

IGBT Chip

Die In Wafer Form

1700V

IC (nom) =100A

Vce(sat)typ=1.9V@ IC(nom)@25°C

Low Vce(sat)

ShortCircuit Rated

300mm Wafer

Applications

- Inverter For Motor Driver
- Servo Driver

Features

Trench FS Technology
 Low Vce(sat)
 10μs Short Circuit Capability
 Parallel Suitable
 Positive Vce(sat) Temperature Coefficient

Chip Type	Icn	Vce	Die size	Wafer size
SYC100P170C4WK	100A	1700V	9.6*10.26 mm ²	12 inch

Mechanical Parameters

Die size	9.6mm*10.26mm
Emitter pad size	See chip drawing
Gate pad size	1.32mm*1.32mm
Area total	98.5mm ²
Silicon thickness	170um
Wafer size	300mm
Maximum possible chips per wafer	560 pcs
Passivation frontside	Polyimide
Pad metal	5000nm AlCu
Backside metal	Al - Ti - Ni/V - Ag, (2kA - 2kA - 2kA - 8kA) suitable for epoxy and soft solder die bonding
Die bond	Soft solder
Wire bond	Al, ≤500um
Reject ink dot size	Ø 0.65mm; max. 1.2mm
Storage environment (<6 months) for original and sealed MBB bags	Ambient atmosphere air, temperature 17°C – 25°C
Storage environment (<6 months) for open MBB bags	Acc. IEC 62258-3; Section 9.4 Storage Environment.

Maximum Ratings

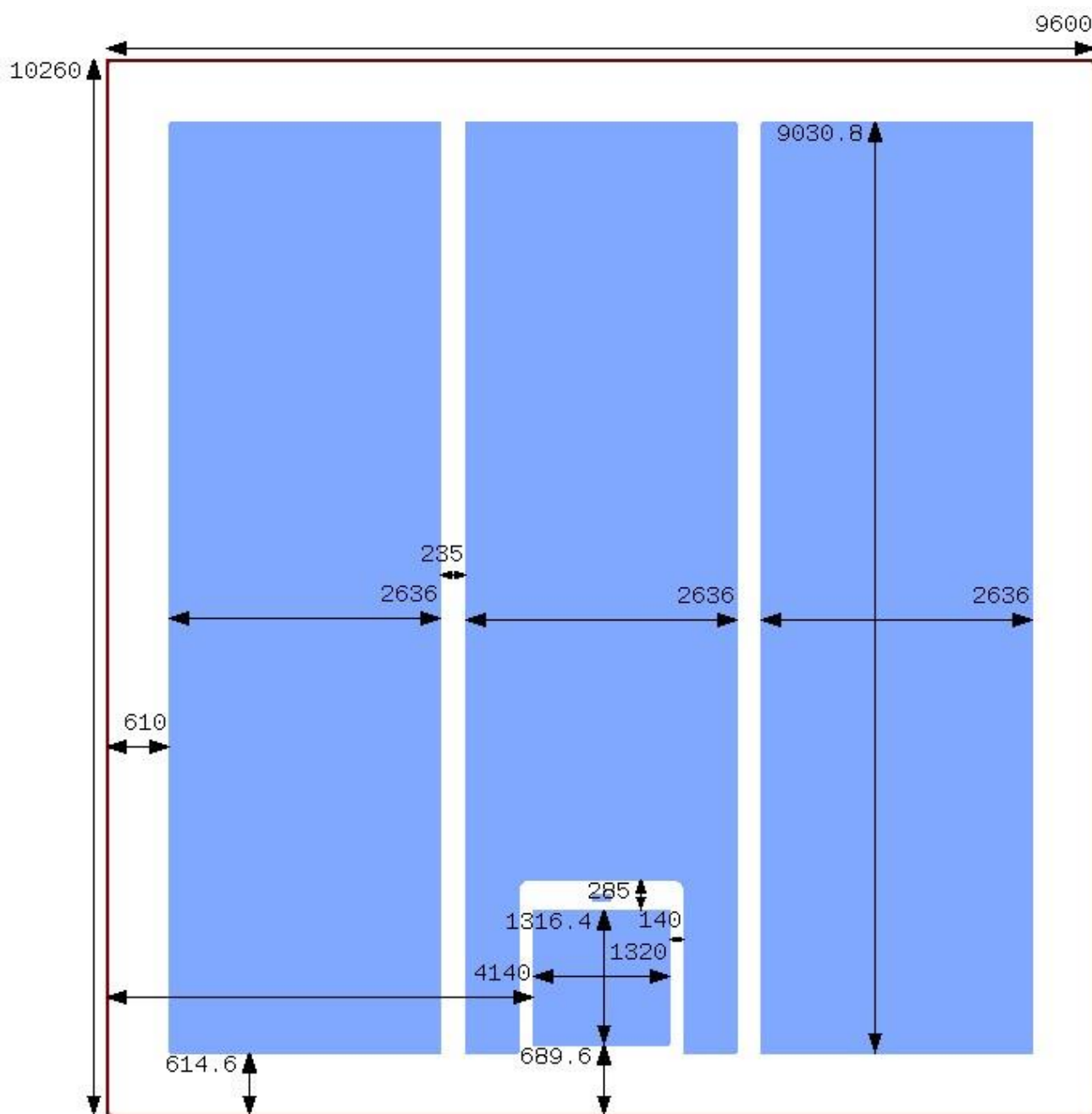
Parameter	Symbol	Value	Unit
Collector-emitter voltage, $T_{vj}=25^{\circ}\text{C}$	VCE	1700	V
DC collector current, limited by T_{vj} max ¹	IC	100	A
Pulsed collector current, t_p limited by T_{vj} max ²	IC,puls	200	A
Gate-emitter voltage	VGE	± 20	V
Junction temperature	T_{vj}	150	$^{\circ}\text{C}$
Operating junction temperature	T_{vj} op	-40 - 150	$^{\circ}\text{C}$
Short circuit data ^{2/3} $V_{GE}=15\text{V}$, $V_{CC}=1000\text{V}$, $T_{vj}=150^{\circ}\text{C}$	tsc	10	μs

