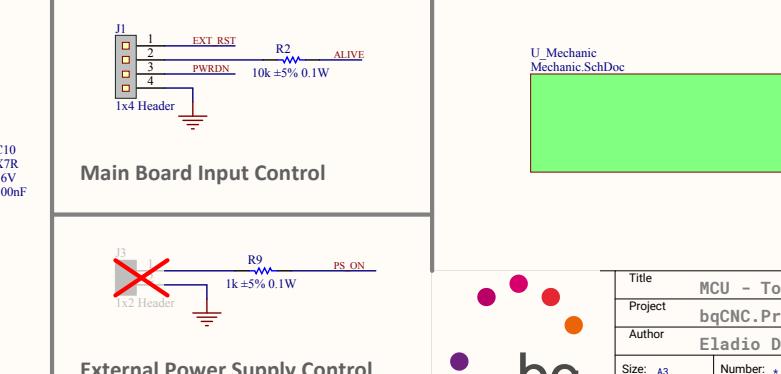
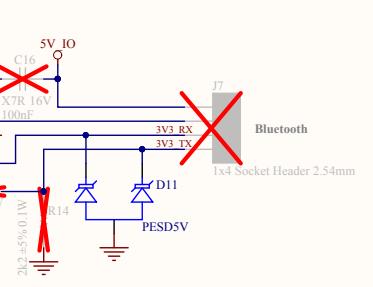
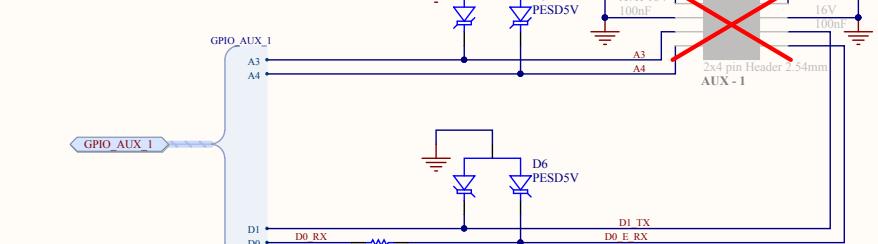


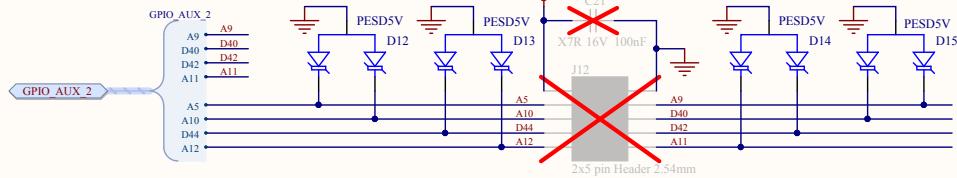
ICSP



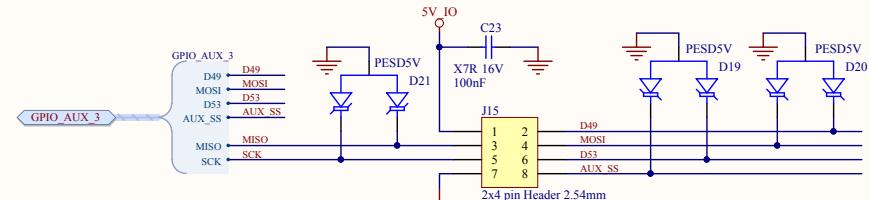
Title	MCU - Top Sheet
Project	bqCNC.PrtPCB
Author	Eladio Delgado Mingorance
Size:	A3
Number:	*
Revision:	1.4
Date:	26/08/2015
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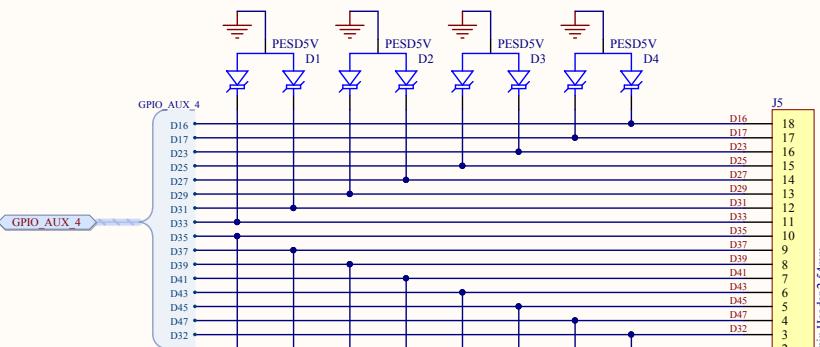
RAMPS CONNECTOR AUX-1 & BT Port



