

I. Power section

| Absolute maximum ratings | | T _s = 25°C unless otherwise specified | |
|--------------------------------------|---|--|-------------------|
| Symbol | Conditions | Values | Units |
| IGBT | | | |
| V _{CES} | Operating DC link voltage | 1200 | V |
| V _{CC} ¹⁾ | | 900 | V |
| V _{GES} | | ± 20 | V |
| I _C | | 900 (675) | A |
| T _s = 25 (70) °C | | | |
| Inverse diode | | | |
| I _F = -I _C | T _s = 25 (70) °C | 900 (675) | A |
| I _{FSM} | T _j = 150 °C, t _p = 10ms; sin | 6480 | A |
| I ² t (Diode) | Diode, T _j = 150 °C, 10ms | 210 | kA ² s |
| T _j , (T _{stg}) | | -40 (-25) ...+150 (125) | °C |
| V _{isol} | AC, 1min. | 3000 | V |

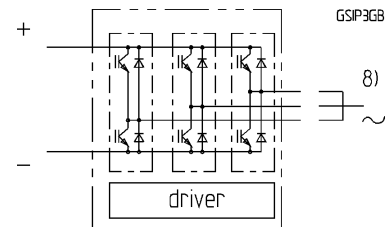
| Characteristics | | | | | | | | |
|--|--|------|-----------|-----------|----------------------|------|-------|------|
| T _s = 25 °C unless otherwise specified | | | | | | | | |
| Symbol | Conditions | min. | typ. | max. | Units | | | |
| IGBT | | | | | | | | |
| V _{CESat} | I _C = 750A, T _j = 25 (125)°C | – | 2,6 (3,1) | 3,1 | V | | | |
| V _{CEO} | T _j = 25 (125) °C | – | 1,2 (1,3) | 1,5 (1,6) | V | | | |
| r _{CE} | T _j = 25 (125) °C | – | 1,8 (2,3) | 2,1 (2,7) | mΩ | | | |
| I _{CES} | V _{GE} =0, V _{CE} =V _{CES} , T _j =25(125) °C | – | (45) | 1,2 | mA | | | |
| E _{on} + E _{off} | I _C =750A, V _{CC} =600V | – | – | 225 | mJ | | | |
| | T _j =125°C V _{CC} =900V | – | – | 397 | mJ | | | |
| R _{CC'-EE'} | terminal chip, T _j = 125 °C | – | 0,17 | – | mΩ | | | |
| L _{CE} | top, bottom | – | 5,0 | – | nH | | | |
| C _{CHC} | per phase, AC-side | – | 4,2 | – | nF | | | |
| Inverse diode | | | | | | | | |
| V _F = V _{EC} | I _F = 750A; T _j = 25(125) °C | – | 2,1 (2,0) | 2,6 | V | | | |
| V _{TO} | T _j = 25 (125) °C | – | 1,3 (1,0) | 1,4 (1,1) | V | | | |
| r _T | T _j = 25 (125) °C | – | 1,1 (1,3) | 1,5 (1,7) | mΩ | | | |
| E _{RR} | I _C =750A V _{CC} =600V | – | – | 29 | mJ | | | |
| | T _j =125°C V _{CC} =900V | – | – | 37 | mJ | | | |
| Mechanical data | | | | | | | | |
| M _{dc} | DC terminals, SI Units | 6 | – | 8 | Nm | | | |
| M _{ac} | AC terminals, SI Units | 13 | – | 15 | Nm | | | |
| w | SKiiP® 2 System w/o heat sink | – | 2,7 | – | kg | | | |
| w | heat sink | – | 6,6 | – | kg | | | |
| Thermal characteristics (P16 heat sink; 295 m^3/ h); "r" reference to temperature sensor | | | | | | | | |
| R _{thjrl} IGBT | per IGBT | – | – | 0,030 | K/W | | | |
| R _{thjrd} iode | per diode | – | – | 0,083 | K/W | | | |
| R _{thra} | per module | – | – | 0,036 | K/W | | | |
| Z _{th} | R _i (mK/W) (max.) | | | | tau _i (s) | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| IGBT _{jr} | 3 | 23 | 4 | – | 1 | 0,13 | 0,001 | – |
| diode _{jr} | 9 | 64 | 10 | – | 1 | 0,13 | 0,001 | – |
| heatsink _{ra} | 11,1 | 18,3 | 3,5 | 3,1 | 204 | 60 | 6 | 0,02 |

