

SKiiP 432 GB 120 - 207 CTV

| Absolute Maximum Ratings | | Values | Units |
|---------------------------------|---|--------------------|-------------------|
| Symbol | Conditions ¹⁾ | | |
| IGBT & Inverse Diode | | | |
| V _{CEs} | | 1200 | V |
| V _{CC} ⁹⁾ | Operating DC link voltage | 900 | V |
| I _C | T _{heatsink} = 25 °C | 400 | A |
| T _J ³⁾ | IGBT & Diode | - 40 ... + 150 | °C |
| V _{isol} ⁴⁾ | AC, 1 min. | 3000 ⁵⁾ | V |
| I _F | T _{heatsink} = 25 °C | 400 | A |
| I _{FM} | T _{heatsink} = 25 °C; t _p < 1 ms | 800 | A |
| I _{FSM} | t _p = 10 ms; sin.; T _J = 150 °C | 4300 | A |
| I _t (Diode) | t _p = 10 ms; T _J = 150 °C | 93 | kA ² s |

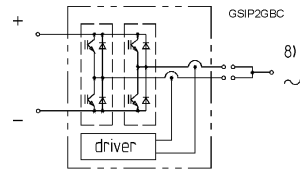
| Characteristics | | min. | typ. | max. | Units |
|-------------------------------------|--|--------------------|-----------|------|-------|
| Symbol | Conditions ¹⁾ | | | | |
| V _{(BR)CES} | Driver without power supply | ≥ V _{CEs} | - | - | V |
| I _{CES} | V _{GE} = 0 } T _J = 25 °C V _{CE} = V _{CEs} } T _J = 125 °C | - | 0,6 | - | mA |
| V _{CEsat} | I _C = 300 A } T _J = 25 (125) °C | - | 2,5(3) | - | V |
| V _{CEsat} | I _C = 400 A } T _J = 25 (125) °C | - | 2,9(3,5) | - | V |
| C _{CHC} | per SKiiPPACK AC side | - | 1,6 | - | nF |
| L _{CE} | Top (Bottom) | - | 7,5 | - | nH |
| t _{d(on)} | I _C = 400 A } V _{CC} = T _J = 125 °C } inductive load } 600 V | - | 150 | - | ns |
| t _{d(on)Driver} | | - | 1,0 | - | µs |
| t _r | | - | 100 | - | ns |
| t _{d(off)} | | - | 0,6 | - | µs |
| t _{d(off)Driver} | | - | 1,0 | - | µs |
| t _f | | - | 80 | - | ns |
| E _{on} + E _{off} | V _{CC} = 600 V / 900 V | - | 120 / 196 | - | mJ |
| Inverse Diode ²⁾ | | | | | |
| V _F = V _{EC} | I _F = 300 A } T _J = 25 (125) °C | - | 1,9(1,8) | - | V |
| | I _F = 400 A } T _J = 25 (125) °C | - | 2,1(2,05) | - | V |
| E _{on} + E _{off} | I _F = 400 A; T _J = 125 °C | - | 16 | - | mJ |
| IGBT / Inverse Diode ²⁾ | | | | | |
| V _{TO} | T _J = 125 °C | - | 1,4 / 0,9 | - | V |
| r _T | T _J = 125 °C | - | 5,3 / 3 | - | mΩ |
| Thermal Characteristics | | | | | |
| R _{thjh} | per IGBT | - | 0,064 | - | K/W |
| R _{thjd} | per diode | - | 0,18 | - | K/W |
| T _{TP} ¹²⁾ | Over temperature protection | 110 | 115 | 120 | °C |
| R _{thha} ⁶⁾ | P16/200 F; v _{air} = 293 m ³ / h | - | 0,044 | - | K/W |
| SKiiPPACK protection | | | | | |
| I _{TRIPSC} | Short circuit protection | 490 | 500 | 510 | A |
| T _{TRIP} | Overtemperature protection | 110 | 115 | 120 | °C |
| U _{DC} TRIP ¹³⁾ | UDC-protection | 900 | 920 | 940 | V |
| Mechanical Data | | | | | |
| M _{dc} | for DC terminals, SI Units | 4 | - | 6 | Nm |
| M _{ac} | for AC terminals, SI Units | 8 | - | 10 | Nm |
| Case | | | S2 | | |

SKiiPPACK® SK integrated intelligent Power PACK halfbridge

SKiiP 432 GB 120 + Driver 207 CTV ^{7,13)}

Preliminary Data

Case S2



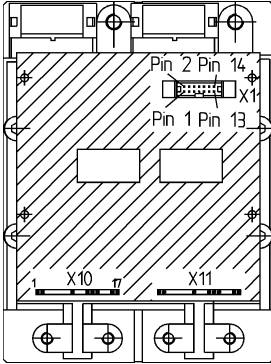
Features

- Low thermal impedance
- Optimal thermal management with integrated heatsink
- Pressure contact technology with increased power cycling capability, compact design
- Low stray inductance
- High power, small losses
- Overtemp. protection
- Short circuit protection, due to evaluation of current sensor signals
- Isolated power supply

