

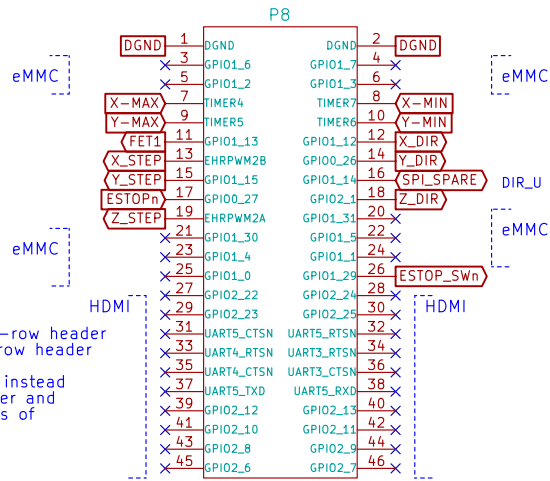
To save money on all the pin headers when buying parts for a few boards you can get large breakaway headers instead of the individual parts. You will need a total of:

- 18 pins of single-row header
- 82 pins of dual-row header

Which you can get using

- Harwin M20-9993645 36-pin single-row header
- Harwin M20-9983645 72-pin dual-row header

If you want to use standard pin headers instead of the latching KK headers for the stepper and ESTOP headers, you need another 32 pins of single-row header



Stepper Drivers



Emergency Stop



Inputs



Mosfet Outputs

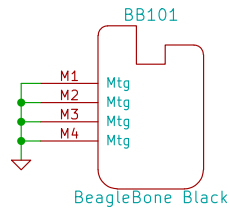


Serial Console



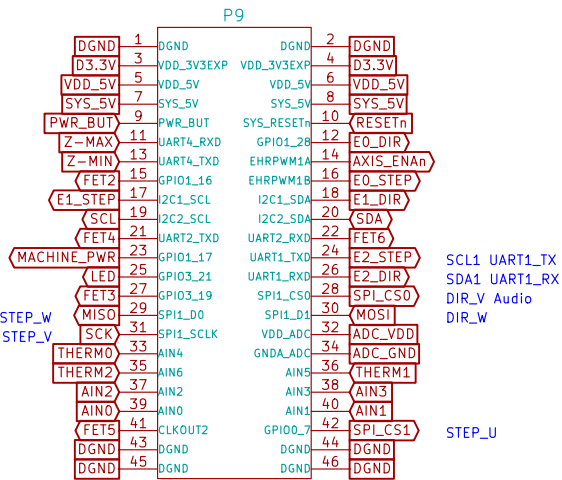
BeagleBone serial console pass-through header

Uses Arduino 6-pin stacking connector for low-cost

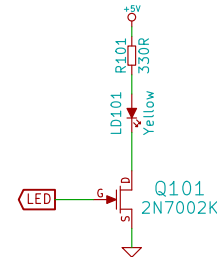


24.576MHz Audio

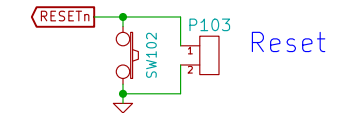
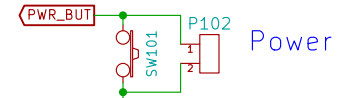
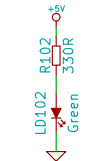
Audio STEP_W
Audio STEP_V



