

### SKiiP 802 GB 061 - 259 CTV

Absolute Maximum Ratings			
Symbol	Conditions <sup>1)</sup>	Values	Units
V <sub>isol</sub> <sup>4)</sup>	AC, 1min	2500	V
T <sub>op</sub> , T <sub>stg</sub>	Operating / stor. temperature	-25...+85	°C
IGBT and Inverse Diode			
V <sub>CES</sub>		600	V
V <sub>CC</sub> <sup>5)</sup>	Operating DC link voltage	400	V
I <sub>C</sub>	IGBT	800	A
T <sub>j</sub> <sup>3)</sup>	IGBT + Diode	-40...+150	°C
I <sub>F</sub>	Diode	800	A
I <sub>FM</sub>	Diode, t <sub>p</sub> < 1 ms	1600	A
I <sub>FSM</sub>	Diode, T <sub>j</sub> = 150 °C, 10ms; sin	8000	A
I <sup>2</sup> t (Diode)	Diode, T <sub>j</sub> = 150 °C, 10ms	320	kAs <sup>2</sup>
Driver			
V <sub>S1</sub>	Stabilized Power Supply	18	V
V <sub>S2</sub>	Non-stabilized Power Supply	30	V
f <sub>smax</sub>	Switching frequency	20	kHz
dV/dt	Primary to secondary side	75	kV/μs

Characteristics					
Symbol	Conditions <sup>1)</sup>	min.	typ.	max.	Units
IGBT <sup>11)</sup>					
V <sub>(BR)CES</sub>	Driver without supply	≥V <sub>CES</sub>	-	-	V
I <sub>CES</sub>	V <sub>GE</sub> = 0, T <sub>j</sub> = 25 °C	-	-	0,8	mA
	V <sub>CE</sub> = V <sub>CES</sub> T <sub>j</sub> = 125 °C	-	12	-	mA
V <sub>TO</sub>	T <sub>j</sub> = 125 °C	-	-	0,94	V
r <sub>T</sub>	T <sub>j</sub> = 125 °C	-	-	2,1	mΩ
V <sub>Cesat</sub>	I <sub>C</sub> = 800A, T <sub>j</sub> = 125 °C	-	-	2,6	V
V <sub>Cesat</sub>	I <sub>C</sub> = 800A, T <sub>j</sub> = 25 °C	-	-	2,60	V
E <sub>on</sub> + E <sub>off</sub>	V <sub>CC</sub> =300/400V, I <sub>C</sub> =800A T <sub>j</sub> = 125 °C	-	-	72/102	mJ
C <sub>CHC</sub>	per Phase, AC side	-	1,6	-	nF
L <sub>CE</sub>	Top, Bottom	-	7,5	-	nH
Inverse Diode <sup>2)</sup>					
V <sub>F</sub> = V <sub>EC</sub>	I <sub>F</sub> = 800A; T <sub>j</sub> = 125 °C	-	-	1,72	V
V <sub>F</sub> = V <sub>EC</sub>	I <sub>F</sub> = 800A T <sub>j</sub> = 25 °C	-	-	1,75	V
E <sub>on</sub> + E <sub>off</sub>	I <sub>F</sub> = 800A; T <sub>j</sub> = 125 °C	-	-	24	mJ
V <sub>TO</sub>	T <sub>j</sub> = 125 °C	-	-	0,78	V
r <sub>T</sub>	T <sub>j</sub> = 125 °C	-	-	1,2	mΩ
Thermal Characteristics					
R <sub>thjs</sub> <sup>10)</sup>	per IGBT	-	-	0,050	K/W
R <sub>thjs</sub> <sup>10)</sup>	per Diode	-	-	0,094	K/W
R <sub>thsa</sub> <sup>6,10)</sup>	P16 heatsink; see case S2	-	-	44	K/KW
Driver					
I <sub>S1</sub>	Supply current 15V-supply	210+390*f <sub>s</sub> /f <sub>smax</sub> +1,3*I <sub>AC</sub> /A			mA
I <sub>S2</sub>	Supply current 24V-supply	160+290*f <sub>s</sub> /f <sub>smax</sub> +1,0*I <sub>AC</sub> /A			mA
t <sub>interlock-driver</sub>	Interlock-time	2,3			μs
SKiiPPACK protection					
I <sub>TRIPSC</sub>	Short circuit protection	826			A
I <sub>TRIPLG</sub>	Ground fault protection				A
T <sub>TRIP</sub>	Over-temp. protection	115			°C
U <sub>DCTRIP</sub> <sup>9)</sup>	U <sub>DC</sub> -protection	410			V
Mechanical Data					
M1	DC terminals, SI Units	4	-	6	Nm
M2	AC terminals, SI Units	8	-	10	Nm

