



IGC27T120T6L

IGBT4 Low Power Chip

FEATURES:

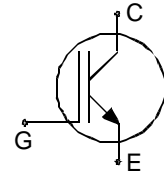
- 1200V Trench + Field Stop technology
- low switching losses
- positive temperature coefficient
- easy paralleling

This chip is used for:

- low / medium power modules

Applications:

- low / medium power drives



| Chip Type | V _{CE} | I _{CN} | Die Size | Package |
|--------------|-----------------|-----------------|-----------------------------|--------------|
| IGC27T120T6L | 1200V | 25A | 4.99 x 5.45 mm ² | sawn on foil |

MECHANICAL PARAMETER

| | | |
|---------------------------------|--|-----------------|
| Raster size | 4.99 x 5.45 | mm ² |
| Emitter pad size | 3.182 x 3.962 | |
| Gate pad size | 0.826 x 1.31 | |
| Area total / active | 27.2 / 17.3 | |
| Thickness | 115 | µm |
| Wafer size | 150 | mm |
| Flat position | 90 | grd |
| Max.possible chips per wafer | 537 | |
| Passivation frontside | Photoimide | |
| Pad metal | 3200 nm AlSiCu | |
| Backside metal | 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 | |



IGC27T120T6L

MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|--|--|---------------|------------------|
| Collector-Emitter voltage, $T_j=25\text{ }^\circ\text{C}$ | 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 temperature | T_j | -40 ... +175 | $^\circ\text{C}$ |
| Short circuit data ²⁾ $V_{GE} = 15\text{V}$, $V_{CC} = 800\text{V}$, $T_{vj} = 150^\circ\text{C}$ | t_p | 10 | μs |
| Reverse bias safe operating area ²⁾ (RBSOA) | $I_{Cmax} = 50\text{A}$, $V_{CEmax} = 1200\text{V}$, $T_{vjmax} = 150^\circ\text{C}$ | | |

¹⁾ depending on thermal properties of assembly

²⁾ not subject to production test - verified by design/characterization

STATIC CHARACTERISTICS (tested on wafer), $T_j=25\text{ }^\circ\text{C}$

| Parameter | Symbol | Conditions | Value | | | Unit |
|--------------------------------------|---------------|--|-------|------|------|---------------|
| | | | min. | typ. | max. | |
| Collector-Emitter breakdown voltage | $V_{(BR)CES}$ | $V_{GE}=0\text{V}$, $I_C=0.85\text{ mA}$ | 1200 | | | V |
| Collector-Emitter saturation voltage | $V_{CE(sat)}$ | $V_{GE}=15\text{V}$, $I_C=25\text{ A}$ | 1.6 | 1.85 | 2.1 | |
| Gate-Emitter threshold voltage | $V_{GE(th)}$ | $I_C=0.85\text{ mA}$, $V_{GE}=V_{CE}$ | 5.0 | 5.8 | 6.5 | |
| Zero gate voltage collector current | I_{CES} | $V_{CE}=1200\text{V}$, $V_{GE}=0\text{V}$ | | | 2.4 | μA |
| Gate-Emitter leakage current | I_{GES} | $V_{CE}=0\text{V}$, $V_{GE}=20\text{V}$ | | | 120 | nA |
| Integrated gate resistor | R_{Gint} | | | - | | Ω |

ELECTRICAL CHARACTERISTICS (not subject to production test - verified by design/characterization)

| Parameter | Symbol | Conditions | Value | | | Unit |
|------------------------------|-----------|---|-------|------|------|------|
| | | | min. | typ. | max. | |
| Input capacitance | C_{iss} | $V_{CE}=25\text{V}$, $V_{GE}=0\text{V}$, $f=1\text{ MHz}$ | | 1430 | | pF |
| Output capacitance | C_{oss} | | | 115 | | |
| Reverse transfer capacitance | C_{rss} | | | 85 | | |