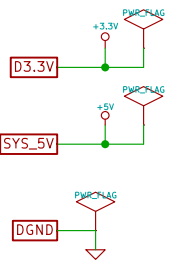
STATUS LED



BB ON LED



BeagleBone Logic supply is always 3.3V



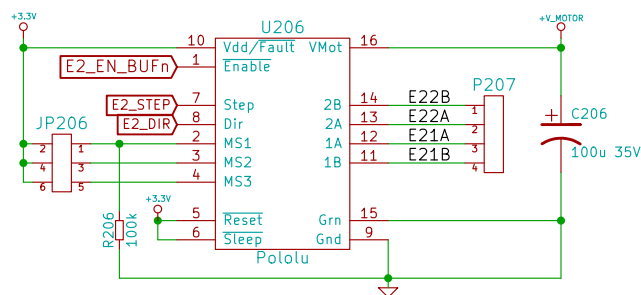
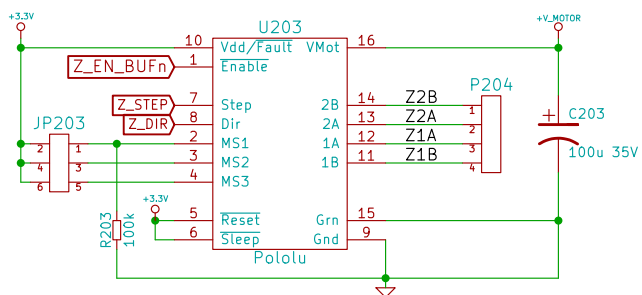
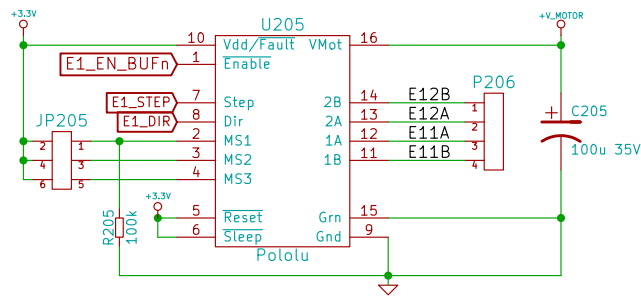
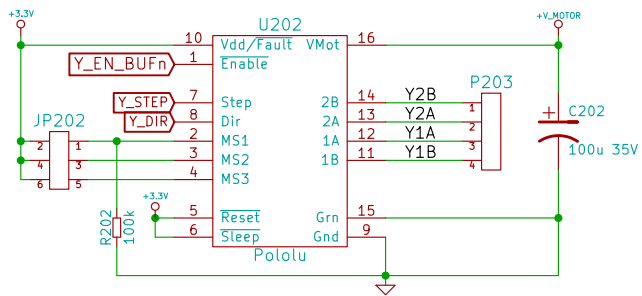
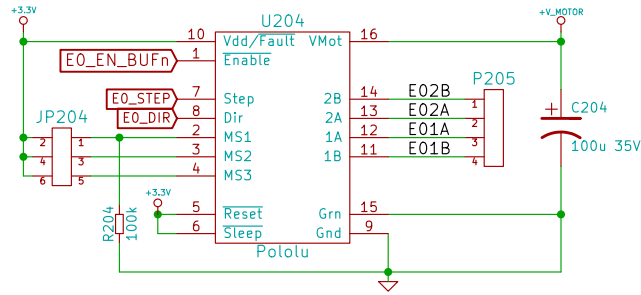
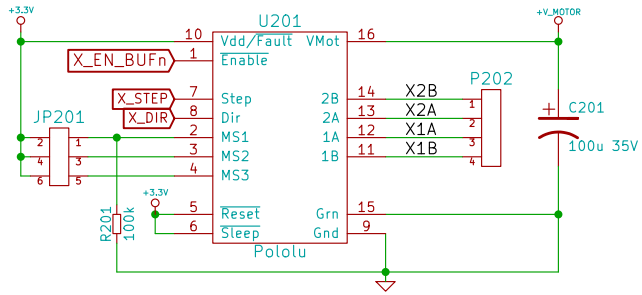
D3.3V: Low-current supply from 500 mA LDO on BeagleBone

SYS_5V: Low-current supply provided by BeagleBone PMIC Active when BeagleBone is running



CRAMPS by Charles Steinkuehler and Murray Lindeblom
Copyright 2014 GPL v3
Derived from RAMPS-FD by Bob Cousins
Derived from RAMPS 1.4 repp.org/wiki/RAMPS1.4