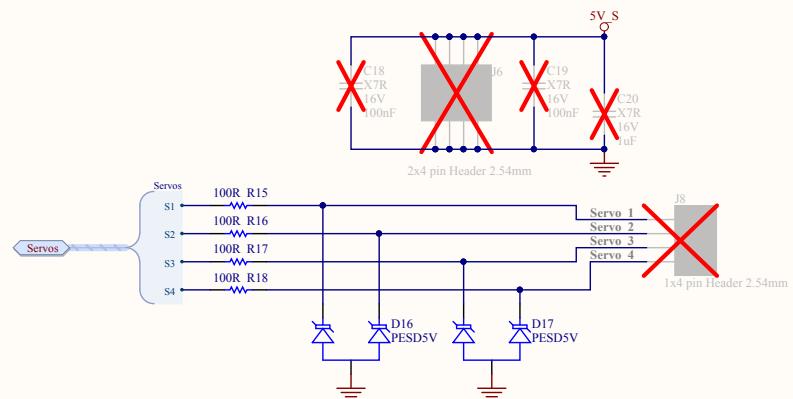
RAMPS CONNECTOR AUX-2



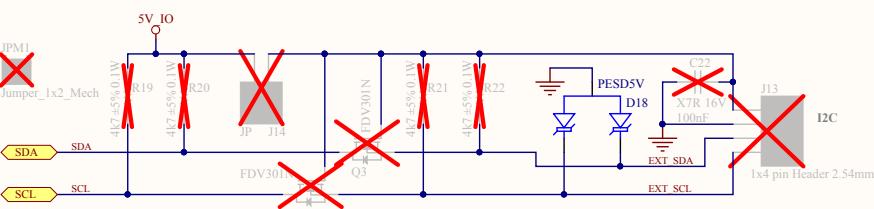
RAMPS CONNECTOR AUX-3



RAMPS CONNECTOR AUX-4



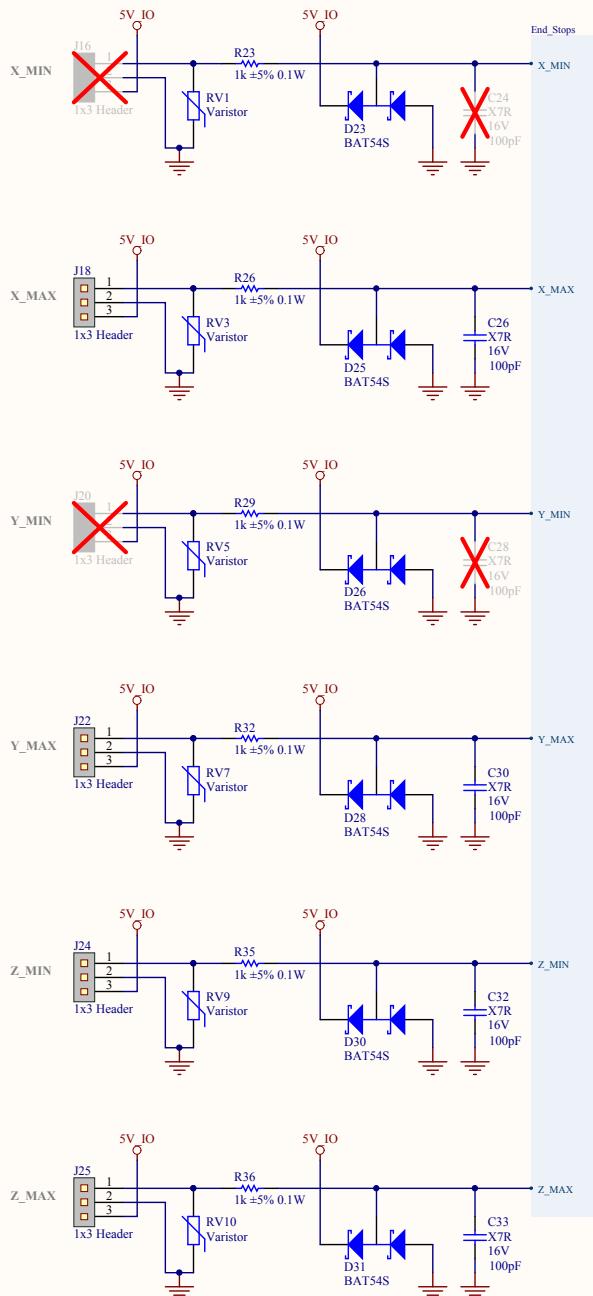
Servos



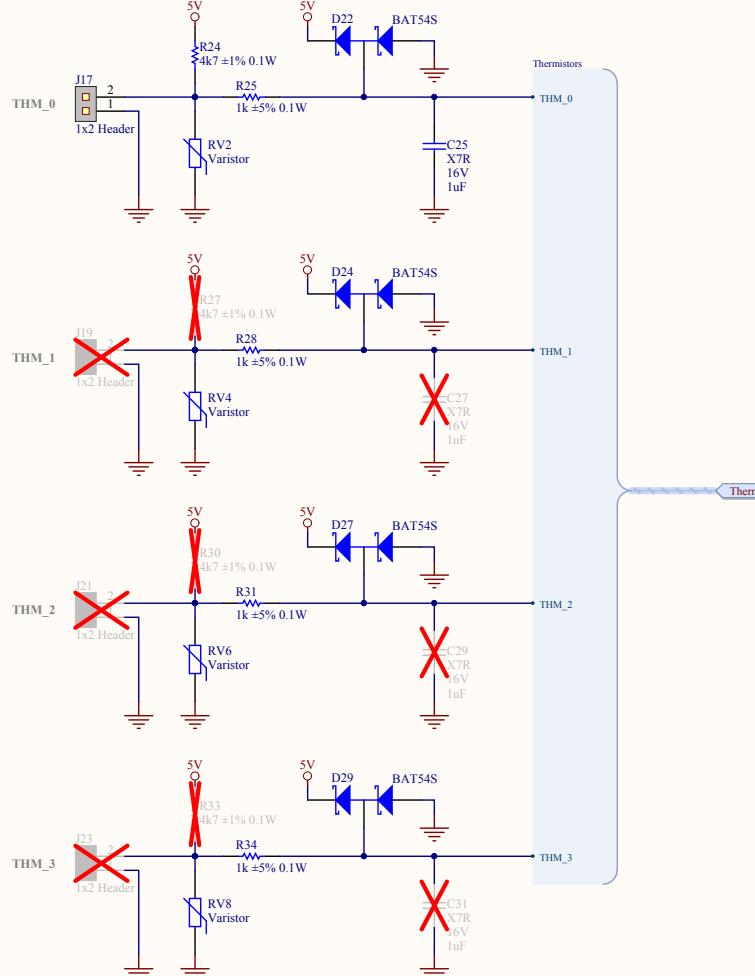
I2C



Title	GPIO	
Project	bqCNC.PrjPCB	
Author	Eladio Delgado Mingorance	
Size: A3	Number: *	Revision: 1.4
Date: 26/08/2015	Time: 10:53:06	Sheet 2 of 10



