

I. Power section

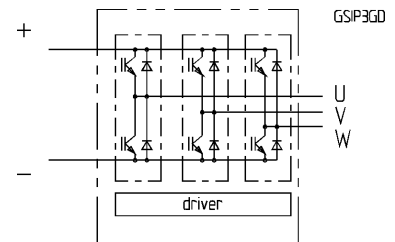
Absolute maximum ratings		T _s = 25°C unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V _{CES}	Operating DC link voltage	600	V
V _{CC} ¹⁾		400	V
V _{GES}		± 20	V
I _C		T _s = 25 (70) °C	300 (225)
Inverse diode			
I _F = -I _C	T _s = 25 (70) °C	300 (225)	A
I _{FSM}	T _j = 150 °C, t _p = 10ms; sin	3000	A
I ² t (Diode)	Diode, T _j = 150 °C, 10ms	45	kA ² s
T _j , (T _{stg})	AC, 1min.	-40 (-25) ...+150 (125)	°C
V _{isol}		2500	V

SKiiP® 2

SK integrated intelligent Power 6-pack

SKiiP 302GD061-359CTV

Case S3



Characteristics T _s = 25°C unless otherwise specified					
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{CEsat}	I _C = 300A, T _j = 25 (125)°C	-	2,5 (2,8)	2,7	V
V _{CEO}	T _j = 25 (125) °C	-	0,8 (0,7)	1,0 (0,9)	V
r _{CE}	T _j = 25 (125) °C	-	5,6 (7,1)	6,0 (7,5)	mΩ
I _{CES}	V _{GE} =0, V _{CE} =V _{CES} , T _j =25(125) °C	-	(15)	0,4	mA
E _{on} + E _{off}	I _C =300A, V _{CC} =300V	-	-	27	mJ
	T _j =125°C, V _{CC} =400V	-	-	39	mJ
R _{CC-EE}	terminal chip, T _j = 125 °C	-	0,50	-	mΩ
L _{CE}	top, bottom	-	15,0	-	nH
C _{CHC}	per phase, AC-side	-	0,8	-	nF
Inverse diode					
V _F = V _{EC}	I _F = 300A; T _j = 25(125) °C	-	1,5 (1,5)	1,8	V
V _{TO}	T _j = 25 (125) °C	-	0,8 (0,6)	1,0 (0,8)	V
r _T	T _j = 25 (125) °C	-	2,3 (2,9)	2,5 (3,1)	mΩ
E _{RR}	I _C =300A, V _{CC} =300V	-	-	10	mJ
	T _j =125°C, V _{CC} =400V	-	-	11	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	-	2,7	-	kg
w	heat sink	-	6,6	-	kg
Thermal characteristics (P16 heat sink; 295 m³/h); "r" reference to temperature sensor					
R _{thjriGBT}	per IGBT	-	-	0,167	K/W
R _{thjrdiode}	per diode	-	-	0,267	K/W
R _{thra}	per module	-	-	0,036	K/W
Z _{th}	R _i (mK/W) (max.)	tau _i (s)			
	1 2 3 4	1	2	3	4
IGBT _{jr}	18 128 20 -	1	0,13	0,001	-
diode _{jr}	29 205 32 -	1	0,13	0,001	-
heatsink _{ra}	11,1 18,3 3,5 3,1	204	60	6	0,02

Features

- SKiiP technology inside
- low loss IGBTs
- CAL diode technology
- integrated current sensor
- integrated temperature sensor
- integrated heat sink
- IEC 60721-3-3 (humidity) class 3K3/IE32 (SKiiP® 2 System)
- IEC 68T.1 (climate) 40/125/56 (SKiiP® 2 power section)

1) with assembly of suitable MKP capacitor per terminal (SEMİKRON type is recommended)

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SKiiP 302GD061-359CTV

SKiiP 2®

SK integrated intelligent Power

SKiiP 302GD061-359CTV

II. Integrated gate driver

Absolute maximum ratings			
Symbol	Term	Value	Unit
V _{S1}	stabilized 15V power supply	18	V
V _{S2}	unstabilized 24V 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)	2500	Vac
V _{isol12}	output 1 / output 2 (AC)	1500	Vac
f _{max}	switching frequency	20	kHz
T _{op} (T _{stg})	operating / storage temperature	- 25 ... + 85	°C

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 68T.1 (climate) 25/85/56 (SKiiP® 2 gate driver)

Electrical characteristics (T _a = 25 °C)				Values				
Symbol	Term				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} = 15V	340 + 360*f / f _{max} + 3,5* (I _{AC} /A)						mA
I _{S2}	V _{S2} = 24V	250 + 240*f / f _{max} + 2,6 * (I _{AC} /A)						mA
V _{iT+}	input threshold voltage (High)				11,2	–	–	V
V _{iT-}	input threshold voltage (Low)				–	–	5,4	V
R _{in}	input resistance				–	10	–	kΩ
t _{d(on)IO}	turn-on propagation time (system)				–	1,1	–	μs
t _{d(off)IO}	turn-off propagation time (system)				–	1,4	–	μs
t _{pERRRESET}	error memory reset time				9	–	–	μs
t _{TD}	top/bottom switch: interlock time				–	2,3	–	μs
I _{analogOUT}	8 V corresponds to				–	300	–	A
I _{Vs1outmax}	max. current of 15 V supply voltage (available when supplied with 24V)				–	–	50	mA
I _{A0max}	output current at pin 13/20/22/24/26				–	–	5	mA
V _{ol}	logic low output voltage				–	–	0,6	V
V _{oH}	logic high output voltage				–	–	30	V
I _{TRIPSC}	over current trip level (I _{analog OUT} = 10V)				–	375	–	A
I _{TRIPLG}	ground fault protection				–	87	–	A
T _{ip}	over temperature protection				110	–	120	°C
U _{DCTRIP}	trip level of U _{DC} -protection (U _{analog OUT} = 9V); (option)				400	–	–	V

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