### SKiiPPACK®

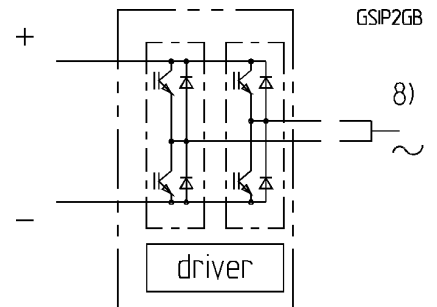
### SK integrated intelligent Power PACK halfbridge

### SKiiP

### 802 GB 061 - 259 CTV <sup>7,9)</sup>

### Preliminary Data

### Case S2



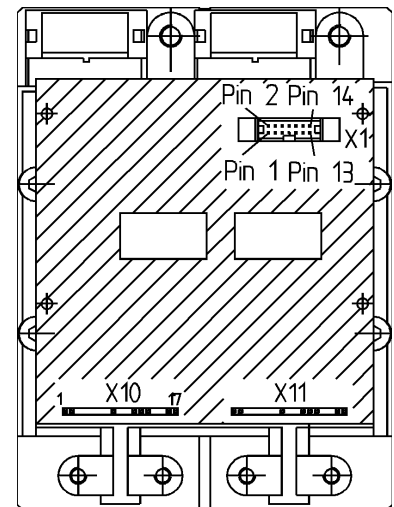
### Features

- Short circuit protection, due to evaluation of current sensor signals
  - Isolated power supply
  - 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
  - Over-temperature protection
- 1) T<sub>heatsink</sub> = 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 to DC link / AC output to heatsink
  - 5) with Semikron-DC link (low inductance)
  - 6) other heatsinks 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 the user; copper busbars available on request
  - 9) options available for driver:  
U - DC link voltage sense  
F - Fiber optic connector
  - 10) "s" referenced to temperature sensor
  - 11) NPT-technology with homogenous current-distribution

## PIN-array - halfbridge driver SKiiPPACK 2-fold type "GB"

X1:

Pin	signal	remark
1	shield	connected to GND, when shielded cable is used
2	BOT IN <sup>4)</sup>	positive 15V CMOS logic; 10 kΩ impedance, don't connect when using fiber optic
3	ERROR OUT <sup>1)</sup>	LOW = NO ERROR; open Collector Output; max. 30 V / 15 mA don't connect when using fiber optic, propagation delay 1 μs min. pulsewidth error-memory-reset 8 μs
4	TOP IN <sup>4)</sup>	positive 15V CMOS logic; 10 kΩ impedance don't connect when using fiber optic
5	Overtemp. OUT <sup>1)</sup>	LOW = NO ERROR = $\vartheta_{DCB} < 115 \pm 5^\circ\text{C}$ open collector Output; max. 30 V / 15 mA „low“ output voltage < 0,6 V „high“ output voltage max. 30 V
6	+ 24 V <sub>DC</sub> IN	24 V <sub>DC</sub> (20 - 30 V)
7	+ 24 V <sub>DC</sub> IN	don't supply with 24 V, when using + 15 V <sub>DCIN</sub> supply voltage monitoring threshold 19,5 V
8	+ 15 V <sub>DC</sub> IN	15 V <sub>DC</sub> ± 4 %
9	+ 15 V <sub>DC</sub> IN	don't supply with 15 V, when using + 24 V <sub>DCIN</sub> supply voltage monitoring threshold 13 V
10	GND	GND for power supply and
11	GND	GND for digital signals
12	Temp. analog OUT or U <sub>DC</sub> analog OUT <sup>2)</sup>	U <sub>DC</sub> when using option "U" actual DC-link voltage, 9 V refer to U <sub>DCmax</sub> max. output current 5 mA; overvoltage trip level 9 V
13	GND aux <sup>3)</sup>	GND for analog signals
14	I analog OUT	current actual value, 8,0 V refer to I <sub>c</sub> @ 25 °C overcurrent trip level 10 V ⇔ 125 % I <sub>c</sub> @ 25 °C current value > 0 ⇔ SKiiP is source current value < 0 ⇔ SKiiP is sink



### X10: halfbridge 1 (HB1) OUT

Pin	Signal
1	
2	
8	Collector TOP (HB1)
11	Gate TOP (HB1)
12	Emitter TOP (HB1)
13	Collector BOT (HB1)
16	Gate BOT (HB1)
17	Emitter BOT (HB1)

### X11: halfbridge 2 (HB2) OUT

Pin	Signal
1	Temp.-Sensor (HB2)1
2	Temp.-Sensor (HB2)2
8	Collector TOP (HB2)
11	Gate TOP (HB2)
12	Emitter TOP (HB2)
13	Collector BOT (HB2)
16	Gate BOT (HB2)
17	Emitter BOT (HB2)

### type "GAL"

as type "GB" except  
- PIN X1-4: connect this pin to GND  
- TOP switch does not exist

