NJSM

# SPG200H65AW

***650V 200A IGBT CHIP***

## Features:

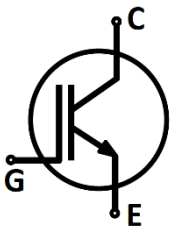
- 650V Trench & field stop technology
- Low switching losses
- High short circuit capability
- Positive Temperature coefficient
- Easy paralleling

## Recommended for:

power modules

## Applications:

drives




## Mechanical parameters

| | | | |
|---|---|---|---|
| Die size | *L* x *W* | 11.50×8.20 | $mm^2$ |
| Emitter pad size | *L* x *W* | See chip drawing | $mm^2$ |
| Gate pad size | *L* x *W* | 1.31×0.80 | $mm^2$ |
| Silicon thickness | 80 | | μm |
| Wafer size | 200 | | mm |
| Maximum possible chips per wafer | 274 | | |
| Passivation frontside | Polyimide | | |
| Pad Metallization | AlCu | 4 | μm |
| Backside Metallization | Al / Ti / Ni / Ag | 1.7 | μm |

## Maximum Ratings

| **Parameters** | **Symbol** | **Value** | **Unit** |
|---|---|---|---|
| Collector-emitter voltage | $V_{CE}$ | 650 | V |
| DC collector current, limited by $T_{vj\ max}$ | $I_C$ | 200 [1] | A |
| Pulsed collector current, $t_p$ limited by $T_{vj\ max}$ [2] | $I_{C\ puls}$ | 600 | A |
| Gate-emitter voltage | $V_{GE}$ | ±20 | V |
| Operating junction temperature | $T_{vj\ op}$ | -40~175 | °C |
| Storage temperature | $T_{stg}$ | -40~150 | °C |
| Short circuit data [3] ($V_{GE}$=15V, $V_{CC}$=360V, $T_{vj}$=150°C) | $t_{sc}$ | 10 | μs |

## Static Characteristic ($T_{vj}$=25°C, unless otherwise noted)

| **Parameter** | **Symbol** | **Conditions** | **Min.** | **Typ.** | **Max.** | **Unit** |
|---|---|---|---|---|---|---|
| Collector-emitter breakdown voltage | $V_{(BR)CES}$ | $V_{GE}$=0V, $I_C$=25μA | 650 | - | - | V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $V_{GE}$=15V, $I_C$=25A | 0.80 | 0.90 | 1.00 | V |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $I_C$=3.2mA, $V_{CE}$= $V_{GE}$ | 4.3 | 4.8 | 5.3 | V |
| Collector-emitter leakage | $I_{CES}$ | $V_{CE}$=650V, $V_{GE}$=0V | - | - | 1.08 | μA |
| Gate-emitter leakage | $I_{GES}$ | $V_{CE}$=0V, $V_{GE}$=20V | - | - | 120 | nA |
| Integrated gate resistor | $R_{Gint}$ | | | 2.0 | | Ω |

