

IGBT Chip in NPT-technology

FEATURES:

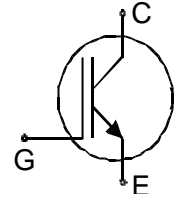
- 600V NPT technology
- 100µm chip
- short circuit prove
- positive temperature coefficient
- easy paralleling

This chip is used for:

- IGBT-Modules

Applications:

- drives



| Chip Type | V _{CE} | I _{CN} | Die Size | Package | Ordering Code |
|--------------|-----------------|-----------------|-----------------------------|--------------|-------------------|
| SIGC81T60SNC | 600V | 100A | 8.99 x 8.99 mm ² | sawn on foil | Q67050-A4164-A003 |

MECHANICAL PARAMETER:

| | | |
|---------------------------------|--|-----------------|
| Raster size | 8.99 x 8.99 | mm ² |
| Area total / active | 80.82 / 72.6 | |
| Emitter pad size | 8x(1.77x2.82) | |
| Gate pad size | 0.78 x 1.51 | |
| Thickness | 100 | µm |
| Wafer size | 150 | mm |
| Flat position | 90 | deg |
| Max.possible chips per wafer | 169 | |
| Passivation frontside | Photoimide | |
| Emitter metallization | 3200 nm Al Si 1% | |
| Collector metallization | 1400 nm 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, < 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 | ¹⁾ | A |
| Pulsed collector current, t_p limited by T_{jmax} | I_{Cpuls} | 300 | A |
| Gate emitter voltage | V_{GE} | ± 20 | V |
| Operating junction and storage temperature | T_j, T_{stg} | -55 ... +150 | $^{\circ}\text{C}$ |

¹⁾ 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 | $V_{(BR)CES}$ | $V_{GE}=0V, I_C=4mA$ | 600 | | | V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $V_{GE}=15V, I_C=100A$ | 1.7 | 2.1 | 2.5 | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $I_C=1.5mA, V_{GE}=V_{CE}$ | 3 | 4 | 5 | |
| Zero gate voltage collector current | I_{CES} | $V_{CE}=600V, V_{GE}=0V$ | | | 7 | μA |
| Gate-emitter leakage current | I_{GES} | $V_{CE}=0V, V_{GE}=30V$ | | | 300 | nA |

DYNAMIC CHARACTERISTICS (tested at component):