Static Characteristics (tested on chip)

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Collector-emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0\text{V}$, $I_C=250\mu\text{A}$	1700			V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=100\text{A}$, $V_{GE}=15\text{V}$, $T_{vj}=25^{\circ}\text{C}$		1.9		V
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$, $I_C=1.5\text{mA}$, $T_{vj}=25^{\circ}\text{C}$		5.8		V
Collector-emitter cut-off current	I_{CES}	$V_{CE}=1700\text{V}$, $V_{GE}=0\text{V}$, $T_{vj}=25^{\circ}\text{C}$			20	μA
Gate-emitter leakage current	I_{GES}	$V_{CE}=0$, $V_{GE}=20\text{V}$, $T_{vj}=25^{\circ}\text{C}$			100	nA
Internal gate resistor	R_{gint}	$T_{vj}=25^{\circ}\text{C}$		1		Ω

说明：此规格书中的参数值是通过芯片CP数据评估制定，FT测试的时候同测试条件下 $V_{ce(sat)}$ 参数会降低（不同封装工艺可能也会不同），给出一个供参考的数值是在现CP规范上减少0.2V，以客户实际统计FT的bias为准。

1. Depending on thermal properties of assembly.
2. Not subject or production test - verified by design/characterization.
3. Allowed number of short circuits: <1000; time between short circuits: >1s.



Bare Die Product Specifics

Test coverage at wafer level cannot cover all application conditions. Therefore, it is recommended to test all characteristics which are relevant for the application at package level, including RBSOA and SCSOA.

Revision History

Revision	Subjects(major changes since last revision)	Date
1.0	Preliminary data sheet	2024.4.3