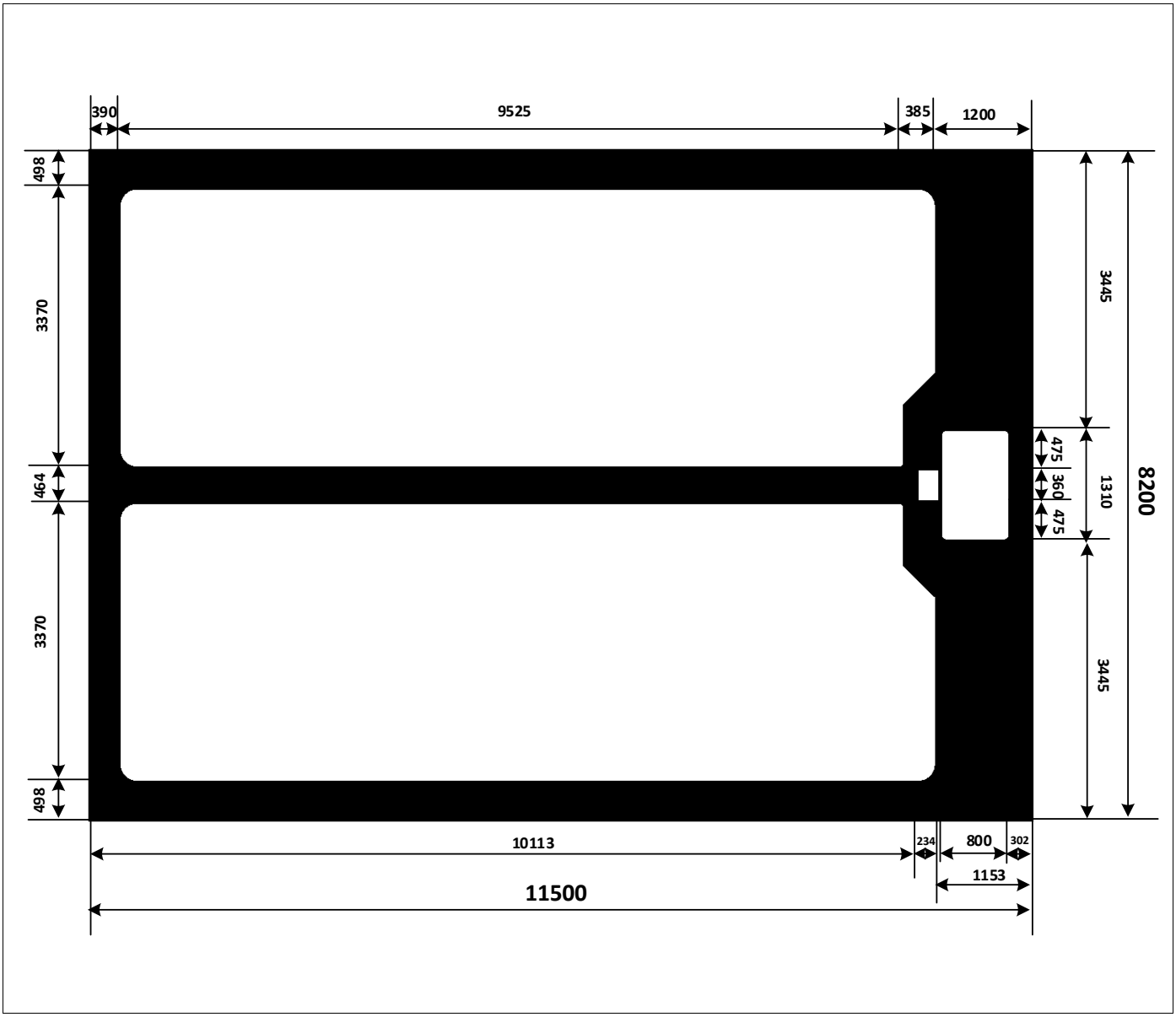
[1] Depending on thermal properties of assembly.
[2] Not subject to production test - verified by design/characterization.
[3] Allowed number of short circuit: ＜1000; time between short circuit: ＞1s.

**Version: 1.1**

## Electrical Characteristic [1]

| Parameter | | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| Collector-emitter saturation voltage | $T_{vj}$=25°C | $V_{CE(sat)}$ | $V_{GE}$=15V, $I_C$=200A | 1.30 | 1.50 | 1.70 | V |
| | $T_{vj}$=150°C | | | 1.40 | 1.70 | 2.00 | |
| Input capacitance | | $C_{ies}$ | $V_{CE}$=25V, $V_{GE}$=0V, $f$=100kHz, $T_{vj}$=25°C | - | 14400 | - | pF |
| Reverse transfer capacitance | | $C_{res}$ | | - | 280 | - | pF |

## Chip Drawing (unit: μm)




[1] Not subject to production test - verified by design/characterization.

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