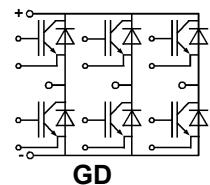
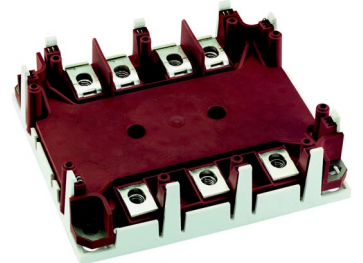


SKiM® 4 IGBT Modules

SKiM 400 GD 126 DM

Preliminary Data



Features

- Trench gate IGBT with field stop layer
- Low inductance case
- Fast & soft inverse CAL diodes ⁸⁾
- Isolated by AlN DCB (Direct Copper Bonded) ceramic plate
- Pressure contact technology for thermal contacts
- Spring contact system to attach driver PCB to the control terminals
- Integrated temperature sensor

Typical Applications

- Switched mode power supplies
- Three phase inverters for AC motor speed control
- Switching (not for linear use)

¹⁾ T_{HS} = 25 °C, unless otherwise specified

²⁾ TBD

³⁾ Use V_{GEoff} = -5... -15 V

⁴⁾ Measured at chip level

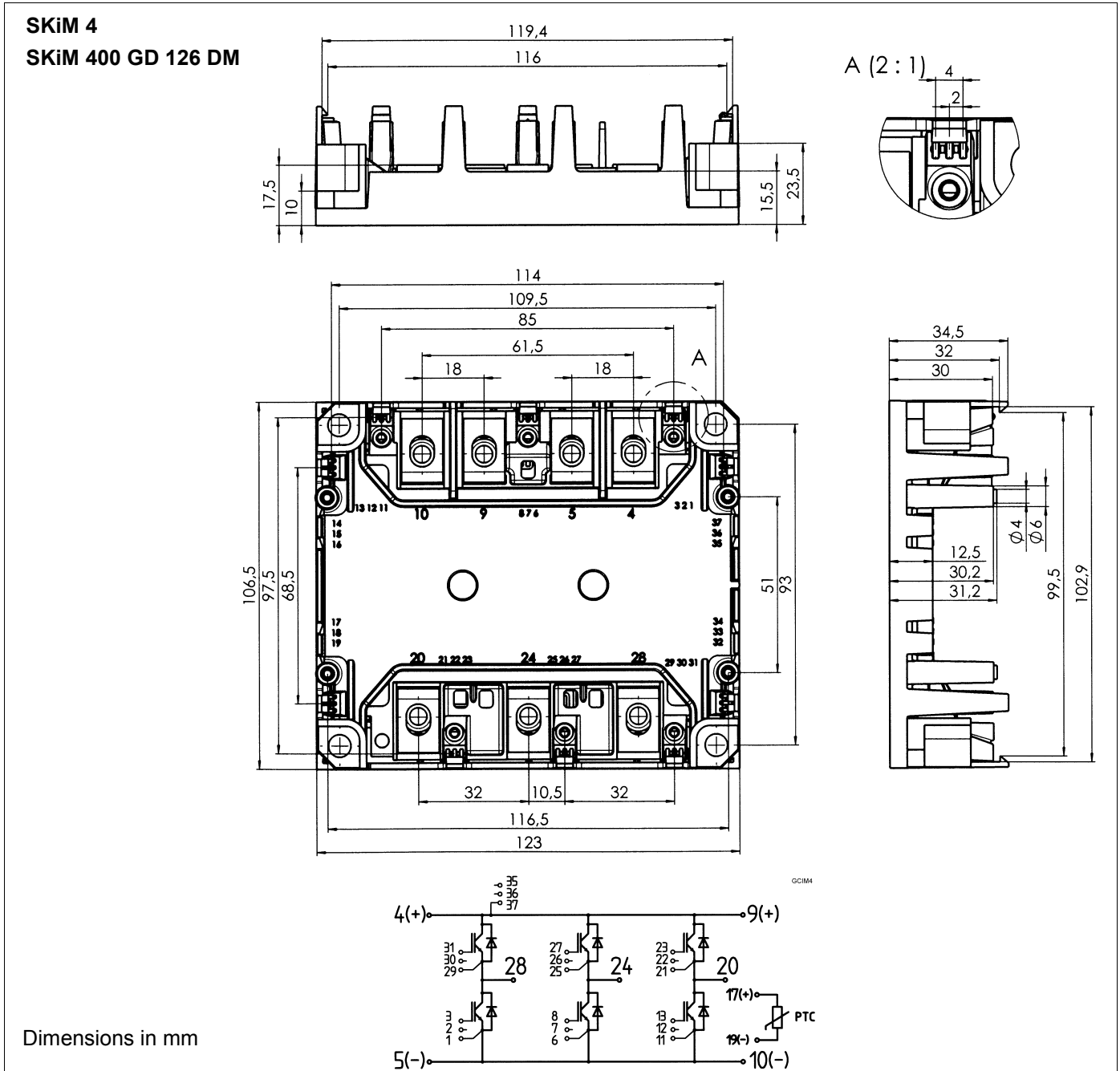
⁵⁾ See mounting instructions

⁶⁾ Corresponding value. This value cannot be measured. It is only given for comparison.