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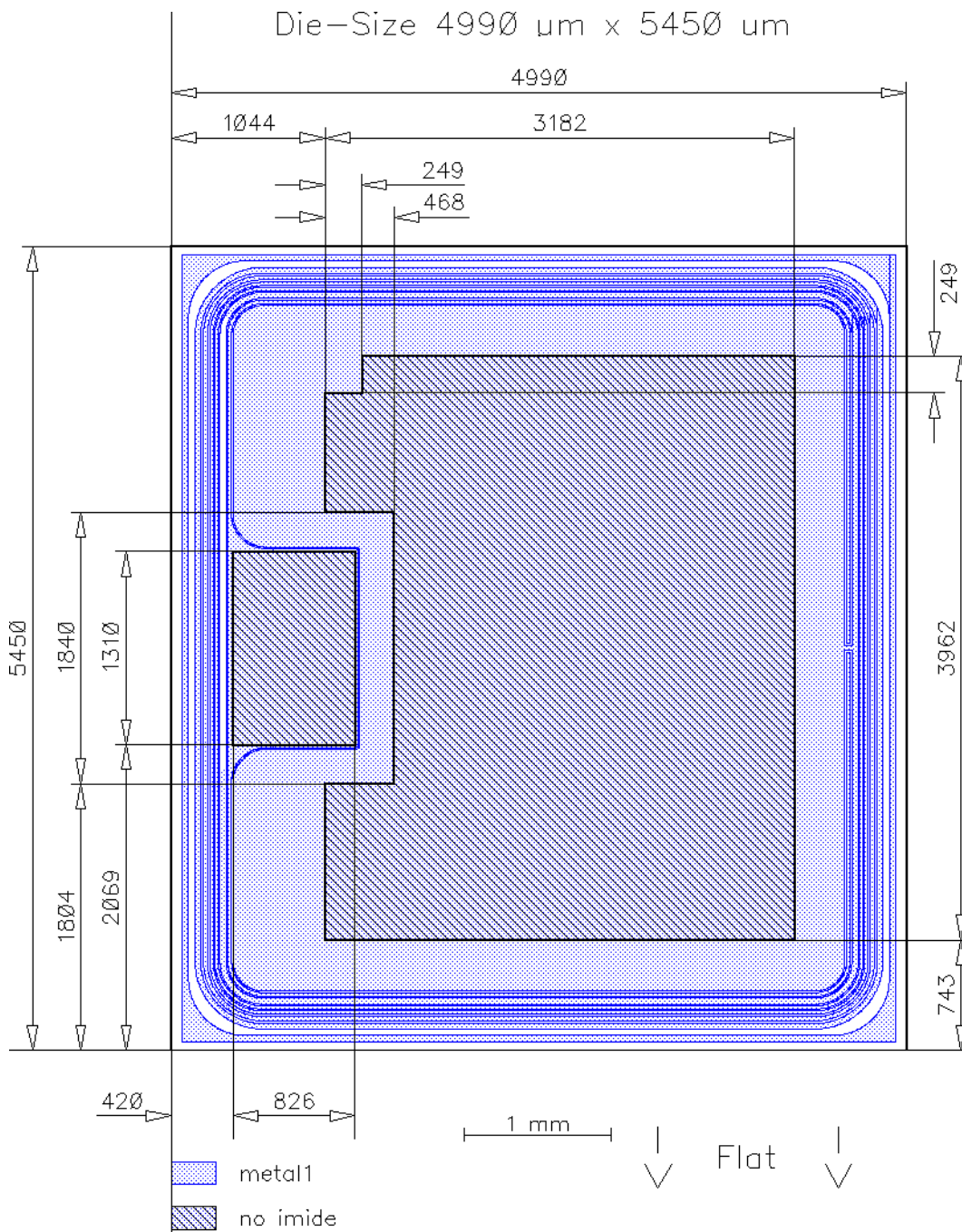
SWITCHING CHARACTERISTICS inductive load (not subject to production test - verified by design /characterization)

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

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

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CHIP DRAWING





IGC27T120T6L

FURTHER ELECTRICAL CHARACTERISTICS

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

DESCRIPTION

AQL 0,65 for visual inspection according to failure catalogue

Electrostatic Discharge Sensitive Device according to MIL-STD 883

Test-Normen Villach/Prüffeld

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Infineon Technologies AG
81726 Munich, Germany
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