

SKiIP 1242 GB 120 - 407 CTV

Absolute Maximum Ratings		Values	Units
Symbol	Conditions ¹⁾		
IGBT & Inverse Diode			
V _{CEs}		1200	V
V _{CC} ⁹⁾	Operating DC link voltage	900	V
I _C	T _{heatsink} = 25 °C	1200	A
T _J ³⁾	IGBT & Diode	- 40 ... + 150	°C
V _{isol} ⁴⁾	AC, 1 min.	3000 ⁵⁾	V
I _F	T _{heatsink} = 25 °C	1200	A
I _{FM}	T _{heatsink} = 25 °C; t _p < 1 ms	2400	A
I _{FSM}	t _p = 10 ms; sin.; T _J = 150 °C	8600	A
I _t (Diode)	t _p = 10 ms; T _J = 150 °C	374	kA ² s

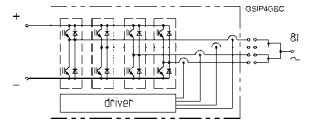
Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
V _{(BR)CES}	Driver without power supply	≥ V _{CEs}	-	-	V
I _{CES}	V _{GE} = 0 } T _J = 25 °C	-	1,2	-	mA
	V _{CE} = V _{CEs} } T _J = 125 °C	-	60	-	mA
V _{CEsat}	I _C = 900 A } T _J = 25 (125) °C	-	2,6(3)	-	V
V _{CEsat}	I _C = 1200 A } T _J = 25 (125) °C	-	3(3,6)	-	V
C _{CHC}	per SKiIPPACK AC side	-	3,2	-	nF
L _{CE}	Top (Bottom)	-	4	-	nH
t _{d(on)}	I _C = 1200 A } V _{CC} = T _J = 125 °C } inductive load } 600 V	-	150	-	ns
t _{d(on)Driver}		-	1,0	-	µs
t _r		-	100	-	ns
t _{d(off)}		-	0,6	-	µs
t _{d(off)Driver}		-	1,0	-	µs
t _f		-	80	-	ns
E _{on} + E _{off}	V _{CC} = 600 V / 900 V	-	360/588	-	mJ
Inverse Diode ²⁾					
V _F = V _{EC}	I _F = 900 A } T _J = 25 (125) °C	-	1,9(1,8)	-	V
	I _F = 1200 A } T _J = 25 (125) °C	-	2,1(2,05)	-	V
E _{on} + E _{off}	I _F = 1200 A; T _J = 125 °C	-	48	-	mJ
IGBT / Inverse Diode ²⁾					
V _{TO}	T _J = 125 °C	-	1,4 / 0,9	-	V
r _T	T _J = 125 °C	-	1,8 / 1	-	mΩ
Thermal Characteristics					
R _{thjh}	per IGBT	-	0,023	-	K/W
R _{thjd}	per diode	-	0,06	-	K/W
T _{TP} ¹²⁾	Over temperature protection	110	115	120	°C
R _{thha} ⁶⁾	P16/360 F; v _{air} = 279 m ³ / h	-	0,033	-	K/W
SKiIPPACK protection					
I _{TRIPSC}	Short circuit protection	1470	1500	1530	A
T _{TRIP}	Overtemperature protection	110	115	120	°C
U _{DC} TRIP ¹³⁾	UDC-protection	900	820	940	V
Mechanical Data					
M _{dc}	for DC terminals, SI Units	4	-	6	Nm
M _{ac}	for AC terminals, SI Units	8	-	10	Nm
Case			S4		

SKiIPPACK® SK integrated intelligent Power PACK halfbridge

SKiIP 1242 GB 120 + Driver 407 CTV ^{7,13)}

Preliminary Data

Case S4



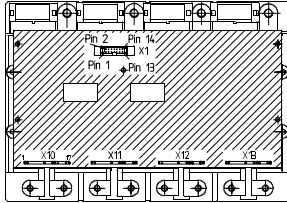
Features

- Low thermal impedance
- Optimal thermal management with integrated heatsink
- Pressure contact technology with increased power cycling capability, compact design
- Low stray inductance
- High power, small losses
- Overtemp. protection
- Short circuit protection, due to evaluation of current sensor signals
- Isolated power supply

