

IGBT Chip

Die In Wafer Form

1200V
IC (nom) =50A
Vce(sat)typ=1.85V@ IC(nom)@25°C
Low Vce(sat)
ShortCircuit Rated
200mm 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
SYC50P120H4WK	50A	1200V	6.37*6.5 mm ²	8 inch

Mechanical Parameters

Die size	6.37mm*6.5mm
Emitter pad size	See chip drawing
Gate pad size	1.22mm*0.84mm
Area total	41.4mm ²
Silicon thickness	130um
Wafer size	200mm
Maximum possible chips per wafer	562 pcs
Passivation frontside	Polyimide
Pad metal	4000nm AlSiCu
Backside metal	Al - Ti - Ni/V - Ag, (1kA - 1kA - 2kA - 8kA) suitable for epoxy and soft solder die bonding
Die bond	Soft solder
Wire bond	Al, ≤500um
Reject ink dot size	∅ 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	1200	V
DC collector current, limited by T_{vj} max ¹	IC	50	A
Pulsed collector current, t_p limited by T_{vj} max ²	IC,puls	100	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} $V_{GE}=15\text{V}$, $V_{CC}=600\text{V}$, $T_{vj}=150^{\circ}\text{C}$	tsc	10	μs

Static Characteristics (tested on chip)

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Collector-emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0\text{V}$, $I_C=250\mu\text{A}$	1200			V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=50\text{A}$, $V_{GE}=15\text{V}$, $T_{vj}=25^{\circ}\text{C}$	-	1.85	-	V
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$, $I_C=1\text{mA}$, $T_{vj}=25^{\circ}\text{C}$	-	5.8	-	V
Collector-emitter cut-off current	I_{CES}	$V_{CE}=1200\text{V}$, $V_{GE}=0\text{V}$, $T_{vj}=25^{\circ}\text{C}$			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：此规格书中的芯片有效颗数以实际数量为准。

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.

