

IGBT

TRENCHSTOP™ IGBT4 High Power Chip  
IGC142T120T8RH

Data Sheet

Industrial Power Control



# IGC142T120T8RH

---

## Table of Contents

Features and Applications.....	3
Mechanical Parameters.....	3
Maximum Ratings.....	4
Static and Electrical Characteristics .....	4
Further Electrical Characteristics .....	5
Chip Drawing.....	6
Revision History .....	7
Relevant Application Notes .....	7
Legal Disclaimer .....	8

## TRENCHSTOP™ IGBT4 High Power Chip

### Features:

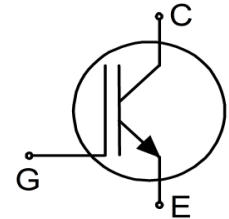
- 1200V trench & field stop technology
- LOW  $V_{CEsat}$
- Soft turn off
- Positive temperature coefficient
- Easy paralleling

### Recommended for:

- Medium / high power modules

### Applications:

- Medium / high power drives



Chip Type	$V_{CE}$	$I_{Cn}$	Die Size	Package
IGC142T120T8RH	1200V	150A	11.31mm x 12.56mm	Sawn on foil

### Mechanical Parameters

Die size	11.31 x 12.56		mm <sup>2</sup>
Emitter pad size	See chip drawing		
Gate pad size	1.31 x 0.811		
Area total	142.05		
Silicon thickness	140		μm
Wafer size	200		mm
Maximum possible chips per wafer	170		
Passivation frontside	Photoimide		
Pad metal	3200nm AlSiCu		
Backside metal	Ni Ag – system To achieve a reliable solder connection it is strongly recommended not to consume the Ni layer completely during production process		
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 (<6 months)	for original and sealed MBB bags	Ambient atmosphere air, temperature 17°C – 25°C	
	for open MBB bags	Acc. IEC62258-3; Section 9.4 Storage Environment.	

## Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage, $T_{vj}=25^{\circ}\text{C}$	$V_{CE}$	1200	V
DC collector current, limited by $T_{vj\text{ max}}^1$	$I_C$	-	A
Pulsed collector current, $t_p$ limited by $T_{vj\text{ max}}^2$	$I_{C,puls}$	450	A
Gate-emitter voltage	$V_{GE}$	$\pm 20$	V
Virtual junction operating temperature	$T_{vj}$	-40 ... +175	$^{\circ}\text{C}$
Short circuit data <sup>1/2/3</sup> $V_{GE}=15\text{V}$ , $V_{CC}=800\text{V}$ , $T_{vj}=150^{\circ}\text{C}$	$t_{sc}$	10	$\mu\text{s}$

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0\text{V}$ , $I_C=5.7\text{mA}$	1200	-	-	V
Collector-emitter saturation voltage	$V_{CEsat}$	$V_{GE}=15\text{V}$ , $I_C=45\text{A}$	0.97	1.1	1.26	
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C=5.7\text{mA}$ , $V_{GE}=V_{CE}$	5.1	5.8	6.4	
Zero gate voltage collector current	$I_{CES}$	$V_{CE}=1200\text{V}$ , $V_{GE}=0\text{V}$	-	-	20	$\mu\text{A}$
Gate-emitter leakage current	$I_{GES}$	$V_{CE}=0\text{V}$ , $V_{GE}=20\text{V}$	-	-	120	nA
Integrated gate resistor	$r_G$		-	5	-	$\Omega$

## Electrical Characteristics <sup>2</sup>

Parameter	Symbol	Conditions	Value			Unit	
			min.	typ.	max.		
Collector-emitter saturation voltage	$V_{CEsat}$	$V_{GE}=15\text{V}$ , $I_C=150\text{A}$	$T_{vj}=25^{\circ}\text{C}$	-	1.7	-	V
			$T_{vj}=150^{\circ}\text{C}$	-	2.1	-	
Input capacitance	$C_{ies}$	$V_{CE}=25\text{V}$ , $V_{GE}=0\text{V}$ , $f=1\text{MHz}$ $T_{vj}=25^{\circ}\text{C}$	-	9300	-	pF	
Reverse transfer capacitance	$C_{res}$		-	510	-		

<sup>1</sup> Depending on thermal properties of assembly.

<sup>2</sup> Not subject to production test - verified by design/characterization.

<sup>3</sup> Allowed number of short circuits: <1000; time between short circuits: >1s.