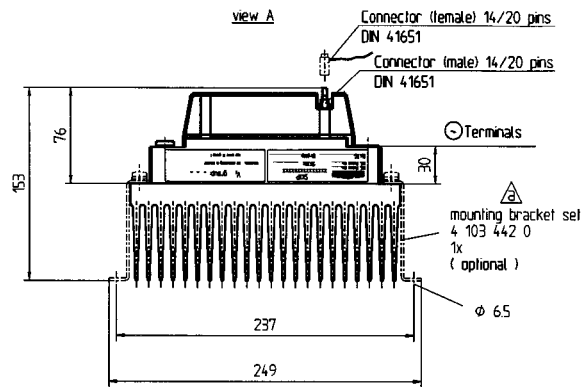
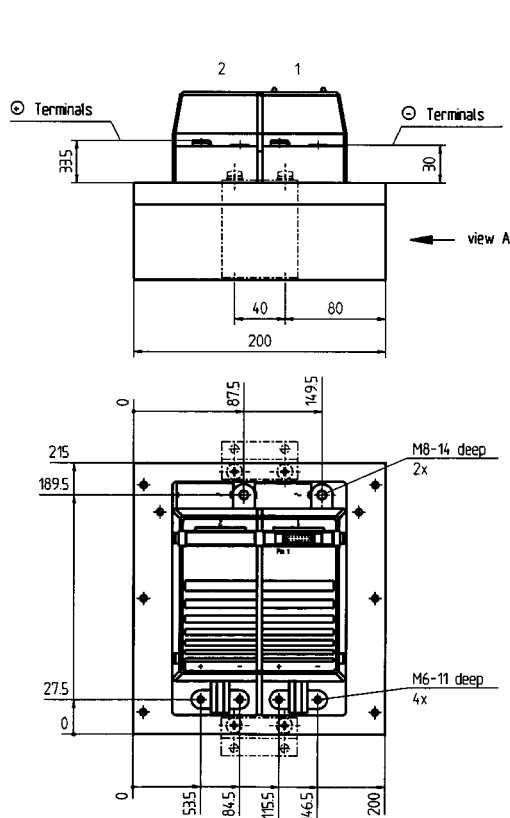
### type "GAR"

as type "GB" except  
- PIN X1-2: connect this pin to GND  
- BOTTOM switch does not exist

- 1) Open collector output, external pull up resistor necessary
- 2) When using option "U" the analog temperature signal is not available
- 3) GND aux = reference for analog output signals
- 4) „high“ (min) 11,2 V  
„low“ (max) 5,4 V

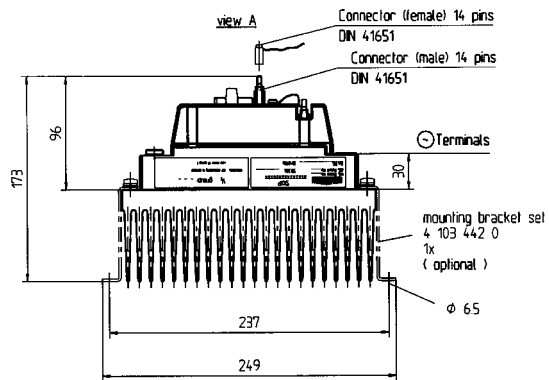
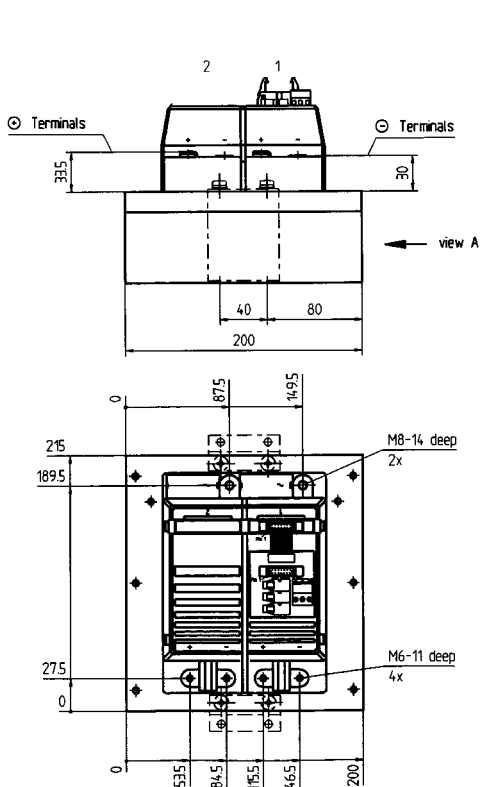
## Case S2

## SKiiPPACK 2 - GB; GH



Weight without heatsink: 1,85 kg  
 P16: 4,7 kg

## SKiiPPACK 2 - GB with F-option



F-Option