SKiiP 292 GH 170 - 273 CTV

Absolute Maximum Ratings			
Symbol	**Conditions** [1]	**Values**	**Units**
V_{isol} [4]	AC, 1min	4000	V
T_{op} ,T_{stg}	Operating / stor. temperature	-25...+85	°C
IGBT and Inverse Diode			
V_{CES}		1700	V
V_{CC} [5]	Operating DC link voltage	1200	V
I_C	IGBT	250	A
T_j [3]	IGBT + Diode	-40...+150	°C
I_F	Diode	250	A
I_{FM}	Diode, t_p < 1 ms	500	A
I_{FSM}	Diode, T_j = 150 °C, 10ms; sin	2160	A
I^2t (Diode)	Diode, T_j = 150 °C, 10ms	23	kAs^2
Driver			
V_{S1}	Stabilized Power Supply	18	V
V_{S2}	Non-stabilized Power Supply	30	V
f_{smax}	Switching frequency	20,0	kHz
dV/dt	Primary to secondary side	75	kV/µs

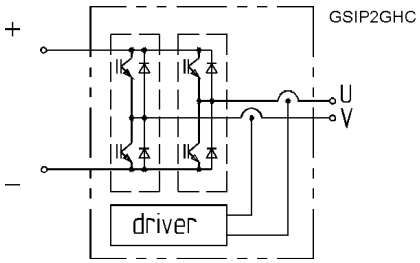
Characteristics						
Symbol	**Conditions** [1]		**min.**	**typ.**	**max.**	**Units**
IGBT[11]						
$V_{(BR)CES}$	Driver without supply		≥V_{CES}	–	–	V
I_{CES}	V_{GE} = 0,	T_j = 25 °C	–	–	1	mA
	V_{CE} = V_{CES}	T_j = 125 °C	–	15	–	mA
V_{TO}	T_j = 125 °C		–	–	1,77	V
r_T	T_j = 125 °C		–	–	16,5	mΩ
V_{Cesat}	I_C = 200A,	T_j = 125 °C	–	–	5,1	V
V_{Cesat}	I_C = 200A,	T_j = 25 °C	–	–	3,85	V
E_{on} + E_{off}	V_{CC}=900/1200V, I_C=250A T_j = 125 °C		–	–	211/325	mJ
C_{CHC}	per Phase, AC side		–	0,8	–	nF
L_{CE}	Top, Bottom		–	7,5	–	nH
Inverse Diode [2]						
V_F = V_{EC}	I_F= 200A;	T_j = 125 °C	–	–	2,60	V
V_F= V_{EC}	I_F= 200A;	T_j = 25 °C	–	–	2,90	V
E_{on} + E_{off}	I_F= 250A;	T_j = 125 °C	–	–	30	mJ
V_{TO}	T_j = 125 °C		–	–	0,90	V
r_T	T_j = 125 °C		–	–	5,4	mΩ
Thermal Characteristics						
R_{thjs} [10]	per IGBT		–	–	0,090	K/W
R_{thjs} [10]	per Diode		–	–	0,250	K/W
R_{thsa} [6,10]	P16 heatsink; see case S2		–	–	43	K/KW
Driver (supply current per driver)						
I_{S1}	Supply current 15V-supply		230+360*f_s /f_{smax}+2,6*I_{AC}/A			mA
I_{S2}	Supply current 24V-supply		170+250*f_s /f_{smax}+2,0*I_{AC}/A			mA
$t_{interlock-driver}$	Interlock-time			2,3		µs
SKiiPPACK protection						
I_{TRIPSC}	Short circuit protection			313		A
I_{TRIPLG}	Ground fault protection			72		A
T_{TRIP}	Over-temp. protection			115		°C
U_{DCTRIP} [9]	U_{DC}-protection			1225		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 single phase bridge SKiiP 292 GH 170 - 273 CTV [7,9)]

