

IGBT3 Power Chip

Features:

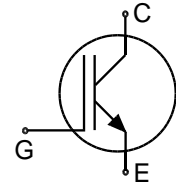
- 1700V Trench + Field stop technology
- low switching losses and saturation losses
- soft turn off
- positive temperature coefficient
- easy paralleling

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	Ø 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	



IGC168T170S8RH

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, $T_{vj}=25\text{ °C}$	V_{CE}	1700	V
DC collector current, limited by $T_{vj\text{ max}}$	I_C	¹⁾	A
Pulsed collector current, t_p limited by $T_{vj\text{ max}}$	$I_{C,puls}$	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⁾ $V_{GE} = 15V, V_{CC} = 1000V, T_{vj} = 150\text{ °C}$	t_{SC}	10	μs
Reverse bias safe operating area ²⁾ (RBSOA)	$I_{C,max} = 300A, V_{CE,max} = 1700V$ $T_{vj} \leq 150\text{ °C}$		

¹⁾ depending on thermal properties of assembly

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

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0V, I_C=2\text{ mA}$	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⁾ V_{cesat} tested at lower current

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

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

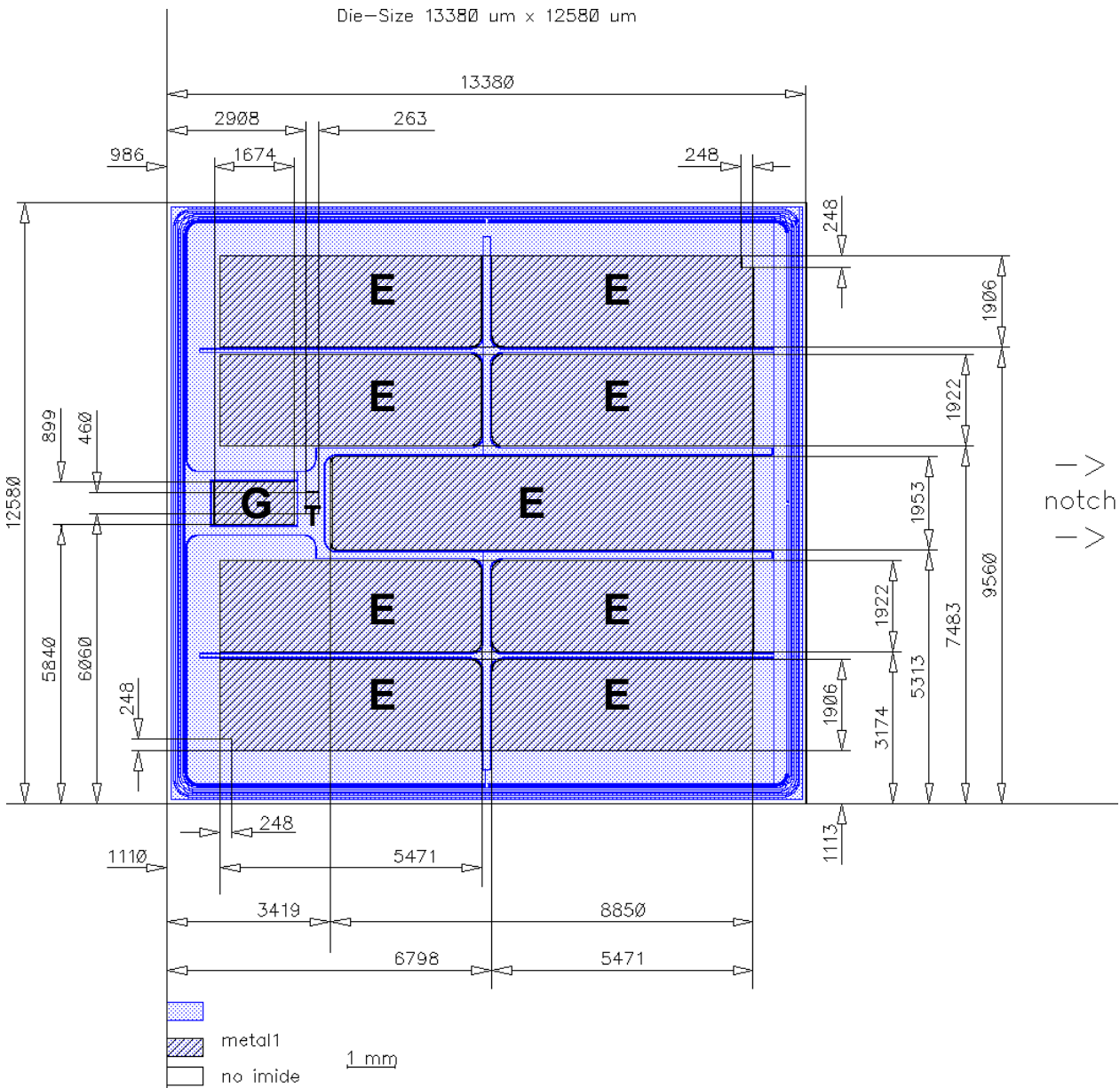


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Further Electrical Characteristic

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

Chip Drawing



E = Emitter

G = Gate

T = Test pad do not contact



IGC168T170S8RH

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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