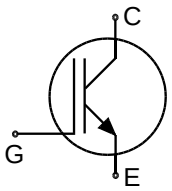
IGC136T170S8RH2

IGBT3 Power Chip

Features:
- 1700V Trench & Field stop technology
- low switching losses and saturation losses
- soft turn off
- positive temperature coefficient
- easy paralleling
- Qualified according to JEDEC for target applications

Recommended for:
- power modules

Applications:
- drives



Chip Type	V_{CE}	I_{Cn} [1)]	Die Size	Package
IGC136T170S8RH2	1700V	117.5A	17.72 x 7.7 mm^2	sawn on foil

[1)] nominal collector current at Tc = 100°C, not subject to production test - verified by design/characterization

Mechanical Parameters

Die size		17.72 x 7.7	mm^2
Emitter pad size (incl. gate pad)		See chip drawing	
Gate pad size		1.674 x 0.899	
Area total		136.4	
Thickness		190	µm
Wafer size		200	mm
Max.possible chips per wafer		187	
Passivation frontside		Photoimide	
Pad metal		3200 nm AlSiCu	
Backside metal		Ni Ag –system	
Die bond		Electrically conductive epoxy glue and soft solder	
Wire bond		Al, <500µm	
Reject ink dot size		∅ 0.65mm ; max 1.2mm	
Storage environment	for original and sealed MBB bags	Ambient atmosphere air, Temperature 17°C – 25°C, < 6 month	
	for open MBB bags	Acc. to IEC62258-3: Atmosphere >99% Nitrogen or inert gas, Humidity <25%RH, Temperature 17°C – 25°C, < 6 month	

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Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, T_{vj} =25 °C	V_{CE}	1700	V
DC collector current, limited by $T_{vj\,max}$	I_C	1)	A
Pulsed collector current, t_p limited by $T_{vj\,max}$ 2)	$I_{c,puls}$	352.5	A
Gate emitter voltage	V_{GE}	±20	V
Junction temperature range	T_{vj}	-40 ... +175	°C
Operating junction temperature	T_{vj}	-40 ... +150	
Short circuit data 2)3) V_{GE} = 15V, V_{CC} = 1000V, T_{vj} = 150°C	t_{SC}	10	µs

1) depending on thermal properties of assembly

2) not subject to production test - verified by design/characterization

3) allowed number of short circuits: <1000; time between short circuits: >1s.

Static Characteristics (tested on wafer), T_{vj} =25 °C

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter breakdown voltage	$V_{(BR)CES}$	V_{GE}=0V , I_C=2 mA	1700			V
Collector-Emitter saturation voltage	V_{CEsat}	V_{GE}=15V, I_C=35.25A	1.0	1.1	1.3	
Gate-Emitter threshold voltage	$V_{GE(th)}$	I_C=4.7mA , V_{GE}=V_{CE}	5.3	5.8	6.3	
Zero gate voltage collector current	I_{CES}	V_{CE}=1700V , V_{GE}=0V			7	µA
Gate-Emitter leakage current	I_{GES}	V_{CE}=0V , V_{GE}=20V			300	nA
Integrated gate resistor	r_G			11.5		Ω

Electrical Characteristics (not subject to production test - verified by design / characterization)

Parameter		Symbol	Conditions	Value			Unit
				min.	typ.	max.	
Collector-Emitter saturation voltage	T_{vj} =25 °C	V_{CEsat}	V_{GE}=15V, I_C=117.5A		1.75	2.2	V
	T_{vj} =150 °C				2.2		
Input capacitance		C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1MHz T_{vj} =25 °C		10568		pF
Reverse transfer capacitance		C_{res}			340		

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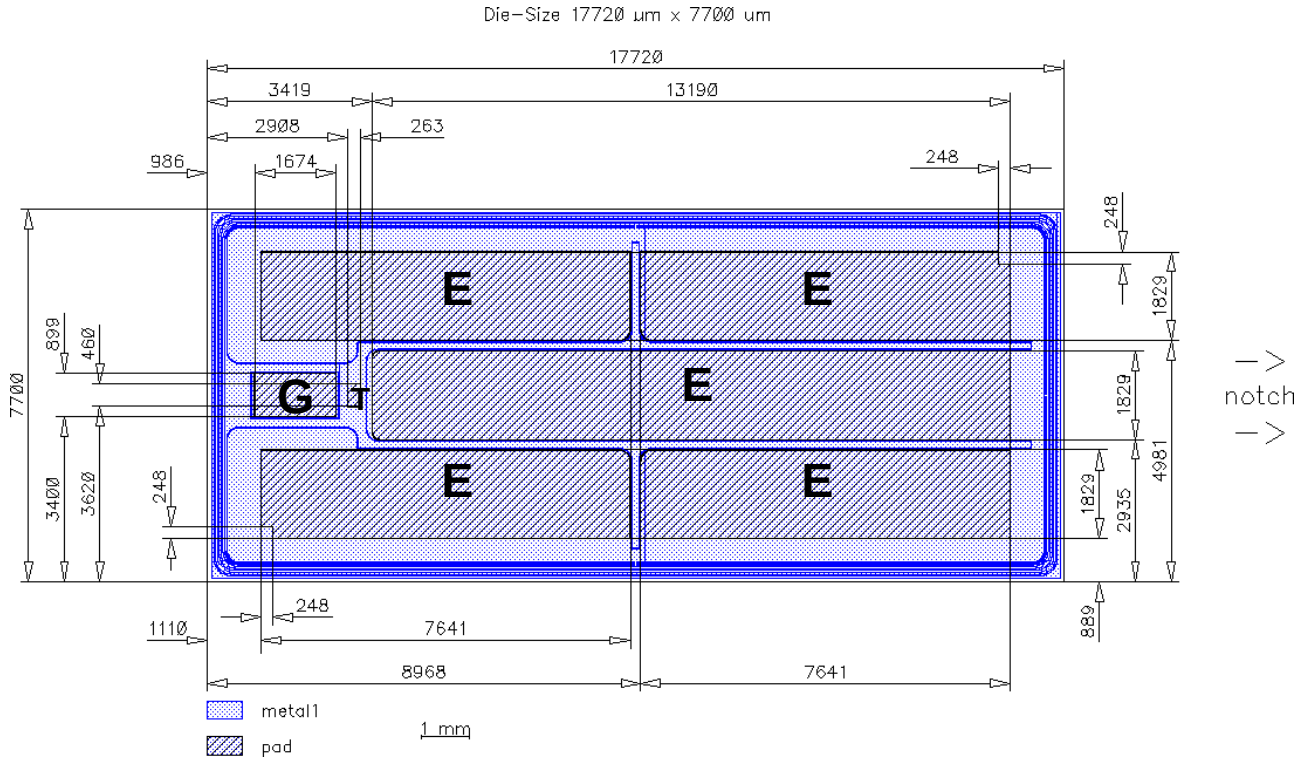
Further Electrical Characteristic

Switching characteristics and thermal properties are depending strongly on module design and mounting technology and can therefore not be specified for a bare die.

This chip data sheet refers to the device data sheet	FF1400R17IP4	Rev. 2.2

Chip Drawing



E = Emitter
G = Gate
T = Test pad do not contact

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Description

AQL 0,65 for visual inspection according to failure catalogue

Electrostatic Discharge Sensitive Device according to MIL-STD 883

Revision History

Version	Subjects (major changes since last revision)	Date

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