End Stops Inputs

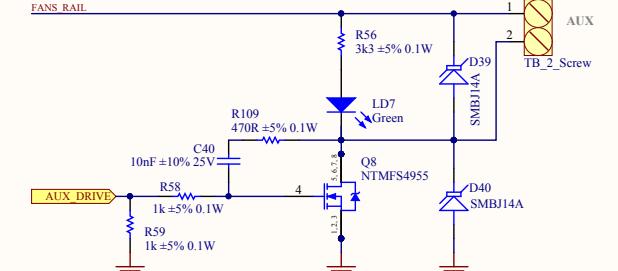
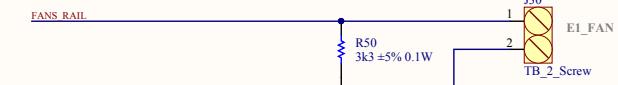
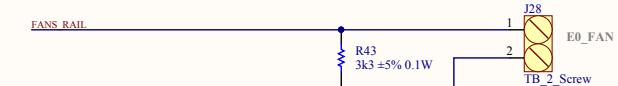
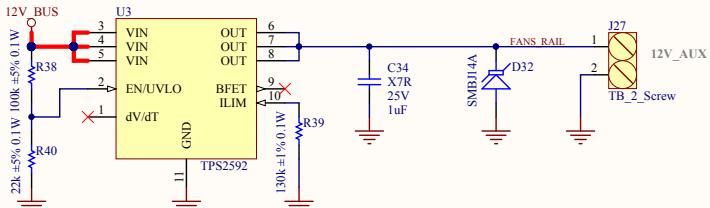


Thermistors Signal Conditioners

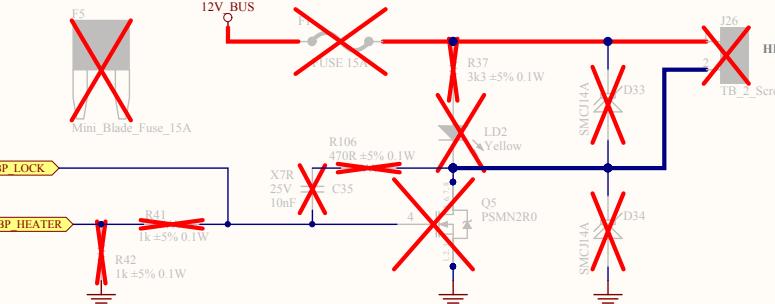
5V
5V
5V_IO
5V_IO

Title Sensors Signal Conditioners		
Project bqCNC.PrjPCB		
Author Eladio Delgado Mingorance		
Size: A3	Number: *	Revision: 1.4
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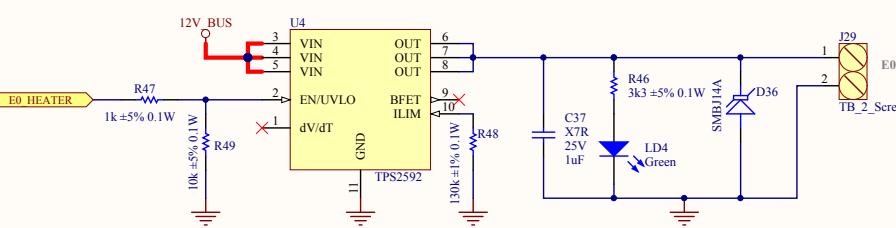




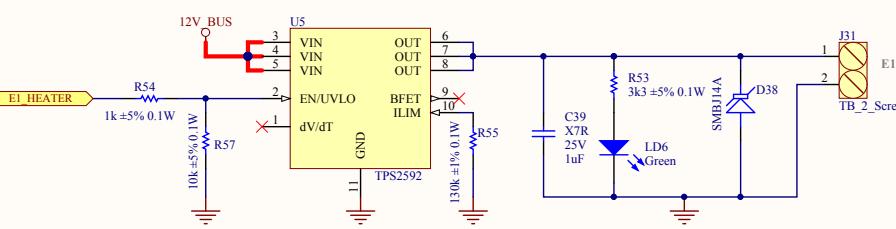
Fans & Aux Drivers



Heated Build Plate Driver



Extruder 0 Heater Driver



Extruder 1 Heater Driver

bq		
Title	Power Drive	
Project	bqCNC.PrtPCB	
Author	Eladio Delgado Mingorance	
Size:	A3	Number: *
Date:	26/08/2015	Revision: 1.4
Time:	10:53:07	Sheet 4 of 18

