



**THE DATASHEET OF  
SIGC11T60SNCX1SA1**



## IGBT Chip in NPT-technology

### FEATURES:

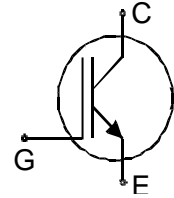
- 600V NPT technology
- 100µm chip
- positive temperature coefficient
- easy paralleling

### This chip is used for:

- IGBT Modules

### Applications:

- drives



| Chip Type    | V <sub>CE</sub> | I <sub>CN</sub> | Die Size                    | Package      | Ordering Code     |
|--------------|-----------------|-----------------|-----------------------------|--------------|-------------------|
| SIGC11T60SNC | 600V            | 10A             | 3.25 x 3.25 mm <sup>2</sup> | sawn on foil | Q67050-A4155-A001 |

### MECHANICAL PARAMETER:

|                                 |  |                 |
|---------------------------------|--|-----------------|
| Raster size                     | 3.25 x 3.25  | mm <sup>2</sup> |
| Area total / active             | 10.56 / 7.4  |                 |
| Emitter pad size                | 2 x 1.6  |                 |
| Gate pad size                   | 1.08 x 0.68  |                 |
| Thickness                       | 100  | µm              |
| Wafer size                      | 150  | mm              |
| Flat position                   | 270  | deg             |
| Max.possible chips per wafer    | 1414   |                 |
| Passivation frontside           | Photoimide   |                 |
| Emitter metallization           | 3200 nm Al Si 1%   |                 |
| Collector metallization         | 1400 nm Ni Ag –system<br>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,<br>< 6 month at an ambient temperature of 23°C |                 |

## MAXIMUM RATINGS:

| Parameter   | Symbol         | Value         | Unit               |
|---|----------------|---------------|--------------------|
| Collector-emitter voltage, $T_j=25\text{ °C}$         | $V_{CE}$       | 600           | V                  |
| DC collector current, limited by $T_{jmax}$           | $I_C$          | <sup>1)</sup> | A                  |
| Pulsed collector current, $t_p$ limited by $T_{jmax}$ | $I_{Cpuls}$    | 30            | A                  |
| Gate-emitter voltage                                  | $V_{GE}$       | $\pm 20$      | V                  |
| Operating junction and storage temperature            | $T_j, T_{stg}$ | -55 ... +150  | $^{\circ}\text{C}$ |

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

## STATIC CHARACTERISTICS (tested on chip), $T_j=25\text{ °C}$ , unless otherwise specified:

| Parameter                            | Symbol        | Conditions                    | Value |      |      | Unit    |
|--------------------------------------|---------------|-------------------------------|-------|------|------|---------|
|                                      |               |                               | min.  | typ. | max. |         |
| Collector-emitter breakdown voltage  | $V_{(BR)CES}$ | $V_{GE}=0V, I_C=500\mu A$     | 600   |      |      | V       |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $V_{GE}=15V, I_C=10A$         | 1.7   | 2    | 2.4  |         |
| Gate-emitter threshold voltage       | $V_{GE(th)}$  | $I_C=300\mu A, V_{GE}=V_{CE}$ | 3     | 4    | 5    |         |
| Zero gate voltage collector current  | $I_{CES}$     | $V_{CE}=600V, V_{GE}=0V$      |       |      | 0.85 | $\mu A$ |
| Gate-emitter leakage current         | $I_{GES}$     | $V_{CE}=0V, V_{GE}=20V$       |       |      | 100  | nA      |

