

IGBT

TRENCHSTOP™ IGBT3 Chip
SIGC10T60SE

Data Sheet

Industrial Power Control



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™ IGBT3 Chip

Features:

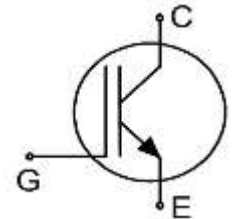
- 600V trench & field stop technology
- Low V_{CEsat}
- Low turn-off losses
- Short tail current
- Positive temperature coefficient
- Easy paralleling

Recommended for:

- Power modules
- Discrete components

Applications:

- Drives
- White goods
- Resonant applications



| Chip Type | V_{CE} | I_{Cn} | Die Size | Package |
|-------------|----------|----------|-----------------|--------------|
| SIGC10T60SE | 600V | 20A | 3.19mm x 3.21mm | Sawn on foil |

Mechanical Parameters

| | | |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Die size | 3.19 x 3.21 | mm ² |
| Emitter pad size | See chip drawing | |
| Gate pad size | 0.36 x 0.51 | |
| Area total | 10.24 | |
| Silicon thickness | 70 | µm |
| Wafer size | 200 | mm |
| Maximum possible chips per wafer | 2693 | |
| 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. IEC 62258-3; Section 9.4 Storage Environment. |

Maximum Ratings

In general, from reliability and lifetime point of view, the lower the operation junction temperature and/or the applied voltage, the greater the expected lifetime of any semiconductor device.

| Parameter | Symbol | Value | Unit |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------|--------------------|
| Collector-emitter voltage, $T_{vj}=25^{\circ}\text{C}$ | V_{CE} | 600 | V |
| DC collector current, limited by $T_{vj\text{ max}}^1$ | I_C | - | A |
| Pulsed collector current, t_p limited by $T_{vj\text{ max}}^2$ | $I_{C,puls}$ | 60 | A |
| Gate-emitter voltage | V_{GE} | ± 20 | V |
| Virtual junction temperature | T_{vj} | -40 ... +175 | $^{\circ}\text{C}$ |
| Short circuit data ^{1/2/3} $V_{GE}=15\text{V}$, $V_{CC}=360\text{V}$, $T_{vj}=150^{\circ}\text{C}$ | t_{sc} | 6 | μs |
| Reverse bias safe operating area (RBSOA) ² | $I_{C,max} = 40\text{A}$, $V_{CE,max} = 600\text{V}$, $T_{vj} \leq 150^{\circ}\text{C}$ | | |

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

| Parameter | Symbol | Conditions | Value | | | Unit |
|--------------------------------------|---------------|-------------------------------------------|-------|------|------|---------------|
| | | | min. | typ. | max. | |
| Collector-emitter breakdown voltage | $V_{(BR)CES}$ | $V_{GE}=0\text{V}$, $I_C=2\text{mA}$ | 600 | - | - | V |
| Collector-emitter saturation voltage | V_{CEsat} | $V_{GE}=15\text{V}$, $I_C=20\text{A}$ | - | 1.5 | 2.05 | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $I_C=290\mu\text{A}$, $V_{GE}=V_{CE}$ | 4.1 | 4.9 | 5.7 | |
| Zero gate voltage collector current | I_{CES} | $V_{CE}=600\text{V}$, $V_{GE}=0\text{V}$ | - | - | 1.1 | μA |
| Gate-emitter leakage current | I_{GES} | $V_{CE}=0\text{V}$, $V_{GE}=20\text{V}$ | - | - | 300 | nA |
| Integrated gate resistor | r_G | | none | | | Ω |

Electrical Characteristics ²

| Parameter | Symbol | Conditions | Value | | | Unit |
|------------------------------|-----------|----------------------------------------------------------------------------------------------|-------|------|------|------|
| | | | min. | typ. | max. | |
| Input capacitance | C_{ies} | $V_{CE}=25\text{V}$, $V_{GE}=0\text{V}$, $f=1\text{MHz}$ $T_{vj}=25^{\circ}\text{C}$ | - | 1100 | - | pF |
| Output capacitance | C_{oes} | | - | 71 | - | |
| Reverse transfer capacitance | C_{res} | | - | 32 | - | |

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.



