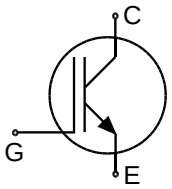
SIGC186T170R3E

IGBT3 Power Chip

Features:
- 1700V Trench & Field Stop technology
- low turn-off losses
- short tail current
- positive temperature coefficient
- easy paralleling

This chip is used for:
- power modules

Applications:
- drives



Chip Type	V_{CE}	I_C	Die Size	Package
SIGC186T170R3E	1700V	150A	13.63 x 13.63 mm^2	sawn on foil

Mechanical Parameters

Raster size	13.63 x 13.63	mm^2
Emitter pad size (incl. gate pad)	8 x (5.62 x 2.71)	
Gate pad size	1.302 x 0.806	
Area total	185.8	
Thickness	190	µm
Wafer size	200	mm
Max.possible chips per wafer	137	
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	
Recommended storage environment	Store in original container, in dry nitrogen, in dark environment, < 6 month at an ambient temperature of 23°C	

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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 Characteristic (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= 4 mA	1700			V
Collector-Emitter saturation voltage	V_{CEsat} 3)	V_{GE}=15V, I_C=150A	1.6	2	2.4	
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			8.2	µA
Gate-Emitter leakage current	I_{GES}	V_{CE}=0V , V_{GE}=20V			600	nA
Integrated gate resistor	r_G			5		Ω

3) Vcesat tested at lower current

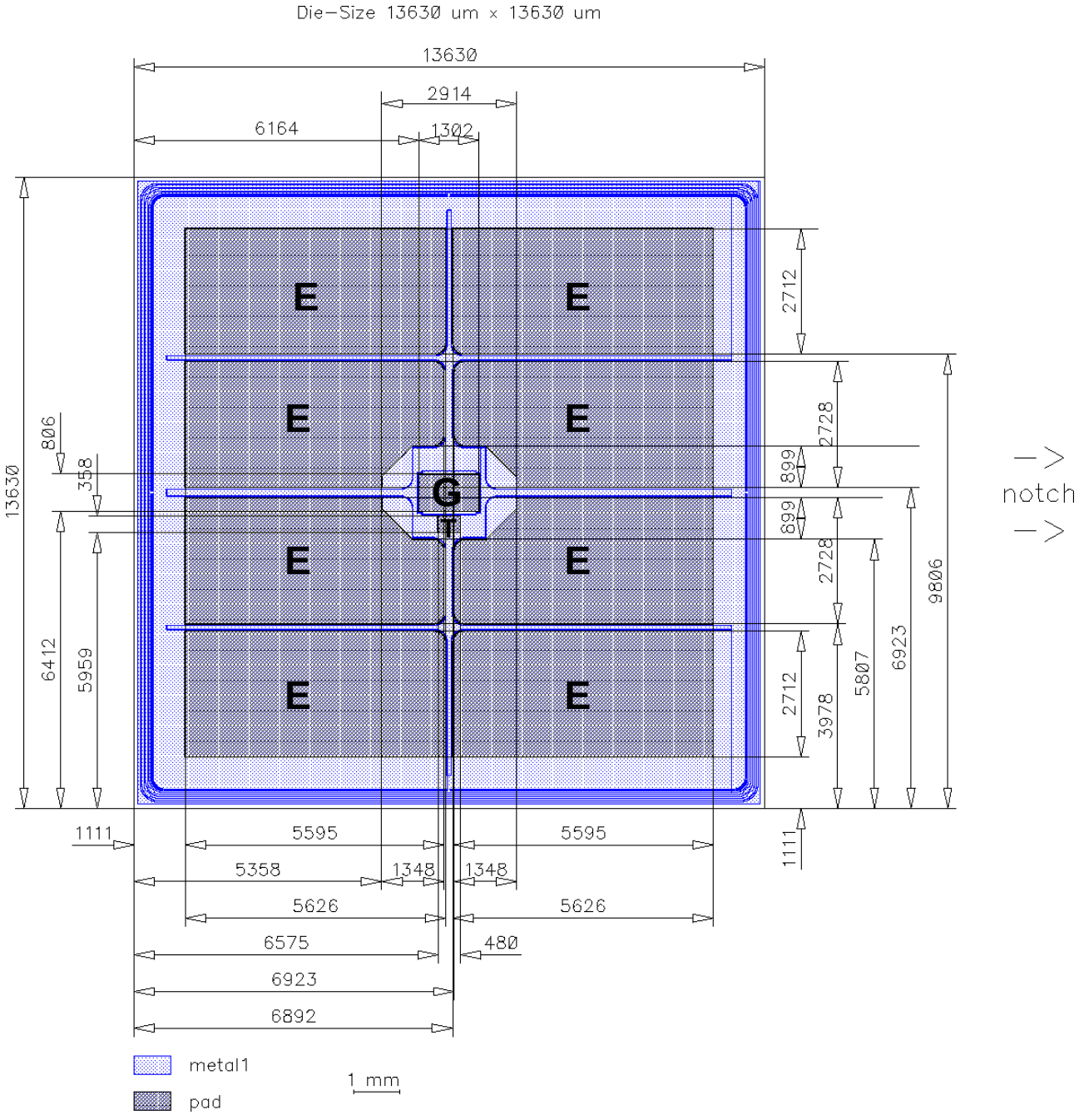
Dynamic Characteristic (not subject to production test - verified by design / characterization), T_{vj} =25 °C

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1MHz		13196		pF
Reverse transfer capacitance	C_{res}			438		

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
2.1	Change wafer size to 200 mm	14.04.2010
2.2	Additional basic types L7797M, L7797T, L7797E; new gate pad design	01.07.2014

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