I. Power section 1 * SKiiP413GB061CT per phase

Absolute maximum ratings			
Symbol	**Conditions**	**Values**	**Units**
IGBT			
V_{CES}		600	V
V_{CC} [1]	Operating DC link voltage	400	V
V_{GES}		± 20	V
I_C	$T_{heat\ sink}$ = 25 (70) °C	400 (300)	A
Inverse diode			
I_F	$T_{heat\ sink}$ = 25 (70) °C	400 (300)	A
I_{FSM}	T_j = 150 °C, t_p = 10ms; sin	4000	A
I^2t (Diode)	Diode, T_j = 150 °C, 10ms	80	kA^2s
T_j , (T_{stg})		-40...+150 (125)	°C
V_{isol}	AC, 1min.	2500	V
$I_{C\text{-}package}$	$T_{heat\ sink}$ = 70°C, T_{term} [3] =115°C	1 * 500	A

Characteristics					
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT					
V_{CEsat} [5]	I_C = 200A, T_j = 25 (125)°C	–	1,6 (1,8)	1,7	V
V_{CEO}	V_{GE} = 15V; T_j = 25 (125) °C	–	1,0 (0,9)	1,0 (0,9)	V
r_{CE}	V_{GE} = 15V; T_j = 25 (125) °C	–	3,8 (5,2)	4,2 (5,6)	mΩ
$E_{on} + E_{off}$ [4]	I_C=200A Vcc=300V	–	27	–	mJ
	T_j=125°C Vcc=400V	–	40	–	mJ
I_{CES}	V_{GE}=0,V_{CE}=V_{CES},T_j=25(125) °C	–	0,8 (24)	–	mA
L_{CE}	top, bottom	–	12	–	nH
$R_{CC'\text{-}EE'}$	terminal-chip, T_j=25 °C	–	0,40	–	mΩ
Inverse diode					
V_F [5] = V_{EC}	I_F= 200A; T_j = 25(125) °C	–	1,3 (1,2)	1,4	V
V_{TO}	T_j = 25 (125) °C	–	0,9 (0,7)	1,0 (0,7)	V
r_T	T_j = 25 (125) °C	–	2,5 (3,1)	2,8 (3,4)	mΩ
E_{RR} [4]	I_C=200A Vcc=300V	–	3	–	mJ
	T_j=125°C Vcc=400V	–	5	–	mJ
Thermal characteristics					
R_{thjs}	per IGBT	–	–	0,100	°C/W
R_{thjs}	per diode	–	–	0,188	°C/W
R_{thsa} [2]	L: P16w heat sink; 280 m3/ h	–	–	0,029	°C/W
Current sensor					
$I_{p\ RMS}$	T_a=100° C , V_{supply} = ± 15V		1 * 400		A
$I_{pmax\ RMS}$	t ≤ 2 s, T_a=100° C		1 * 500		A
Mechanical data					
M1	DC terminals, SI Units	4	–	6	Nm
M2	AC terminals, SI Units	8	–	10	Nm

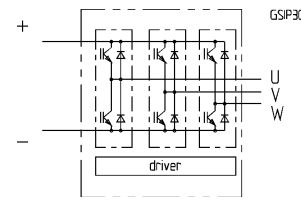
SKiiP[â] 3

SK integrated intelligent Power PACK 6-pack

SKiiP 413GD061-3DUL [2]

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
- low loss IGBTs
- CAL diode technology
- integrated current sensor
- integrated temperature sensor
- high power density

1) assembly of suitable MKP capacitor per terminal is mandatory (SEMIKRON type is recommended)
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