

IGBT³ Chip

FEATURES:

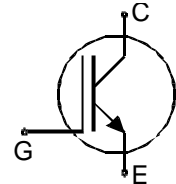
- 1200V Trench + Field Stop technology
- 120µm chip
- low turn-off losses
- short tail current
- positive temperature coefficient
- easy paralleling

This chip is used for:

- power module

Applications:

- drives



| Chip Type | V _{CE} | I _{Cn} | Die Size | Package | Ordering Code |
|---------------|-----------------|-----------------|----------------------------|--------------|-----------------------|
| SIGC32T120R3L | 1200V | 25A | 6.5 x 4.87 mm ² | sawn on foil | Q67050- A4206-A101 |

MECHANICAL PARAMETER:

| | | |
|---------------------------------------|--|-----------------|
| Raster size | 6.5 x 4.87 | mm |
| Emitter pad size (include gate pad) | 3.4 x 4.99 | |
| Gate pad size | 1.14 x 1.14 | |
| Area total / active | 31.6 / 21.5 | mm ² |
| Thickness | 120 | µm |
| Wafer size | 150 | mm |
| Flat position | 180 | grd |
| Max.possible chips per wafer | 454 pcs | |
| Passivation frontside | Photoimide | |
| Emitter metallization | 3200 nm AlSiCu | |
| 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} | 75 | 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 | $V_{(BR)CES}$ | $V_{GE}=0V, I_C=1mA$ | 1200 | | | V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $V_{GE}=15V, I_C=25A$ | 1.35 | 1.65 | 2.05 | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $I_C=1mA, V_{GE}=V_{CE}$ | 5.0 | 5.8 | 6.5 | |
| Zero gate voltage collector current | I_{CES} | $V_{CE}=1200V, V_{GE}=0V$ | | | 3.35 | µA |
| Gate-emitter leakage current | I_{GES} | $V_{CE}=0V, V_{GE}=20V$ | | | 600 | nA |
| Integrated gate resistor | R_{Gint} | | | 8 | | Ω |

ELECTRICAL CHARACTERISTICS (tested at component):

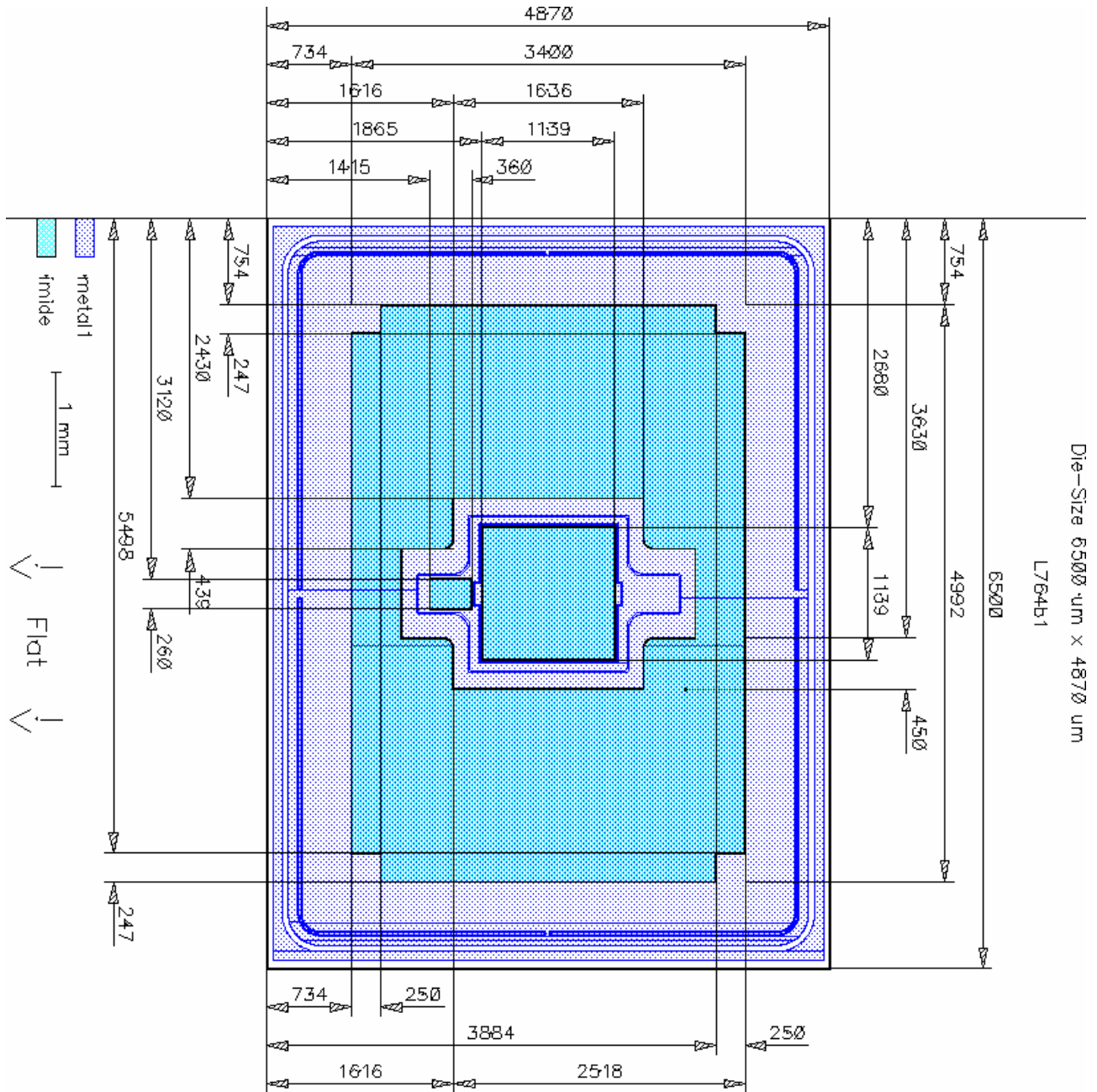
| Parameter | Symbol | Conditions | Value | | | Unit |
|------------------------------|------------|---------------|-------|------|------|------|
| | | | min. | typ. | max. | |
| Input capacitance | C_{iss} | $V_{CE}=25V,$ | | 1808 | | pF |
| Output capacitance | C_{oss} | $V_{GE}=0V,$ | | 95 | | |
| Reverse transfer capacitance | C_{riss} | $f=1MHz$ | | 82 | | |

SWITCHING CHARACTERISTICS (tested at component), Inductive Load

| Parameter | Symbol | Conditions ¹⁾ | Value | | | Unit |
|---------------------|--------------|-------------------------------------|-------|------|------|------|
| | | | min. | typ. | max. | |
| Turn-on delay time | $t_{d(on)}$ | $T_j=125\text{ °C}$ | | 0.09 | | µs |
| Rise time | t_r | $V_{CC}=600V,$ | | 0.05 | | |
| Turn-off delay time | $t_{d(off)}$ | $I_C=25A,$ | | 0.52 | | |
| Fall time | t_f | $V_{GE}=-15/15V,$ $R_G=36\Omega$ | | 0.09 | | |

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

CHIP DRAWING:



FURTHER ELECTRICAL CHARACTERISTICS:

| | | |
|--|-----|--|
| This chip data sheet refers to the device data sheet | tbd | |
|--|-----|--|

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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