SKiiP® 2

SK integrated intelligent Power 2-pack

SKiiP 942GB120-317CTV

Case S3



Features

- SKiiP technology inside
- low loss IGBTs
- CAL diode technology
- integrated current sensor
- integrated temperature sensor
- integrated heat sink
- IEC 60721-3-3 (humidity) class 3K3/IE32 (SKiiP® 2 System)
- IEC 68T.1 (climate) 40/125/56 (SKiiP® 2 power section)

1) with assembly of suitable MKP capacitor per terminal (SEMİKRON type is recommended)

8) AC connection busbars must be connected by the user; copper busbars available on request

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SKiiP 942GB120-317CTV

SKiiP 2®

SK integrated intelligent Power

SKiiP 942GB120-317CTV

Gate driver features

- CMOS compatible inputs
- wide range power supply
- integrated circuitry to sense phase current, heat sink temperature and DC-bus voltage (option)
- short circuit protection
- over current protection
- over voltage protection (option)
- power supply protected against under voltage
- interlock of top/bottom switch
- isolation by transformers
- fibre optic interface (option for GB-types only)
- IEC 68T.1 (climate) 25/85/56 (SKiiP® 2 gate driver)

II. Integrated gate driver

Absolute maximum ratings

| Symbol | Term | Value | Unit |
|-------------------------------------|---------------------------------|---------------|-------|
| V _{S1} | stabilized 15V power supply | 18 | V |
| V _{S2} | unstabilized 24V power supply | 30 | V |
| V _{iH} | input signal voltage (high) | 15 + 0,3 | V |
| dv/dt | secondary to primary side | 75 | kV/μs |
| V _{isollO} | input / output (AC) | 3000 | Vac |
| V _{isol12} | output 1 / output 2 (AC) | 1500 | Vac |
| f _{max} | switching frequency | 16 | kHz |
| T _{op} (T _{stg}) | operating / storage temperature | - 25 ... + 85 | °C |

Electrical characteristics (T_a = 25 °C)

| Symbol | Term | Values | | | Units |
|------------------------|---|---|------|------|-------|
| | | min | typ | max. | |
| V _{S1} | supply voltage stabilized | 14,4 | 15 | 15,6 | V |
| V _{S2} | supply voltage non stabilized | 20 | 24 | 30 | V |
| I _{S1} | V _{S1} = 15V | 260 + 320*f / f _{max} + 1,3* (I _{AC} /A) | | | mA |
| I _{S2} | V _{S2} = 24V | 200 + 210*f / f _{max} + 1,0 * (I _{AC} /A) | | | mA |
| V _{iT+} | input threshold voltage (High) | 11,2 | – | – | V |
| V _{iT-} | input threshold voltage (Low) | – | – | 5,4 | V |
| R _{in} | input resistance | – | 10 | – | kΩ |
| t _{d(on)IO} | turn-on propagation time (system) | – | 1,2 | – | μs |
| t _{d(off)IO} | turn-off propagation time (system) | – | 1,6 | – | μs |
| t _{pERRRESET} | error memory reset time | 9 | – | – | μs |
| t _{TD} | top/bottom switch: interlock time | – | 3,3 | – | μs |
| I _{analogOUT} | 8 V corresponds to | – | 900 | – | A |
| I _{Vs1outmax} | max. current of 15 V supply voltage (available when supplied with 24V) | – | – | 50 | mA |
| I _{AOmax} | output current at pin 12/14 | – | – | 5 | mA |
| V _{ol} | logic low output voltage | – | – | 0,6 | V |
| V _{oH} | logic high output voltage | – | – | 30 | V |
| I _{TRIPSC} | over current trip level (I _{analog OUT} = 10V) | – | 1125 | – | A |
| I _{TRIPLG} | ground fault protection | – | – | – | A |
| T _{tp} | over temperature protection | 110 | – | 120 | °C |
| U _{DCTRIIP} | trip level of U _{DC} -protection (U _{analog OUT} = 9V); (option) | 900 | – | – | V |

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