Preliminary Data

Case S2



Features

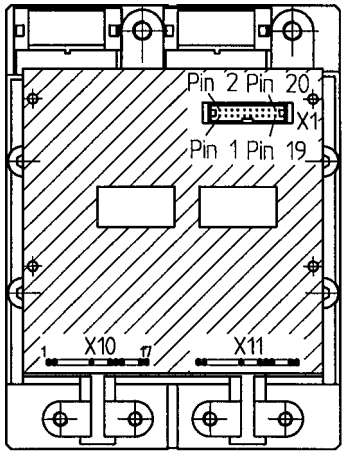
- Short circuit protection, due to evaluation of current sensor signals
- Isolated power supply
- Low thermal impedance
- Optimal thermal management with integrated heatsink
- Pressure contact technology with increased power cycling capability, compact design
- Low stray inductance
- High power, small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

1) $T_{heatsink}$ = 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 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
9) options available for driver:
U - DC link voltage sense
F – Fiber optic connector
10) "s" referenced to temperature sensor

PIN-array - H-bridge driver SKiiPPACK type „GH”

X1:

Pin	signal	remark
1	shield	connected to GND, when shielded cable is used
2	BOT HB 1 IN[4)]	positive 15V CMOS logic; 10 kΩ impedance
3	TOP HB 1 IN[4)]	positive 15V CMOS logic; 10 kΩ impedance
4	BOT HB 2 IN[4)]	positive 15V CMOS logic; 10 kΩ impedance
5	TOP HB 2 IN[4)]	positive 15V CMOS logic; 10 kΩ impedance
6	reserved	
7	Overtemp. OUT [1)]	LOW = NO ERROR = ϑ_{DCB} < 115 ± 5°C open collector Output; max. 30 V / 15 mA „low“ output voltage < 0,6 V „high“ output voltage max. 30 V
8	ERROR OUT [1)]	LOW = NO ERROR; open collector Output; max. 30 V / 15 mA propagation delay 1 µs, min. pulsewidth error-memory-reset 8 µs
9	GND	GND for power supply and
10	GND	GND for digital signals
11	+ 15 V_{DC} IN	15 V_{DC} ± 4 % power supply
12	+ 15 V_{DC} IN	don´t supply with 15 V, when using + 24 V_{DCIN} supply voltage monitoring threshold 13 V
13	+ 24 V_{DC} IN	24 V_{DC} (20 - 30 V) power supply
14	+ 24 V_{DC} IN	don´t supply with 24 V, when using + 15 V_{DC} supply voltage monitoring threshold 15,6 V
15	U_{DC} analog OUT	U_{DC} when using **option „U”** actual DC-link voltage, 9,0 V refer to U_{DCmax}
16	Temp. analog OUT	max. output current 5 mA
17	GND aux[2)]	GND for analog signals
18	I analog OUT HB 1	current actual value, 8,0 V refer to 100 % I_C overcurrent trip level 10 V ⇔ 125 %; I_C @ 25 °C current value > 0 ⇔ SKiiP is source current value < 0 ⇔ SKiiP is sink
19	I analog OUT HB 2	current actual value, 8,0 V refer to 100 % I_C overcurrent trip level 10 V ⇔ 125 %; I_C @ 25 °C current value > 0 ⇔ SKiiP is source current value < 0 ⇔ SKiiP is sink
20	GND aux[2)]	



X10: halfbridge 1 (HB1) OUT

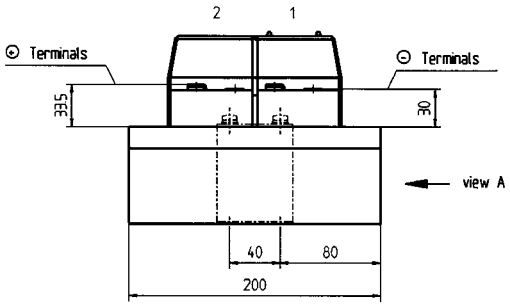
Pin	Signal
1	
2	
8	Collector 1=TOP (HB1)
11	Gate 1=TOP (HB1)
12	Emitter 1=TOP (HB1)
13	Collector 2=BOT (HB1)
16	Gate 2=BOT (HB1)
17	Emitter 2=BOT (HB1)

