

IGBT4 High Power Chip

Features:

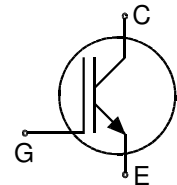
- 1200V Trench + Field stop technology
- low $V_{CE(sat)}$
- soft turn off
- positive temperature coefficient
- easy paralleling
- Qualified according to JEDEC for target applications

Recommended for:

- medium / high power modules

Applications:

- medium / high power drives



Chip Type	V_{CE}	$I_{Cn}^{1)}$	Die Size	Package
IGC99T120T8RH	1200V	100A	9.5 x 10.39 mm ²	sawn on foil

¹⁾ nominal collector current at $T_c = 100^\circ\text{C}$, not subject to production test - verified by design/characterization

Mechanical Parameters

Die size	9.5 x 10.39	mm ²
Emitter pad size (incl. gate pad)	See chip drawing	
Gate pad size	1.31 x 0.81	
Area total	98.7	
Thickness	140	μm
Wafer size	200	mm
Max.possible chips per wafer	258	
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	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

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, $T_{vj} = 25\text{ °C}$	V_{CE}	1200	V
DC collector current, limited by $T_{vj\text{ max}}$	I_C	¹⁾	A
Pulsed collector current, t_p limited by $T_{vj\text{ max}}$ ²⁾	$I_{C,puls}$	300	A
Gate emitter voltage	V_{GE}	± 20	V
Operating junction temperature	T_{vj}	-40 ... +175	°C
Short circuit data ²⁾³⁾ $V_{GE} = 15V$, $V_{CC} = 800V$, $T_{vj} = 150\text{ °C}$	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), $T_{vj} = 25\text{ °C}$

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0V$, $I_C=3.8\text{ mA}$	1200			V
Collector-Emitter saturation voltage	V_{CEsat}	$V_{GE}=15V$, $I_C=100A$	1.48	1.7	1.92	
Gate-Emitter threshold voltage	$V_{GE(th)}$	$I_C=3.8mA$, $V_{GE}=V_{CE}$	5.1	5.8	6.4	
Zero gate voltage collector current	I_{CES}	$V_{CE}=1200V$, $V_{GE}=0V$			13	μA
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V$, $V_{GE}=20V$			120	nA
Integrated gate resistor	r_G			7.5		Ω

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

Parameter		Symbol	Conditions	Value			Unit
				min.	typ.	max.	
Collector-Emitter saturation voltage	$T_{vj} = 25\text{ °C}$	V_{CEsat}	$V_{GE}=15V$, $I_C=100A$	1.5	1.7	2.0	V
	$T_{vj} = 150\text{ °C}$				2.1		
Input capacitance		C_{ies}	$V_{CE}=25V$, $V_{GE}=0V$, $f=1\text{ MHz}$ $T_{vj}=25\text{ °C}$		6300		pF
Reverse transfer capacitance		C_{res}			270		



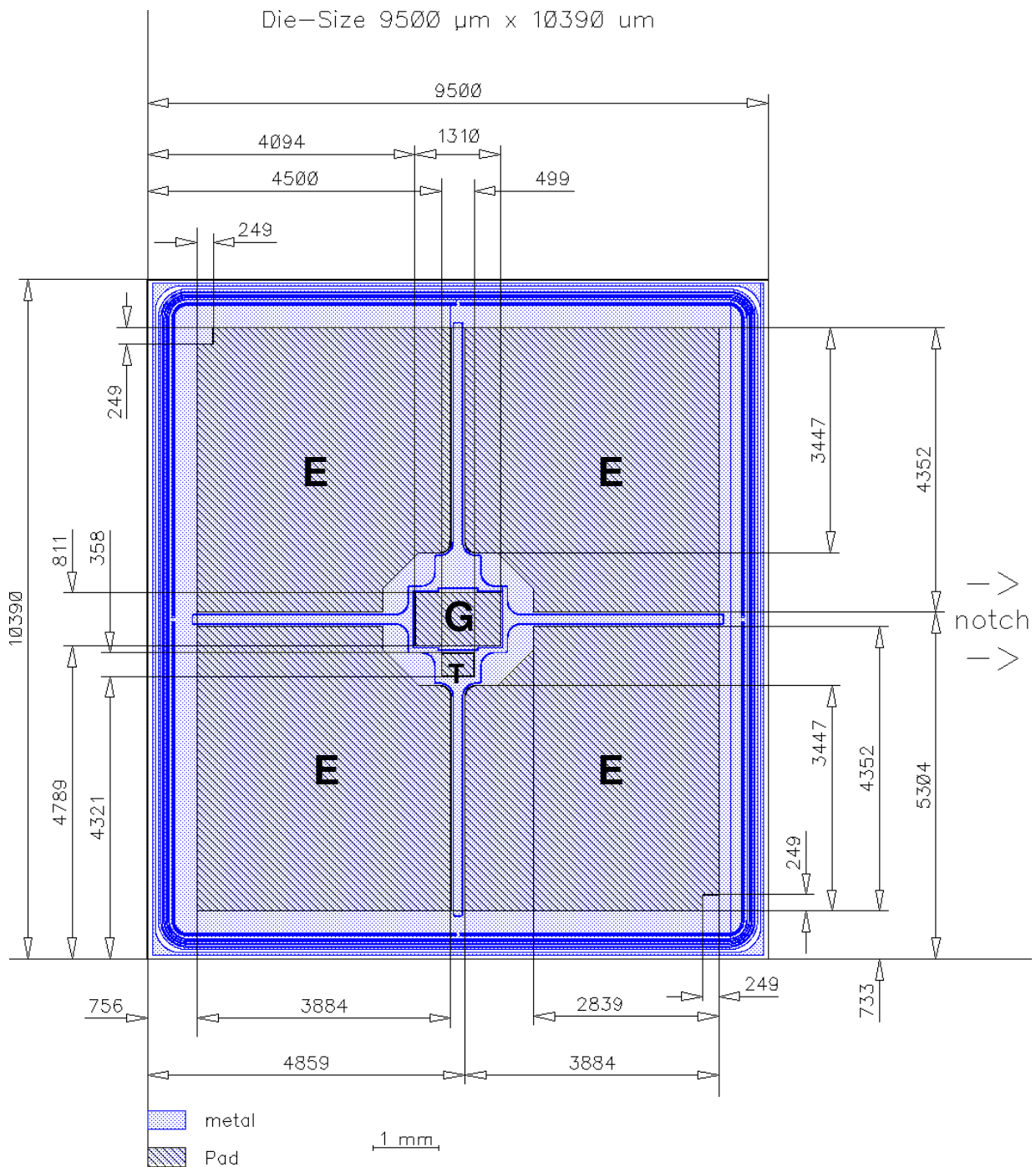
IGC99T120T8RH

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	FZ2400R12HP4_B9	Rev 2.3
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Chip Drawing



E = Emitter

G = Gate

T = Test pad do not contact



IGC99T120T8RH

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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