- ¹⁾ T_{heatsink} = 25 °C, unless otherwise specified
- ²⁾ CAL = Controlled Axial Lifetime Technology (soft and fast)
- ³⁾ without driver
- ⁴⁾ Driver input to DC link/AC output or DC link/AC output to heatsink
- ⁵⁾ 4 kV (AC; on request)
- ⁶⁾ other heatsink on request
- ⁷⁾ C - integrated current sensors
T - Temperature protection
V - 15 V or 24 V power supply
- ⁸⁾ AC connection busbars must be connected by user, copper busbars available on request
- ⁹⁾ with SK-DC link (low inductance)
- ¹²⁾ thermal reference for R_{thjh}; R_{thha}
- ¹³⁾ options available for driver
U - DC-link voltage sense
F - Fiber optic connector

SKiiPACK®
SK integrated
Intelligent Power PACK
halfbridge

SKiiP 1242 GB 120
+ Driver 407 CTV^{3,5)}
Preliminary Driver Data



SKiiP 1242 GB 120 - 407 CTV
Driver for Halfbridge

Absolute Maximum Ratings				
Symbol	Conditions	Values	Units	remark
V _{S1}	supply voltage primary	18	V	pin 8 / 9
V _{S2} ¹⁾	supply voltage primary	30	V	pin 6 / 7
I _{outmax}	output peak current max.	± 10	A	
I _{outAV}	output average current	± 100	mA	
f _{swmax}	switching frequency max.	12	kHz	
dv/dt	rate of rise and fall of voltage (secondary to primary side)	75	kV/μs	
V _{isol IO} ⁴⁾	Isol. test volt. IN/OUT (RMS; 1 min)	3	kV~	
V _{isol 12}	Isol. test volt. output 1 - output 2	1,5	kV=	
T _{op} , T _{stg}	operating / stor. temperature	- 25 ... + 85	°C	

Features

- CMOS compatible inputs
- Short circuit protection by evaluation of current sensor signals
- Drive interlock top/bottom
- Isolation by transformers
- Supply undervoltage protection
- Overtemperature protection
- Fiber optic connector (option)
- U_{DC}-monitoring (option)

- 1) 24 V - power supply
- 2) Open collector output, external pull-up resistor necessary
- 3) C - integrated current sensors
T - Temperature protection
V - 15 V or 24 V power supply
4 kV_{AC} (on request)
- 4) 4 kV_{AC} (on request)
- 5) options available for driver
U - DC-link voltage sense
F - Fiber optic connectors
- 6) I_{AC} - AC-current per phase

Characteristics (T_a = 25 °C)				
Symbol	Conditions	Values	Units	remark
V _{S1}	supply voltage primary	15,0 ± 4 %	V	pin 8 / 9
V _{S2} ¹⁾	supply voltage primary	24,0 +25%/-15%	V	pin 6 / 7
V _{UVS}	supply voltage monitoring	13 / 19,5	V	15 V / 24 V
I _{S01}	sup. current pr. side (standby)	290	mA	15 V supply
I _{S02} ¹⁾	sup. current pr. side (standby)	220	mA	24 V supply
I _{S1}	sup. current pr. side (max) at f _{swmax}	750 + $\frac{1,3 \cdot I_{AC}^{(6)}}{1000}$	mA	15 V supply
I _{S2} ¹⁾	sup. current pr. side (max) at f _{swmax}	560 + $\frac{1,3 \cdot I_{AC}^{(6)}}{1350}$	mA	24 V supply
V _{IT+}	input thresh. volt. (high) min	12,9	V	
V _{IT-}	input thresh. volt. (low) max.	2,1	V	
V _{GE(on)}	turn-on output gate voltage	15	V	
V _{GE(off)}	turn-off output gate voltage	- 8	V	
t _{d(on)}	propagation delay time on	1,0	μs	typ.
t _{d(off)}	propagation delay time off	1,0	μs	typ.
t _{TD}	dead time of interlock	3	μs	typ.
V _{ol} ²⁾	logic low output voltage	< 600	mV	15 mA
V _{oh} ²⁾	logic high output voltage	max. 30	V	
t _{pdon-error}	propag. delay time-on error	1	μs	typ.
t _{p RESET}	min. pulse width error memory RESET	5	μs	
T _{TRIP}	max. temperature	115 ± 5	°C	
I _{AOmax}	max. output current	± 5	mA	pin 12/14
U _{TRIPSC}	overcurrent trip level	10	V	10 V = 125% I _c
U _{DCTRIP}	overvoltage trip level	9	V	9 V = 900 V; using option "U"