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B

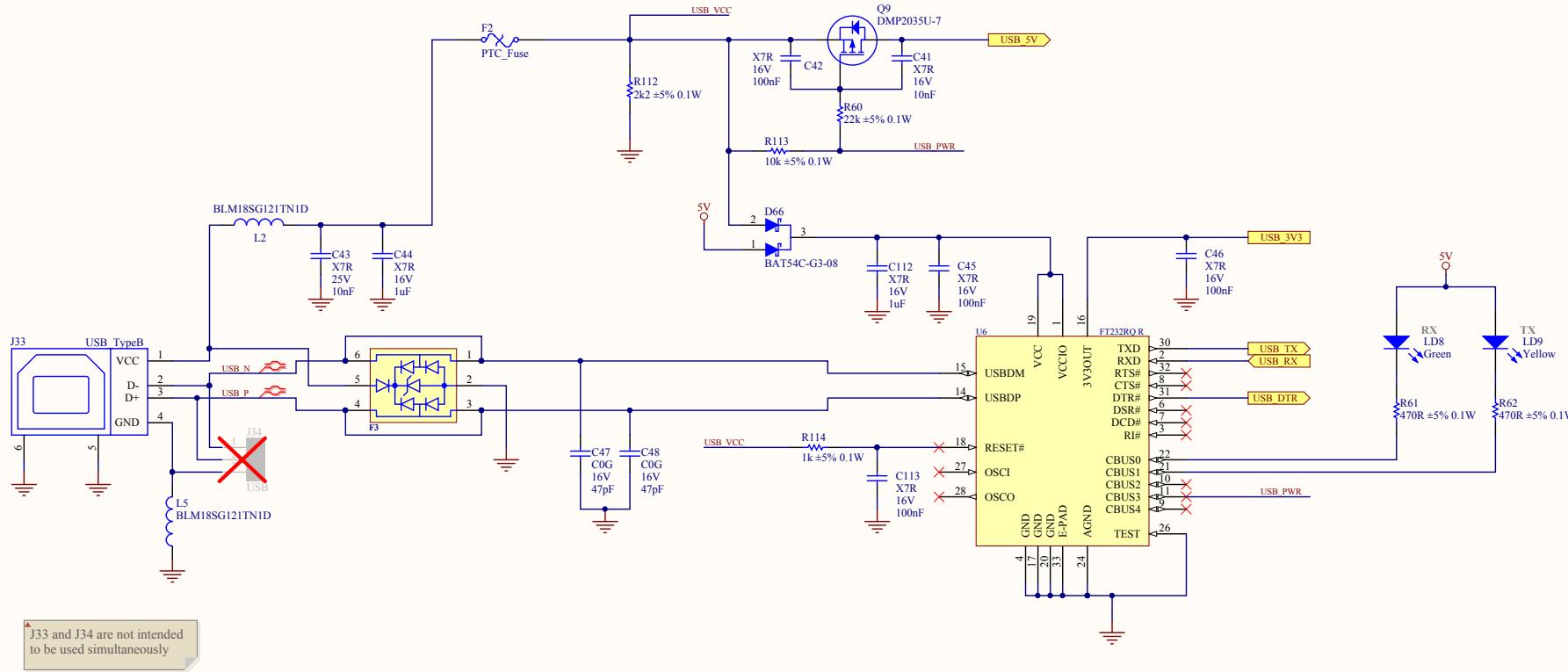
10

C

10

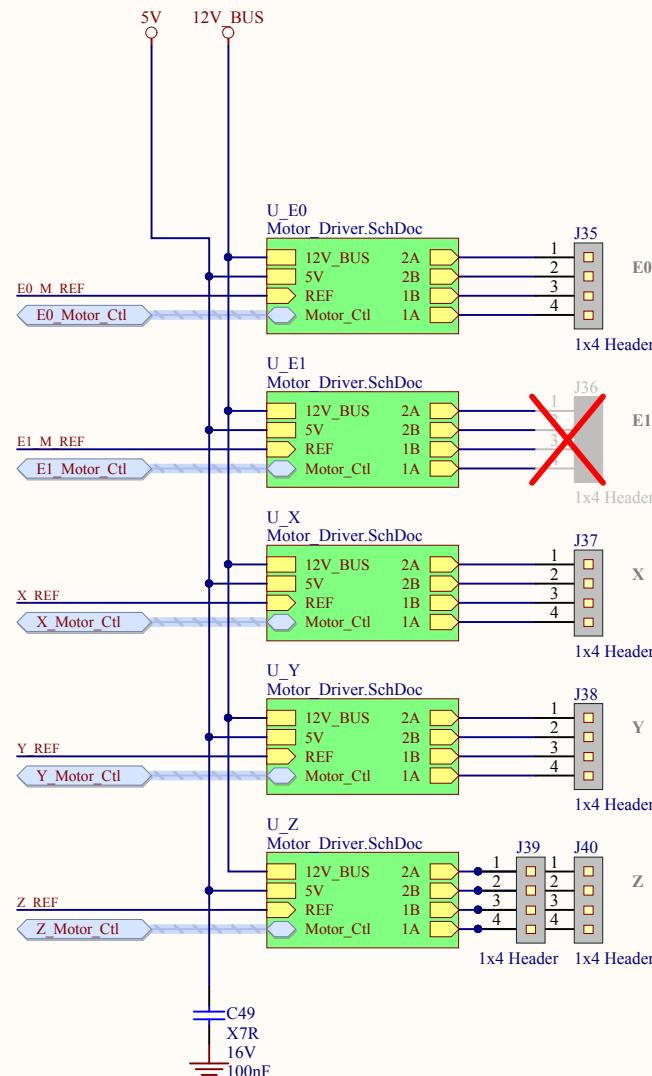
D

10



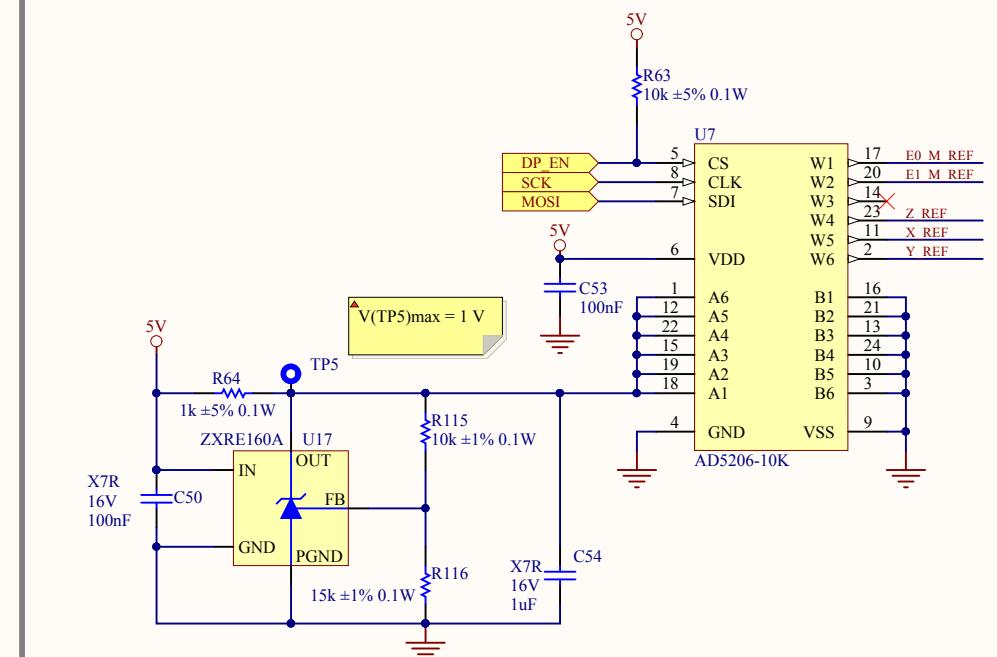
1 2 3 4

A A



Motor Drivers

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Motor Current Control

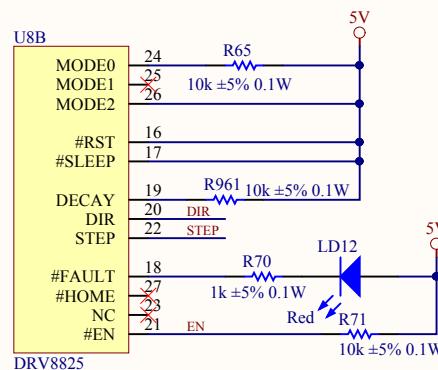
5V O 5V
12V_BUS O 12V_BUS



Title	Stepper Motors Control		
Project	bqCNC.PjrPCB		
Author	Eladio Delgado Mingorance		
Size:	A4	Number:	*
Date:	26/08/2015	Time:	10:53:07
Revision:	1.4		
Sheet	6	of	10

