

SKiiP 342GD120-314CTV

I. Power section

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		$T_s = 25 (70)^\circ\text{C}$	300 (225)
Inverse diode			
$I_F = -I_C$	$T_s = 25 (70)^\circ\text{C}$	300 (225)	A
I_{FSM}	$T_j = 150^\circ\text{C}$, $t_p = 10\text{ms}$; sin	2160	A
I^2t (Diode)	Diode, $T_j = 150^\circ\text{C}$, 10ms	23	kA^2s
$T_j, (T_{stg})$		-40 (-25) ... +150 (125)	$^\circ\text{C}$
V_{isol}	AC, 1min.	3000	V

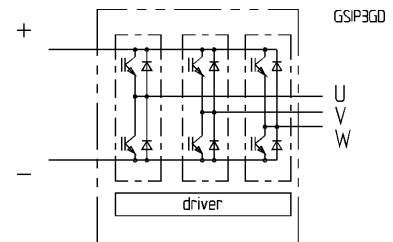
Characteristics		$T_s = 25^\circ\text{C}$ unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V_{CESat}	$I_C = 250\text{A}$, $T_j = 25 (125)^\circ\text{C}$	-	2,6 (3,1)	3,1	V
V_{CEO}	$T_j = 25 (125)^\circ\text{C}$	-	1,2 (1,3)	1,5 (1,6)	V
r_{CE}	$T_j = 25 (125)^\circ\text{C}$	-	5,3 (7,0)	6,3 (8,1)	$\text{m}\Omega$
I_{CES}	$V_{GE}=0$, $V_{CE}=V_{CES}$, $T_j=25(125)^\circ\text{C}$	-	(15)	0,4	mA
$E_{on} + E_{off}$	$I_C=250\text{A}$, $V_{CC}=600\text{V}$	-	-	75	mJ
	$T_j=125^\circ\text{C}$, $V_{CC}=900\text{V}$	-	-	132	mJ
R_{CC-EE}	terminal chip, $T_j = 125^\circ\text{C}$	-	0,50	-	$\text{m}\Omega$
L_{CE}	top, bottom	-	15,0	-	nH
C_{CHC}	per phase, AC-side	-	1,4	-	nF
Inverse diode					
$V_F = V_{EC}$	$I_F = 250\text{A}$; $T_j = 25(125)^\circ\text{C}$	-	2,1 (2,0)	2,6	V
V_{TO}	$T_j = 25 (125)^\circ\text{C}$	-	1,3 (1,0)	1,4 (1,1)	V
r_T	$T_j = 25 (125)^\circ\text{C}$	-	3,3 (4,0)	4,5 (5,2)	$\text{m}\Omega$
E_{RR}	$I_C=250\text{A}$, $V_{CC}=600\text{V}$	-	-	10	mJ
	$T_j=125^\circ\text{C}$, $V_{CC}=900\text{V}$	-	-	12	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 m^3/h); "r" reference to temperature sensor					
$R_{thjrIGBT}$	per IGBT	-	-	0,090	K/W
$R_{thjrdiode}$	per diode	-	-	0,250	K/W
R_{thra}	per module	-	-	0,036	K/W
Z_{th}	R_i (mK/W) (max.)	τ_{au_i} (s)			
		1	2	3	4
$IGBT_{jr}$		10	69	11	-
$diode_{jr}$		28	193	30	-
$heatsink_{ra}$		11,1	18,3	3,5	3,1
		204	60	6	0,02

SKiiP[®] 2

SK integrated intelligent Power 6-pack

SKiiP 342GD120-314CTV

Case S3



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 (SEMIKRON type is recommended)

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee, expressed or implied is made regarding delivery, performance or suitability.

SKiiP 342GD120-314CTV

SKiiP 2®

SK integrated intelligent Power

SKiiP 342GD120-314CTV

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)	3000	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 + 520*f / f _{max} + 3,5* (I _{AC} /A)						mA
I _{S2}	V _{S2} = 24V	250 + 380*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)				–	1,2	–	μs
t _{d(off)IO}	turn-off propagation time (system)				–	1,6	–	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)				900	–	–	V

For electrical and thermal design support please use SEMISEL. Access to SEMISEL is via SEMIKRON website <http://semisel.semikron.com>. Further questions can be placed via <http://faq.semikron.com/>.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.