File: CRAMPS.sch	
Sheet: /	
Title: CRAMPS (Cape-RAMPS for BeagleBone)	
Size: A	Date: 14 may 2014
KiCad E.D.A.	Rev: v2.1
	Id: 1/5



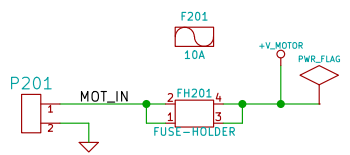
Shunts to set micro-stepping

- S201 SHUNT
- S202 SHUNT
- S203 SHUNT
- S204 SHUNT
- S205 SHUNT
- S206 SHUNT
- S207 SHUNT
- S208 SHUNT
- S209 SHUNT
- S210 SHUNT
- S211 SHUNT
- S212 SHUNT
- S213 SHUNT
- S214 SHUNT
- S215 SHUNT
- S216 SHUNT
- S217 SHUNT
- S218 SHUNT
- S219 SHUNT
- S220 SHUNT

24-pin Single-Row sockets for Pololu

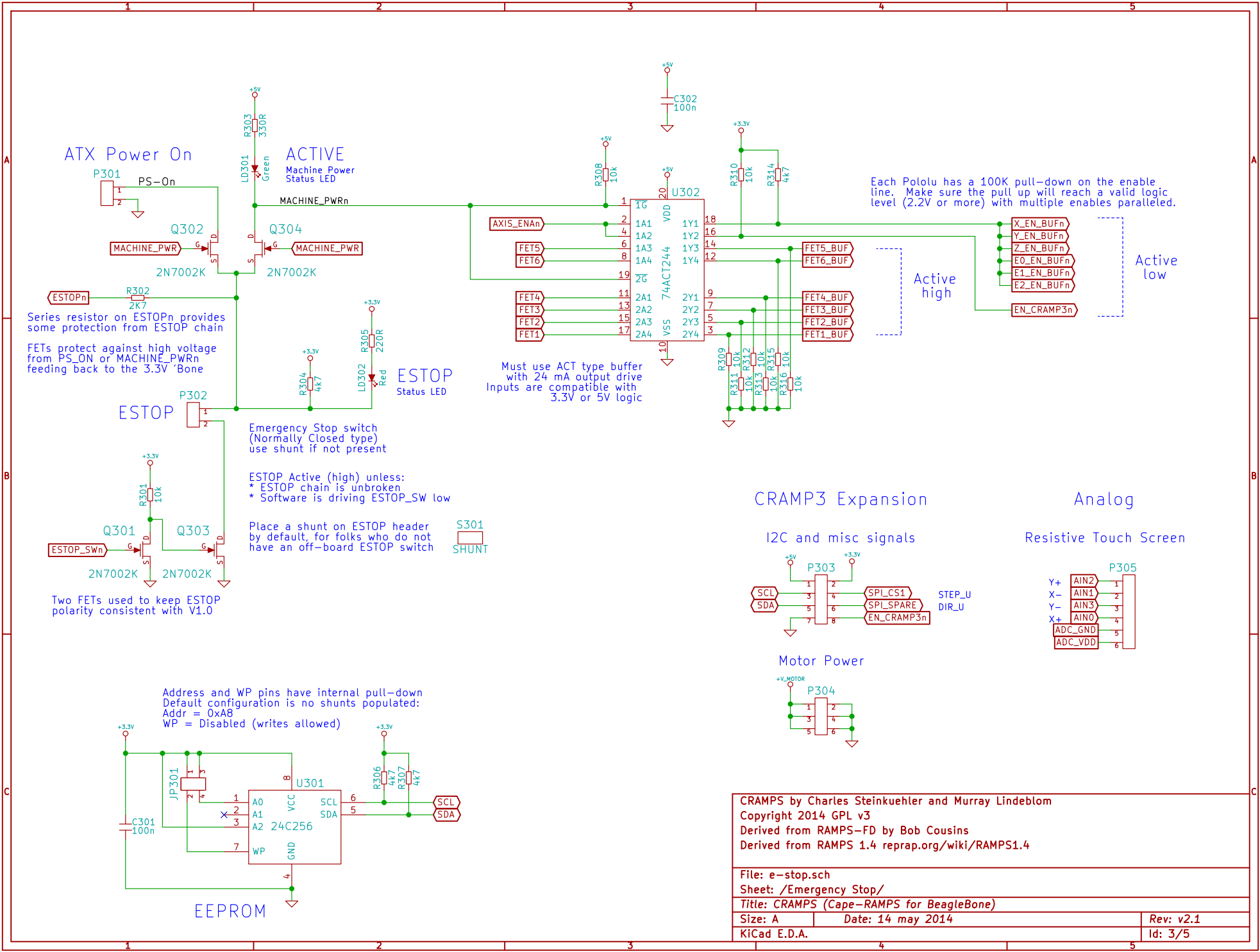
- P208 POLOLU_SOCKET
- P210 POLOLU_SOCKET
- P209 POLOLU_SOCKET
- P211 POLOLU_SOCKET

