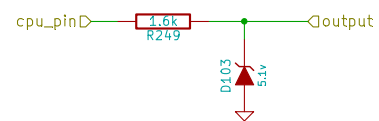
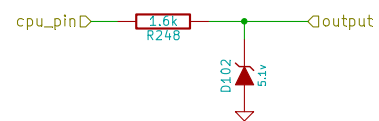


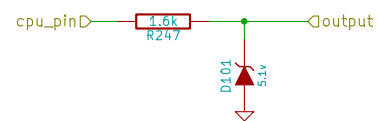
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PT7/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 2/56



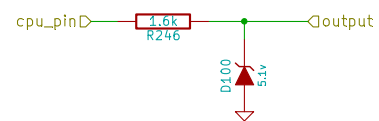
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PT6/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 3/56



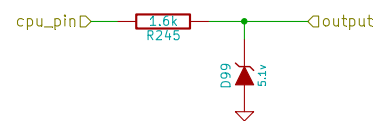
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PM3/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 4/56



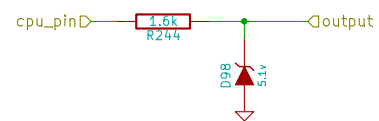
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PM2/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 5/56



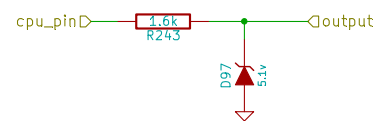
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PM1/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 6/56



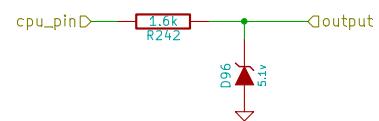
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PM0/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 7/56



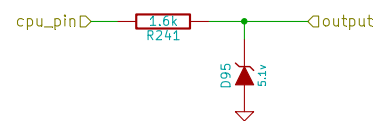
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PP6/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 8/56



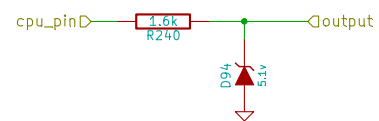
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PP7/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 9/56



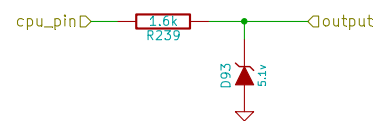
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PJ2/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 10/56



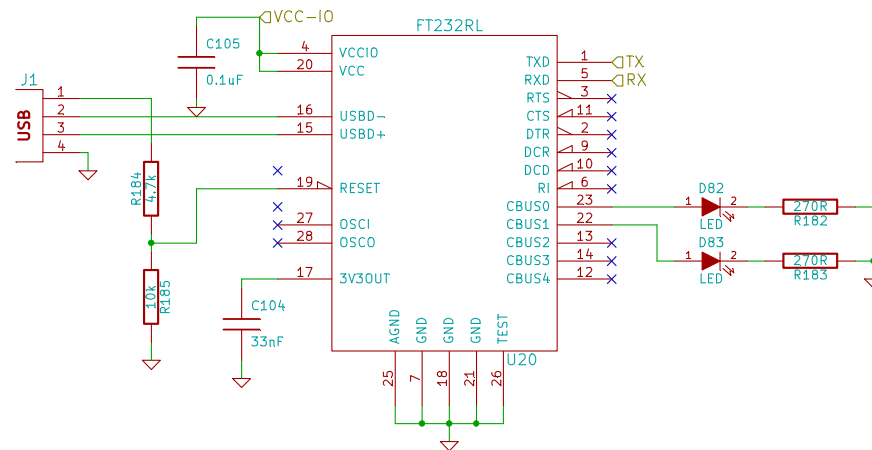
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PJ3/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 11/56



diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PJ1/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 12/56



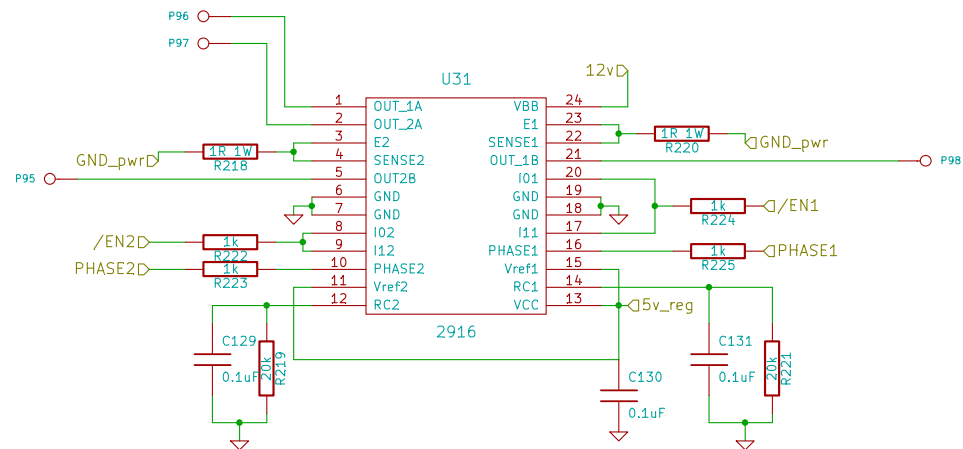
diyefi.org		
File: digi_protect.sch		
Sheet: /digi_protect_PJ0/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 13/56



Self powered mode

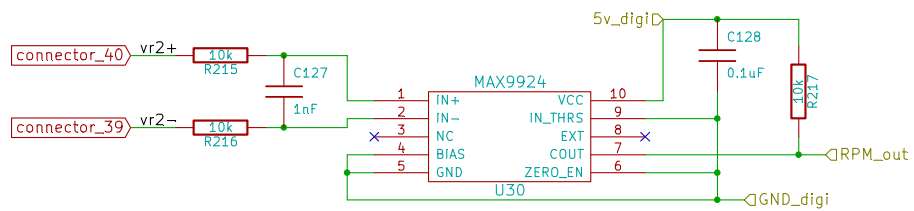
This device only support 85°C. To withstand 125°C it must be powered off.

diyefi.org		
File: ft232.sch		
Sheet: /CPU/ft232/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 15/56

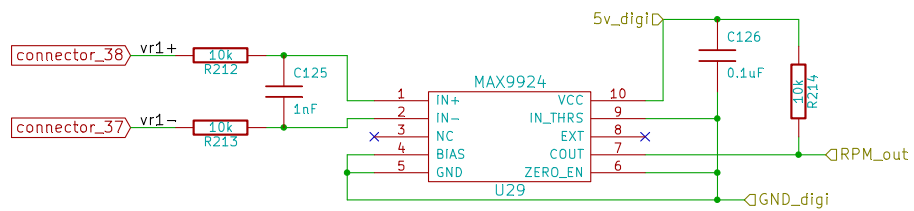


* RC = 2msec
 * I = Vreg/(10*Rsense) = 500mA

diyefi.org		
File: stepper_driver.sch		
Sheet: /stepper_driver/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 16/56