1 2 3 4

A



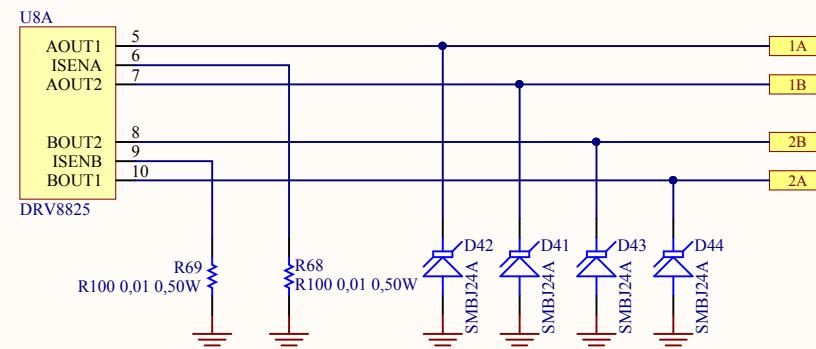
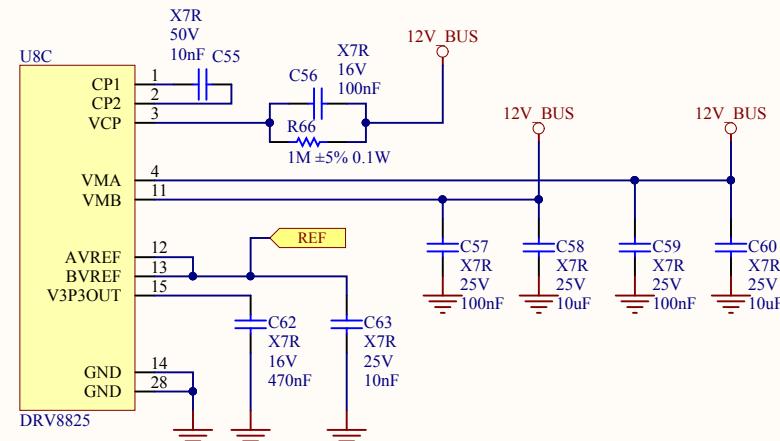
E0, E1: Fast Decay --> R961, R962 = 10k
X,Y,Z: Mixed Decay --> DNP
R963, R964, R965

Current Regulation:
Vrefx = 0V -> 1V
Ichip = 0A -> 2A

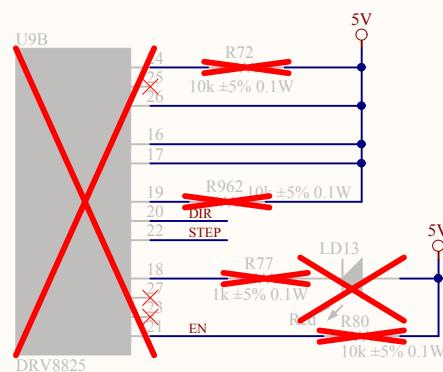
R65 = 10k -> 32 uStep (default)
R65 = NL -> 16 uSteps
Decay Mode:
R96 = 10k -> Fast decay
R96 = NL -> Mixed decay

Motor Ctl

EN EN
DIR DIR
STEP STEP



A



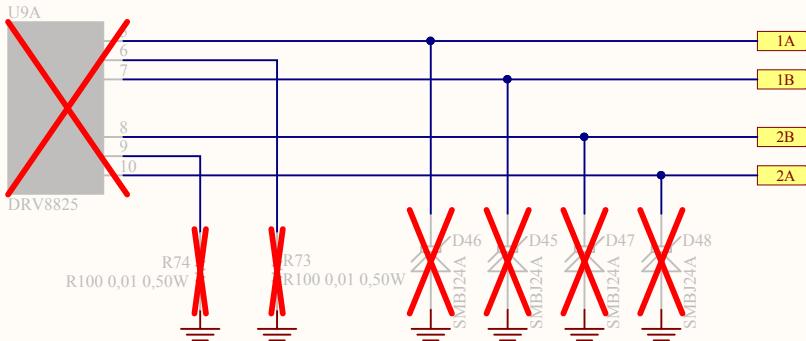
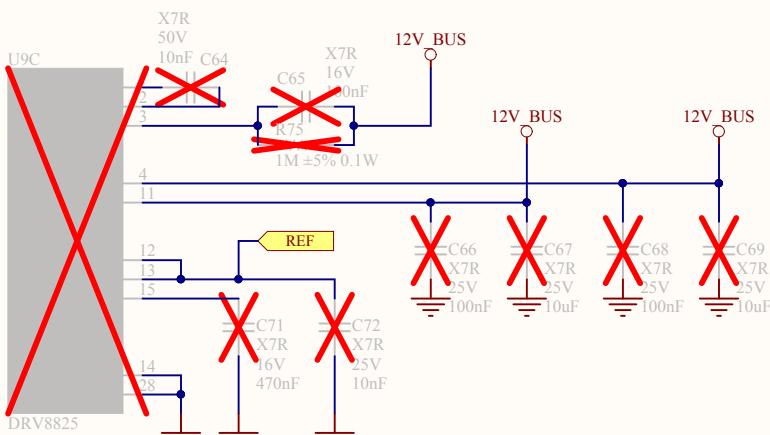
E0, E1: Fast Decay --> R961, R962 = 10k
 X,Y,Z: Mixed Decay --> DNP
 R963, R964, R965

Current Regulation:
 $V_{refx} = 0V \rightarrow 1V$
 $I_{chop} = 0A \rightarrow 2A$

