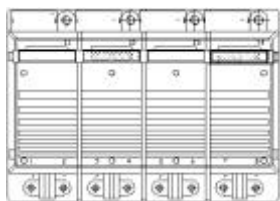


SKiiP 432GH120-4D

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SKiiP® 2

4-pack - integrated intelligent Power System

Power section

SKiiP 432GH120-4D

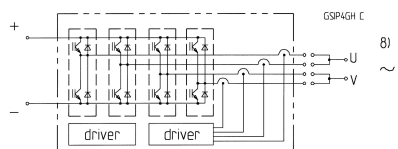
Power section features

- 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		$T_s = 25^\circ\text{C}$ 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	$T_s = 25 (70)^\circ\text{C}$	400 (300)	A
Inverse diode			
$I_F = -I_C$	$T_s = 25 (70)^\circ\text{C}$	400 (300)	A
I_{FSM}	$T_j = 150^\circ\text{C}$, $t_p = 10\text{ ms}$; sin.	2880	A
I^2t (Diode)	Diode, $T_j = 150^\circ\text{C}$, 10 ms	41	kA^2s
$T_j, (T_{stg})$	AC, 1 min. (mainterminals to heat sink)	- 40 (- 25) ... + 150 (125)	$^\circ\text{C}$
V_{isol}		3000	V

Characteristics		T _s = 25 °C unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{CEsat}	I _C = 350 A, T _j = 25 (125) °C		2,6 (3,1)	3,1	V
V _{CEO}	T _j = 25 (125) °C		1,2 (1,3)	1,5 (1,6)	V
r _{CE}	T _j = 25 (125) °C		3,8 (5)	4,5 (5,8)	mΩ
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} , T _j = 25 (125) °C		(20)	0,8	mA
E _{on} + E _{off}	I _C = 350 A, V _{CC} = 600 V			105	mJ
	T _j = 125 °C, V _{CC} = 900 V			185	mJ
R _{CC' + EE'}	terminal chip, T _j = 125 °C		0,25		mΩ
L _{CE}	top, bottom		7,5		nH
C _{CHC}	per phase, AC-side		2,8		nF
Inverse diode					
V _F = V _{EC}	I _F = 300 A, T _j = 25 (125) °C		2,1 (1,9)	2,6	V
V _{TO}	T _j = 25 (125) °C		1,3 (1)	1,4 (1,1)	V
r _T	T _j = 25 (125) °C		2,5 (3)	3,4 (3,9)	mΩ
E _{rr}	I _C = 350 A, V _{CC} = 600 V			12	mJ
	T _j = 125 °C, V _{CC} = 900 V			15	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; 275m ³ /h); "r" reference to temperature sensor					
R _{th(j-s)I}	per IGBT			0,064	K/W
R _{th(j-s)D}	per diode			0,188	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	
Z _{th(j-r)I}	7	50	8	0	1
Z _{th(j-r)D}	21	144	23	0	1
Z _{th(r-a)}	1,6	22	7	2,4	0,03

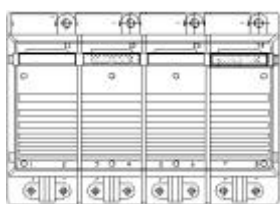


Case S 5

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SKiiP® 2

4-pack - integrated intelligent Power System

4-pack
integrated gate driver

SKiiP 432GH120-4D

Gate driver features

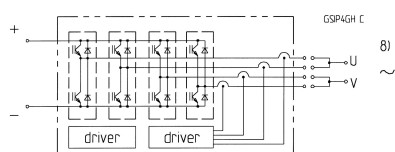
- Two separate and independent "GB"-type driver
- CMOS compatible inputs
- Wide range power supply
- Integrated circuitry to sense phase current, heat sink temperature and DC-bus voltage (option)
- U-option is integrated on left driver, (DC terminals at bottom; refer to case drawing)
- Short circuit protection
- Over current protection
- Over voltage protection (option)
- Power supply protected against under voltage
- Interlock of top/bottom switch
- Isolation by transformer
- Fibre optic interface (option)
- IEC 60068-1 (climate) 25/85/56

Absolute Maximum Ratings		$T_a = 25^\circ\text{C}$ 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/ μs
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	20	kHz
f_{out}	output frequency for $I = I_C$; sin.	1	kHz
$T_{op} (T_{stg})$	operating / storage temperature	$-40 \dots +85$	$^\circ\text{C}$

Characteristics		(T _a = 25 °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 V	210+320*f/f _{max} +1,3*(I _{AC} /A)			mA
I _{S2}	V _{S2} = 24 V	160+220*f/f _{max} +1,0*(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			kΩ
t _{d(on)IO}	input-output turn-on propagation time	1,5			μs
t _{d(off)IO}	input-output turn-off propagation time	1,4			μs
t _{pERRRESET}	error memory reset time	9			μs
t _{TD}	top / bottom switch : interlock time	3,3			μs
I _{analogOUT}	8 V corresponds to max. current of 15 V supply voltage (available when supplied with 24 V)	400			A
I _{Vs1outmax}	output current at pin 12/14	50			mA
I _{A0max}	output current at pin 12/14	5			mA
V _{0I}	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 V)	500			A
I _{TRIPLG}	ground fault protection				A
T _{tp}	over temperature protection	110	120		°C
U _{DCTRIP}	trip level of U _{DC} -protection (U _{analog OUT} = 9 V); (option)	900			V

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