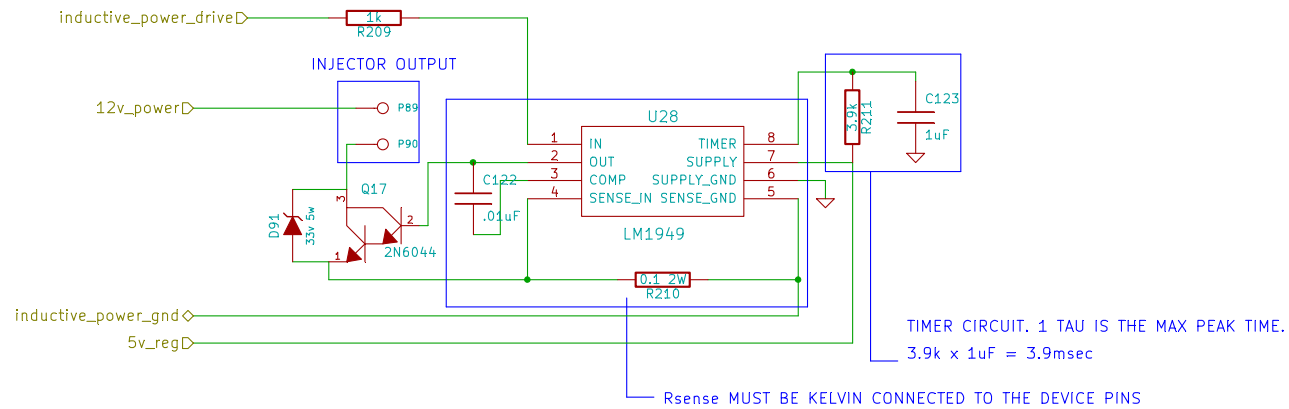


diyefi.org		
File: RPM_input_MAX9924_2.sch		
Sheet: /RPM_input_2/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 17/56



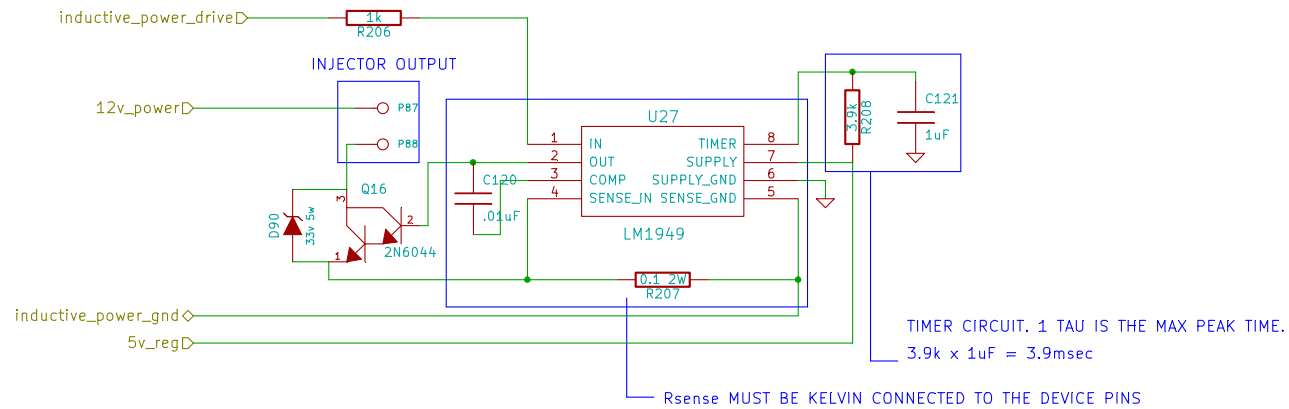
diyefi.org		
File: RPM_input_MAX9924_1.sch		
Sheet: /RPM_input_1/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 18/56

PEAK & HOLD INJECTOR DRIVER

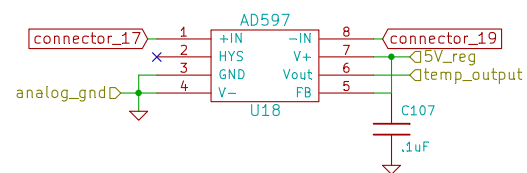


injector_drive.sch		
diyefi.org		
File: injector_drive.sch		
Sheet: /injector_drive_8/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 19/56

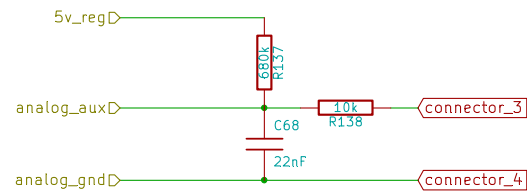
PEAK & HOLD INJECTOR DRIVER



injector_drive.sch		
diyefi.org		
File: injector_drive.sch		
Sheet: /injector_drive_7/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 20/56

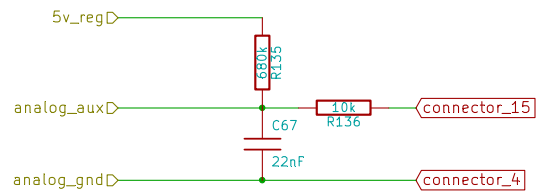


diyefi.org		
File: thermocuple_amplifier.sch		
Sheet: /thermocouple_amplifier/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 21/56



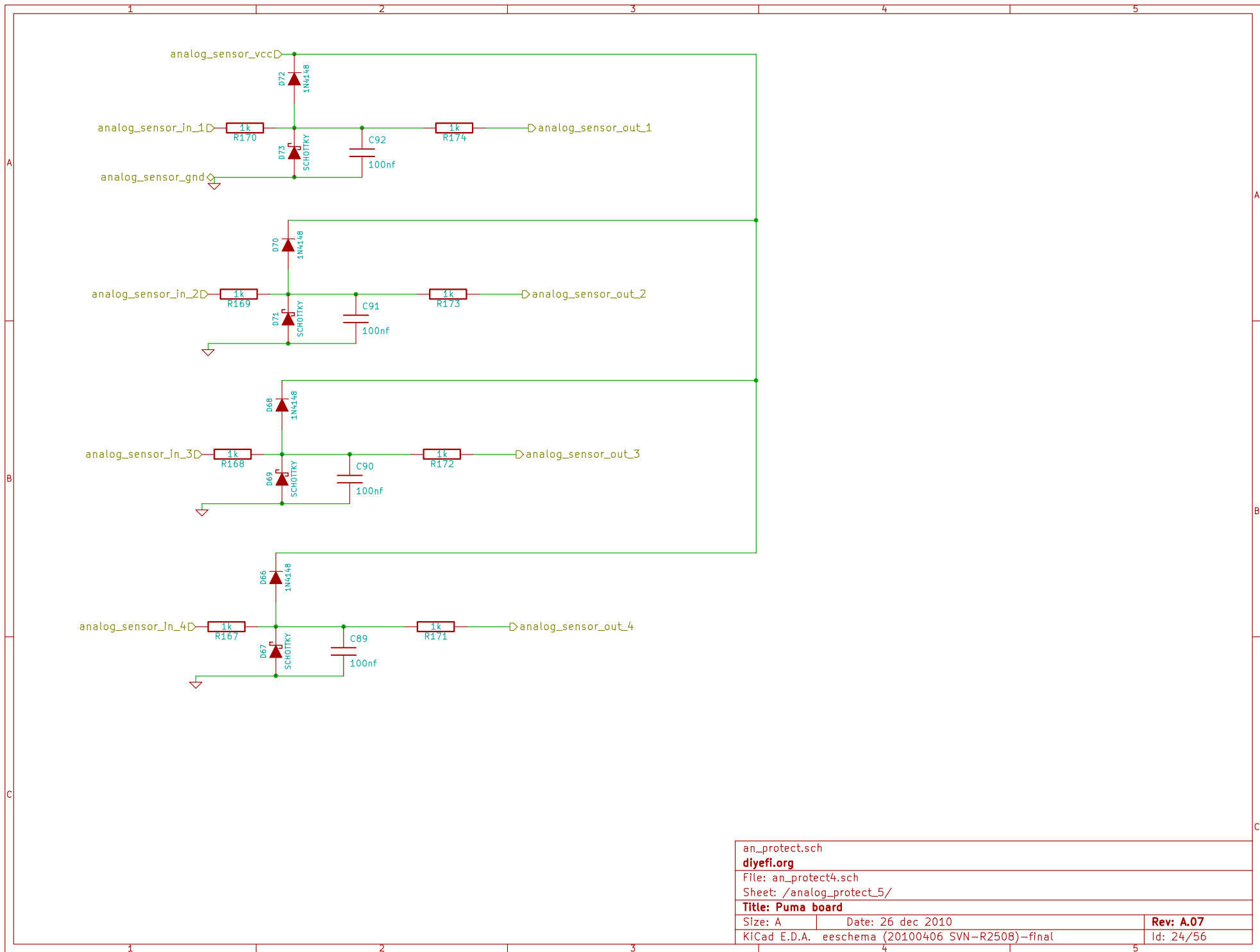
Filter settling time: 1ms ($4 \cdot RC = 0.88\text{ms}$)
 Pull-up resistor for diagnosis