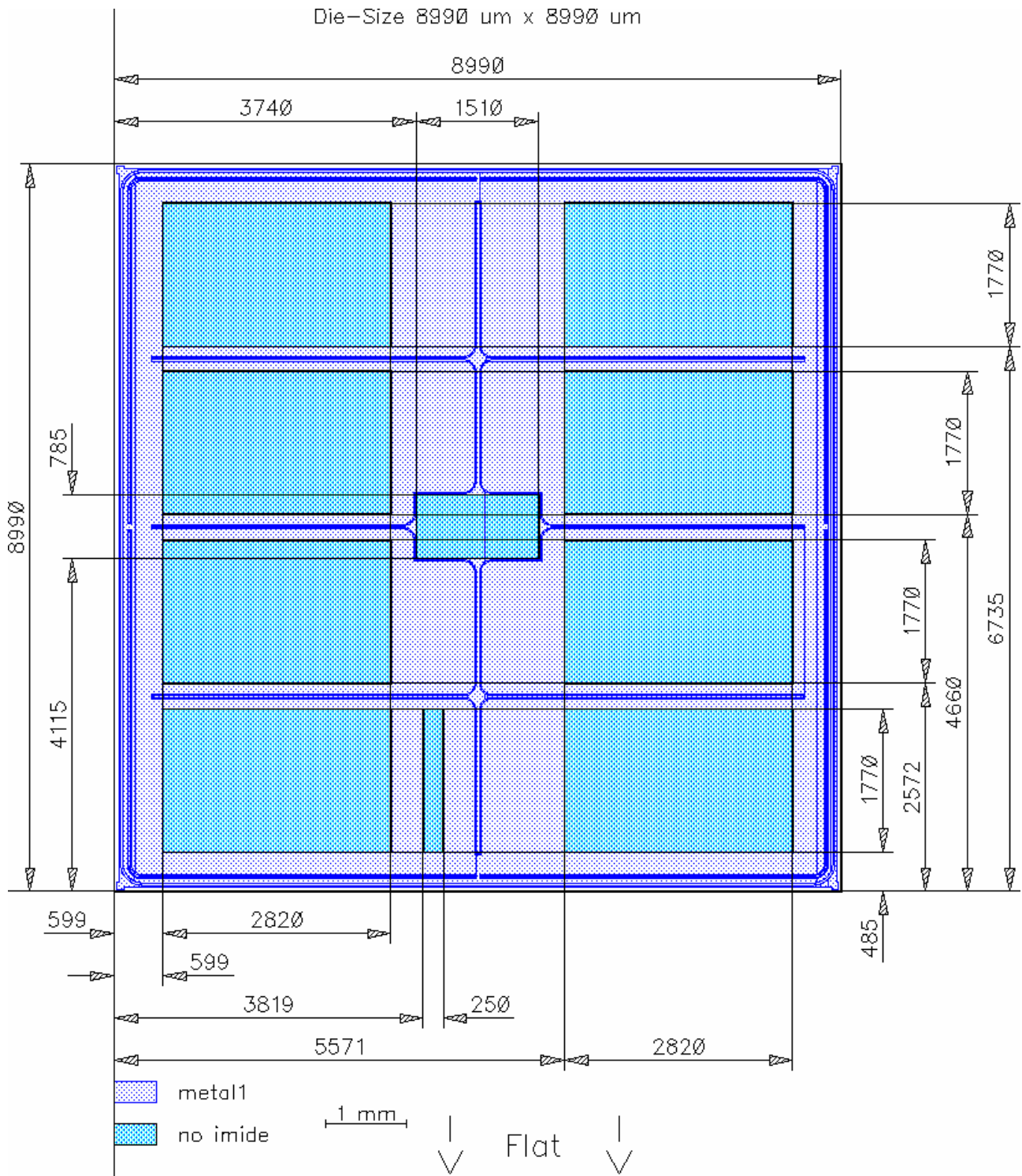
| Parameter | Symbol | Conditions | Value | | | Unit |
|------------------------------|------------|-----------------|-------|------|------|------|
| | | | min. | typ. | max. | |
| Input capacitance | C_{iss} | $V_{CE}=25V$ | - | 5430 | 6500 | pF |
| Output capacitance | C_{oss} | $V_{GE}=0V$ | - | 508 | 610 | |
| Reverse transfer capacitance | C_{riss} | $f=1\text{MHz}$ | - | 312 | 373 | |

SWITCHING CHARACTERISTICS (tested at component), Inductive Load:

| Parameter | Symbol | Conditions ²⁾ | Value | | | Unit |
|---------------------|--------------|--------------------------------------|-------|------|------|------|
| | | | min. | typ. | max. | |
| Turn-on delay time | $t_{d(on)}$ | $T_j=150\text{ °C}$ $V_{CC}=400V$ | - | 65 | 91 | ns |
| Rise time | t_r | $I_C=100A$ | - | 50 | 70 | |
| Turn-off delay time | $t_{d(off)}$ | $V_{GE}=+15/0V$ $R_G=3.3\Omega$ | - | 450 | 630 | |
| Fall time | t_f | | - | 90 | 126 | |

²⁾ 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:





SIGC81T60SNC

FURTHER ELECTRICAL CHARACTERISTICS:

This chip data sheet refers to the device data sheet

Description:

AQL 0,65 for visual inspection according to failure catalog

Electrostatic Discharge Sensitive Device according to MIL-STD 883

Test-Normen Villach/Prüffeld

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