

IGBT Chip in NPT-technology

FEATURES:

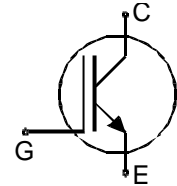
- 1200V NPT technology 200µm chip
- low turn-off losses
- positive temperature coefficient
- easy paralleling
- integrated gate resistor

This chip is used for:

- power module
BSM 50GD120DN2

Applications:

- drives



| Chip Type | V _{CE} | I _{CN} | Die Size | Package | Ordering Code |
|---------------|-----------------|-----------------|-----------------------------|--------------|-----------------------|
| SIGC81T120R2C | 1200V | 50A | 9.08 X 8.98 mm ² | sawn on foil | Q67041- A4701-A003 |

MECHANICAL PARAMETER:

| | | |
|---------------------------------|--|-----------------|
| Raster size | 9.08 X 8.98 | mm ² |
| Emitter pad size | 8 x (2.6 x 1.78) | |
| Gate pad size | 1.46 x 0.8 | |
| Area total / active | 81.5 / 63.5 | |
| Thickness | 200 | µm |
| Wafer size | 150 | mm |
| Flat position | 90 | grd |
| Max.possible chips per wafer | 167 pcs | |
| 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} | 1200 | V |
| DC collector current, limited by T_{jmax} | I_C | 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 | $^{\circ}\text{C}$ |

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 | $V_{(BR)CES}$ | $V_{GE}=0V, I_C=3mA$ | 1200 | | | V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $V_{GE}=15V, I_C=50A$ | 2.0 | 2.5 | 3.0 | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $I_C=2mA, V_{GE}=V_{CE}$ | 4.5 | 5.5 | 6.5 | |
| Zero gate voltage collector current | I_{CES} | $V_{CE}=1200V, V_{GE}=0V$ | | | 6.1 | μA |
| Gate-emitter leakage current | I_{GES} | $V_{CE}=0V, V_{GE}=20V$ | | | 300 | nA |
| Integrated gate resistor | R_{Gint} | | | 5 | | Ω |

ELECTRICAL CHARACTERISTICS (tested at component):

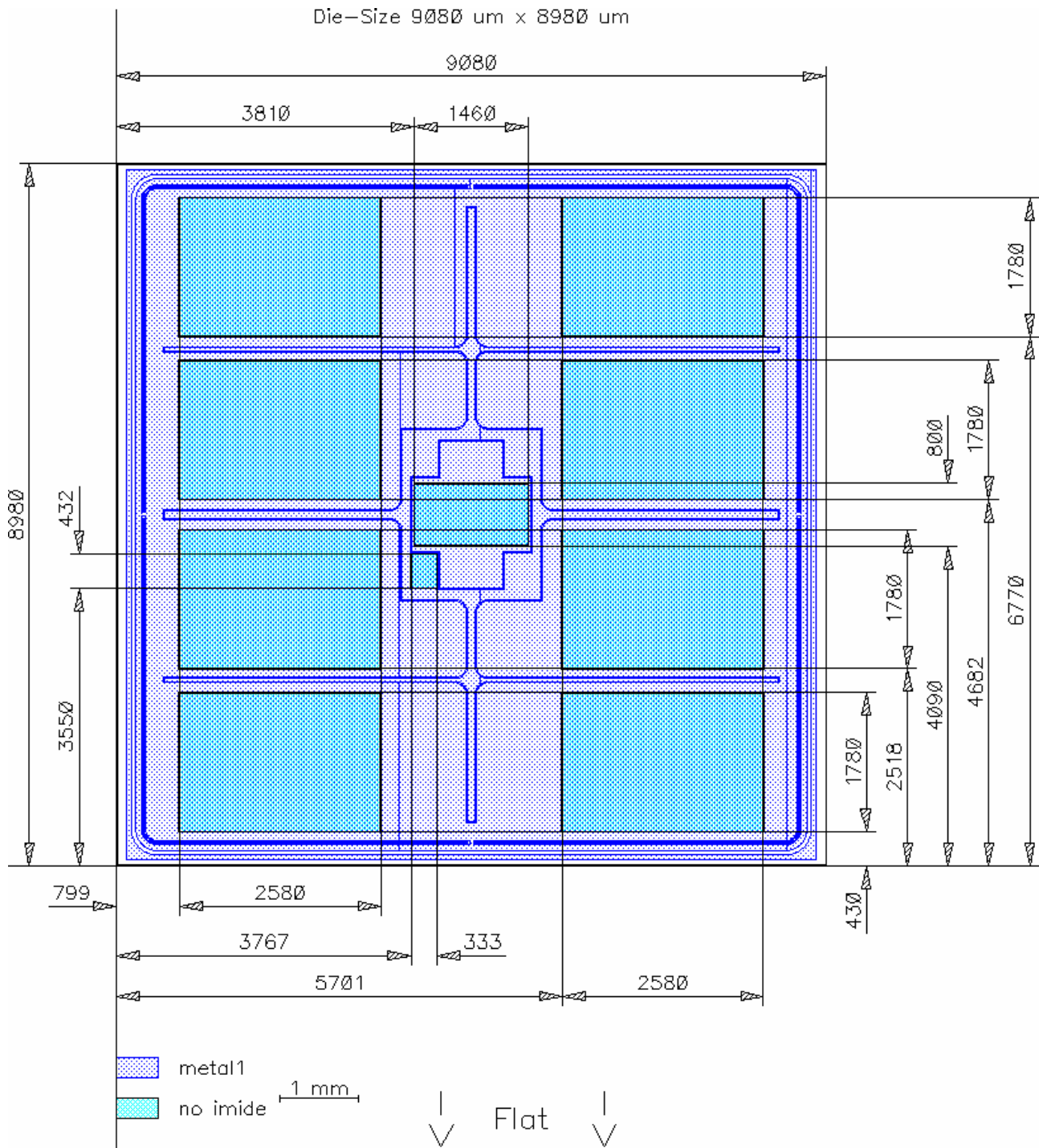
| Parameter | Symbol | Conditions | Value | | | Unit |
|------------------------------|-----------|-----------------|-------|------|------|------|
| | | | min. | typ. | max. | |
| Input capacitance | C_{iss} | $V_{CE}=25V,$ | - | 3300 | - | pF |
| Output capacitance | C_{oss} | $V_{GE}=0V,$ | - | 500 | - | |
| Reverse transfer capacitance | C_{rss} | $f=1\text{MHz}$ | - | 220 | - | |

SWITCHING CHARACTERISTICS (tested at component), Inductive Load

| Parameter | Symbol | Conditions ¹⁾ | Value | | | Unit |
|---------------------|--------------|--------------------------------------|-------|------|------|------|
| | | | min. | typ. | max. | |
| Turn-on delay time | $t_{d(on)}$ | $T_j=125\text{ °C}$ | - | 44 | 100 | ns |
| Rise time | t_r | $V_{CC}=600V,$ | - | 56 | 100 | |
| Turn-off delay time | $t_{d(off)}$ | $I_C=50A,$ | - | 380 | 500 | |
| Fall time | t_f | $V_{GE}=+15/-15V,$ $R_G=22\Omega$ | - | 70 | 100 | |

¹⁾ values also influenced by parasitic L- and C- in measurement and package.

CHIP DRAWING:





SIGC81T120R2C

FURTHER ELECTRICAL CHARACTERISTICS:

| | | |
|--|----------------|--------------|
| This chip data sheet refers to the device data sheet | BSM 50GD120DN2 | ECONOPACK 2K |
|--|----------------|--------------|

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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