diyefi.org		
File: analog_aux_input.sch		
Sheet: /analog_input_1/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 22/56

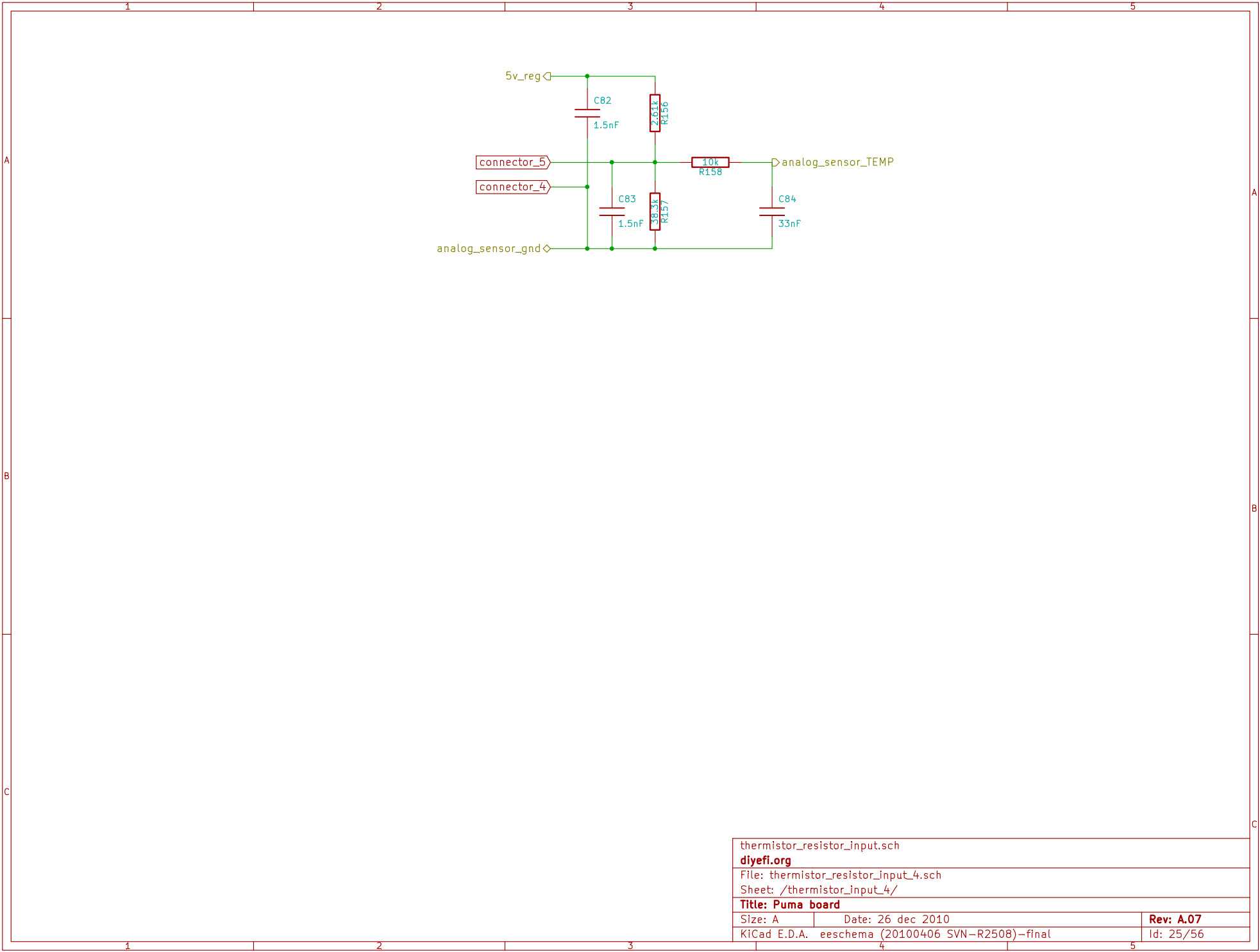


Filter settling time: 1ms ($4 \cdot RC = 0.88\text{ms}$)
 Pull-up resistor for diagnosis

