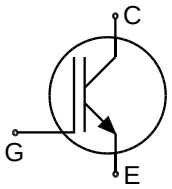
IGC168T170S8RH

IGBT3 Power Chip

Features:
- 1700V Trench + Field stop technology
- low switching losses and saturation losses
- soft turn off
- positive temperature coefficient
- easy paralleling

This chip is used for:
- power modules

Applications:
- drives



Chip Type	V_{CE}	I_C	Die Size	Package
IGC168T170S8RH	1700V	150A	13.38 x 12.58 mm^2	sawn on foil

Mechanical Parameters

Raster size		13.38 x 12.58	mm^2
Emitter pad size (incl. gate pad)		11.159 x 10.353	
Gate pad size		1.674 x 0.899	
Area total		168.3	
Thickness		190	µm
Wafer size		200	mm
Max.possible chips per wafer		142	
Passivation frontside		Photoimide	
Pad metal		3200 nm AlSiCu	
Backside metal		Ni Ag –system suitable for epoxy and soft solder die bonding	
Die bond		Electrically conductive glue or 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 $T_{vj\,max}$	$I_{c,puls}$	450	A
Gate emitter voltage	V_{GE}	±20	V
Junction temperature range	T_{vj}	-40 ... +175	°C
Operating junction temperature	T_{vj}	-40...+150	°C
Short circuit data [2] V_{GE} = 15V, V_{CC} = 1000V, T_{vj} = 150°C	t_{SC}	10	µs
Reverse bias safe operating area [2] (RBSOA)	$I_{C,max}$ = 300A, $V_{CE,max}$ = 1700V $T_{vj} \leq 150°C$		

[1] depending on thermal properties of assembly

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

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} [3]	V_{GE}=15V, I_C=150A	1.55	1.85	2.15	
Gate-Emitter threshold voltage	$V_{GE(th)}$	I_C=6mA , V_{GE}=V_{CE}	5.2	5.8	6.4	
Zero gate voltage collector current	I_{CES}	V_{CE}=1700V , V_{GE}=0V			8	µA
Gate-Emitter leakage current	I_{GES}	V_{CE}=0V , V_{GE}=20V			300	nA
Integrated gate resistor	r_G			5		Ω

[3] Vcesat tested at lower current

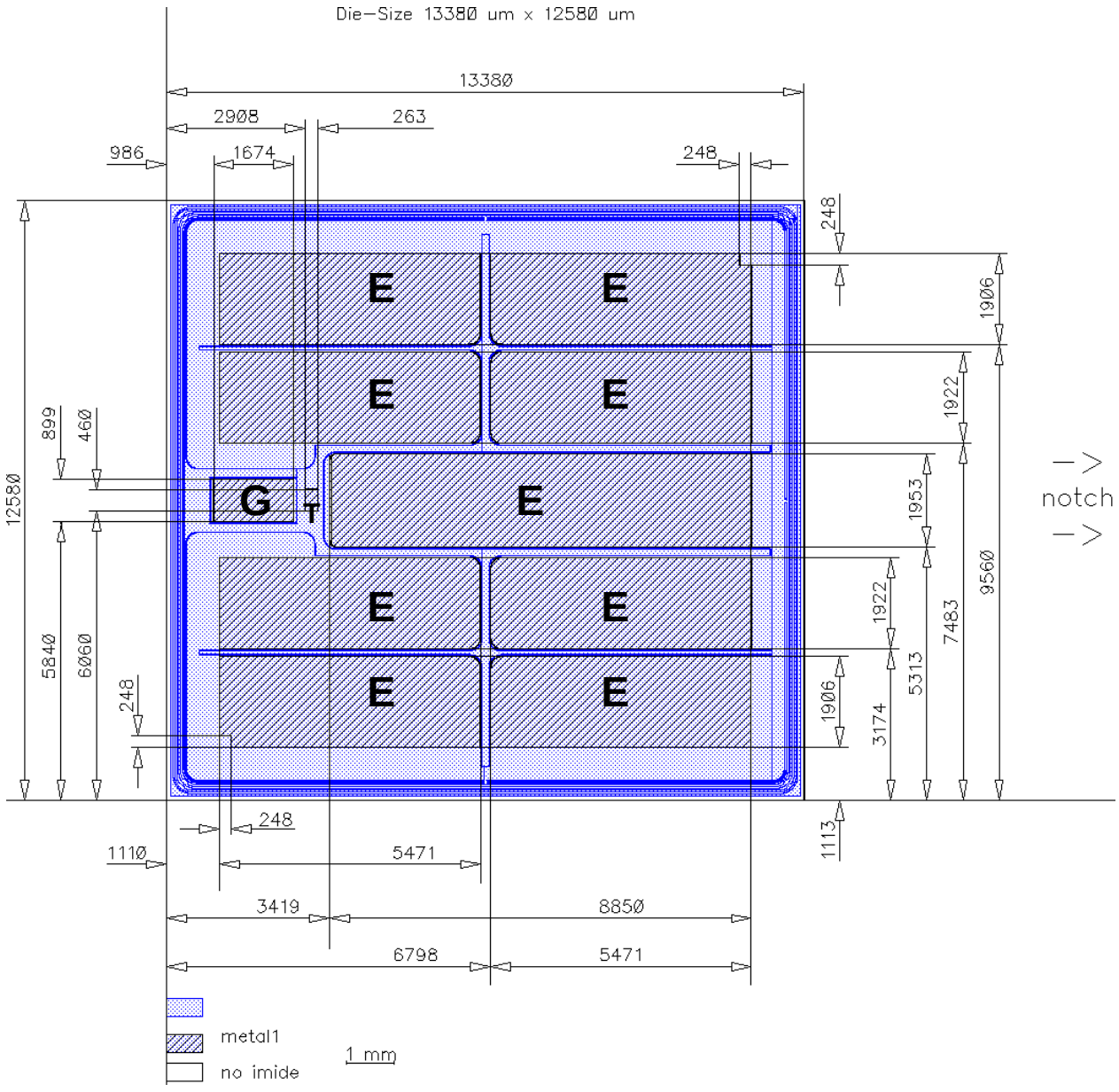
Dynamic Characteristics (not subject to production test - verified by design / characterization), T_{vj} =25 °C

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1MHz		13500		pF
Reverse transfer capacitance	C_{res}			430		

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.

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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