

I. Power section 1 * SKiiP613GB121CT per phase

Absolute maximum ratings		Values	Units
Symbol	Conditions ¹⁾		
IGBT and inverse diode			
V _{CES}		1200	V
V _{CC}	Operating DC link voltage	900	V
V _{GES}		± 20	V
I _C	IGBT, T _{heat sink} = 25 / 70 °C	600 / 450	A
I _{CM}	IGBT, t _p < 1 ms, T _{heat sink} = 25°C	1200	A
I _F	Diode, T _{heat sink} = 25 / 70 °C	450 / 337,5	A
I _{FM}	Diode, t _p < 1 ms	900	A
I _{FSM}	Diode, T _j = 150 °C, 10ms; sin	4320	A
I ² t (Diode)	Diode, T _j = 150 °C, 10ms	93	kA ² s
T _j , (T _{stg})		-40...+150 (125)	°C
V _{isol}	AC, 1min.	3000	V
I _{C-package} ⁴⁾	T _{heat sink} = 70°C, T _{term} = 115 °C	1 * 500	A

Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
IGBT					
V _{(BR)CES}	gate driver without supply	≥V _{CES}	-	-	V
I _{CES}	V _{GE} = 0, T _j = 25 °C V _{CE} = V _{CES} T _j = 125 °C	-	1,2	-	mA
V _{CEO} ⁷⁾	T _j = 125 °C	-	0,9	-	V
r _T ⁷⁾	T _j = 125 °C	-	2,71	-	mΩ
V _{CEsat} ⁷⁾	I _C = 490A, T _j = 125 °C	-	2,3	-	V
V _{CEsat} ⁷⁾	I _C = 490A, T _j = 25 °C	-	-	2	V
E _{on} + E _{off} ⁵⁾	I _C =490A, V _{CC} =600V T _j = 125 °C V _{CC} =900V	-	172	-	mJ
C	per SKiiP, AC side	-	1	-	nF
L _{CE}	top, bottom	-	12	-	nH
R _{CC'-EE'}	resistance, terminal-chip	-	0,40	-	mΩ
Inverse diode ²⁾					
V _F = V _{EC}	I _F = 450A; T _j = 125 °C	-	1,8	-	V
V _F = V _{EC}	I _F = 450A; T _j = 25 °C	-	-	2,5	V
E _{on} + E _{off} ⁵⁾	I _F = 450A; T _j = 125 °C	-	18	-	mJ
V _{TO}	T _j = 125 °C	-	1,0	-	V
r _T	T _j = 125 °C	-	1,83	-	mΩ
Thermal characteristics					
R _{thjs}	per IGBT	-	-	0,071	°C/W
R _{thjs}	per diode	-	-	0,125	°C/W
R _{thsa} ³⁾	L: P16 heat sink; 280 m ³ /h W: WK 40; 8l/min; 50% glycol	-	-	0,033	°C/W
		-	-	0,010	°C/W
Current sensor					
I _{p RMS}	T _a =100° C, V _{supply} = ± 15V		1 * 400		A
I _{pmax RMS}	t ≤ 2 s		1 * 500		A
Linearity	V _{supply} ≥ ±14,25V, 0 ≤ I ≤ ± 700A, per sensor		0,1		%
I _{ppeak}	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 ⁶⁾	-	3	-	Nm

SKiiPPACK®

SK integrated intelligent Power PACK

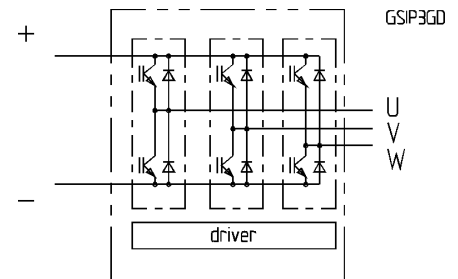
3rd Generation

6-pack

SKiiP 613GD121-3DUL ³⁾

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
- 1) T_{heatsink} = 25 °C, unless otherwise specified
- 2) CAL = Controlled Axial Lifetime Technology (soft and fast)
- 3) 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
- 4) T_{term} = temperature of terminal with SKiiPPACK 3rd generation gate driver
- 5) assembly instruction must be followed
- 6) measured at chip level
- 7) external paralleling necessary

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