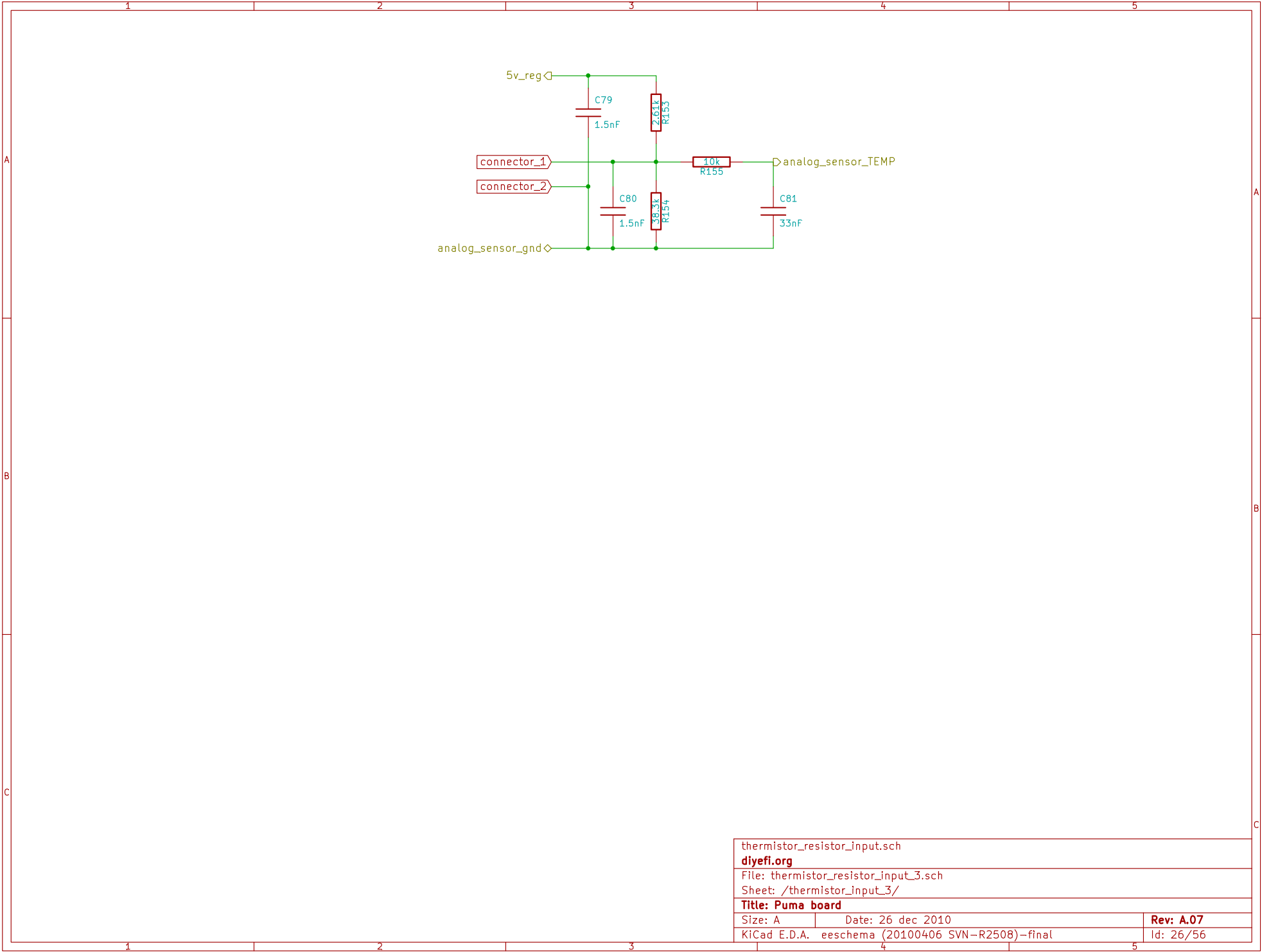
diyefi.org		
File: MAF_input.sch		
Sheet: /MAF_input/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev:
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 23/56



an_protect.sch		
diyefi.org		
File: an_protect4.sch		
Sheet: /analog_protect_5/		
Title: Puma board		
Size: A	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 24/56

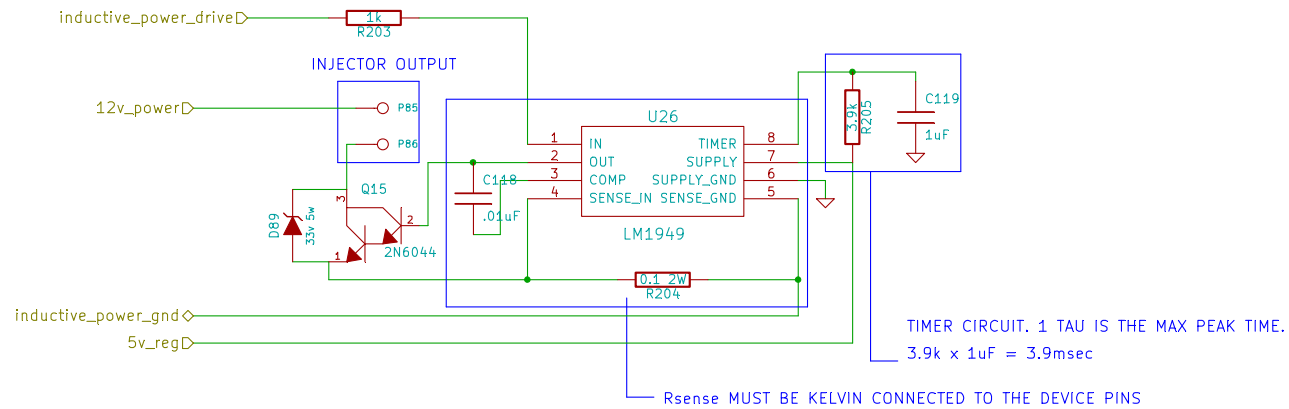


thermistor_resistor_input.sch		
diyefi.org		
File: thermistor_resistor_input_4.sch		
Sheet: /thermistor_input_4/		
Title: Puma board		
Size: A	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 25/56



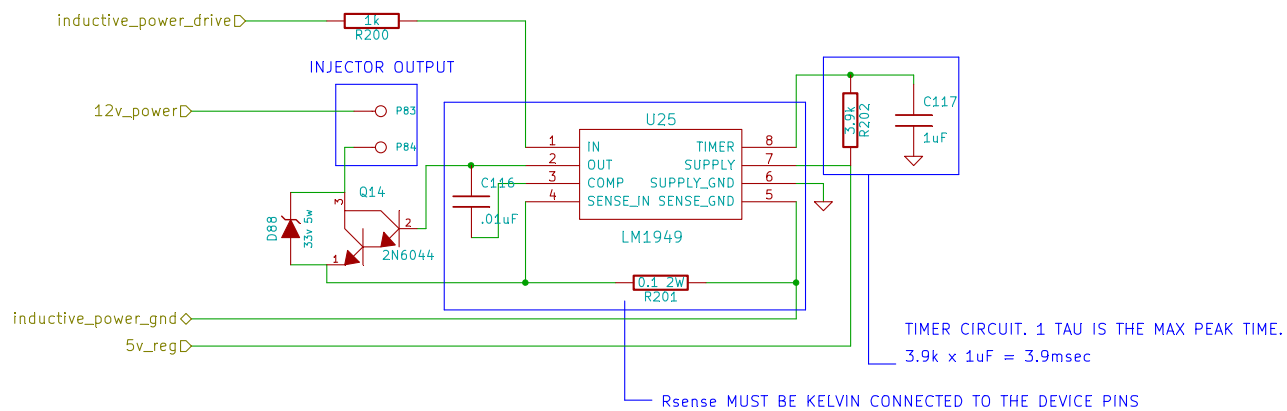
thermistor_resistor_input.sch		
diyefi.org		
File: thermistor_resistor_input_3.sch		
Sheet: /thermistor_input_3/		
Title: Puma board		
Size: A	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 26/56

PEAK & HOLD INJECTOR DRIVER



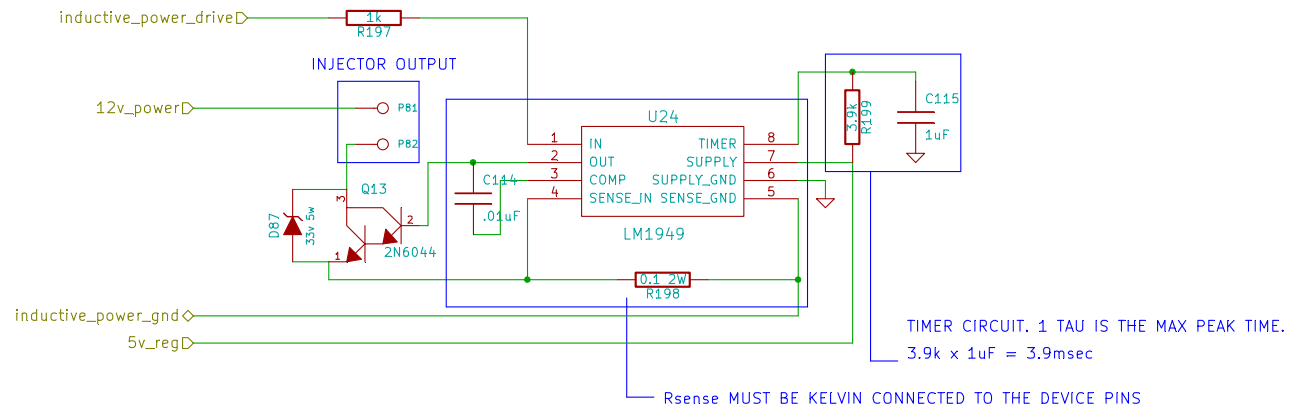
injector_drive.sch		
diyefi.org		
File: injector_drive.sch		
Sheet: /injector_drive_1/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 27/56

