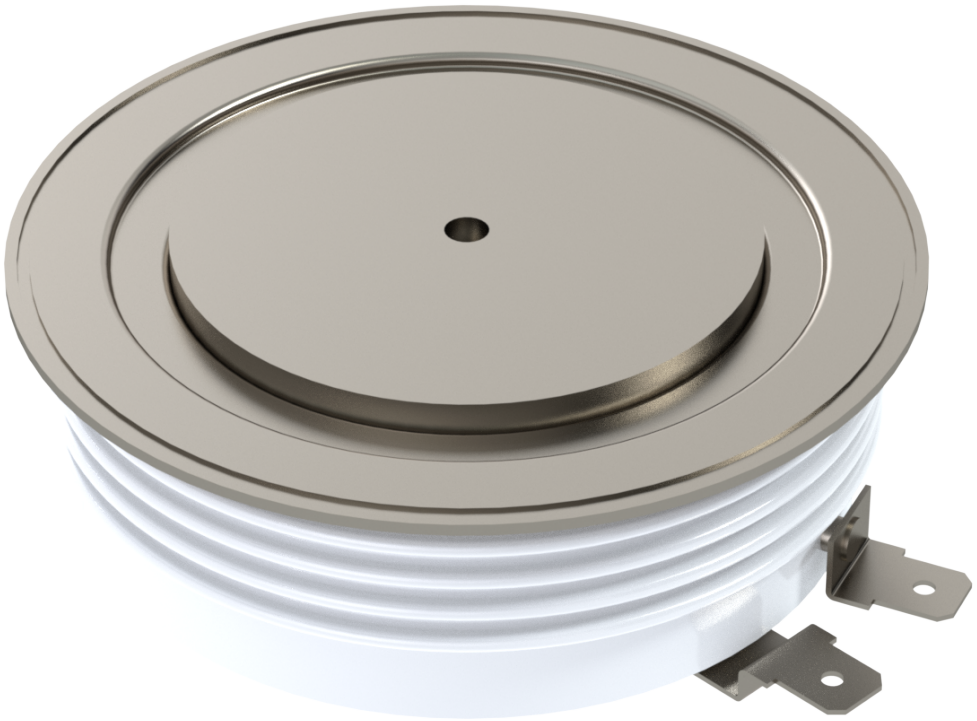
Symmetrical Gate Turn-Off Thyristor Type SA20AP1200FR

SANCONA®
technical solutions

Contact us!

Date: June, 2020
Data Sheet Issue: 1



ORDERING INFORMATION						(Please quote 12 to 15 digit code as below)
SA	20	AP	1200	F	R	
-	Voltage Code	Outline Code	Current code	Type code	Special code	Optional code

Find more!

Explore the full range of our semiconductor portfolio online

Absolute Maximum Ratings

	VOLTAGE RATINGS	MAXIMUM LIMITS	UNITS
V_{DRM}	Repetitive peak off-state voltage, (note 1)	2000	V
V_{RSM}	Non-repetitive peak off-state voltage, (note 1)	2100	V
V_{RRM}	Repetitive peak reverse voltage	500	V
V_{RSM}	Non-repetitive peak reverse voltage	500	V
note 1)	V_{GK} = –2V		

	OTHER RATINGS	MAXIMUM LIMITS	UNITS
I_{TGQ}	Peak turn-off current (note 1)	1200	A
L_S	Snubber loop impedance, $I_{TM} = I_{TGQ}$ (note 1)	0.3	µH
$I_{T(AV)M}$	Mean on-state current, T_{sink} = 55°C, (note 2)	790	A
$I_{T(RMS)}$	Nominal RMS on-state current, T_{sink} = 25°C (note 2)	1600	A
I_{TSM}	Peak non-repetitive surge current t_p = 10ms	13.0	kA
I_{TSM2}	Peak non-repetitive surge current (note 3)	23.0	kA
I^2t	I^2t capacity for fusing t_p = 10ms	$840 \cdot 10^3$	A^2s
$(di/dt)_{cr}$	Critical rate of rise of on-state current, (note 4)	1000	A/µs
P_{FGM}	Peak forward gate power	200	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, $I_{TM} = I_{TGQ}$ (note 1)	80	µs
t_{on}	Minimum permissible off-time	20	µs
T_{jop}	Operating temperature range	-40 to +125	°C
T_{stg}	Storage temperature range	-40 to +150	°C
note 1)	T_j = 125°C, V_D = 80%V_{DM}, $V_{DM} \leq V_{DRM}$, di_{GQ}/dt = 20A/µs, $I_{TM} = I_{TGQ}$ and C_S = 3µF		
note 2)	Double-side cooled, single phase, 50Hz, 180° half-sinewave.		
note 3)	Half-sinewave, t_p = 2ms		
note 4)	For di/dt > 1000A/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 = 1200A	-	2.4	2.7	V
I_L	Latching current	T_j = 25°C	-	10	-	A
I_H	Holding current		-	10	-	A
$(dv/dt)_{cr}$	Critical rate of rise of off-state voltage	V_D = 80%V_{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	Rated V_{RRM}	-	-	100	mA
I_{GKM}	Peak negative gate leakage current	V_{GR} = –16V	-	-	200	mA
V_{GT}	Gate trigger voltage	T_j = –40°C, V_D = 25V, R_L = 25mΩ	-	1.0	-	V
		T_j = 25°C, V_D = 25V, R_L = 25mΩ	-	0.9	-	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	-	2	7	A
		T_j = 25°C, V_D = 25V, R_L = 25mΩ	-	0.5	2	A
		T_j = 125°C, V_D = 25V, R_L = 25mΩ	-	50	300	mA
t_d	Delay time	(note 2)	-	1.5	-	µs
t_{gt}	Turn-on time	Conditions as for t_d, (10%I_{GM} to 10%V_D)	-	4.5	8.0	µs
t_f	Fall time	(note 3)	-	1	-	µs
t_{gq}	Turn-off time	Conditions as for t_f, (10%I_{GQ} to 10%I_{TGQ})	-	19	22	µs
I_{GQ}	Turn-off gate current	Conditions as for t_f	-	300	-	A
Q_{GQ}	Turn-off gate charge		-	4000	5000	mC
t_{tail}	Tail time	Conditions as for t_f, (10%I_{TGQ} to I_{TGQ} < 1A)	-	50	75	µs
t_{gw}	Gate off-time (note 4)	Conditions as for t_f	150	-	-	µs
R_{thJK}	Thermal resistance, junction to sink	Double side cooled	-	-	0.027	K/W
		Cathode side cooled	-	-	0.070	K/W
		Anode side cooled	-	-	0.045	K/W
F	Mounting force	(note 5)	15	-	25	kN
W_t	Weight		-	480	-	g

