

## SKiip 312 GD 120 - 302 WT

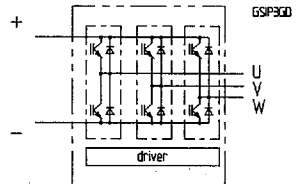
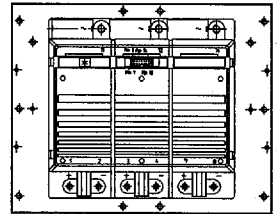
Absolute Maximum Ratings		Values	Units
Symbol	Conditions <sup>1)</sup>		
IGBT & Inverse Diode			
V <sub>CES</sub>		1200	V
V <sub>CC</sub> <sup>10)</sup>	Operating DC link voltage	900	V
I <sub>C</sub>	T <sub>heatsink</sub> = 25 °C	300	A
I <sub>CM</sub>	T <sub>heatsink</sub> = 25 °C; t <sub>p</sub> < 1 ms	600	A
T <sub>J</sub> <sup>3)</sup>	IGBT & Diode	-55...+150	°C
V <sub>isol</sub> <sup>4)</sup>	AC, 1 min.	3000 <sup>5)</sup>	V
I <sub>F</sub>	T <sub>heatsink</sub> = 25 °C	240	A
I <sub>FM</sub>	T <sub>heatsink</sub> = 25 °C; t <sub>p</sub> < 1 ms	600	A
I <sub>FSM</sub>	t <sub>p</sub> = 10 ms; sin.; T <sub>J</sub> = 150 °C	2160	A
I <sup>2</sup> t (Diode)	t <sub>p</sub> = 10 ms; T <sub>J</sub> = 150 °C	23,4	kA <sup>2</sup> s
Driver			
V <sub>S1</sub>	Stabilized power supply	18	V
V <sub>S2</sub> <sup>9)</sup>	Nonstabilized power supply	30	V
dv/dt	Primary to second. side	75	kV/μs
T <sub>op</sub> , T <sub>stg</sub>	Operating / stor. temperature	-25...+85	°C

Characteristics		min.	typ.	max.	Units
Symbol	Conditions <sup>1)</sup>				
V <sub>(BR)CES</sub>	Driver without power supply	≥ V <sub>CES</sub>	-	-	V
I <sub>CES</sub>	V <sub>GE</sub> = 0 } T <sub>J</sub> = 25 °C	-	0,3	-	mA
	V <sub>CE</sub> = V <sub>CES</sub> } T <sub>J</sub> = 125 °C	-	1%	-	mA
V <sub>CEsat</sub> <sup>8)</sup>	I <sub>C</sub> = 225 A   T <sub>J</sub> = 25 (125) °C	-	2,75 (3,6)	-	V
V <sub>CEsat</sub> <sup>8)</sup>	I <sub>C</sub> = 300 A   T <sub>J</sub> = 25 (125) °C	-	3,15 (4,2)	-	V
I <sub>CETRIP</sub>	T <sub>J</sub> = 125 °C; V <sub>S</sub> = 15 V ± 0,6V	≥ 375	-	-	A
C <sub>CHC</sub>	per SKiIPACK AC side	-	0,8	-	nF
L <sub>CE</sub>	Top (Bottom)	-	15	-	nH
t <sub>d(on)</sub>	} V <sub>CC</sub> = 600 V I <sub>C</sub> = 300 A T <sub>J</sub> = 125 °C inductive load	-	150	-	ns
t <sub>d(on)Driver</sub>		-	1,2	-	μs
t <sub>r</sub>		-	100	-	ns
t <sub>d(off)</sub>		-	0,7	-	μs
t <sub>d(off)Driver</sub>		-	1,2	-	μs
t <sub>f</sub>		-	80	-	ns
E <sub>on</sub> + E <sub>off</sub>		-	90	-	mJ
Inverse Diode <sup>2)</sup>					
V <sub>F</sub> <sup>8)</sup> = V <sub>EC</sub>	I <sub>F</sub> = 225 A { T <sub>J</sub> = 25 (125) °C } I <sub>F</sub> = 300 A { T <sub>J</sub> = 25 (125) °C }	-	2,0(1,8)	-	V
			-	2,25(2,05)	-
V <sub>TO</sub>	T <sub>J</sub> = 125 °C	-	1,0	-	V
r <sub>T</sub>	T <sub>J</sub> = 125 °C	-	4,0	-	mΩ
E <sub>on</sub> + E <sub>off</sub>	I <sub>F</sub> = 300 A; T <sub>J</sub> = 125 °C	-	12	-	mJ
Thermal Characteristics					
R <sub>thjh</sub>	per IGBT	-	0,08	-	K/W
R <sub>thjd</sub>	per diode	-	0,27	-	K/W
T <sub>tp</sub> <sup>11)</sup>	Over temperature protection	109	115	121	°C
R <sub>thha</sub> <sup>6)</sup>	P16/280 F; v <sub>air</sub> = 285 m <sup>3</sup> / h	-	0,036	-	K/W
Mechanical Data					
M <sub>dc</sub>	for DC terminals, SI Units	4	-	6	Nm
Mac	for AC terminals, SI Units	8	-	10	Nm
Case			S3		

