Distributed Gate Thyristor Type SA42SN5145EW

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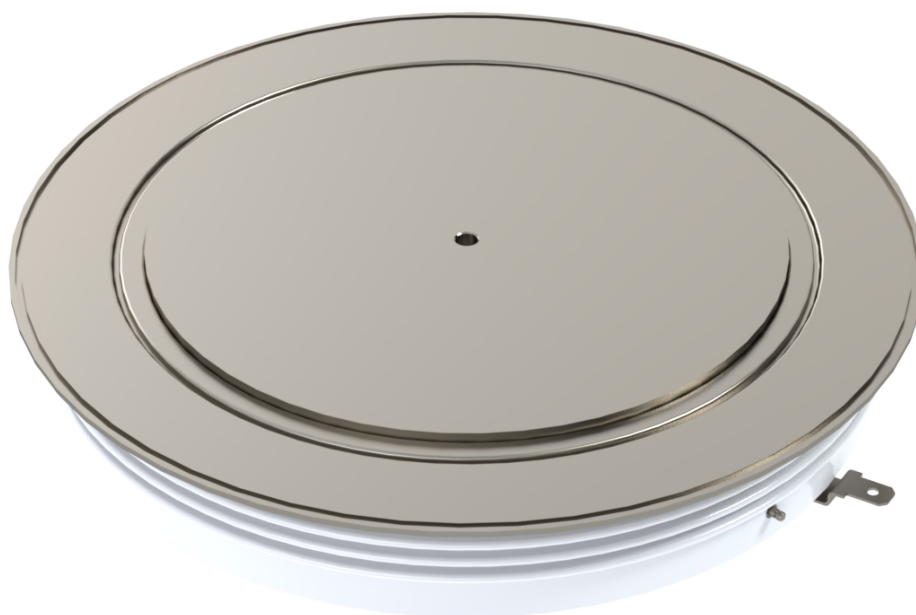
ORDERING INFORMATION						(Please quote 12 to 15 digit code as below)
SA	42	SN	5145	E	W	
-	Voltage Code	Outline Code	Current code	Type code	t_q code	Optional code
t_q code: V = 250µs, W = 300µs						

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Absolute Maximum Ratings

	VOLTAGE RATINGS	MAXIMUM LIMITS	UNITS
V_{DRM}	Repetitive peak off-state voltage, (note 1)	4200	V
V_{DSM}	Non-repetitive peak off-state voltage, (note 1)	4300	V
V_{DDC}	Maximum DC of-state voltage, (note 1)	2500	V
V_{RRM}	Repetitive peak reverse voltage, (note 1)	4200	V
V_{RSM}	Non-repetitive peak reverse voltage, (note 1)	4300	V
V_{RDC}	Maximum DC revrese voltage, (note 1)	2500	V
note 1)	De-rating factor of 0.13%/°C is applicable for T_j below 25°C		

	OTHER RATINGS	MAXIMUM LIMITS	UNITS
$I_{T(AV)M}$	Maximum average on-state current, T_{sink} = 55°C, (note 1)	5145	A
$I_{T(AV)M}$	Maximum average on-state current, T_{sink} = 85°C, (note 1)	3450	A
$I_{T(AV)M}$	Maximum average on-state current, T_{sink} = 85°C, (note 2)	1600	A
$I_{T(RMS)}$	Nominal RMS on-state current, T_{sink} = 25°C (note 1)	10290	A
$I_{T(d.c.)}$	D.C. on-state current, T_{sink} = 25°C, (note 3)	8610	A
I_{TSM}	Peak non-repetitive surge current t_p = 10ms, V_{RM} = 60%V_{RRM}, (note4)	66.0	kA
I_{TSM2}	Peak non-repetitive surge current t_p = 10ms, V_{RM} ≤ 10V, (note 4)	72.5	kA
I^2t	I^2t capacity for fusing t_p = 10ms, V_{RM} = 60%V_{RRM}, (note 4)	$21.78 \cdot 10^6$	A²s
I^2t	I^2t capacity for fusing t_p = 10ms, V_{RM} ≤ 10V, (note 4)	$26.28 \cdot 10^6$	A²s
$(di/dt)_{cr}$	Critical rate of rise of on-state current (repetitive), (note 5)	500	A/μs
	Critical rate of rise of on-state current (non repetitive), (note 5)	1000	A/μs
V_{RGM}	Peak reverse gate voltage	5	V
$P_{G(AV)}$	Mean forward gate power	5	W
P_{GM}	Peak forward gate power	50	W
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		
note 5)	V_D = 67%V_{DRM}, I_{FG} = 2A, t_R ≤ 0.5μs, T_{case} = 125°C		