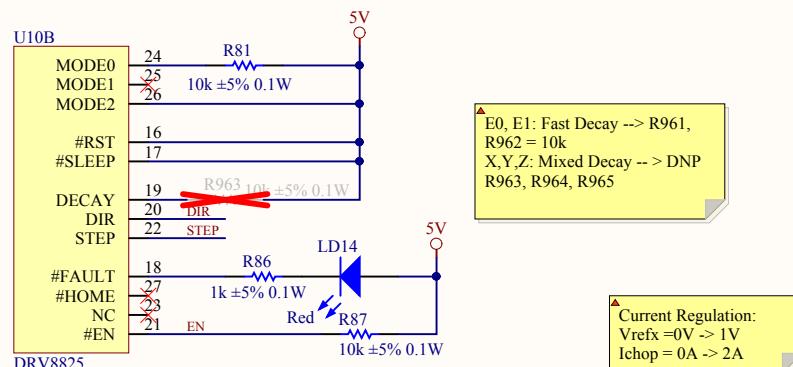
R65 = 10k -> 32 uStep (default)
 R65 = NL -> 16 uSteps
 Decay Mode:
 R96 = 10k -> Fast decay
 R96 = NL -> Mixed decay

Motor Ctl

- EN
- DIR
- STEP



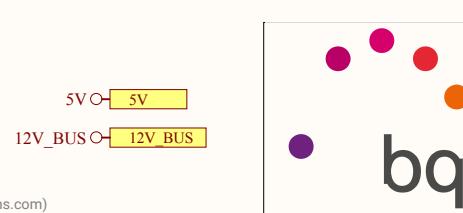
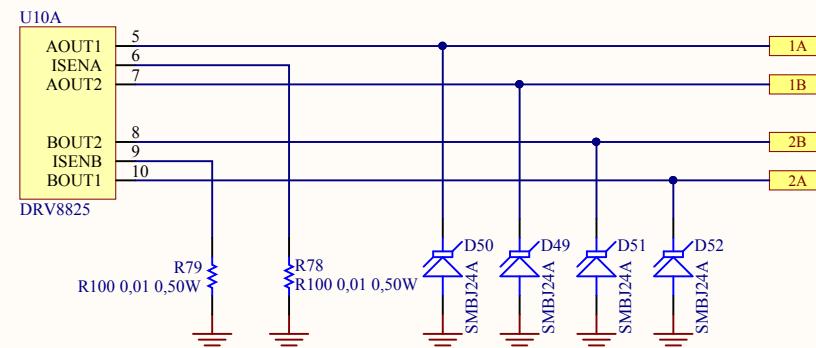
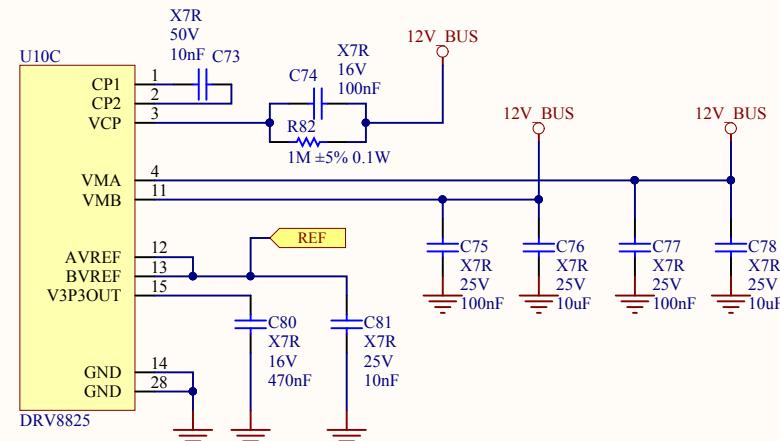
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R65 = 10k -> 32 uStep (default)
R65 = NL -> 16 uSteps
Decay Mode:
R96 = 10k -> Fast decay
R96 = NL -> Mixed decay

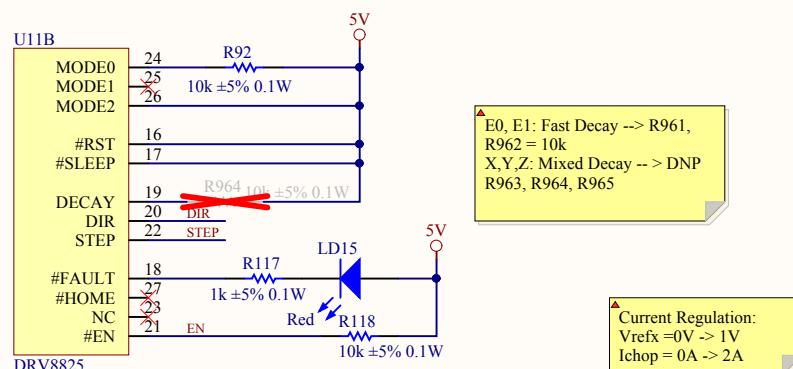
Motor Ctl

EN → EN
DIR → DIR
STEP → STEP



Title		
Project	bqCNC.PjrPCB	
Author		
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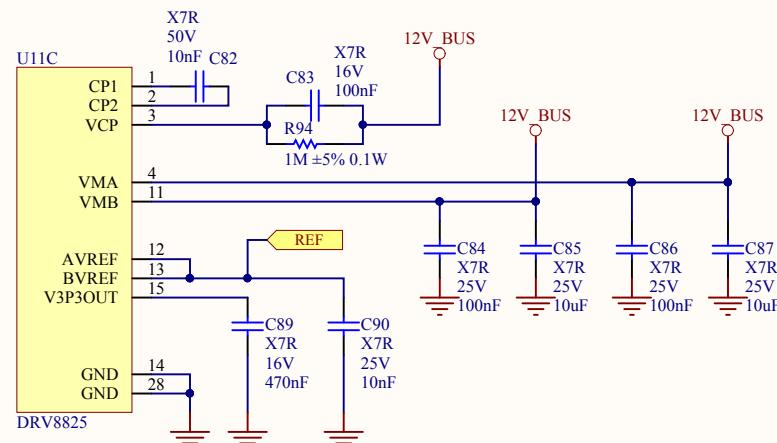
B

R65 = 10k -> 32 uStep (default)
R65 = NL -> 16 uSteps
Decay Mode:
R96 = 10k -> Fast decay
R96 = NL -> Mixed decay

