

## IGBT3 Chip

### Features:

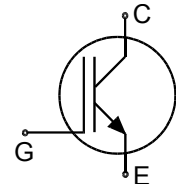
- 1200V Trench & Field Stop technology
- low turn-off losses
- short tail current
- positive temperature coefficient
- easy paralleling

### This chip is used for:

- power modules

### Applications:

- drives



Chip Type	V <sub>CE</sub>	I <sub>C</sub>	Die Size	Package
SIGC109T120R3LE	1200V	100A	10.47 x 10.44 mm <sup>2</sup>	sawn on foil

### Mechanical Parameters

Raster size	10.47 x 10.44	mm <sup>2</sup>
Emitter pad size (incl. gate pad)	8 x (4.391 x 2.114)	
Gate pad size	1.139 x 1.139	
Area total	109.3	
Thickness	120	µm
Wafer size	200	mm
Max.possible chips per wafer	222	
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	
Recommended storage environment	Store in original container, in dry nitrogen, in dark environment, < 6 month at an ambient temperature of 23°C	



# SIGC109T120R3LE

## Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, $T_{vj} = 25\text{ °C}$	$V_{CE}$	1200	V
DC collector current, limited by $T_{vj\text{ max}}$	$I_C$	<sup>1)</sup>	A
Pulsed collector current, $t_p$ limited by $T_{vj\text{ max}}$	$I_{C,puls}$	300	A
Gate emitter voltage	$V_{GE}$	±20	V
Junction temperature range	$T_{vj}$	-55 ... +175	°C
Operating junction temperature	$T_{vj}$	-55...+150	°C
Short circuit data <sup>2)</sup> $V_{GE} = 15V, V_{CC} = 900V, T_{vj} = 125\text{ °C}$	$t_{SC}$	10	µs
Reverse bias safe operating area <sup>2)</sup> (RBSOA)	$I_{C,max} = 200A, V_{CE,max} = 1200V$ $T_{vj} \leq 125\text{ °C}$		

<sup>1)</sup> depending on thermal properties of assembly

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

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0V, I_C=4mA$	1200			V
Collector-Emitter saturation voltage	$V_{CEsat}$	$V_{GE}=15V, I_C=100A$	1.4	1.7	2.1	
Gate-Emitter threshold voltage	$V_{GE(th)}$	$I_C=4mA, V_{GE}=V_{CE}$	5.0	5.8	6.5	
Zero gate voltage collector current	$I_{CES}$	$V_{CE}=1200V, V_{GE}=0V$			13.4	µA
Gate-Emitter leakage current	$I_{GES}$	$V_{CE}=0V, V_{GE}=20V$			600	nA
Integrated gate resistor	$r_G$			7.5		Ω

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	$C_{ies}$	$V_{CE}=25V,$ $V_{GE}=0V,$ $f=1MHz$		7210		pF
Reverse transfer capacitance	$C_{res}$			327		



# SIGC109T120R3LE

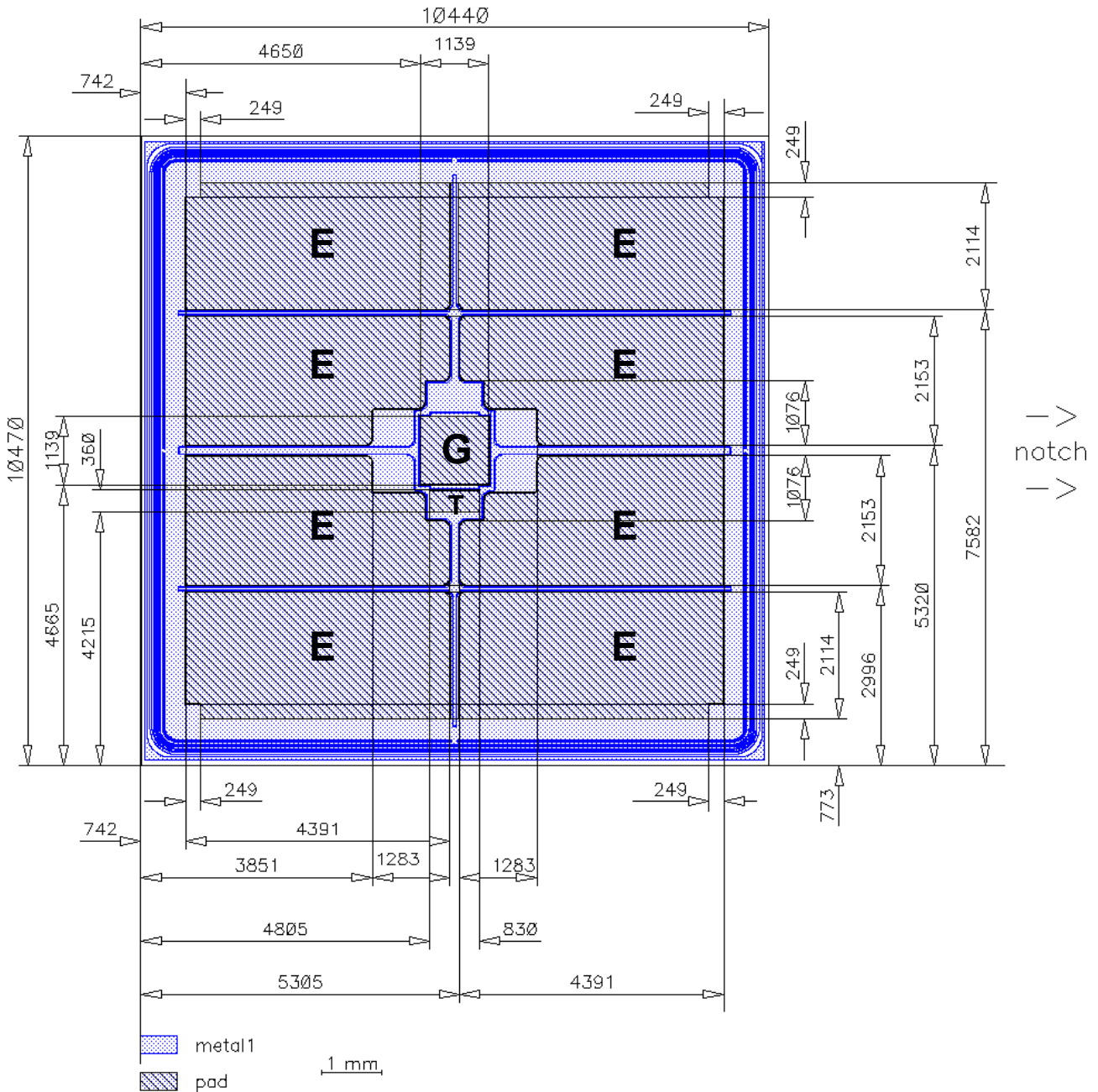
---

## **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

Die-Size 10440  $\mu\text{m}$  x 10470  $\mu\text{m}$



**E** = Emitter

**G** = Gate

**T** = Test pad do not contact



# SIGC109T120R3LE

## 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
2.0	Release of final datasheet, change wafer size to 200 mm	30.04.2010

**Published by**  
**Infineon Technologies AG**  
**81726 Munich, Germany**  
**© 2010 Infineon Technologies AG**  
**All Rights Reserved.**

## Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

## Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office ([www.infineon.com](http://www.infineon.com)).

## Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office. Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.