PEAK & HOLD INJECTOR DRIVER



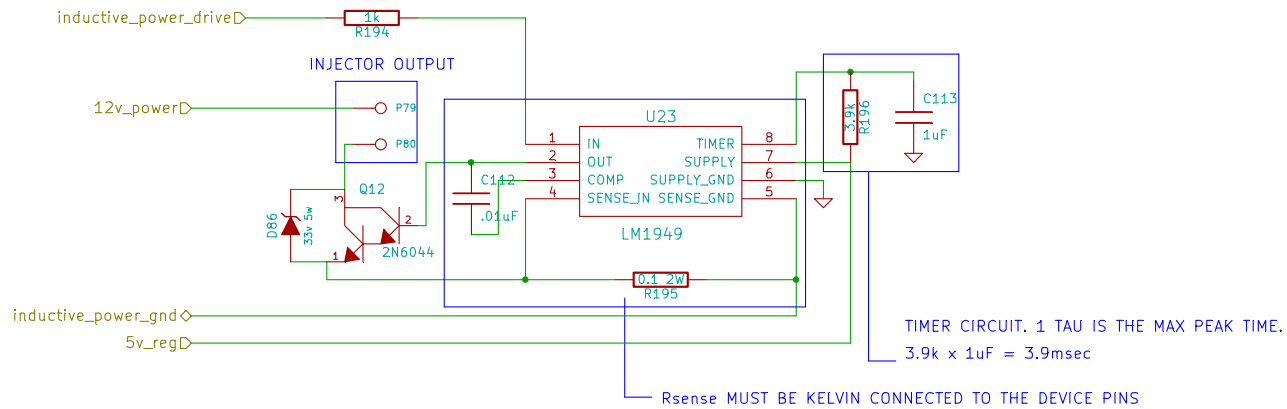
injector_drive.sch		
diyefi.org		
File: injector_drive.sch		
Sheet: /injector_drive_2/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 28/56

PEAK & HOLD INJECTOR DRIVER



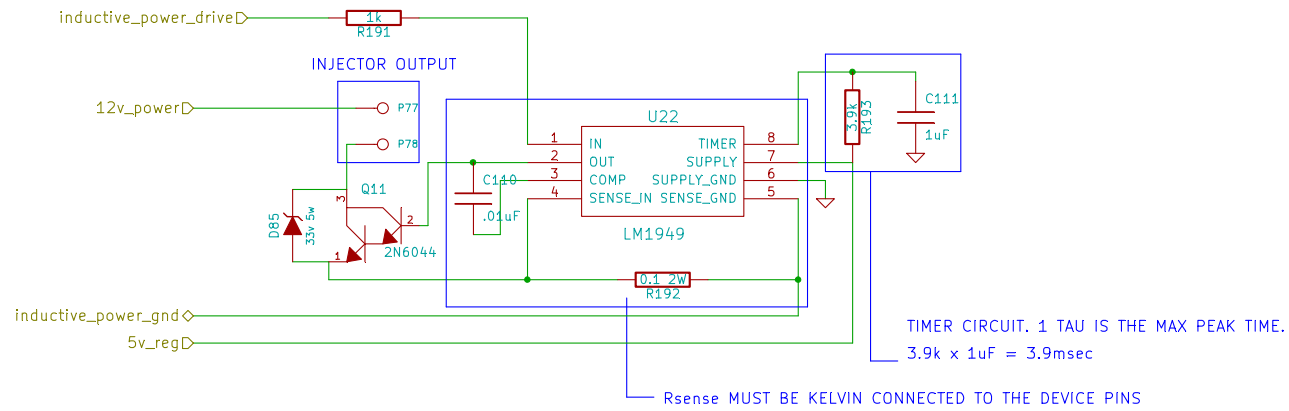
injector_drive.sch		
diyefi.org		
File: injector_drive.sch		
Sheet: /injector_drive_3/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 29/56

PEAK & HOLD INJECTOR DRIVER



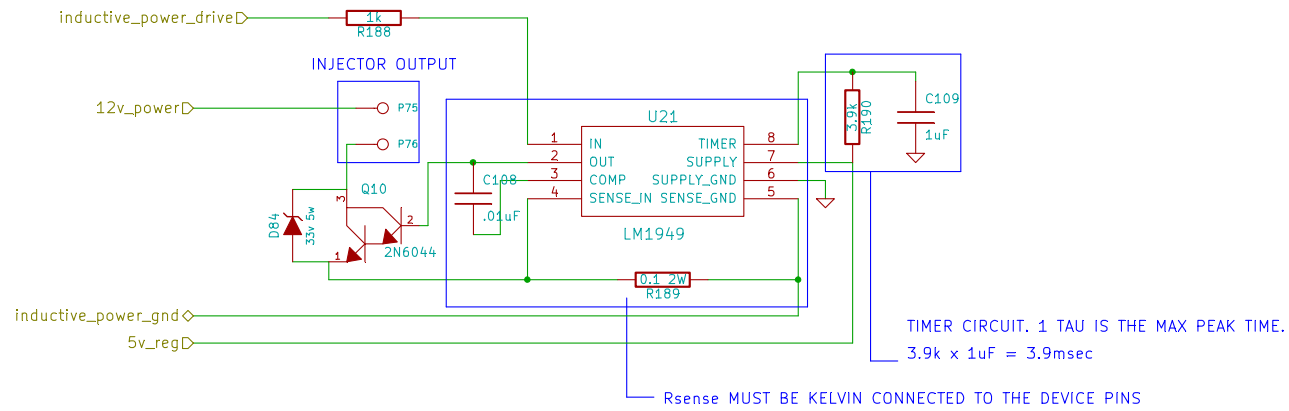
injector_drive.sch		
diyefi.org		
File: injector_drive.sch		
Sheet: /injector_drive_4/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 30/56

PEAK & HOLD INJECTOR DRIVER

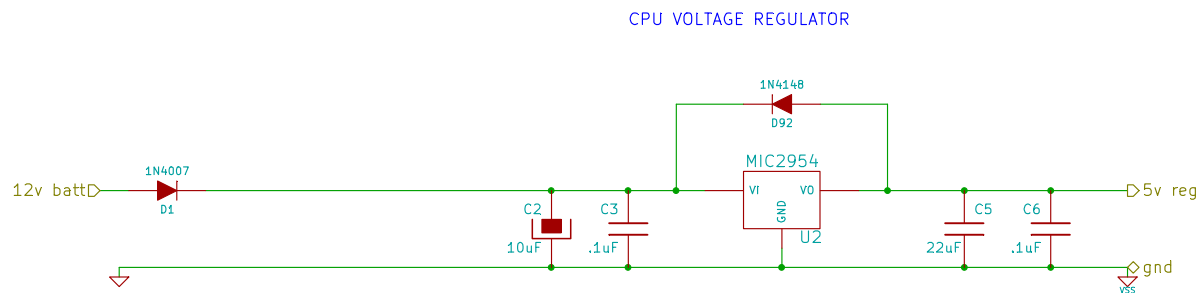


injector_drive.sch		
diyefi.org		
File: injector_drive.sch		
Sheet: /injector_drive_5/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 31/56

