I. Power section 4 * SKiiP503GB171CT per phase

Absolute maximum ratings Symbol	Conditions[1]	Values	Units
IGBT			
V_{CES}		1700	V
V_{CC}	Operating DC link voltage	1200	V
V_{GES}		± 20	V
I_C	$T_{heat\ sink}$ = 25 (70) °C	2000 (1500)	A
Inverse diode			
I_F	$T_{heat\ sink}$ = 25 (70) °C	2000 (1500)	A
I_{FSM}	T_j = 150 °C, t_p = 10ms; sin	17280	A
I^2t (Diode)	Diode, T_j = 150 °C, 10ms	1493	kA^2s
T_j , (T_{stg})		-40...+150 (125)	°C
V_{isol}	AC, 1min.	4000	V
$I_{C\text{-}package}$	$T_{heat\ sink}$ = 70°C, T_{term}[3] =115°C	4 * 500	A

Characteristics Symbol	Conditions[1]	min.	typ.	max.	Units
IGBT					
V_{CEsat}[5]	I_C = 1200A, T_j = 25 (125)°C	–	2,7 (3,1)	3,2	V
V_{CEO}	V_{GE} = 15V; T_j = 25 (125) °C	–	1,5 (1,6)	1,7 (1,8)	V
r_{CE}	V_{GE} = 15V; T_j = 25 (125) °C	–	1,1 (1,4)	1,3 (1,7)	mΩ
$E_{on} + E_{off}$[4]	I_C=1200A Vcc=900V	–	1200	–	mJ
	T_j=125°C Vcc=1200V	–	1769	–	mJ
I_{CES}	V_{GE}=0,V_{CE}=V_{CES},T_j=25(125) °C	–	4,8 (288)	–	mA
L_{CE}	top, bottom	–	3	–	nH
$R_{CC'-EE'}$	resistance, terminal-chip	–	0,10	–	mΩ
Inverse diode					
V_F[5] = V_{EC}	I_F= 1200A; T_j = 25(125) °C	–	2,0 (1,8)	2,3	V
V_{TO}	T_j = 25 (125) °C	–	1,5 (1,2)	1,7 (1,4)	V
r_T	T_j = 25 (125) °C	–	0,5 (0,6)	0,6 (0,7)	mΩ
E_{RR}[4]	I_C=1200A Vcc=900V	–	144	–	mJ
	T_j=125°C Vcc=1200V	–	211	–	mJ
Thermal characteristics					
R_{thjs}	per IGBT	–	–	0,014	°C/W
R_{thjs}	per diode	–	–	0,028	°C/W
R_{thsa}[2]	W: NWK 40; 8l/min; 50%glyc.	–	–	0,008	°C/W
Current sensor					
$I_{p\ RMS}$	T_a=100° C , V_{supply} = ± 15V		4 * 400		A
$I_{pmax\ RMS}$	t ≤ 2 s, T_a=100° C		4 * 500		A
Mechanical data					
M1	DC terminals, SI Units	4	–	6	Nm
M2	AC terminals, SI Units	8	–	10	Nm

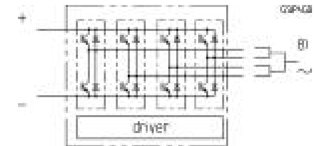
SKiiP® 3

SK integrated intelligent Power PACK 2-pack

SKiiP 2003GB171-4DW [2]

Target data

housing S43



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
- CAL diode technology
- integrated current sensor
- integrated temperature sensor
- high power density

[1] $T_{heatsink}$ = 25 °C, unless otherwise specified

[2] D integrated gate driver
U with DC-bus voltage measurement (option for GB)
L mounted on standard heat sink for forced air cooling
W mounted on standard liquid cooled heat sink

[3] T_{term} = temperature of terminal

[4] with SKiiP 3 gate driver

[5] Measured at chip level

[8] external paralleling necessary

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