⁸⁾ CAL = Controlled Axial Lifetime Technology

| Absolute Maximum Ratings | | Values | Units |
|--------------------------------------|---|--------------------|------------------|
| Symbol | Conditions ¹⁾ | | |
| V _{CES} | | 1200 | V |
| V _{CGR} | R _{GE} = 20 kΩ | 1200 | V |
| I _C | T _{HS} = 25/70 °C | 330 / 255 | A |
| I _{CM} | T _{HS} = 25/70 °C; t _p = 1 ms | 660 / 510 | A |
| V _{GES} | | ± 20 | V |
| P _{tot} | per IGBT, T _{HS} = 25 °C | 935 | W |
| T _j , (T _{stg}) | | -40 ... +150 (125) | °C |
| T _{cop} | max. case operating temperature | 125 | °C |
| V _{isol} | AC, 1 min. | 2500 | V |
| humidity | IEC-EN 60721-3-3 | | |
| climate | IEC 68 T.1 | 40/125/56 | |
| Inverse Diode | | | |
| I _F = -I _C | T _{HS} = 25/70 °C | 300 / 230 | A |
| I _{FM} = -I _{CM} | T _{HS} = 25/70 °C; t _p = 1 ms | 600 / 460 | A |
| I _{FSM} | t _p = 10 ms; sin.; T _j = 150 °C | 2200 | A |
| I ² t | t _p = 10 ms; T _j = 150 °C | 24 200 | A ² s |

| Characteristics | | min. | typ. | max. | Units |
|--|---|--------------------|------------|-------|-------|
| Symbol | Conditions ¹⁾ | | | | |
| V _{(BR)CES} | V _{GE} = 0, I _C = 1 mA | ≥ V _{CES} | - | - | V |
| V _{GE(th)} | V _{GE} = V _{CE} , I _C = 4 mA | 5,0 | 5,8 | 6,5 | V |
| I _{CES} | V _{GE} = 0 V _{CE} = V _{CES} } T _j = 125 °C | - | 15 | - | mA |
| I _{GES} | V _{GE} = 20 V, V _{CE} = 0 | - | - | 600 | nA |
| V _{CESat} ⁴⁾ | I _C = 300 A } V _{GE} = 15 V; T _j = 25 (125) °C } | - | 1,7(2,0) | - | V |
| C _{ies} | V _{GE} = 0 | - | 23 | - | nF |
| C _{oes} | V _{CE} = 25 V | - | 1,6 | - | nF |
| C _{res} | f = 1 MHz | - | 1,6 | - | nF |
| L _{CE} | | - | - | 20 | nH |
| R _{CC'+EE'} | resistance, terminal-chip; T _{HS} = 25 °C | - | 1,35 | - | mΩ |
| t _{d(on)} | V _{CC} = 600 V | - | 250 | - | ns |
| t _r | V _{GE} = +15 V / -15 V ³⁾ | - | 55 | - | ns |
| t _{d(off)} | I _C = 300 A, ind. load | - | 800 | - | ns |
| t _f | R _{Gon} = R _{Goff} = 4,7 Ω | - | 120 | - | ns |
| E _{on} | T _j = 125 °C | - | 17 | - | mJ |
| E _{off} | | - | 32 | - | mJ |
| Inverse Diode ⁸⁾ | | | | | |
| V _F = V _{EC} | I _F = 200 A } V _{GE} = 0 V; T _j = 25 (125) °C } | - | 2,3(2,1) | 2,6 | V |
| V _F = V _{EC} | I _F = 100 A | - | 1,8(1,6) | - | V |
| V _{TO} | T _j = 125 °C | - | 1,1 | - | V |
| r _T | T _j = 125 °C | - | 5 | - | mΩ |
| I _{RRM} | I _F = 350 A; T _j = 25 (125) °C ²⁾ | - | TBD | - | A |
| Q _{rr} | I _F = 350 A; T _j = 25 (125) °C ²⁾ | - | TBD | - | μC |
| Thermal Characteristics ⁵⁾ | | | | | |
| R _{thjh} | per IGBT | - | - | 0,134 | °C/W |
| R _{thjD} | per diode | - | - | 0,19 | °C/W |
| R' _{thjc} ⁶⁾ | per IGBT | - | - | TBD | °C/W |
| R' _{thjD} ⁶⁾ | per diode | - | - | TBD | °C/W |
| Temperature Sensor | | | | | |
| R _{TS} | T = 25 °C / 100 °C | | 1,0 / 1,67 | | kΩ |
| tolerance | T = 25 °C / 100 °C | | 3,0 / 2,0 | | % |



Case outline and circuit diagram

| Mechanical Data | | Values | | | Units | |
|-----------------|--|--------|------|------|--------|------------------|
| Symbol | Conditions | min. | typ. | max. | | |
| M ₁ | to heatsink, SI Units to heatsink, US Units | (M5) | 2 | — | 3 | Nm lb.in. |
| M ₂ | for terminals, SI Units for terminals, US Units | (M6) | 4 | — | 5 | Nm lb.in. |
| a | | | — | — | 5x9,81 | m/s ² |
| w | | | — | — | 310 | g |

This is an electrostatic discharge sensitive device (ESDS).
Please observe the international standard IEC 747-1, Chapter IX.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.