note 1) Unless otherwise indicated T_j = 125°C

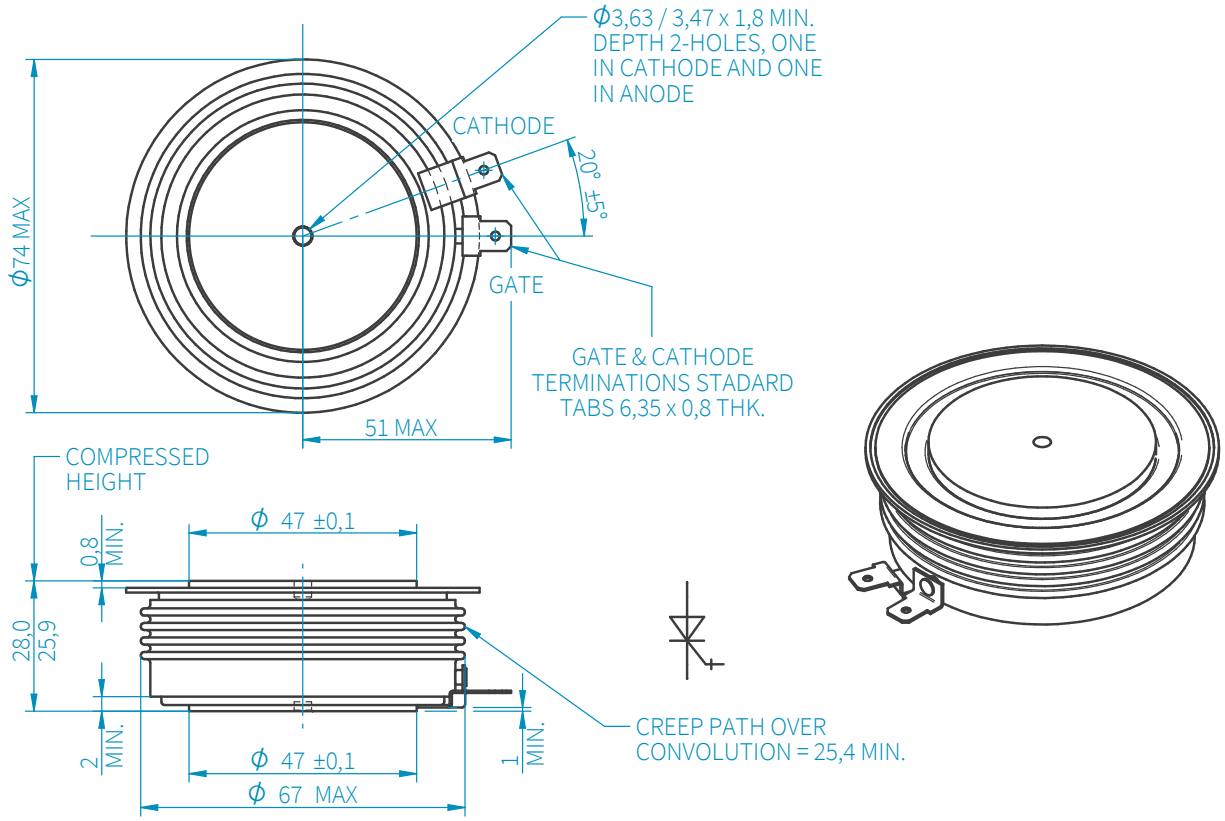
note 2) V_D = 50%V_{DRM}, I_{TGQ} = 1200A, I_{GM} = 20A, di_G/dt = 10A/µs, T_j = 25°C, di/dt = 300A/µs, (10%I_{GM} to 90%V_D)

note 3) V_D = 80%V_{DRM}, I_{TGQ} = 1200A, C_S = 3µF, di_G/dt = 20A/µs, V_{GR} = –16V, (90%I_{TGQ} to 10%I_{TGQ})

note 4) The gate off-time is the period during which the gate circuit is required to remain low impedance to allow for the passage of tail current.

note 5) For other clamping forces, consult factory.

Outline Drawing



SANCONA®
technical solutions

SANCONA GmbH
An der Hebemärchte 26
D-04316 Leipzig

// +49 341 652355-0
+49 341 652355-99
info@sancona.com
www.sancona.com

// Registry Court: Leipzig HRB 32946
VAT Reg No.: DE308741810
Tax number: 232/118/085686