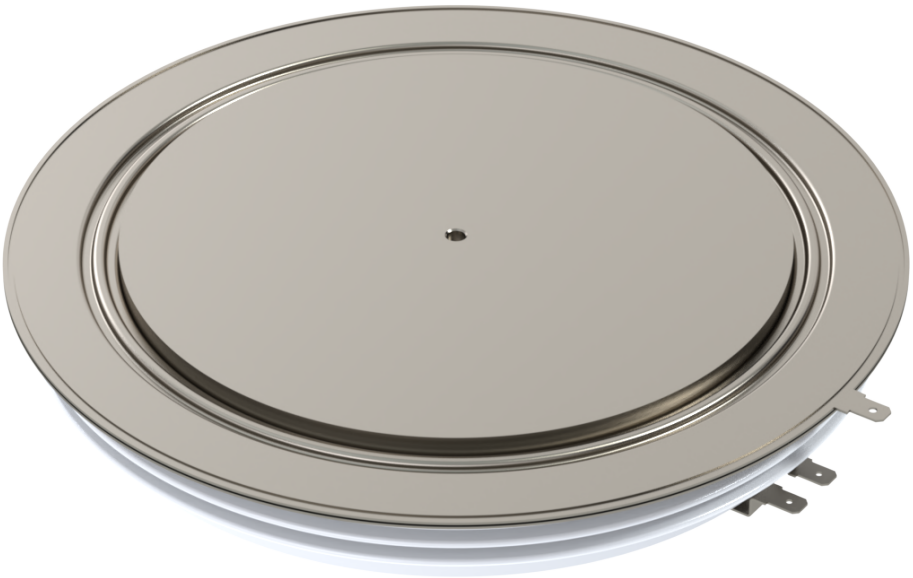
Insulated Gate Bipolar Transistor Type SA45TO2400GE

SANCONA®
technical solutions

Contact us!

Date: August, 2020
Data Sheet Issue: 1



ORDERING INFORMATION				(Please quote 12 to 15 digit code as below)		
SA	45	TO	2400	G	E	
-	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_{CES}	Collector-emitter voltage	4500	V
V_{DClink}	Permanent DC voltage for 100 FIT failure rate	2800	V
V_{GES}	Peak gate - emitter voltage	±20	V

	OTHER RATINGS	MAXIMUM LIMITS	UNITS
I_C	DC collector current, IGBT	2400	A
I_{CRM}	Repetitive peak collector current, t_p = 1ms, IGBT	4800	A
I_{ECO}	Maximum reverse emitter current, t_p = 100µs (note 2 & 3)	2400	A
P_{MAX}	Maximum power dissipation, IGBT (note 2)	19	kW
T_j	Operating temperature range	-40 to +125	°C
T_{stg}	Storage temperature range	-40 to +125	°C
note 1)	Unless otherwise indicated T_j = 125°C		
note 2)	T_{sink} = 25°C, doublesidecooled		
note 3)	Maximum commutation loop inductance 200 nH		
note 4)	Half-sinewave, 125°C T_j initial		