## DYNAMIC CHARACTERISTICS (tested at component):

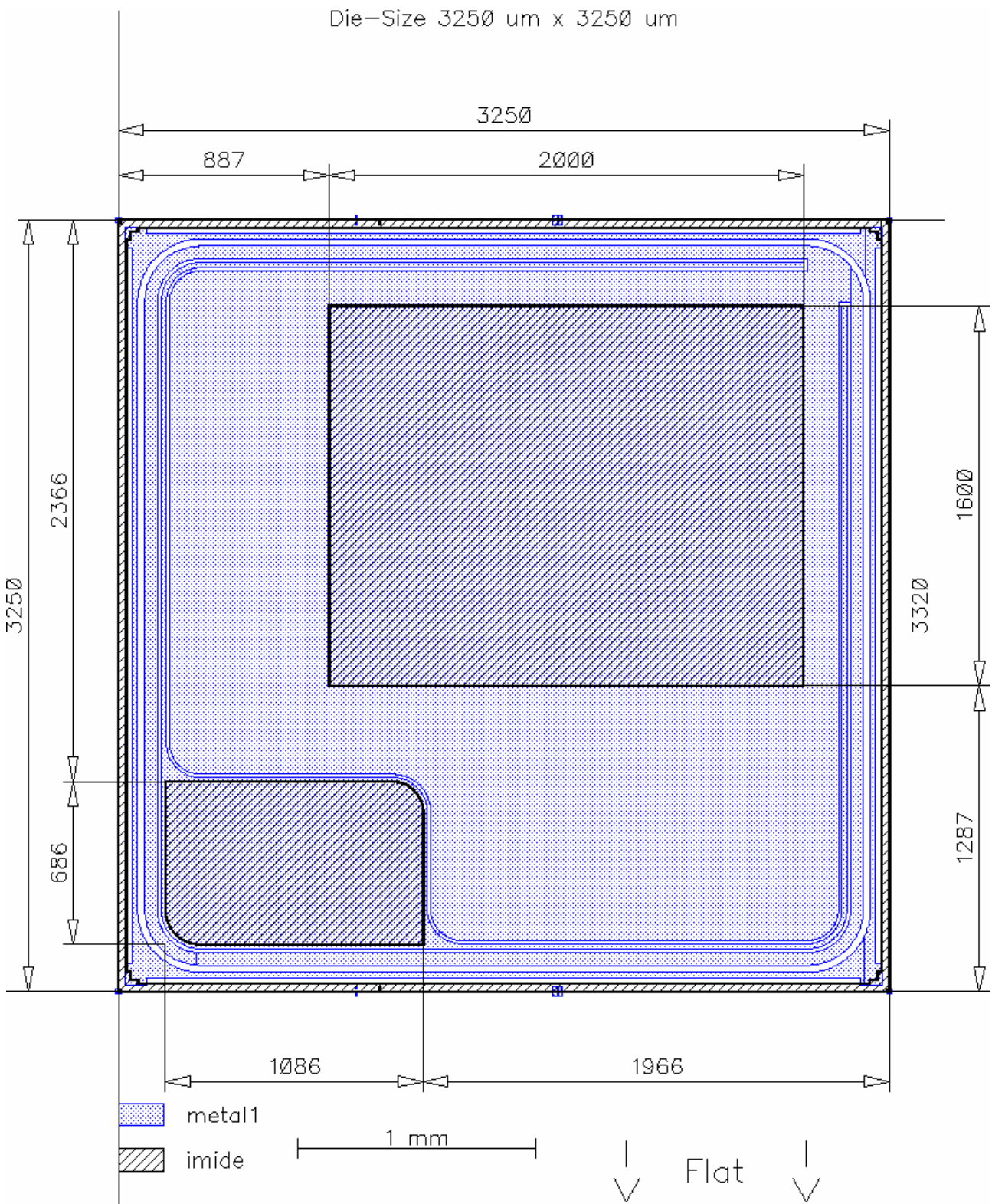
| Parameter                    | Symbol     | Conditions   | Value |      |      | Unit |
|------------------------------|------------|--------------|-------|------|------|------|
|                              |            |              | min.  | typ. | max. |      |
| Input capacitance            | $C_{iss}$  | $V_{CE}=25V$ | -     | 550  | 660  | pF   |
| Output capacitance           | $C_{oss}$  | $V_{GE}=0V$  | -     | 62   | 75   |      |
| Reverse transfer capacitance | $C_{riss}$ | $f=1MHz$     | -     | 42   | 51   |      |

## SWITCHING CHARACTERISTICS (tested at component), Inductive Load:

| Parameter           | Symbol       | Conditions <sup>2)</sup> | Value |      |      | Unit |
|---------------------|--------------|--------------------------|-------|------|------|------|
|                     |              |                          | min.  | typ. | max. |      |
| Turn-on delay time  | $t_{d(on)}$  | $T_j=150\text{ °C}$      | -     | 28   | 34   | ns   |
| Rise time           | $t_r$        | $V_{CC}=400V$            | -     | 12   | 15   |      |
| Turn-off delay time | $t_{d(off)}$ | $I_C=10A$                | -     | 198  | 238  |      |
| Fall time           | $t_f$        | $V_{GE}=+15/0V$          | -     | 26   | 32   |      |
|                     |              | $R_G=25\Omega$           |       |      |      |      |

<sup>2)</sup> switching conditions different to 600V Standard IGBT 2, under comparable switching conditions 40% faster turnoff than Standard IGBT 2. Values also influenced by parasitic L- and C- in measurement and package.

**CHIP DRAWING:**





# SIGC11T60SNC

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**FURTHER ELECTRICAL CHARACTERISTICS:**

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This chip data sheet refers to the  
device data sheet

SGP10N60A

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**Description:**

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AQL 0,65 for visual inspection according to failure catalog

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Electrostatic Discharge Sensitive Device according to MIL-STD 883

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Test-Normen Villach/Prüffeld

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