## SKiIPACK® SK integrated Intelligent Power PACK

### 3-phase bridge SKiIP 312 GD 120 + Driver 302 WT <sup>7)</sup>

Case S3

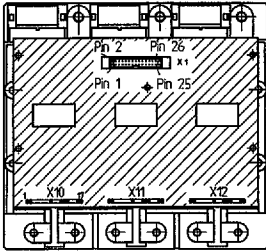


#### Features

- 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
- Isolated power supply

- <sup>1)</sup> T<sub>heatsink</sub> = 25 °C, unless otherwise specified
- <sup>2)</sup> CAL = Controlled Axial Lifetime Technology (soft and fast)
- <sup>3)</sup> without driver
- <sup>4)</sup> Driver input to DC link/AC output or DC link/AC output to heatsink
- <sup>5)</sup> 4 kV (AC; on request)
- <sup>6)</sup> other heatsink on request
- <sup>7)</sup> W - Driver wire input  
T - Temperature protection
- <sup>8)</sup> Chip voltage drop
- <sup>9)</sup> 24 V supply voltage selective
- <sup>10)</sup> with SK-DC link (low inductance)
- <sup>11)</sup> thermal reference for R<sub>thjh</sub>; R<sub>thha</sub>

**SKiiPACK®**  
**SK integrated**  
**intelligent Power PACK**  
**3-phase bridge**  
**SKiiP 312 GD 120**  
**+ Driver 302 WT<sup>3)</sup>**



**SKiiP 312 GD 120 - 302 WT**  
**Driver for 3-phase bridge**

<b>Absolute Maximum Ratings</b>			
Symbol	Conditions	Values	Units remark
V <sub>S1</sub>	supply voltage primary	18	V pin 16 / 17
V <sub>S2</sub> <sup>1)</sup>	supply voltage primary	30	V pin 14 / 15
I <sub>outmax</sub>	output peak current max.	± 10	A
I <sub>outAV</sub>	output average current	± 50	mA
f <sub>swmax</sub>	switching frequency max.	12	kHz
V <sub>CE</sub>	collector emitter voltage		
	sense across IGBT	1200	V
dv/dt	rate of rise and fall of voltage (secondary to primary side)	75	kV/μs
V <sub>isol IO</sub> <sup>4)</sup>	Isol. test volt. IN/OUT (RMS; 1 min)	2,5	kV-
V <sub>isol 12</sub>	Isol. test volt. output 1 - output 2	1,5	kV=
T <sub>op</sub> , T <sub>stg</sub>	operating / stor. temperature	-25...+85	°C

**Features**

- CMOS compatible inputs
- Short circuit protection by V<sub>CE</sub> monitoring and soft switch off
- Drive interlock top/bottom
- Isolation by transformers
- Supply undervoltage protection
- Overtemperature protection

