20A/\mu s$ . For $di/dt > 500A/\mu s$ please consult factory.		
note 5)	May exceed this value during turn-off avalanche period.		

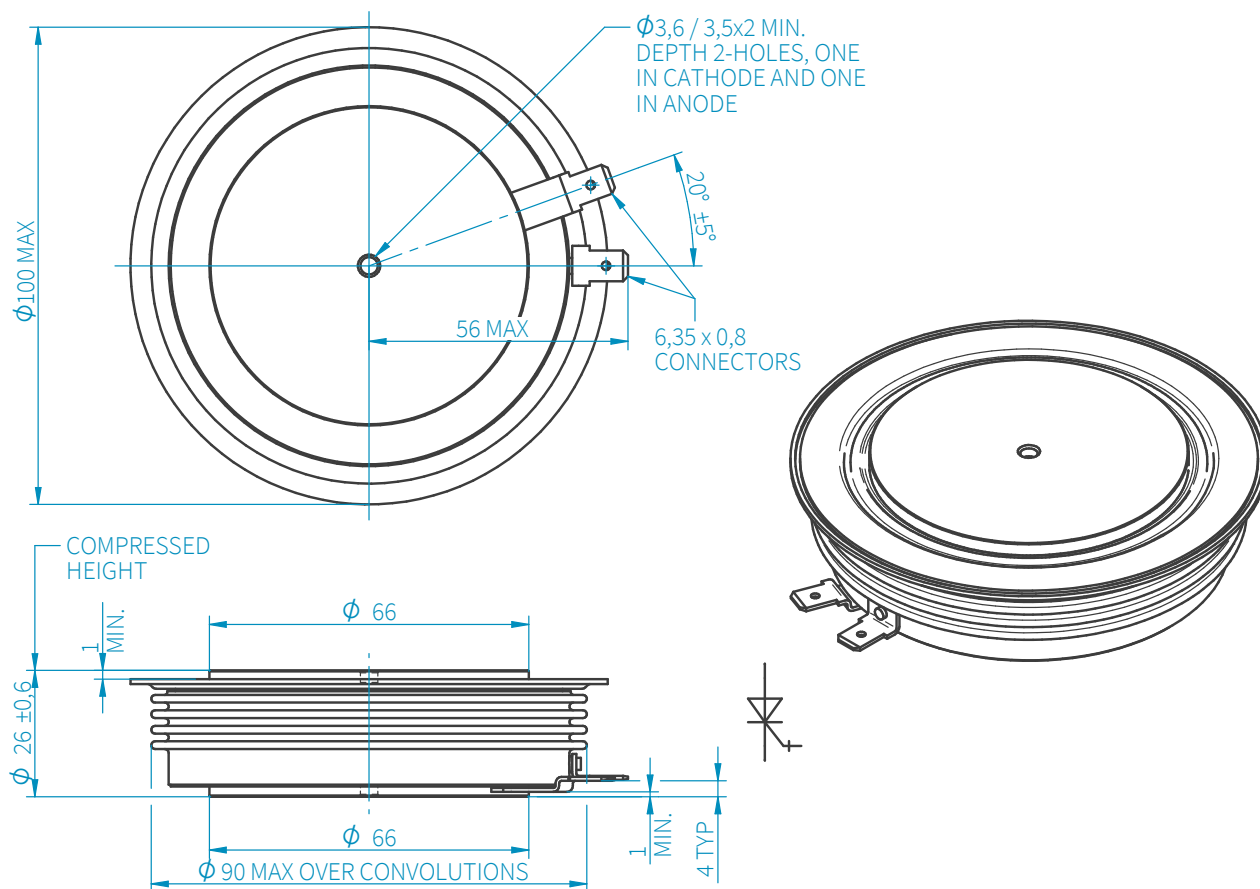
## Characteristics

	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$V_{TM}$	Maximum peak on-state voltage	$I_G = 5A, I_T = 2000A$	-	-	2.8	V
$I_L$	Latching current	$T_J = 25^\circ C$	-	40	-	A
$I_H$	Holding current	$T_J = 25^\circ C$	-	40	-	A
$(dv/dt)_{cr}$	Critical rate of rise of off-state voltage	$V_D = 3000V, V_{GR} = -2V$	1000	-	-	V/ $\mu s$
$I_{DRM}$	Peak off-state current	Rated $V_{DRM}, V_{GR} = -2V$	-	-	60	mA
$I_{RRM}$	Peak reverse current	$V_{RR} = 18V$	-	-	20	mA
$I_{GKM}$	Peak negative gate leakage current	$V_{GR} = -18V$	-	-	20	mA
$V_{GT}$	Gate trigger voltage	$T_J = -40^\circ C, V_D = 25V, R_L = 25m\Omega$	-	1.0	-	V
		$T_J = 25^\circ C, V_D = 25V, R_L = 25m\Omega$	-	0.8	1.0	V
		$T_J = 125^\circ C, V_D = 25V, R_L = 25m\Omega$	-	0.6	-	V
$I_{GT}$	Gate trigger current	$T_J = -40^\circ C, V_D = 25V, R_L = 25m\Omega$	-	8	-	A
		$T_J = 25^\circ C, V_D = 25V, R_L = 25m\Omega$	-	-	5	A
		$T_J = 125^\circ C, V_D = 25V, R_L = 25m\Omega$	0.05	-	1	A
$t_d$	Delay time	$V_D = 1250V, I_{TGQ} = 2000A,$	-	0.7	2	$\mu s$
$t_{gt}$	Turn-on time	$di_T/dt = 200A/\mu s, I_{GM} = 30A, C_S = 4\mu F,$	-	3	5	$\mu s$
$E_{on}$	Turn-on energy	$R_S = 5\Omega$	-	-	0.4	J
$t_f$	Fall time		-	1.5	-	$\mu s$
$t_s$	Storage time		-	-	26	$\mu s$
$t_{gq}$	Turn-off time		-	-	30	$\mu s$
$I_{GQM}$	Peak turn-off gate current	$V_{DM} = 2500V, di_{GQ}/dt = 30A/\mu s,$	-	600	-	A
$Q_{GQ}$	Turn-off gate charge	$I_{TGQ} = 2000A, V_{GR} = -16V, C_S = 4\mu F$	-	8	-	mC
$t_{tail}$	Tail time		-	8.5	-	$\mu s$
$E_{off}$	Turn-off energy		-	-	2.5	J
$R_{thJK}$	Thermal resistance, junction to sink	Double side cooled	-	-	22	K/kW
		Cathode side cooled	-	-	48	K/kW
		Anode side cooled	-	-	42	K/kW
F	Mounting force	(note 2)	21	-	26	kN
$W_t$	Weight		-	800	-	g
note 1)	Unless otherwise indicated $T_J = 125^\circ C$					
note 2)	For other clamping forces, consult factory.					

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## Outline Drawing



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