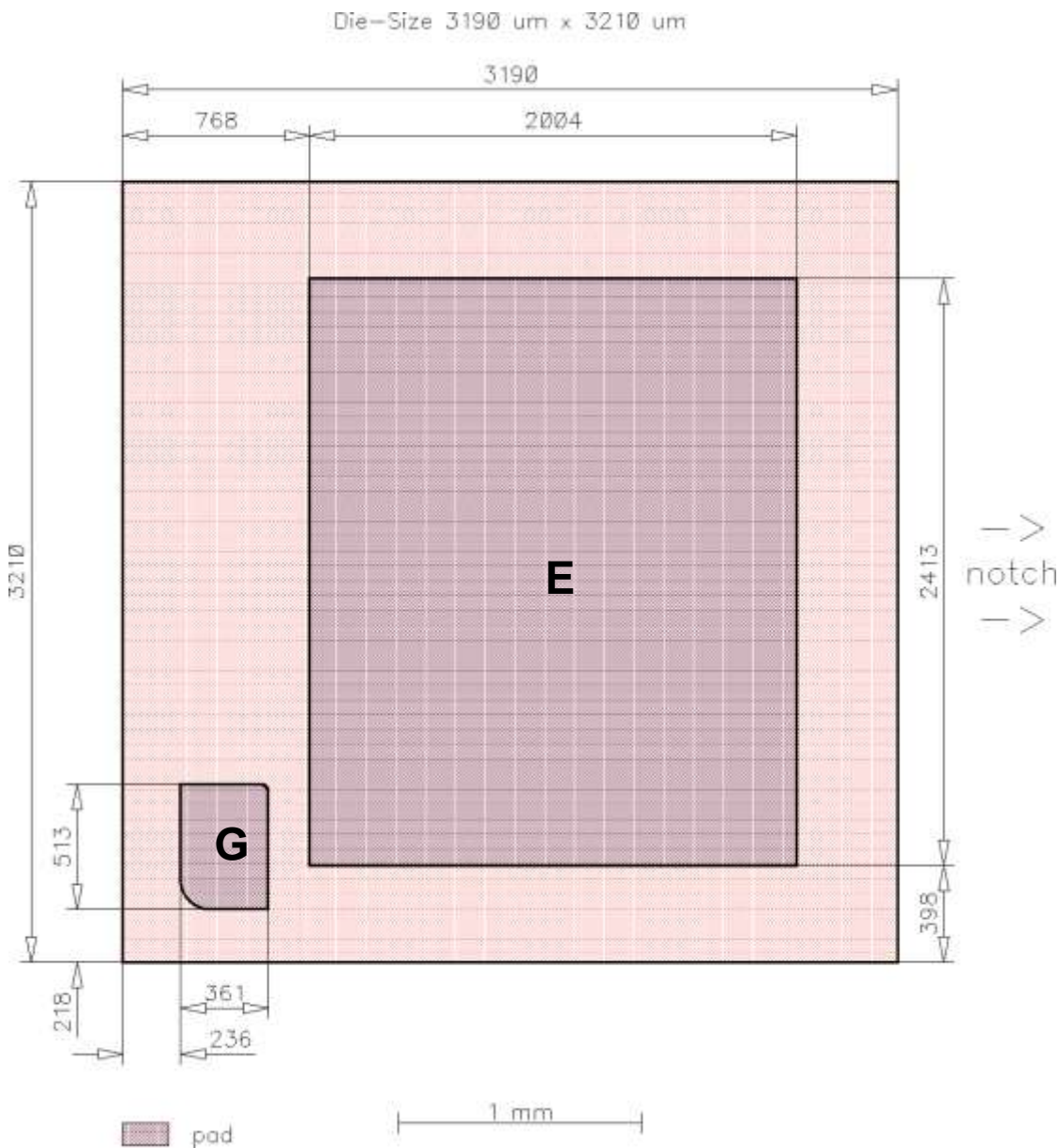
SIGC10T60SE

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 | IKP20N60T | Rev. 2.8 |
|---------------------|-----------|----------|

Chip Drawing



E = Emitter

G = Gate



SIGC10T60SE

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 | Wafer diameter change to 200 mm | 07.07.2010 |
| 2.1 | Additional Basic Type, editorial changes | 20.07.2017 |
| | | |

Relevant Application Notes

| | |
|--|--|
| | |
|--|--|



Published by
Infineon Technologies AG
81726 München, Germany
© Infineon Technologies AG 2017.
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).

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\(英飞凌\)](#)