

## SKiIP 1242 GB 120 - 407 CTV

Absolute Maximum Ratings		Values	Units
Symbol	Conditions <sup>1)</sup>		
IGBT & Inverse Diode			
V <sub>CEs</sub>		1200	V
V <sub>CC</sub> <sup>9)</sup>	Operating DC link voltage	900	V
I <sub>C</sub>	T <sub>heatsink</sub> = 25 °C	1200	A
T <sub>J</sub> <sup>3)</sup>	IGBT & Diode	- 40 ... + 150	°C
V <sub>isol</sub> <sup>4)</sup>	AC, 1 min.	3000 <sup>5)</sup>	V
I <sub>F</sub>	T <sub>heatsink</sub> = 25 °C	1200	A
I <sub>FM</sub>	T <sub>heatsink</sub> = 25 °C; t <sub>p</sub> < 1 ms	2400	A
I <sub>FSM</sub>	t <sub>p</sub> = 10 ms; sin.; T <sub>J</sub> = 150 °C	8600	A
I <sup>2</sup> t (Diode)	t <sub>p</sub> = 10 ms; T <sub>J</sub> = 150 °C	374	kA <sup>2</sup> s

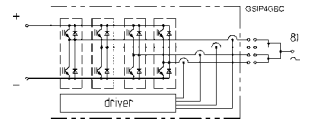
Characteristics		min.	typ.	max.	Units
Symbol	Conditions <sup>1)</sup>				
V <sub>(BR)CES</sub>	Driver without power supply	≥ V <sub>CEs</sub>	-	-	V
I <sub>CES</sub>	V <sub>GE</sub> = 0 } T <sub>J</sub> = 25 °C	-	1,2	-	mA
	V <sub>CE</sub> = V <sub>CEs</sub> } T <sub>J</sub> = 125 °C	-	60	-	mA
V <sub>CEsat</sub>	I <sub>C</sub> = 900 A } T <sub>J</sub> = 25 (125) °C	-	2,6(3)	-	V
V <sub>CEsat</sub>	I <sub>C</sub> = 1200 A } T <sub>J</sub> = 25 (125) °C	-	3(3,6)	-	V
C <sub>CHC</sub>	per SKiIPPACK AC side	-	3,2	-	nF
L <sub>CE</sub>	Top (Bottom)	-	4	-	nH
t <sub>d(on)</sub>	I <sub>C</sub> = 1200 A } V <sub>CC</sub> = T <sub>J</sub> = 125 °C } inductive load } 600 V	-	150	-	ns
t <sub>d(on)Driver</sub>		-	1,0	-	µs
t <sub>r</sub>		-	100	-	ns
t <sub>d(off)</sub>		-	0,6	-	µs
t <sub>d(off)Driver</sub>		-	1,0	-	µs
t <sub>f</sub>		-	80	-	ns
E <sub>on</sub> + E <sub>off</sub>	V <sub>CC</sub> = 600 V / 900 V	-	360/588	-	mJ
Inverse Diode <sup>2)</sup>					
V <sub>F</sub> = V <sub>EC</sub>	I <sub>F</sub> = 900 A } T <sub>J</sub> = 25 (125) °C	-	1,9(1,8)	-	V
	I <sub>F</sub> = 1200 A } T <sub>J</sub> = 25 (125) °C	-	2,1(2,05)	-	V
E <sub>on</sub> + E <sub>off</sub>	I <sub>F</sub> = 1200 A; T <sub>J</sub> = 125 °C	-	48	-	mJ
IGBT / Inverse Diode <sup>2)</sup>					
V <sub>TO</sub>	T <sub>J</sub> = 125 °C	-	1,4 / 0,9	-	V
r <sub>T</sub>	T <sub>J</sub> = 125 °C	-	1,8 / 1	-	mΩ
Thermal Characteristics					
R <sub>thjh</sub>	per IGBT	-	0,023	-	K/W
R <sub>thjd</sub>	per diode	-	0,06	-	K/W
T <sub>TP</sub> <sup>12)</sup>	Over temperature protection	110	115	120	°C
R <sub>thha</sub> <sup>6)</sup>	P16/360 F; v <sub>air</sub> = 279 m <sup>3</sup> / h	-	0,033	-	K/W
SKiIPPACK protection					
I <sub>TRIPSC</sub>	Short circuit protection	1470	1500	1530	A
T <sub>TRIP</sub>	Overtemperature protection	110	115	120	°C
U <sub>DC</sub> TRIP <sup>13)</sup>	UDC-protection	900	820	940	V
Mechanical Data					
M <sub>dc</sub>	for DC terminals, SI Units	4	-	6	Nm
M <sub>ac</sub>	for AC terminals, SI Units	8	-	10	Nm
Case			S4		