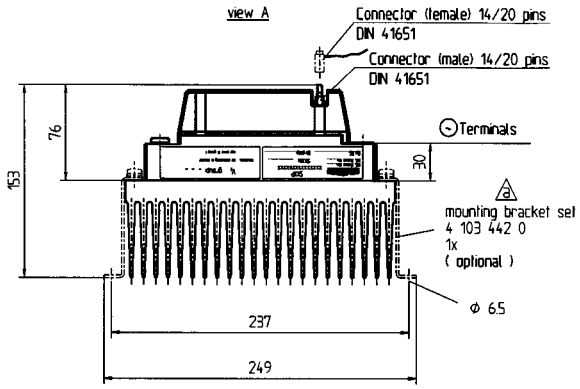
X11: halfbridge 2 (HB2) OUT

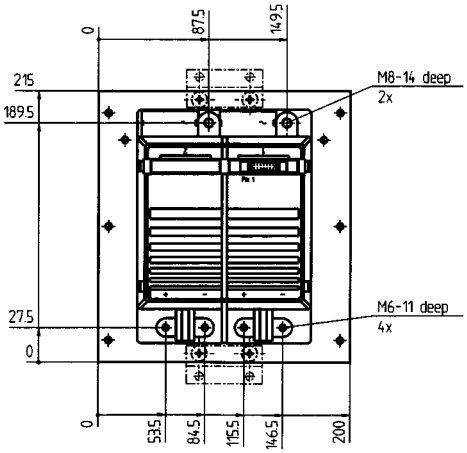
Pin	Signal
1	Temp.-Sensor (HB2)1
2	Temp.-Sensor (HB2)2
8	Collector 1=TOP (HB2)
11	Gate 1=TOP (HB2)
12	Emitter 1=TOP (HB2)
13	Collector 2=BOT (HB2)
16	Gate 2=BOT (HB2)
17	Emitter 2=BOT (HB2)

[1)] Open collector output, external pull up resistor necessary
[2)] GND aux = reference for analog output signals
[4)] „high“ (min) 11,2 V
„low“ (max) 5,4 V

Case S2 **SKiiPPACK 2 - GB; GH**

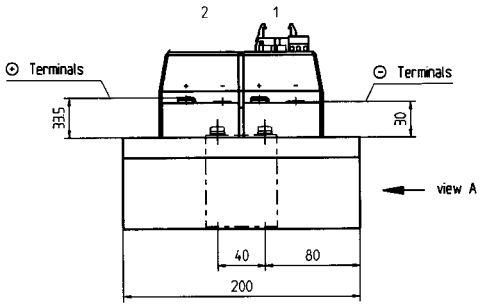


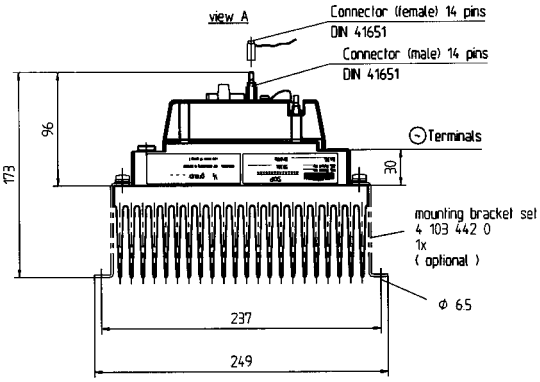


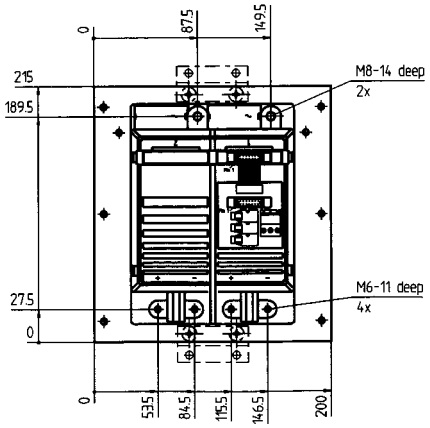


Weight without heatsink: 1,85 kg
P16: 4,7 kg

SKiiPPACK 2 - GB with F-option







F-Option