<b>Characteristics</b>			
Symbol	Conditions	Values	Units remark
V <sub>S1</sub>	supply voltage primary	15,0 ±4%	V pin 16 / 17
V <sub>S2</sub> <sup>1)</sup>	supply voltage primary	24,0 +25%/-15%	V pin 14 / 15
V <sub>UVS</sub>	supply undervolt. monitoring	13 / 19,5	V 15 V / 24 V
I <sub>S01</sub>	sup. current pr.side (standby)	380	mA 15 V supply
I <sub>S02</sub> <sup>1)</sup>	sup. current pr.side (standby)	300	mA 24 V supply
I <sub>S1</sub>	sup. current pr.side (max)	900	mA 15 V supply
I <sub>S2</sub> <sup>1)</sup>	sup. current pr.side (max)	700	mA 24 V supply
V <sub>IT+</sub>	input thresh. volt. (high) min	12,9	V
V <sub>IT-</sub>	input thresh. volt. (low) max.	2,1	V
V <sub>GE(on)</sub>	turn-on output gate voltage	15	V
V <sub>GE(off)</sub>	turn-off output gate voltage	- 8	V
t <sub>d(on)</sub>	propagation delay time on	1,2	μs typ.
t <sub>d(off)</sub>	propagation delay time off	1,2	μs typ.
t <sub>TD</sub>	dead time of interlock	3	μs typ.
V <sub>CEstat</sub>	V <sub>CE</sub> -thresh. st. monitoring	5,1	V typ.
V <sub>CEdyn</sub>	V <sub>CE</sub> -thresh. dyn. monitoring	9,5	V typ.
V <sub>ol</sub> <sup>2)</sup>	logic low output voltage	< 500	mV 15 mA
V <sub>oh</sub> <sup>2)</sup>	logic high output voltage	max. 30	V
t <sub>pdon-error</sub>	propag. delay time-on error	6	μs typ.
t <sub>p RESET</sub>	min. pulse width error memory RESET	5	μs
T <sub>err</sub>	max. temperature	115 ± 6	°C
I <sub>AOmax</sub>	max. output current	± 5	mA pin 20

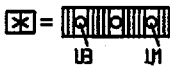
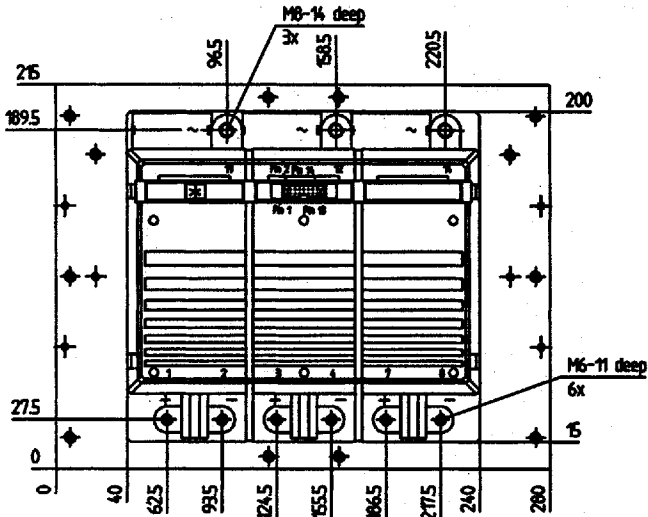
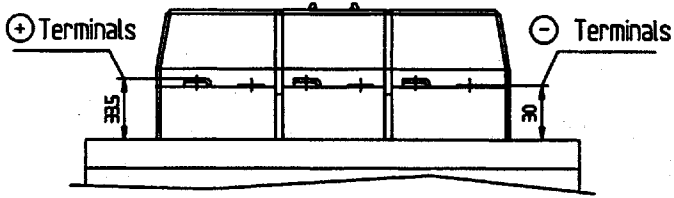
- 1) 24 V - supply voltage selective
  - 2) Open collector output, external pull-up resistor necessary
  - 3) W - Driver wire input
  - 4) T - Temperature protection
- 4) 4 kV<sub>AC</sub> (on request)