## SKiIPPACK® SK integrated intelligent Power PACK halfbridge

### SKiIP 1242 GB 120 + Driver 407 CTV <sup>7,13)</sup>

Preliminary Data

Case S4



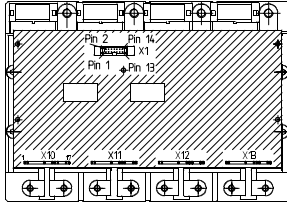
### Features

- 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

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

**SKiiPACK®**  
**SK integrated**  
**Intelligent Power PACK**  
**halfbridge**

**SKiiP 1242 GB 120**  
**+ Driver 407 CTV <sup>3,5)</sup>**  
Preliminary Driver Data



**SKiiP 1242 GB 120 - 407 CTV**  
**Driver for Halfbridge**

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

**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<sub>DC</sub>-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<sub>AC</sub> (on request)
- 5) options available for driver  
U - DC-link voltage sense  
F - Fiber optic connectors
- 6) I<sub>AC</sub> - AC-current per phase

<b>Characteristics (T<sub>a</sub> = 25 °C)</b>				
Symbol	Conditions	Values	Units	remark
V <sub>S1</sub>	supply voltage primary	15,0 ± 4 %	V	pin 8 / 9
V <sub>S2</sub> <sup>1)</sup>	supply voltage primary	24,0 +25%/-15%	V	pin 6 / 7
V <sub>UVS</sub>	supply voltage monitoring	13 / 19,5	V	15 V / 24 V
I <sub>S01</sub>	sup. current pr. side (standby)	290	mA	15 V supply
I <sub>S02</sub> <sup>1)</sup>	sup. current pr. side (standby)	220	mA	24 V supply
I <sub>S1</sub>	sup. current pr. side (max) at f <sub>swmax</sub>	750 + $\frac{1,3 \cdot I_{AC}^{(6)}}{1000}$	mA	15 V supply
I <sub>S2</sub> <sup>1)</sup>	sup. current pr. side (max) at f <sub>swmax</sub>	560 + $\frac{1,3 \cdot I_{AC}^{(6)}}{1350}$	mA	24 V supply
V <sub>IT+</sub>	input thresh. volt. (high) min	12,9	V	
V <sub>IT-</sub>	input thresh. volt. (low) max.	2,1	V	
V <sub>GE(on)</sub>	turn-on output gate voltage	15	V	
V <sub>GE(off)</sub>	turn-off output gate voltage	- 8	V	
t <sub>d(on)</sub>	propagation delay time on	1,0	μs	typ.
t <sub>d(off)</sub>	propagation delay time off	1,0	μs	typ.
t <sub>TD</sub>	dead time of interlock	3	μs	typ.
V <sub>ol</sub> <sup>2)</sup>	logic low output voltage	< 600	mV	15 mA
V <sub>oh</sub> <sup>2)</sup>	logic high output voltage	max. 30	V	
t <sub>pdon-error</sub>	propag. delay time-on error	1	μs	typ.
t <sub>p RESET</sub>	min. pulse width error memory RESET	5	μs	
T <sub>TRIP</sub>	max. temperature	115 ± 5	°C	
I <sub>AOmax</sub>	max. output current	± 5	mA	pin 12/14
U <sub>TRIPSC</sub>	overcurrent trip level	10	V	10 V = 125% I <sub>c</sub>
U <sub>DCTRIP</sub>	overvoltage trip level	9	V	9 V = 900 V; using option "U"