PEAK & HOLD INJECTOR DRIVER



injector_drive.sch		
diyefi.org		
File: injector_drive.sch		
Sheet: /injector_drive_6/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 32/56



Starting from left and moving to the right we have in order :

- Power feed and ground from battery and/or block
- Reverse polarity hook up protection diode
- Current limiting resistor
- Zener over voltage clamping diode
- Charge storage electrolytic polarised 25V 1000uF capacitor (value may change, but 220 – 2200 is around what we want)
- High frequency tantalum 25V 10uF capacitor (35V units are expensive, as are 22uF)
- Ultra high frequency ceramic 0.1uF capacitor (larger units with similar frequency response would also be acceptable)
- 5V LDO (low drop out) voltage regulator
- Reverse voltage protection diode for the regulator in case of external capacitors discharging more quickly and/or to a lower level than internal ones (snubbing not required as this will not happen when things are actually running)
- High frequency tantalum 25V 10uF capacitor (35V units are expensive, as are 22uF)
- Ultra high frequency ceramic 0.1uF capacitor (larger units with similar frequency response would also be acceptable)
- Power feed and ground for CPU core

power_reg.sch

diyefi.org

File: power_reg2.sch

Sheet: /voltage regulator (cpu)/

Title: Puma board

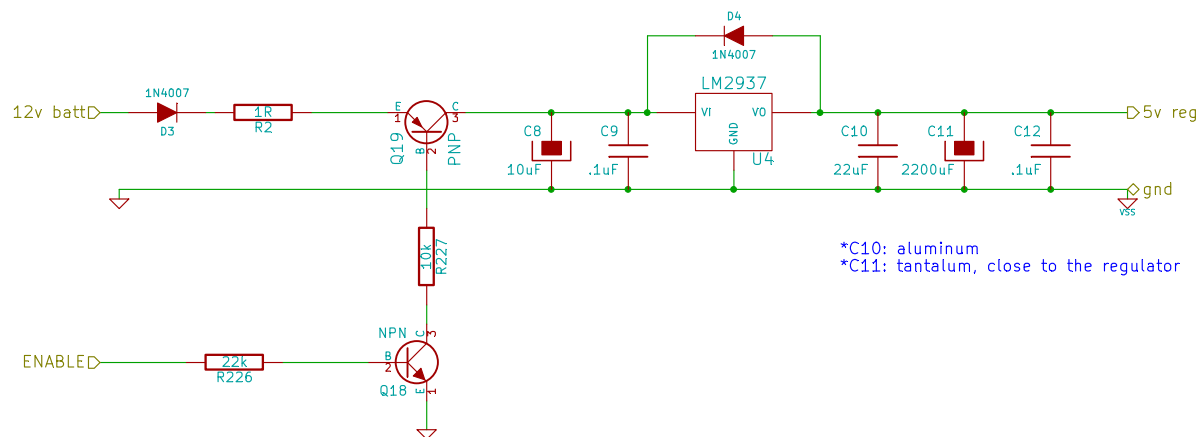
Size: A

Date: 26 dec 2010

Rev: A.07

KiCad E.D.A. eeschema (20100406 SVN-R2508)–final

Id: 33/56



Starting from left and moving to the right we have in order :

- Power feed and ground from battery and/or block
- Reverse polarity hook up protection diode
- Current limiting resistor
- Zener over voltage clamping diode
- Charge storage electrolytic polarised 25V 1000uF capacitor (value may change, but 220 – 2200 is around what we want)
- High frequency tantalum 25V 10uF capacitor (35V units are expensive, as are 22uF)
- Ultra high frequency ceramic 0.1uF capacitor (larger units with similar frequency response would also be acceptable)
- 5V LDO (low drop out) voltage regulator
- Reverse voltage protection diode for the regulator in case of external capacitors discharging more quickly and/or to a lower level than internal ones (snubbing not required as this will not happen when things are actually running)
- High frequency tantalum 25V 10uF capacitor (35V units are expensive, as are 22uF)
- Ultra high frequency ceramic 0.1uF capacitor (larger units with similar frequency response would also be acceptable)
- Power feed and ground for CPU core

