Anode Shorted Gate Turn-Off Thyristor Type SA45AP1000TB

ORDERING INFORMATION					(Please quote 12 to 15 digit code as below)
SA	45	AP	1000	T	B
-	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)	4500	V
V_{RSM}	Non-repetitive peak off-state voltage, (note 1)	4500	V
V_{RRM}	Repetitive peak reverse voltage	18	V
V_{RSM}	Non-repetitive peak reverse voltage	18	V
note 1)	$V_{GK} = -2V$		

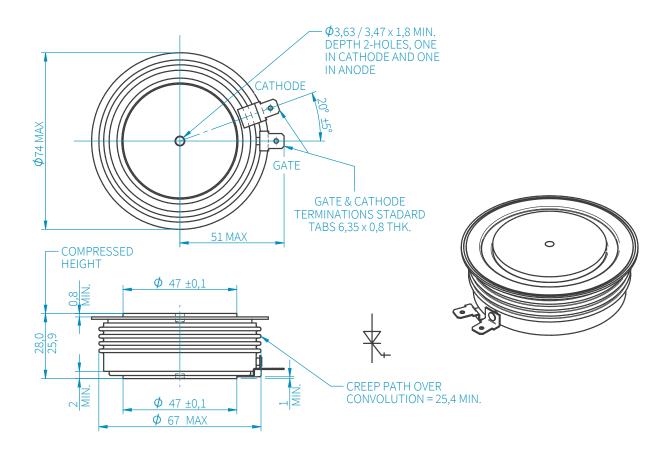|	OTHER RATINGS	MAXIMUM LIMITS	UNITS
I_{TGQ}	Peak turn-off current (note 1)	1000	A
L_S	Snubber loop impedance, $I_{TM} = I_{TGQ}$ (note 1)	300	nH
$I_{T(AV)M}$	Mean on-state current, $T_{sink} = 55°C$, (note 2)	545	A
$I_{T(RMS)}$	Nominal RMS on-state current, $T_{sink} = 25°C$ (note 2)	1065	A
I_{TSM}	Peak non-repetitive surge current $t_p = 10ms$ (note 3)	8	kA
I_{TSM2}	Peak non-repetitive surge current $t_p = 2ms$ (note 3)	14	kA
I^2t	I^2t capacity for fusing $t_p = 10ms$	$320 \cdot 10^3$	A^2s
$(di/dt)_{cr}$	Critical rate of rise of on-state current, (note 4)	800	A/µs
P_{FGM}	Peak forward gate power	210	W
P_{RGM}	Peark reverse gate power	8	kW
I_{FGM}	Peak forward gate current	140	A
V_{RGM}	Peak reverse gate voltage (note 5)	18	V
t_{off}	Minimum permissible off-time (note 1)	80	µs
t_{on}	Maximum permissible on-time	20	µs
T_{jop}	Operating temperature range	-40 to +125	°C
T_{stg}	Storage temperature range	-40 to +125	°C
note 1)	$T_j = 125°C$, $V_D = 2/3V_{DM}$, $V_{DM} \leq V_{DRM}$, $di_{GQ}/dt = 25A/µs$, $I_{TGQ} = 1000A$ and $C_S = 2µF$		
note 2)	Double-side cooled, single phase, 50Hz, 180° half-sinewave.		
note 3)	$T_{j(initial)} = 125°C$, single phase, 50Hz, 180° sinewave, re-applied voltage $V_D = V_R \leq 10V$		
note 4)	For di/dt > 800A/µs 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	$I_G = 2A$, $I_T = 1000A$	-	3.5	4.0	V
I_L	Latching current	$T_j = 25°C$	-	10	-	A
I_H	Holding current	$T_j = 25°C$	-	10	-	A
$(dv/dt)_{cr}$	Critical rate of rise of off-state voltage	$V_D = 2/3V_{DRM}$, $V_{GR} = -2V$	1000	-	-	V/µs
I_{DRM}	Peak off-state current	Rated V_{DRM}, $V_{GR} = -2V$	-	-	50	mA
I_{RRM}	Peak reverse current	$V_{RR} = 16V$	-	-	60	mA
I_{GKM}	Peak negative gate leakage current	$V_{GR} = -16V$	-	-	60	mA
V_{GT}	Gate trigger voltage	$T_j = -40°C$, $V_D = 25V$, $R_L = 25mΩ$	-	1.2	-	V
		$T_j = 25°C$, $V_D = 25V$, $R_L = 25mΩ$	-	1	-	V
		$T_j = 125°C$, $V_D = 25V$, $R_L = 25mΩ$	-	0.8	-	V
I_{GT}	Gate trigger current	$T_j = -40°C$, $V_D = 25V$, $R_L = 25mΩ$	-	1.4	4	A
		$T_j = 25°C$, $V_D = 25V$, $R_L = 25mΩ$	-	0.7	2	A
		$T_j = 125°C$, $V_D = 25V$, $R_L = 25mΩ$	-	0.25	0.7	A
t_d	Delay time	$V_D = 0.5V_{DRM}$, $I_{TGQ} = 1000A$, $di_T/dt = 300A/µs$, $I_{GM} = 20A$, $di_G/dt = 10A/µs$	-	1.2	-	µs
t_{gt}	Turn-on time		-	3.5	6	µs
E_{on}	Turn-on energy		-	0.4	-	J
t_f	Fall time		-	1.3	-	µs
t_{gq}	Turn-off time		-	15	18	µs
I_{CQM}	Peak turn-off gate current	$V_D = 2/3V_{DRM}$, $V_{TGQ} = 1000V$, $di_{GQ}/dt = 25A/µs$, $V_{GR} = -16V$, $C_S = 2µF$	-	290	-	A
E_{off}	Turn-off energy		-	1.4	-	J
Q_{GQ}	Turn-off gate charge		-	2.3	3	mC
t_{tail}	Tail time		-	40	60	µs
t_{gw}	Gate off-time (note 3)		100	-	-	µs
R_{thJK}	Thermal resistance, junction to sink	Double side cooled	-	-	27	K/kW
		Cathode side cooled	-	-	70	K/kW
		Anode side cooled	-	-	45	K/kW
F	Mounting force	(note 2)	15	-	25	kN
W_t	Weight		-	480	-	g

note 1)	Unless otherwise indicated $T_j = 125°C$
note 2)	For other clamping forces, consult factory.
note 3)	t_{gw} is the period during which the gate circuit is required to remain at low impedance to allow for the passage of t_{tail}.

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Outline Drawing

ϕ3,63 / 3,47 x 1,8 MIN. DEPTH 2-HOLES, ONE IN CATHODE AND ONE IN ANODE

CATHODE

20° ±5°

GATE

ϕ74 MAX

51 MAX

GATE & CATHODE TERMINATIONS STADARD TABS 6,35 x 0,8 THK.

COMPRESSED HEIGHT

0,8 MIN.

28,0 / 25,9

2 MIN.

ϕ 47 ±0,1

ϕ 47 ±0,1

ϕ 67 MAX

1 MIN.

CREEP PATH OVER CONVOLUTION = 25,4 MIN.

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