Characteristics

	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
V_{TM}	Maximum peak on-state voltage	$I_{TM} = 6600A$	-	-	2.35	V
V_{T0}	Threshold voltage		-	-	1.659	V
r_T	Slope resistance		-	-	0.107	$m\Omega$
$(dv/dt)_{CR}$	Critical rate of rise of off-state voltage	$V_D = 80\%V_{DRM}$, Linear ramp, Gate o/c	200	-	-	$V/\mu s$
I_{DRM}	Peak off-state current	Rated V_{DRM}	-	-	200	mA
I_{RRM}	Peak reverse current	Rated V_{RRM}	-	-	200	mA
V_{GT}	Gate trigger voltage	$T_j = 25°C$, $V_D = 10V$, $I_T = 3A$	-	-	3.0	V
I_{GT}	Gate trigger current		-	-	600	mA
V_{GD}	Gate non-trigger voltage	Rated V_{DRM}	-	-	0.25	V
I_H	Holding current	$T_j = 25°C$	-	-	1000	mA
t_{GD}	Gate controlled turn-on delay time	$V_D = 67\%V_{DRM}$, $I_{TM} = 4000A$, $di/dt = 60A/\mu s$,	-	0.8	1.5	μs
t_{GT}	Turn-on time	$I_{FG} = 2A$, $t_r = 0.5\mu s$, $T_j = 25°C$	-	1.2	2.5	μs
Q_{RR}	Recovered charge		-	10500	12000	μC
Q_{RA}	Recovered charge, 50% Chord	$I_{TM} = 4000A$, $t_p = 1000\mu s$, $di/dt = 60A/\mu s$,	-	6200	-	μC
I_{RM}	Reverse recovery current	$V_R = 50V$	-	750	-	A
t_{RR}	Reverse recovery time		-	16.5	-	μs
t_{GQ}	Turn-off time (note 2)	$I_{TM} = 4000A$, $t_p = 2000\mu s$, $di/dt = 60A/\mu s$, $V_R = 100V$, $V_{DR} = 67\%V_{DRM}$, $dV_{DR}/dt = 20V/\mu s$	-	250	-	μs
		$I_{TM} = 4000A$, $t_p = 2000\mu s$, $di/dt = 60A/\mu s$, $V_R = 100V$, $V_{DR} = 67\%V_{DRM}$, $dV_{DR}/dt = 200V/\mu s$	-	300	-	μs
R_{thJK}	Thermal resistance, junction to sink (note 3)	Double-side cooled	-	-	4.5	K/kW
		Anode-side cooled	-	-	7.3	K/kW
		Cathode-side cooled	-	-	12.0	K/kW
F	Mounting force	(note 3)	80	-	100	kN
W_t	Weight		-	2200	-	g
note 1)	Unless otherwise indicated $T_j = 125°C$					
note 2)	The required t_Q (specified with $dV_{DR}/dt = 200V/\mu s$) is 300μs					
note 3)	For other clamp forces, please consult factory					

