

High Speed IGBT Chip in NPT-technology

FEATURES:

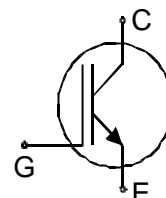
- low E_{off}
 - 600V NPT technology
 - 100µm chip
 - short circuit prove
 - positive temperature coefficient
- easy paralleling

This chip is used for:

- SGW50N60HS

Applications:

- Welding
- PFC
- UPS



| Chip Type | V _{CE} | I _{CN} | Die Size | Package | Ordering Code |
|-------------|-----------------|-----------------|---------------------------|--------------|---------------|
| SIGC42T60UN | 600V | 50A | 6.5 x 6.5 mm ² | sawn on foil | SP0001-01820 |

MECHANICAL PARAMETER:

| | | |
|---------------------------------|--|-----------------|
| Raster size | 6.5 x 6.5 | mm ² |
| Area total / active | 42.25 / 35.6 | |
| Emitter pad size | 2x(3.0x2.85) | |
| Gate pad size | 0.8 x 1.5 | |
| Thickness | 100 | µm |
| Wafer size | 150 | mm |
| Flat position | 90 | deg |
| Max.possible chips per wafer | 334 | |
| 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 ¹⁾ | A |
| Pulsed collector current, t_p limited by T_{jmax} | I_{Cpuls} | 150 | A |
| Gate emitter voltage | V_{GE} | ± 20 | V |
| Operating junction and storage temperature | T_j, T_{stg} | -55 ... +150 | °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 | $V_{(BR)CES}$ | $V_{GE}=0V, I_C=2mA$ | 600 | | | V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $V_{GE}=15V, I_C=50A$ | | 2.8 | 3.15 | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $I_C=1mA, V_{GE}=V_{CE}$ | 3 | 4 | 5 | |
| Zero gate voltage collector current | I_{CES} | $V_{CE}=600V, V_{GE}=0V$ | | | 40 | μA |
| Gate-emitter leakage current | I_{GES} | $V_{CE}=0V, V_{GE}=20V$ | | | 120 | nA |

DYNAMIC CHARACTERISTICS (tested at component):

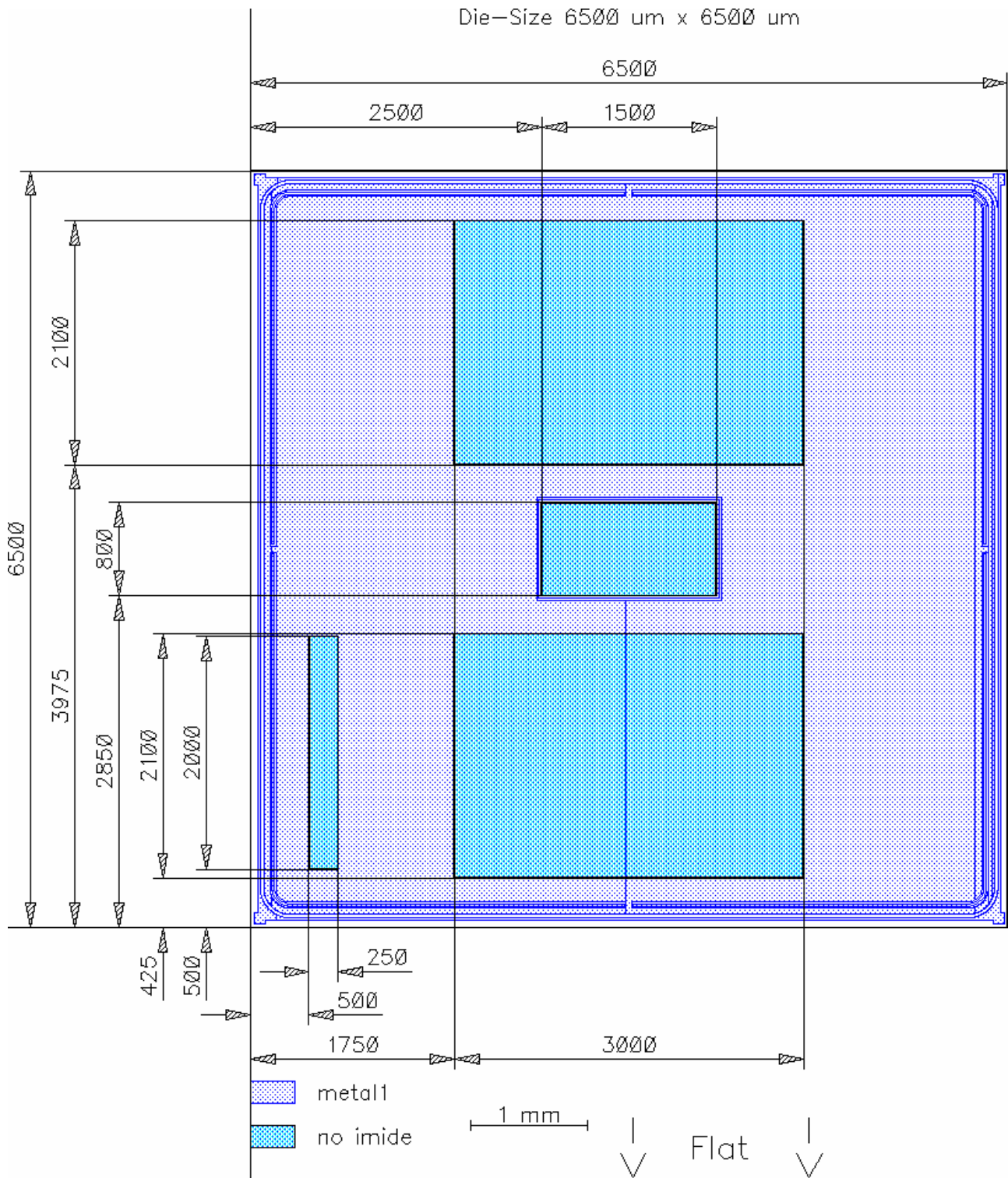
| Parameter | Symbol | Conditions | Value | | | Unit |
|------------------------------|------------|--------------|-------|------|------|------|
| | | | min. | typ. | max. | |
| Input capacitance | C_{iss} | $V_{CE}=25V$ | - | 2572 | | pF |
| Output capacitance | C_{oss} | $V_{GE}=0V$ | - | 245 | | |
| Reverse transfer capacitance | C_{riss} | $f=1MHz$ | - | 158 | | |

SWITCHING CHARACTERISTICS (tested at component), Inductive Load:

| Parameter | Symbol | Conditions* | Value | | | Unit |
|---------------------|--------------|--------------------------------------|-------|------|------|------|
| | | | min. | typ. | max. | |
| Turn-on delay time | $t_{d(on)}$ | $T_j=150\text{ °C}$ $V_{CC}=400V$ | - | 48 | | ns |
| Rise time | t_r | $I_C=50A$ | - | 31 | | |
| Turn-off delay time | $t_{d(off)}$ | $V_{GE}=+15/0V$ $R_G=6.8\Omega$ | - | 350 | | |
| Fall time | t_f | | - | 20 | | |

* Values also influenced by parasitic L- and C- in measurement and package.

CHIP DRAWING:





SIGC42T60UN

FURTHER ELECTRICAL CHARACTERISTICS:

This chip data sheet refers to the device data sheet

SGW50N60HS

Package :TO247

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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