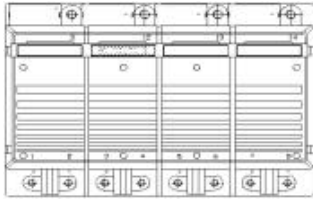


SKiiP 1242GB120-4D



SKiiP[®] 2

2-pack - integrated intelligent Power System

Power section

SKiiP 1242GB120-4D

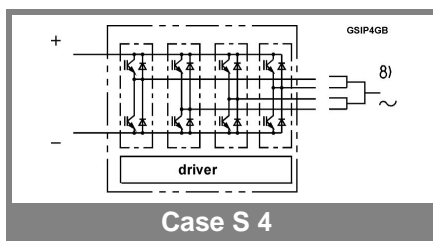
Power section features

- SKiiP technology inside
- CAL diode technology
- Integrated current sensor
- Integrated temperature sensor
- Integrated heat sink
- IEC 60721-3-3 (humidity) class 3K3/IE32 (SKiiP[®] 2 System)
- IEC 60068-1 (climate) 40/125/56
- UL recognized file no. E63532

- 1) with assembly of suitable MKP capacitor per terminal
- 8) AC connection busbars must be connected by the user; copper busbars available on request

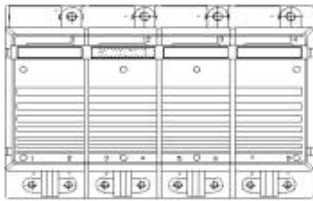
Absolute Maximum Ratings		$T_s = 25\text{ °C}$ unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}	Operating DC link voltage	1200	V
$V_{CC}^{1)}$		900	V
V_{GES}		± 20	V
I_C	$T_s = 25\text{ (70) °C}$	1200 (900)	A
Inverse diode			
$I_F = -I_C$	$T_s = 25\text{ (70) °C}$	1200 (900)	A
I_{FSM}	$T_j = 150\text{ °C}$, $t_p = 10\text{ ms}$; sin.	8640	A
I^2t (Diode)	Diode, $T_j = 150\text{ °C}$, 10 ms	373	kA ² s
$T_j, (T_{stg})$	AC, 1 min. (mainterminals to heat sink)	- 40 (- 25) ... + 150 (125)	°C
V_{isol}		3000	V

Characteristics		$T_s = 25\text{ °C}$ unless otherwise specified							
Symbol	Conditions	min.	typ.	max.	Units				
IGBT									
V_{CESat}	$I_C = 1000\text{ A}$, $T_j = 25\text{ (125) °C}$		2,6 (3,1)	3,1	V				
V_{CEO}	$T_j = 25\text{ (125) °C}$		1,2 (1,3)	1,5 (1,6)	V				
r_{CE}	$T_j = 25\text{ (125) °C}$		1,3 (1,8)	1,6 (2)	mΩ				
I_{CES}	$V_{GE} = 0\text{ V}$, $V_{CE} = V_{CES}$, $T_j = 25\text{ (125) °C}$		(60)	1,6	mA				
$E_{on} + E_{off}$	$I_C = 1000\text{ A}$, $V_{CC} = 600\text{ V}$ $T_j = 125\text{ °C}$, $V_{CC} = 900\text{ V}$			300 529	mJ mJ				
$R_{CC' + EE'}$	terminal chip, $T_j = 125\text{ °C}$		0,13		mΩ				
L_{CE}	top, bottom		3,8		nH				
C_{CHC}	per phase, AC-side		5,6		nF				
Inverse diode									
$V_F = V_{EC}$	$I_F = 1000\text{ A}$, $T_j = 25\text{ (125) °C}$		2,1 (2)	2,6	V				
V_{TO}	$T_j = 25\text{ (125) °C}$		1,3 (1)	1,4 (1,1)	V				
r_T	$T_j = 25\text{ (125) °C}$		0,8 (1)	1,1 (1,3)	mΩ				
E_{rr}	$I_C = 1000\text{ A}$, $V_{CC} = 600\text{ V}$ $T_j = 125\text{ °C}$, $V_{CC} = 900\text{ V}$			39 49	mJ mJ				
Mechanical data									
M_{dc}	DC terminals, SI Units	6		8	Nm				
M_{ac}	AC terminals, SI Units	13		15	Nm				
w	SKiiP [®] 2 System w/o heat sink		3,5		kg				
w	heat sink		8,5		kg				
Thermal characteristics (P16 heat sink; 275m³/h); "r" reference to temperature sensor									
$R_{th(j-s)I}$	per IGBT			0,023	K/W				
$R_{th(j-s)D}$	per diode			0,063	K/W				
$R_{th(s-a)}$	per module			0,033	K/W				
Z_{th}	R_i (mK/W) (max. values)	tau _i (s)							
	1 2 3 4	1	2	3	4				
$Z_{th(j-r)I}$		2	18	3	0	1	0,13	0,001	1
$Z_{th(j-r)D}$		7	48	8	0	1	0,13	0,001	1
$Z_{th(r-a)}$		1,6	22	7	2,4	494	165	20	0,03



* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.

SKiiP 1242GB120-4D



SKiiP® 2

2-pack - integrated intelligent Power System

2-pack
integrated gate driver

SKiiP 1242GB120-4D

Gate driver features

- CMOS compatible inputs
- Wide range power supply
- Integrated circuitry to sense phase current, heat sink temperature and DC-bus voltage (option)
- Short circuit protection
- Over current protection
- Over voltage protection (option)
- Power supply protected against under voltage
- Interlock of top/bottom switch
- Isolation by transformers
- Fibre optic interface (option for GB-types only)
- IEC 60068-1 (climate) 25/85/56

Absolute Maximum Ratings		$T_a = 25\text{ }^\circ\text{C}$ unless otherwise specified	
Symbol	Conditions	Values	Units
V_{S1}	stabilized 15 V power supply	18	V
V_{S2}	unstabilized 24 V power supply	30	V
V_{iH}	input signal voltage (high)	15 + 0,3	V
dv/dt	secondary to primary side	75	kV/ μ s
V_{isolIO}	input / output (AC, r.m.s., 2s)	3000	Vac
V_{isol12}	output 1 / output 2 (AC, r.m.s., 2s)	1500	Vac
f_{sw}	switching frequency	14	kHz
f_{out}	output frequency for $I=I_C$; sin.	1	kHz
T_{op} (T_{stg})	operating / storage temperature	- 40 ... + 85	$^\circ\text{C}$

Characteristics		$(T_a = 25\text{ }^\circ\text{C})$			
Symbol	Conditions	min.	typ.	max.	Units
V_{S1}	supply voltage stabilized	14,4	15	15,6	V
V_{S2}	supply voltage non stabilized	20	24	30	V
I_{S1}	$V_{S1} = 15\text{ V}$	$290+580*f/f_{max}+1,2*(I_{AC}/A)$			mA
I_{S2}	$V_{S2} = 24\text{ V}$	$220+420*f/f_{max}+0,85*(I_{AC}/A)$			mA
V_{iT+}	input threshold voltage (High)	12,3			V
V_{iT-}	input threshold voltage (Low)	4,6			V
R_{IN}	input resistance	10			k Ω
$t_{d(on)IO}$	input-output turn-on propagation time	1,5			μ s
$t_{d(off)IO}$	input-output turn-off propagation time	1,4			μ s
$t_{pERRRESET}$	error memory reset time	9			μ s
t_{TD}	top / bottom switch : interlock time	3,3			μ s
$I_{analogOUT}$	8 V corresponds to max. current of 15 V supply voltage	1200			A
$I_{Vs1outmax}$	(available when supplied with 24 V)	50			mA
I_{A0max}	output current at pin 12/14	5			mA
V_{0l}	logic low output voltage	0,6			V
V_{0H}	logic high output voltage	30			V
I_{TRIPSC}	over current trip level ($I_{analog OUT} = 10\text{ V}$)	1500			A
I_{TRIPLG}	ground fault protection				A
T_{tp}	over temperature protection	110	120		$^\circ\text{C}$
U_{DCTRIP}	trip level of U_{DC} -protection ($U_{analog OUT} = 9\text{ V}$); (option)	900			V

For electrical and thermal design support please use SEMISEL.
Access to SEMISEL is via SEMIKRON website <http://www.semikron.com>.

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