# IGC142T120T8RH

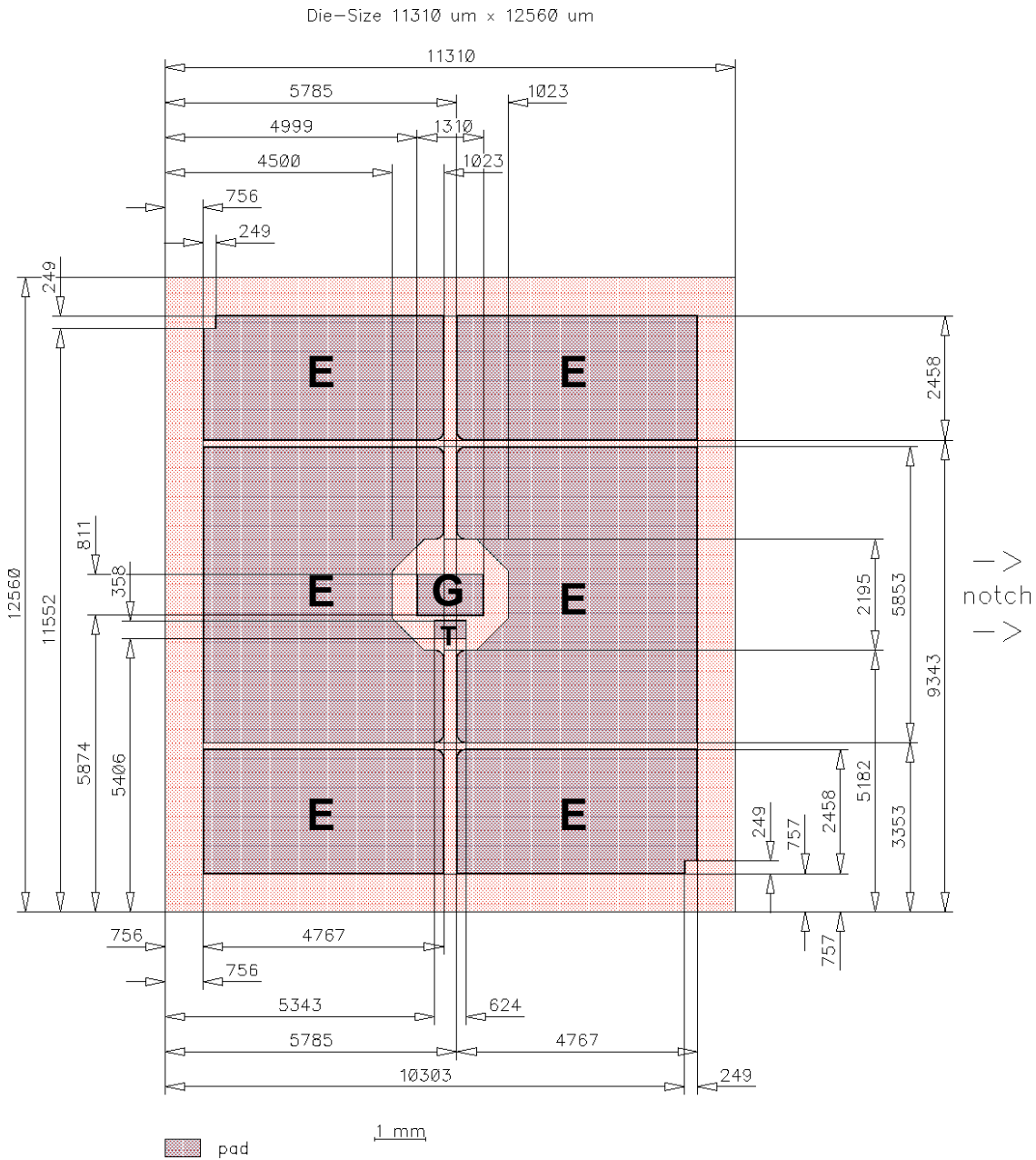
---

## Further Electrical Characteristics

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

Application example	FZ600R12KP4	Rev. 2.2
---------------------	-------------	----------

## Chip Drawing



**E** = Emitter

**G** = Gate

**T** = Test pad do not contact



# IGC142T120T8RH

## Bare Die Product Specifics

Test coverage at wafer level cannot cover all application conditions. Therefore it is recommended to test all characteristics which are relevant for the application at package level, including RBSOA and SCSOA.

## Description

AQL 0.65 for visual inspection according to failure catalogue

Electrostatic Discharge Sensitive Device according to MIL-STD 883

## Revision History

Revision	Subjects (major changes since last revision)	Date
2.0	Final data sheet	11.05.2016

## Relevant Application Notes

--	--



# IGC142T120T8RH

---

**Published by**  
**Infineon Technologies AG**  
**81726 München, Germany**  
**© Infineon Technologies AG 2016.**  
**All Rights Reserved.**

## **IMPORTANT NOTICE**

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie"). With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, 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.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

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

Please note that this product is not qualified according to the AEC Q100 or AEC Q101 documents of the Automotive Electronics Council.

## **WARNINGS**

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.



www.infineon.com

Published by Infineon Technologies AG

Downloaded From [Oneyac.com](https://www.oneyac.com)

单击下面可查看定价，库存，交付和生命周期等信息

[>>Infineon Technologies\(英飞凌\)](#)