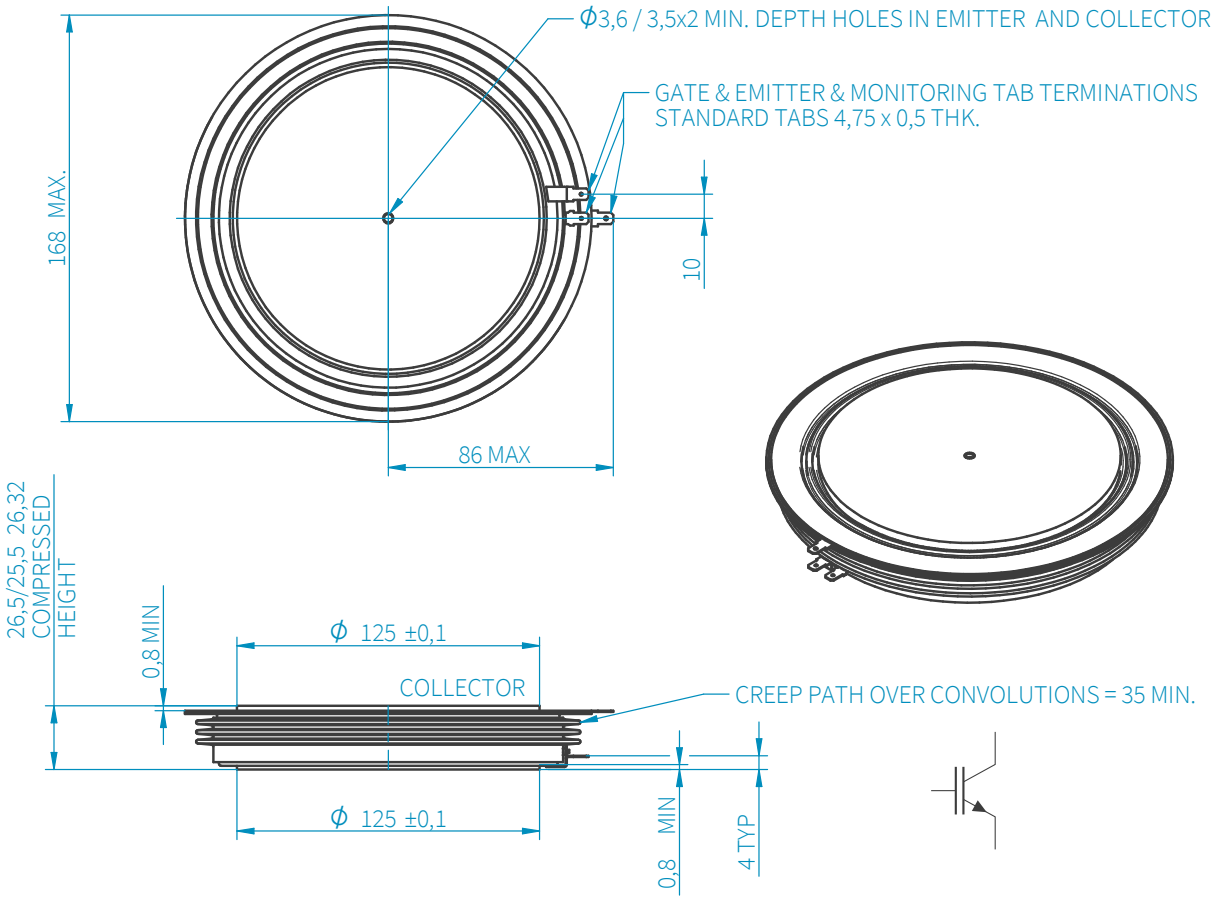
IGBT Characteristics

	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_C = 2400A, V_{GE} = 15V, T_j = 25°C	-	2.8	3.2	V
		I_C = 2400A, V_{GE} = 15V	-	3.6	4.0	V
V_{T0}	Threshold voltage	Current range: 800A-2400A	-	-	1.49	V
r_T	Slope resistance		-	-	1.05	mΩ
$V_{GE(TH)}$	Gate threshold voltage	V_{CE} = V_{GE}, I_C = 250mA	-	5.1	-	V
I_{CES}	Collector-emitter cut-off current	V_{CE} = V_{CES}, V_{GE} = 0V	-	45	70	mA
I_{GES}	Gate leakage current	V_{GE} = ±20V	-	-	±30	µA
C_{ies}	Input capacitance	V_{CE} = 25V, V_{GE} = 0V, f=1MHz	-	400	-	nF
$t_{d(on)}$	Turn-on delay time	I_C = 2400A, V_{CE} = 2800V, di/dt = 4000A/µs, V_{GE} = ±15V, L_S = 200nH, $R_{g(ON)}$ = 2.2Ω, $R_{g(OFF)}$ = 8.2Ω, C_{GE} = 267nF, Freewheel Diode type SA45RP2400RE at T_j = 125°C (notes 1, 2 & 3)	-	1.8	-	µs
t_r(V)	Rise time		-	3.6	-	µs
$Q_{g(on)}$	Turn-on gate charge		-	18	-	µC
E_{on}	Turn-on energy		-	14	-	J
$t_{d(off)}$	Turn-off delay time		-	5.1	-	µs
t_f(I)	Fall time		-	2.4	-	µs
$Q_{g(off)}$	Turn-off gate charge		-	14	-	µC
E_{off}	Turn-off energy		-	13	-	J
I_{SC}	Short circuit current	V_{GE} = +15V, V_{CC} = 2800V, $V_{CEmax} \leq V_{CES}$, $t_p \leq$ 10µs	-	9500	-	A
note 1)	C_{GE} is additional gate–emitter capacitance added to output of gate drive					
note 2)	E_{on} integration time 15µs from 10% rising I_G					
note 3)	E_{off} integration time 15µs from 90% falling V_{GE}					
note 4)	Freewheeling diode changed from SA45GP2400RC to SA45RP2400RE					

Thermal Characteristics

	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
R_{thJK}	Thermal resistance, junction to sink, IGBT	Double side cooled	-	-	5.2	K/kW
		Collector side cooled	-	-	8.5	K/kW
		Emitter side cooled	-	-	13.5	K/kW
F	Mounting force	Note 2	50	-	70	kN
W_t	Weight		-	2000	-	g
note 1)	Unless otherwise indicated T_j = 125°C					
note 2)	Consult application note for detailed mounting requirements					

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