power_reg.sch

diyefi.org

File: power_reg1.sch

Sheet: /voltage regulator (switched)/

Title: Puma board

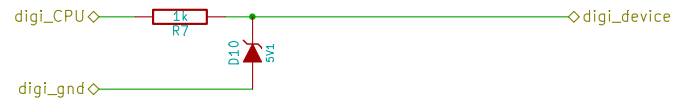
Size: A

Date: 26 dec 2010

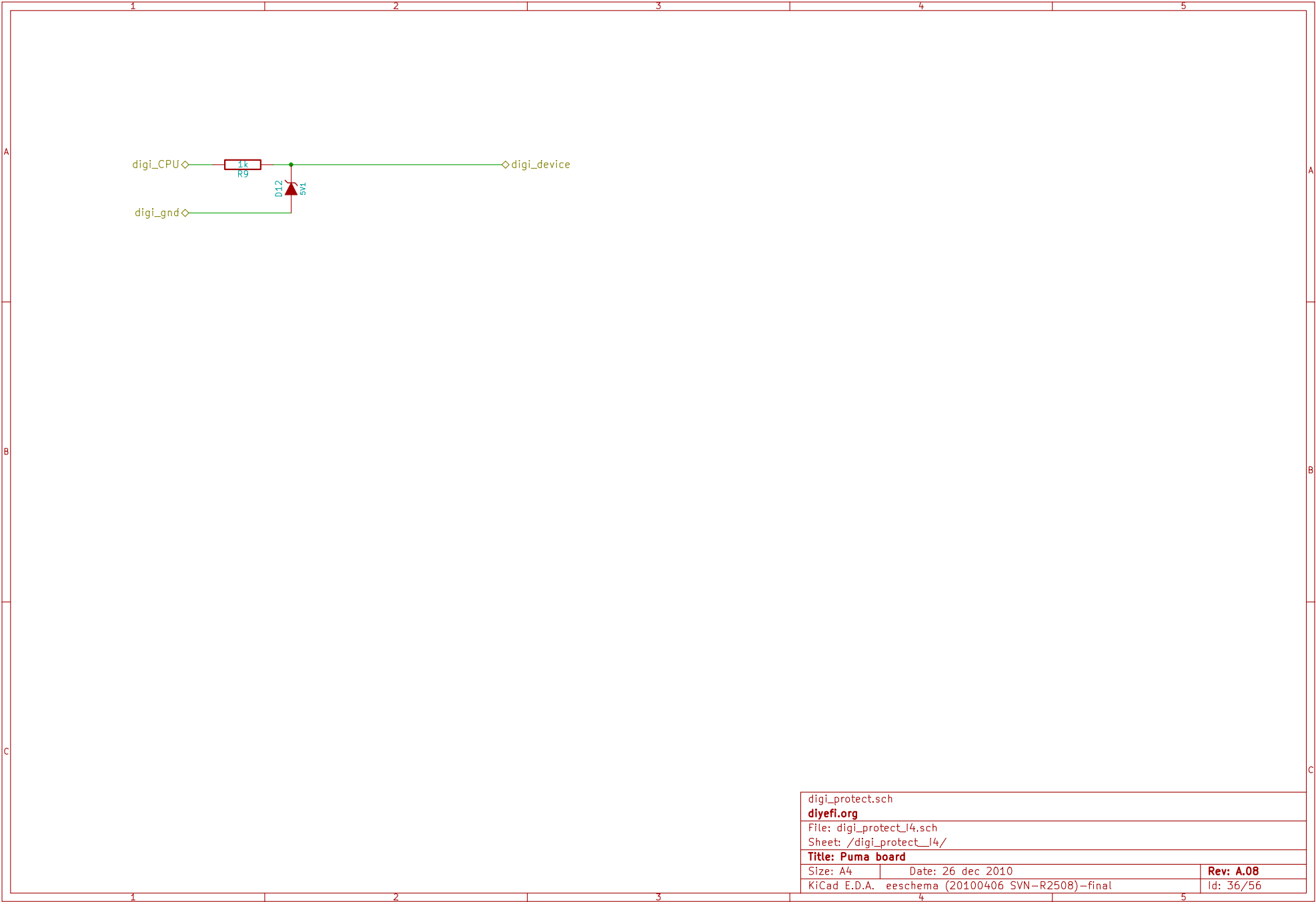
Rev: A.07

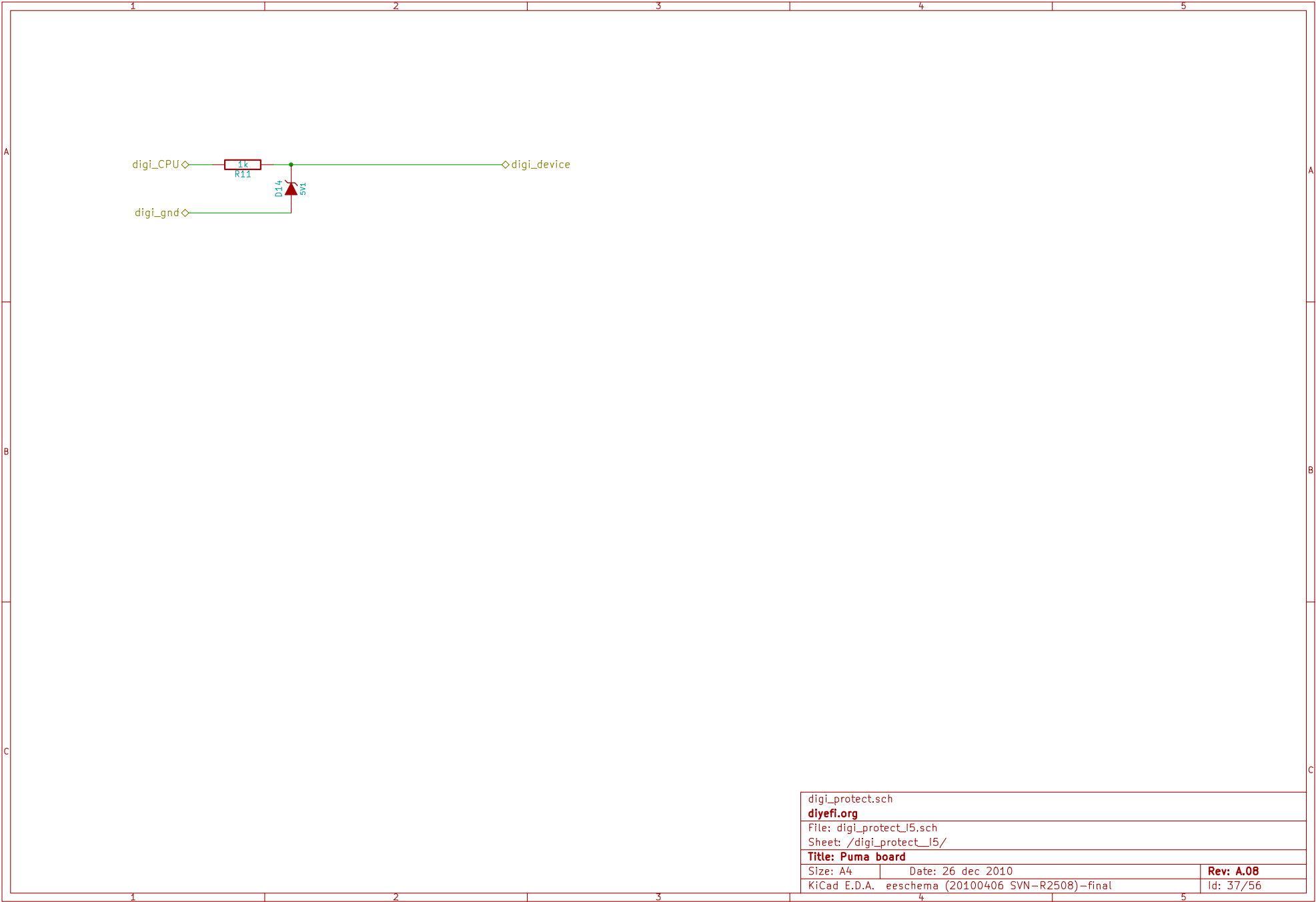
KiCad E.D.A. eeschema (20100406 SVN-R2508)–final

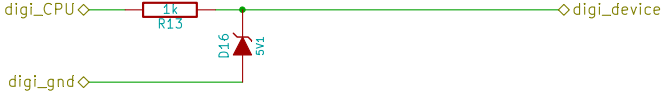
Id: 34/56



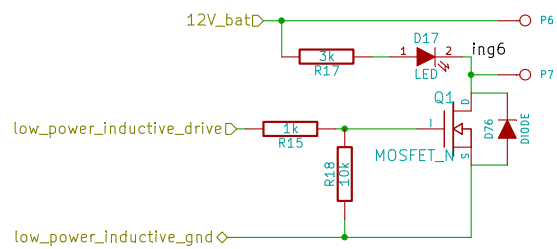
digi_protect.sch		
diyefi.org		
File: digi_protect_I3.sch		
Sheet: /digi_protect_I3/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.08
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 35/56



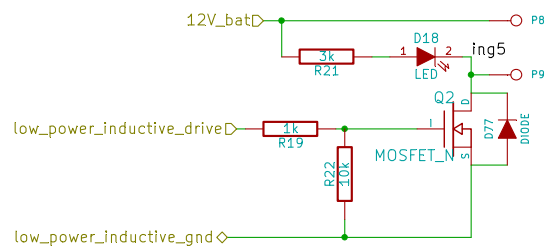




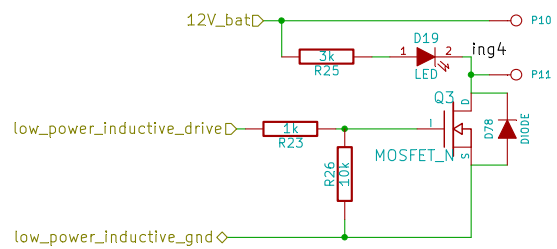
digi_protect.sch		
diyefi.org		
File: digi_protect_l6.sch		
Sheet: /digi_protect_l6/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.08
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 38/56



