

**I. Power section 1 \* SKiiP703GB121CT per phase**

Absolute maximum ratings		Values	Units
Symbol	Conditions <sup>1)</sup>		
IGBT and inverse diode			
V <sub>CES</sub>		1200	V
V <sub>CC</sub>	Operating DC link voltage	900	V
V <sub>GES</sub>		± 20	V
I <sub>C</sub>	IGBT, T <sub>heat sink</sub> = 25 / 70 °C	700 / 525	A
I <sub>CM</sub>	IGBT, t <sub>p</sub> < 1 ms, T <sub>heat sink</sub> = 25°C	1400	A
I <sub>F</sub>	Diode, T <sub>heat sink</sub> = 25 / 70 °C	525 / 393,75	A
I <sub>FM</sub>	Diode, t <sub>p</sub> < 1 ms	900	A
I <sub>FSM</sub>	Diode, T <sub>j</sub> = 150 °C, 10ms; sin	4320	A
I <sup>2</sup> t (Diode)	Diode, T <sub>j</sub> = 150 °C, 10ms	93	kA <sup>2</sup> s
T <sub>j</sub> , (T <sub>stg</sub> )		-40...+150 (125)	°C
V <sub>isol</sub>	AC, 1min.	3000	V
I <sub>C-package</sub> <sup>4)</sup>	T <sub>heat sink</sub> = 70°C, T <sub>term</sub> = 115 °C	1 * 500	A

Characteristics		min.	typ.	max.	Units
Symbol	Conditions <sup>1)</sup>				
IGBT					
V <sub>(BR)CES</sub>	gate driver without supply	≥V <sub>CES</sub>	-	-	V
I <sub>CES</sub>	V <sub>GE</sub> = 0, T <sub>j</sub> = 25 °C V <sub>CE</sub> = V <sub>CES</sub> T <sub>j</sub> = 125 °C	-	1,2	-	mA
V <sub>CEO</sub> <sup>7)</sup>	T <sub>j</sub> = 125 °C	-	0,9	-	V
r <sub>T</sub> <sup>7)</sup>	T <sub>j</sub> = 125 °C	-	2,71	-	mΩ
V <sub>CEsat</sub> <sup>7)</sup>	I <sub>C</sub> = 490A, T <sub>j</sub> = 125 °C	-	2,3	-	V
V <sub>CEsat</sub> <sup>7)</sup>	I <sub>C</sub> = 490A, T <sub>j</sub> = 25 °C	-	-	2	V
E <sub>on</sub> + E <sub>off</sub> <sup>5)</sup>	I <sub>C</sub> =490A, V <sub>CC</sub> =600V T <sub>j</sub> = 125 °C V <sub>CC</sub> =900V	-	172	-	mJ
C	per SKiiP, AC side	-	1	-	nF
L <sub>CE</sub>	top, bottom	-	10	-	nH
R <sub>CC'-EE'</sub>	resistance, terminal-chip	-	0,40	-	mΩ
Inverse diode <sup>2)</sup>					
V <sub>F</sub> = V <sub>EC</sub>	I <sub>F</sub> = 450A; T <sub>j</sub> = 125 °C	-	1,8	-	V
V <sub>F</sub> = V <sub>EC</sub>	I <sub>F</sub> = 450A; T <sub>j</sub> = 25 °C	-	-	2,5	V
E <sub>on</sub> + E <sub>off</sub> <sup>5)</sup>	I <sub>F</sub> = 450A; T <sub>j</sub> = 125 °C	-	18	-	mJ
V <sub>TO</sub>	T <sub>j</sub> = 125 °C	-	1,0	-	V
r <sub>T</sub>	T <sub>j</sub> = 125 °C	-	1,83	-	mΩ
Thermal characteristics					
R <sub>thjs</sub>	per IGBT	-	-	0,047	°C/W
R <sub>thjs</sub>	per diode	-	-	0,092	°C/W
R <sub>thsa</sub> <sup>3)</sup>	L: P16 heat sink; 280 m <sup>3</sup> /h	-	-	0,033	°C/W
	W: WK 40; 8l/min; 50% glycol	-	-	0,010	°C/W
Current sensor					
I <sub>p RMS</sub>	T <sub>a</sub> =100° C, V <sub>supply</sub> = ± 15V		1 * 400		A
I <sub>pmax RMS</sub>	t ≤ 2 s		1 * 500		A
Linearity	V <sub>supply</sub> ≥ ±14,25V, 0 ≤ I ≤ ± 700A, per sensor		0,1		%
I <sub>ppeak</sub>	t ≤ 10 μs, per sensor		± 3000		A
Mechanical data					
M1	DC terminals, SI Units	4	-	6	Nm
M2	AC terminals, SI Units	8	-	10	Nm
M3	to heat sink <sup>6)</sup>	-	3	-	Nm

**SKiiPPACK®**

**SK integrated intelligent Power PACK**

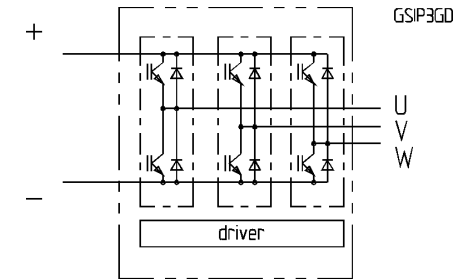
**3<sup>rd</sup> Generation**

**6-pack**

**SKiiP 703GD121-3DUW <sup>3)</sup>**

**Target data**

housing S33



**Features**

- SKiiP technology inside
    - pressure contact of ceramic to heat sink; low thermal impedance
    - pressure contact of main electric terminals
    - pressure contact of auxiliary electric terminals
    - increased thermal cycling capability
    - low stray inductance
    - homogenous current distribution
  - integrated current sensor
  - integrated temperature sensor
  - high power density
- <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> D integrated gate driver  
U with DC-bus voltage measurement (option for GB)  
L mounted on standard P16 for forced air cooling  
W mounted on standard water cooler
- <sup>4)</sup> T<sub>term</sub> = temperature of terminal with SKiiPPACK 3<sup>rd</sup> generation gate driver
- <sup>5)</sup> assembly instruction must be followed
- <sup>6)</sup> measured at chip level
- <sup>7)</sup> external paralleling necessary

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