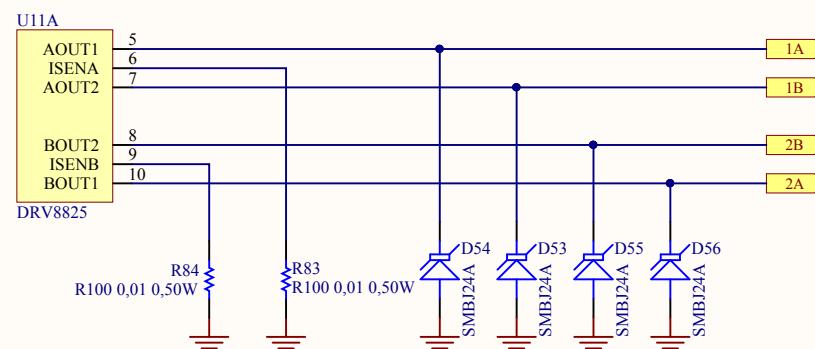
Motor Ctl

EN EN
DIR DIR
STEP STEP

C



D

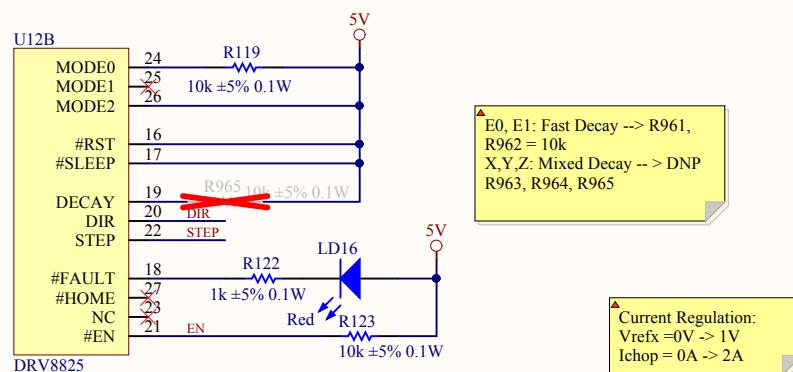


5V O 5V
12V_BUS O 12V BUS



Title		
Project	bqCNC.PjrPCB	
Author		
Size:	A4	Number: *
Date:	26/08/2015	Revision: 1.4
Time:	10:53:08	Sheet 7 of 10

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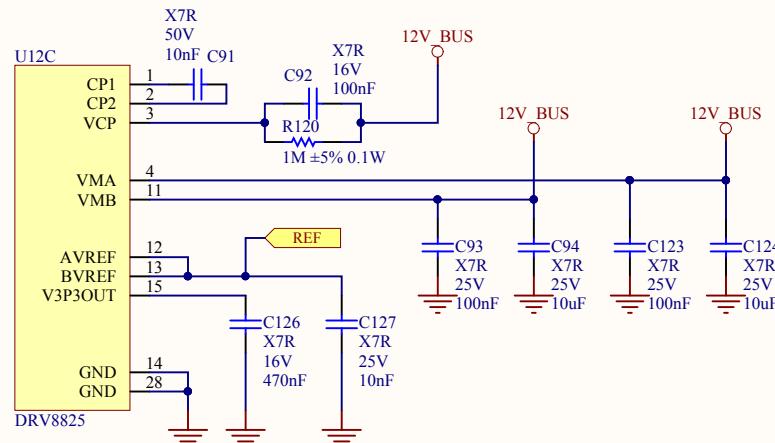
B

R65 = 10k -> 32 uStep (default)
 R65 = NL -> 16 uSteps
 Decay Mode:
 R96 = 10k -> Fast decay
 R96 = NL -> Mixed decay

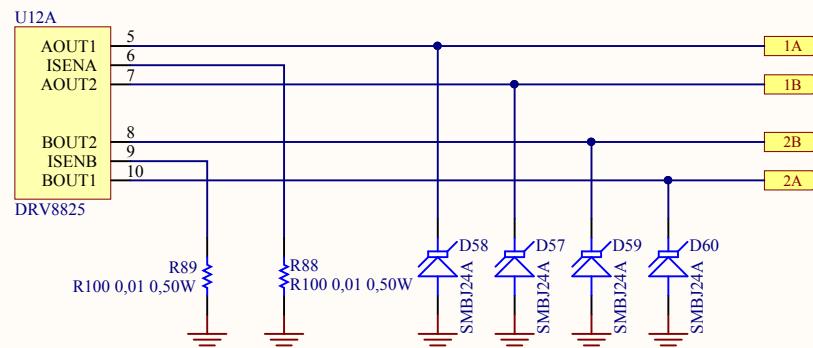
Motor Ctl

- EN → EN
- DIR → DIR
- STEP → STEP

C



D



5V O 5V
12V_BUS O 12V BUS



Title Motor Driver		
Project	bqCNC.PrdPCB	
Author	Eladio Delgado Mingorance	
Size:	A4	Number: *
Date:	26/08/2015	Revision: 1.4
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1

2

3

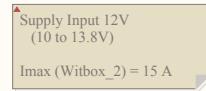
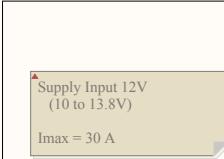
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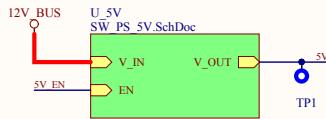
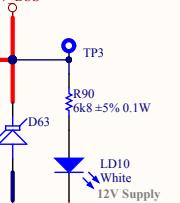
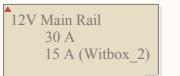
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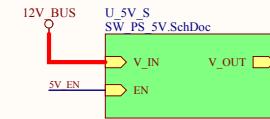
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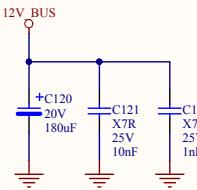
Power Supply Input Protection