Motor Power
12-24V, 10A



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File: steppers.sch		Rev: v2.1	
Sheet: /Stepper Drivers/		Id: 2/5	
Title: CRAMPS (Cape-RAMPS for BeagleBone)			
Size: A	Date: 14 may 2014		
KiCad E.D.A.			



ATX Power On

ACTIVE
Machine Power
Status LED

Series resistor on ESTOPn provides some protection from ESTOP chain

FETs protect against high voltage from PS_ON or MACH_PWRn feeding back to the 3.3V 'Bone

ESTOP

Emergency Stop switch (Normally Closed type) use shunt if not present

ESTOP Active (high) unless:
* ESTOP chain is unbroken
* Software is driving ESTOP_SW low

Place a shunt on ESTOP header by default, for folks who do not have an off-board ESTOP switch



Two FETs used to keep ESTOP polarity consistent with V1.0

Address and WP pins have internal pull-down
Default configuration is no shunts populated:
Addr = 0xA8
WP = Disabled (writes allowed)

EEPROM

Must use ACT type buffer with 24 mA output drive
Inputs are compatible with 3.3V or 5V logic

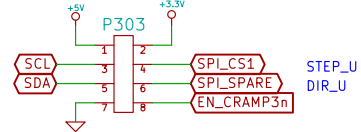
Each Pololu has a 100K pull-down on the enable line. Make sure the pull up will reach a valid logic level (2.2V or more) with multiple enables paralleled.