Case S3

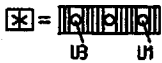
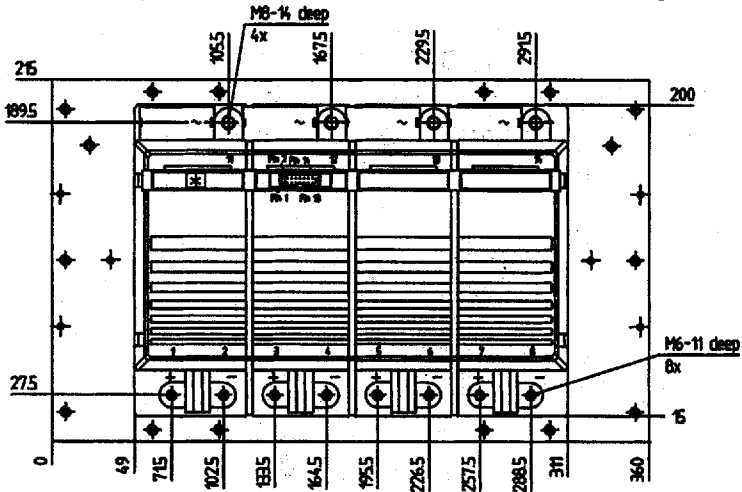
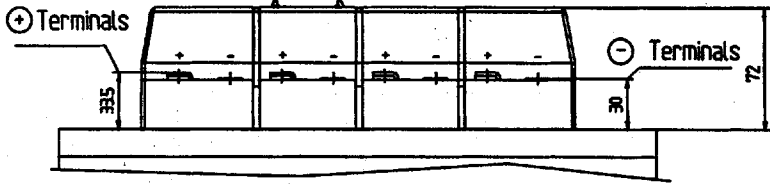
SKIIPACK 3 - GB, GD

CASES3

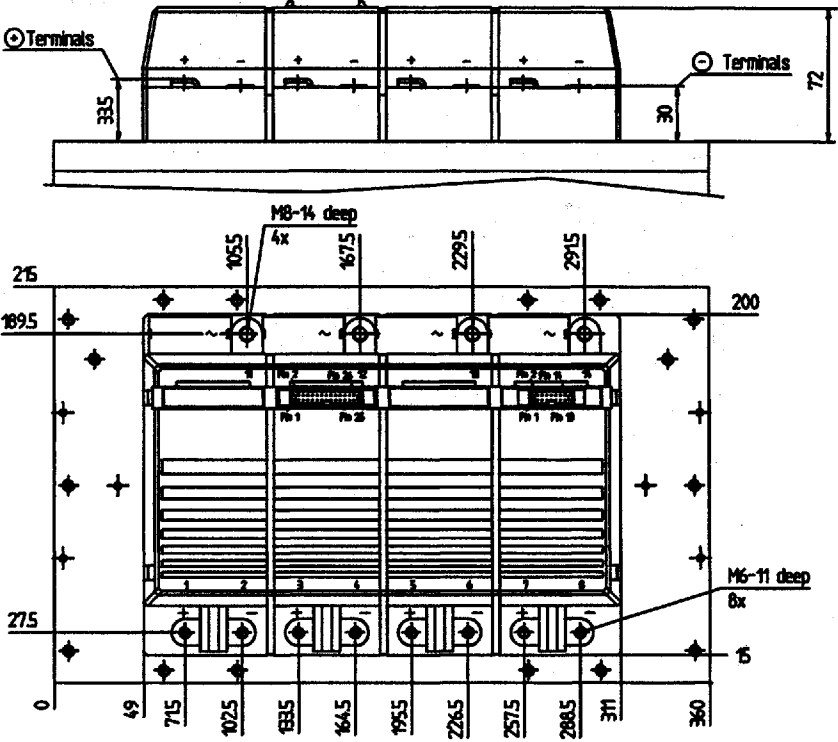


Version SKiIP ... GB ... FT (Fibre optic input)

CASES4



Version SKiIP ... GB ... FT (Fibreoptic input)



**SKIIPACK view from right**