- ¹⁾ T_{heatsink} = 25 °C, unless otherwise specified
- ²⁾ CAL = Controlled Axial Lifetime Technology (soft and fast)
- ³⁾ without driver
- ⁴⁾ Driver input to DC link/AC output or DC link/AC output to heatsink
- ⁵⁾ 4 kV (AC; on request)
- ⁶⁾ other heatsink on request
- ⁷⁾ C - integrated current sensors
T - Temperature protection
V - 15 V or 24 V power supply
- ⁸⁾ AC connection busbars must be connected by user, copper busbars available on request
- ⁹⁾ with SK-DC link (low inductance)
- ¹²⁾ thermal reference for R_{thjh}; R_{thha}
- ¹³⁾ options available for driver
U - DC-link voltage sense
F - Fiber optic connector

SKiiPACK®
SK integrated
intelligent Power PACK
halfbridge

SKiiP 432 GB 120
+ Driver 207 CTV^{3), 5)}
Preliminary Driver Data



Features

- CMOS compatible inputs
- Short circuit protection by evaluation of current sensor signals
- Drive interlock top/bottom
- Isolation by transformers
- Supply undervoltage protection
- Overtemperature protection
- Fiber optic connector (option)
- U_{DC}-monitoring (option)

- 1) 24 V - power supply
- 2) Open collector output, external pull-up resistor necessary
- 3) C - integrated current sensors
T - Temperature protection
V - 15 V or 24 V power supply
- 4) 4 kV_{AC} (on request)
- 5) options available for driver
U - DC-link voltage sense
F - Fiber optic connectors
- 6) I_{AC} - AC-current per phase

SKiiP 432 GB 120 - 207 CTV
Driver for Halfbridge

| Absolute Maximum Ratings | | | | |
|------------------------------------|--|--------------|-------|-----------|
| Symbol | Conditions | Values | Units | remark |
| V _{S1} | supply voltage primary | 18 | V | pin 8 / 9 |
| V _{S2} ¹⁾ | supply voltage primary | 30 | V | pin 6 / 7 |
| I _{outmax} | output peak current max. | ± 10 | A | |
| I _{outAV} | output average current | ± 100 | mA | |
| f _{swmax} | switching frequency max. | 20 | kHz | |
| dv/dt | rate of rise and fall of voltage (secondary to primary side) | 75 | kV/μs | |
| V _{isol IO} ⁴⁾ | Isol. test volt. IN/OUT (RMS; 1 min) | 3 | kV~ | |
| V _{isol 12} | Isol. test volt. output 1 - output 2 | 1,5 | kV= | |
| T _{op} , T _{stg} | operating / stor. temperature | -25 ... + 85 | °C | |

| Characteristics (T_a = 25 °C) | | | | |
|--|---|--|-------|----------------------------------|
| Symbol | Conditions | Values | Units | remark |
| V _{S1} | supply voltage primary | 15,0 ± 4 % | V | pin 8 / 9 |
| V _{S2} ¹⁾ | supply voltage primary | 24,0 +25%/-15% | V | pin 6 / 7 |
| V _{UVS} | supply voltage monitoring | 13 / 19,5 | V | 15 V / 24 V |
| I _{S01} | sup. current pr. side (standby) | 210 | mA | 15 V supply |
| I _{S02} ¹⁾ | sup. current pr. side (standby) | 160 | mA | 24 V supply |
| I _{S1} | sup. current pr. side (max) at f _{swmax} | 520 + $\frac{1,3 \cdot I_{AC}^{(6)}}{1000}$ | mA | 15 V supply |
| I _{S2} ¹⁾ | sup. current pr. side (max) at f _{swmax} | 380 + $\frac{1,3 \cdot I_{AC}^{(6)}}{1350}$ | mA | 24 V supply |
| V _{IT+} | input thresh. volt. (high) min | 11,2 | V | |
| V _{IT-} | input thresh. volt. (low) max. | 5,4 | V | |
| V _{GE(on)} | turn-on output gate voltage | 15 | V | |
| V _{GE(off)} | turn-off output gate voltage | - 8 | V | |
| t _{d(on)} | propagation delay time on | 1,0 | μs | typ. |
| t _{d(off)} | propagation delay time off | 1,0 | μs | typ. |
| t _{TD} | dead time of interlock | 3 | μs | typ. |
| V _{ol} ²⁾ | logic low output voltage | < 600 | mV | 15 mA |
| V _{oh} ²⁾ | logic high output voltage | max. 30 | V | |
| t _{pdon-error} | propag. delay time-on error | 1 | μs | typ. |
| t _{p RESET} | min. pulse width error memory RESET | 8 | μs | |
| T _{TRIP} | max. temperature | 115 ± 5 | °C | |
| I _{AOmax} | max. output current | ± 5 | mA | pin 12/14 |
| U _{TRIPSC} | overcurrent trip level | 10 | V | 10 V = 125% I _c |
| U _{DCTRIP} | overvoltage trip level | 9 | V | 9 V = 900 V; using option "U" |