Active high

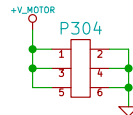
Active low

CRAMP3 Expansion

I2C and misc signals

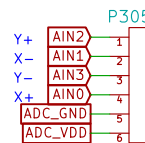


Motor Power



Analog

Resistive Touch Screen

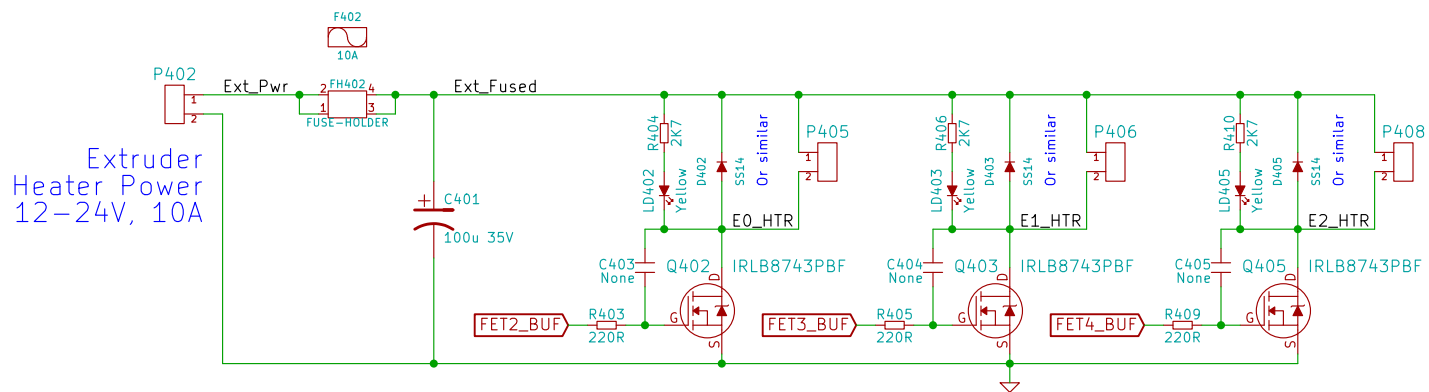
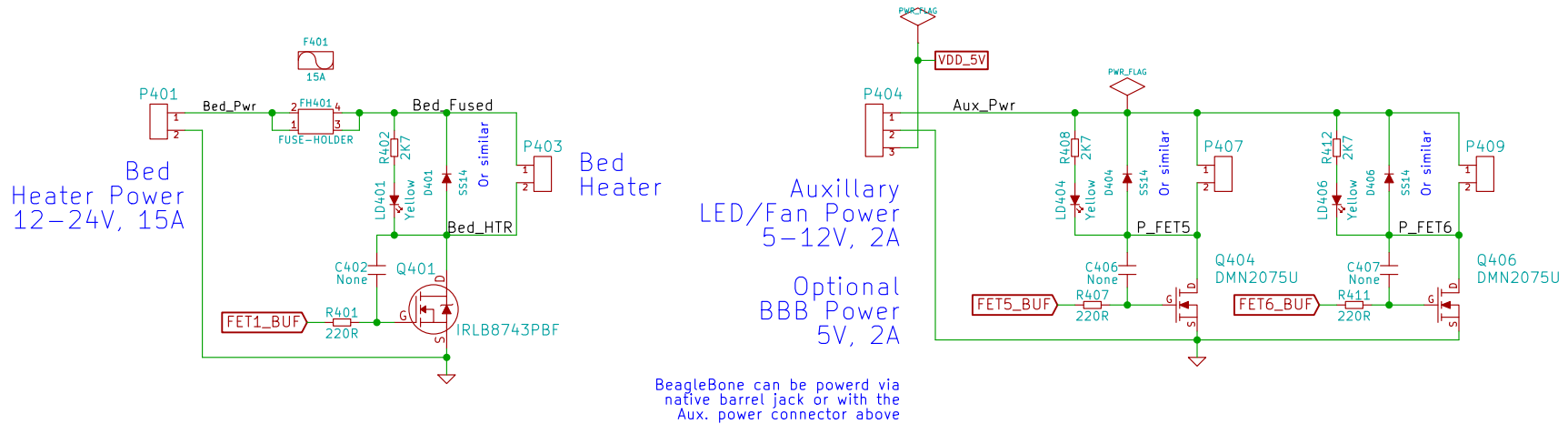


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File: e-stop.sch		Rev: v2.1	
Sheet: /Emergency Stop/		Date: 14 may 2014	
Title: CRAMPS (Cape-RAMPS for BeagleBone)			
Size: A	Date: 14 may 2014	Id: 3/5	
KiCad E.D.A.			

MOSFET Outputs

Non-inverting drivers



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File: con_outputs.sch		Rev: v2.1	
Sheet: /Mosfet Outputs/		Date: 14 may 2014	
Title: CRAMPS (Cape-RAMPS for BeagleBone)		Id: 4/5	
Size: A	Date: 14 may 2014	KiCad E.D.A.	