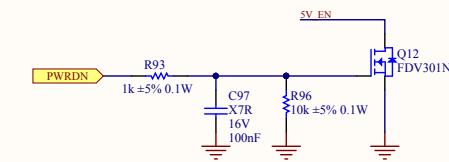
5V Logic Power Supply



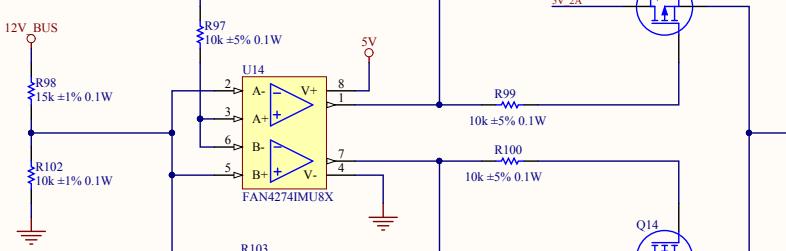
5V Servos Power Supply



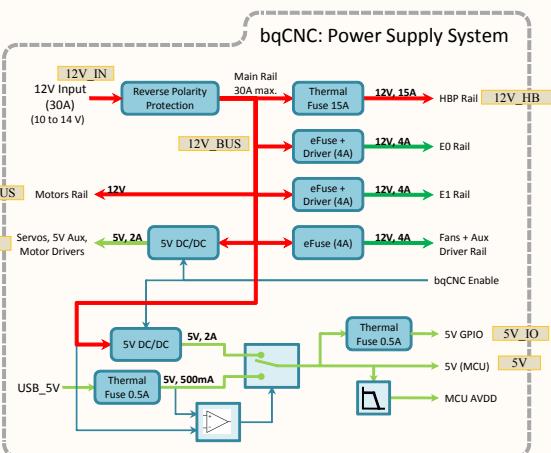
Stepper Motors Rail Damping and HF Filtering



5V Power Supplies Disable



5V Logic Source Select



Title	Power Supply	
Project	bqCNC.PPrjPCB	
Author	Eladio Delgado Mingorance	
Size:	A3	Number: *
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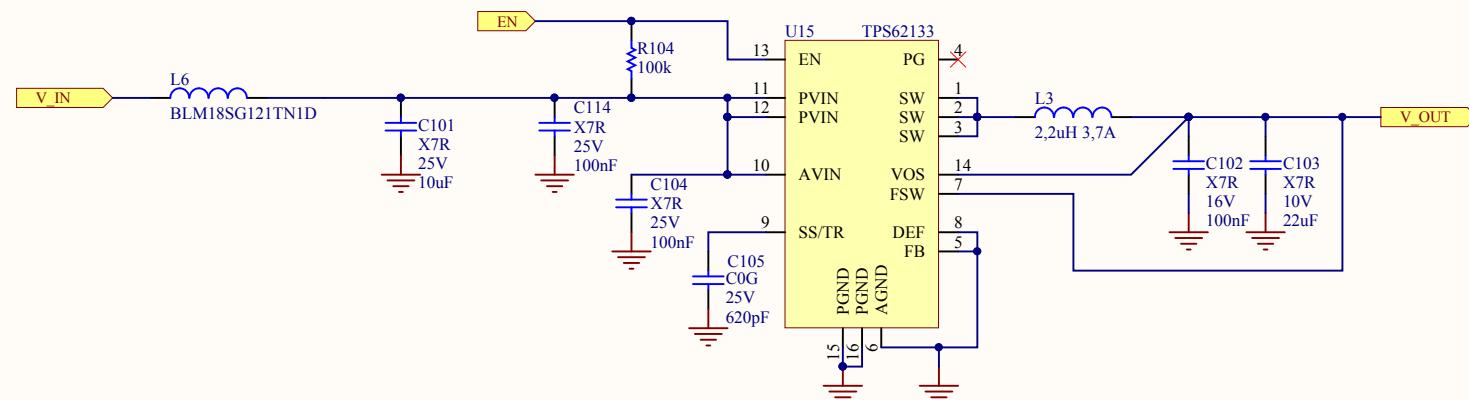
B

C

C

D

D



Title 5V Power Supply		
Project bqCNC.PnjPCB		
Author Eladio Delgado Mingorance		
Size: A4 Number: * Revision: 1.4		
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A

A

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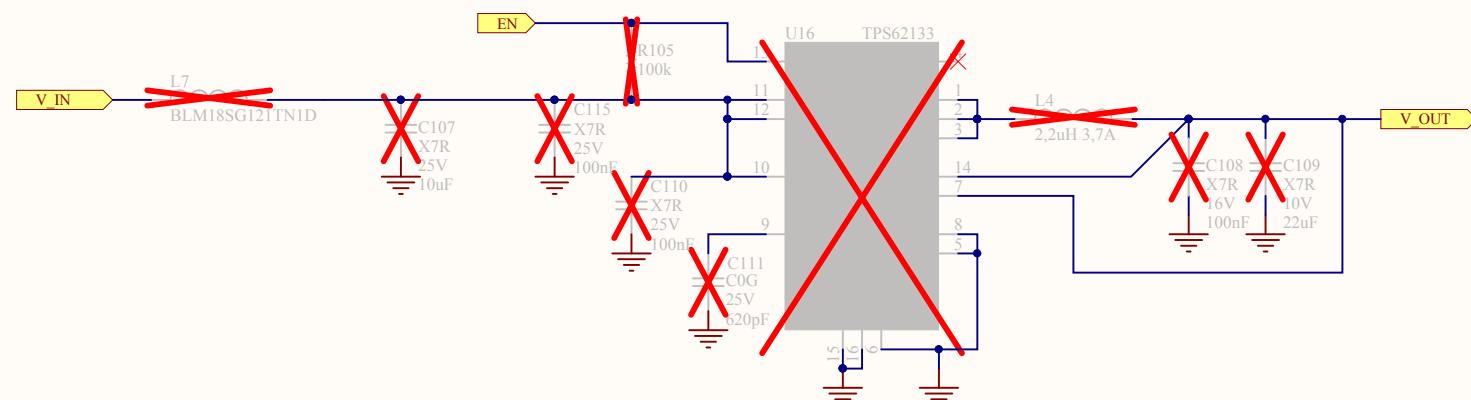
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C

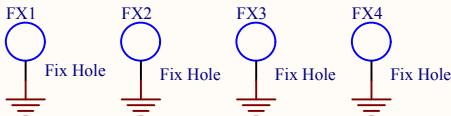
C

D

D



Title 5V Power Supply		
Project bqCNC.PkjPCB		
Author Eladio Delgado Mingorance		
Size: A4 Number: * Revision: 1.4		
Date: 26/08/2015	Time: 10:53:09	Sheet 9 of 10



Title Mechanic		
Project bqCNC.PnjPCB		
Author Eladio Delgado Mingorance		
Size: A4		
Number:	*	Revision: 1.4
Date: 26/08/2015	Time: 10:53:09	Sheet 10 of 10