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Outline Drawing

74 MAX

Φ3,6 / 3,5x2 MIN. DEPTH 2-HOLES, ONE IN CATHODE AND ONE IN ANODE

GATE TERMINAL USE AMP RECEPTACLE 60598-1

4,75 BLADE CONNECTOR

Φ 144 MAX

1,5 MIN

Φ 100

MINIMUM CREEP PATH OVER CONVOLUTIONS = 30mm

26 ±1 COMPRESSED HEIGHT

1,5 MIN

Φ 100

1 MIN

5/4

Φ 132 MAX OVER CONVOLUTIONS
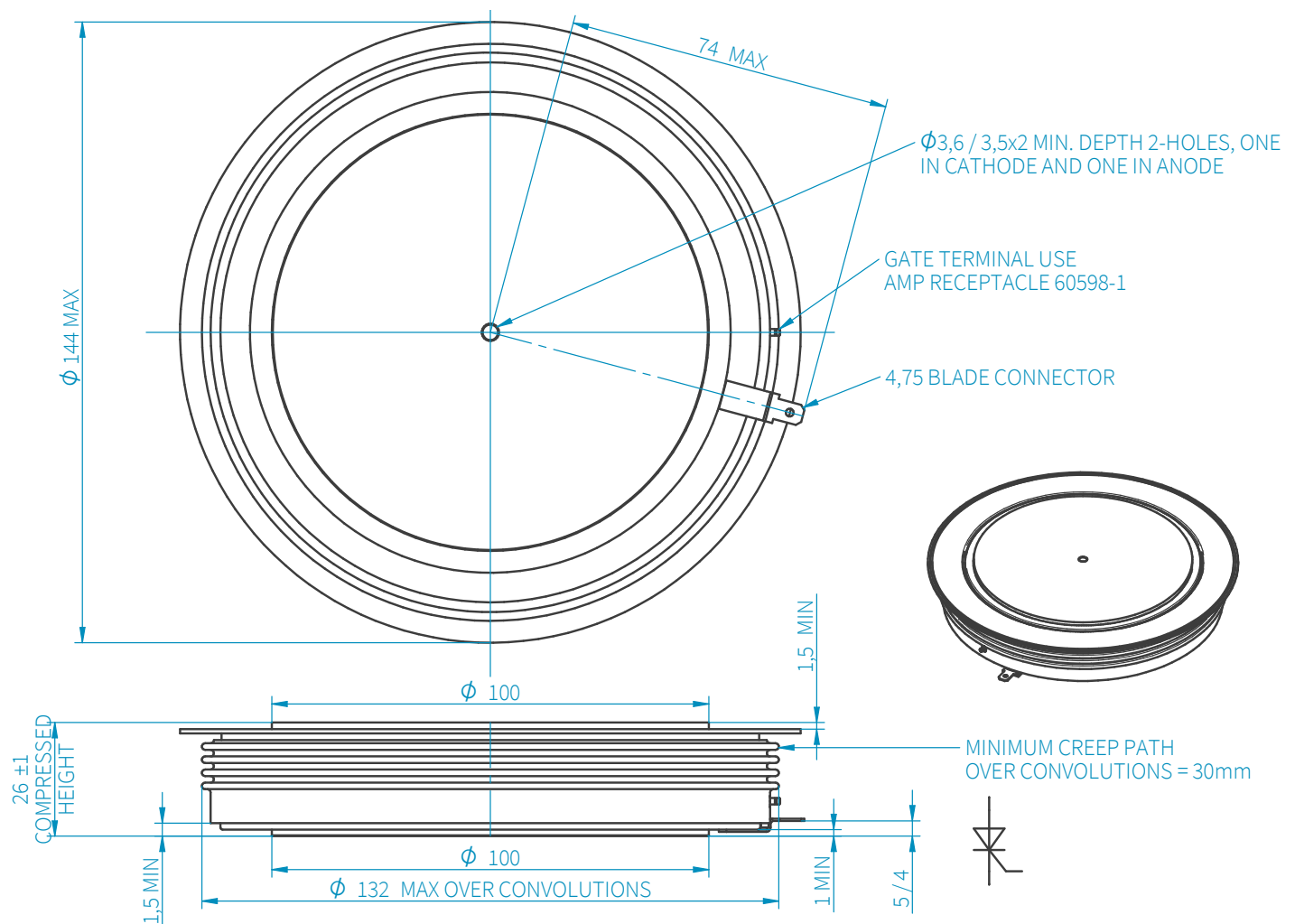
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