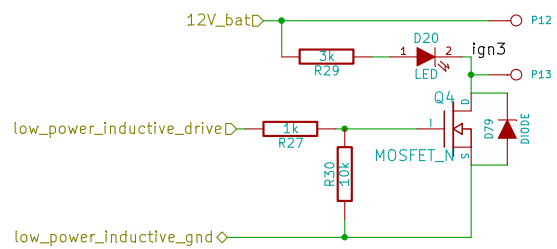
ignition.sch		
diyefi.org		
File: ignition6.sch		
Sheet: /igniter_6/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 39/56



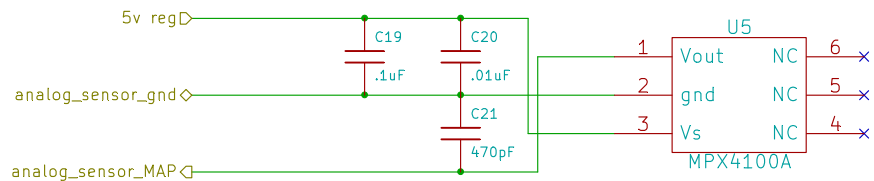
ignition.sch		
diyefi.org		
File: ignition5.sch		
Sheet: /igniter_5/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 40/56



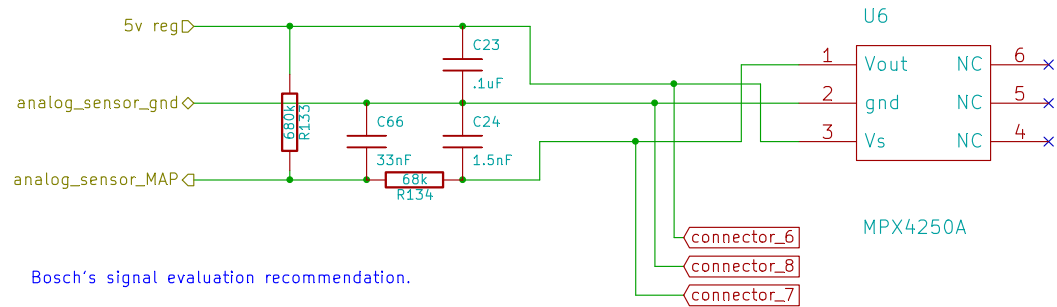
ignition.sch		
diyefi.org		
File: ignition4.sch		
Sheet: /igniter_4/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 41/56



ignition.sch		
diyefi.org		
File: ignition3.sch		
Sheet: /igniter_3/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 42/56



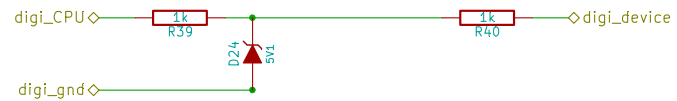
MAP_input.sch		
diyefi.org		
File: MAP_input_2.sch		
Sheet: /MAP_input_baro/		
Title: Puma board		
Size: A	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 43/56



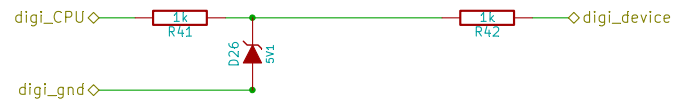
Bosch's signal evaluation recommendation.

The 680k pull up resistor is for diagnostics

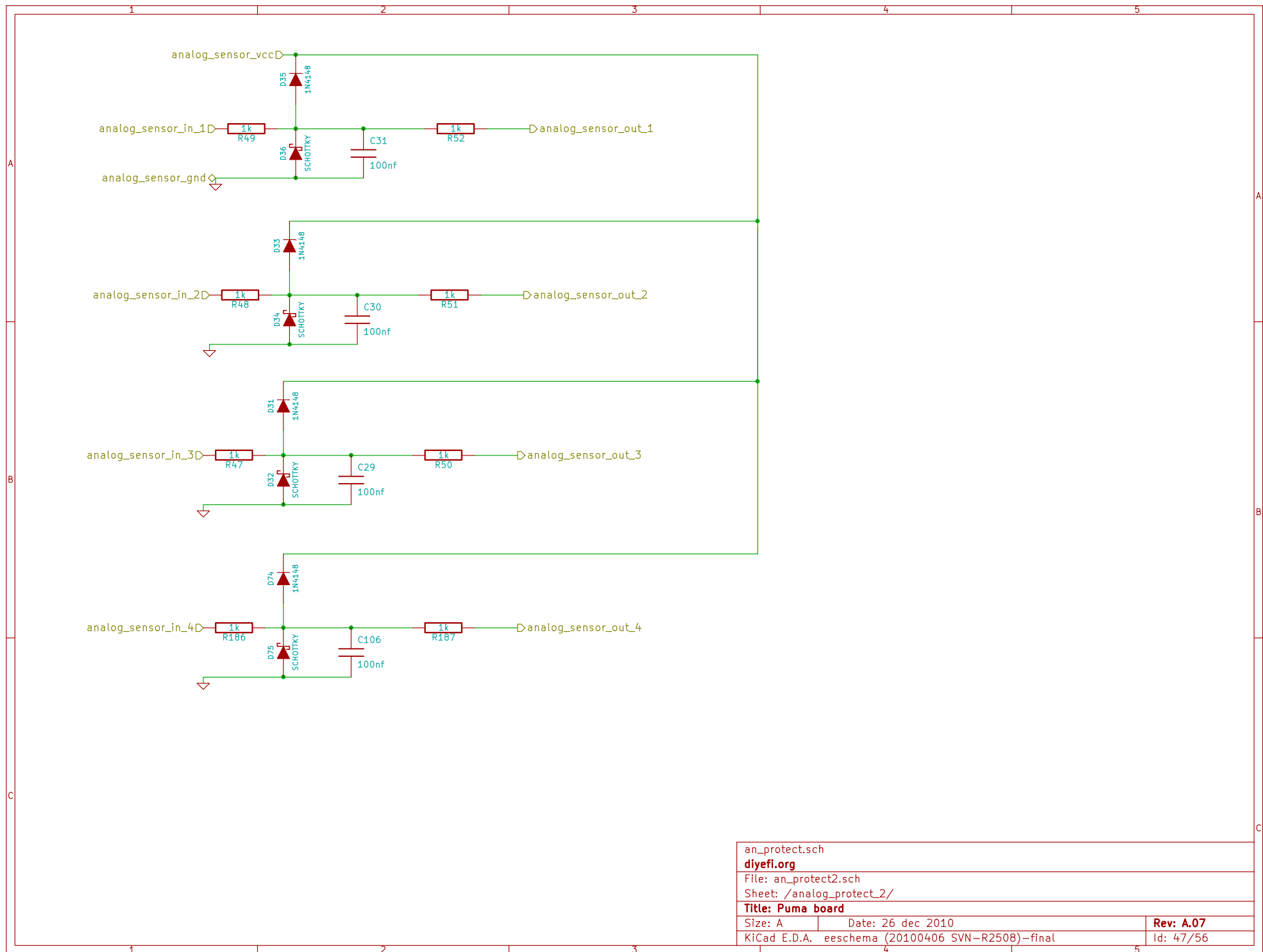
MAP_input.sch		
diyefi.org		
File: MAP_input_1.sch		
Sheet: /MAP_input/		
Title: Puma board		
Size: A	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 44/56

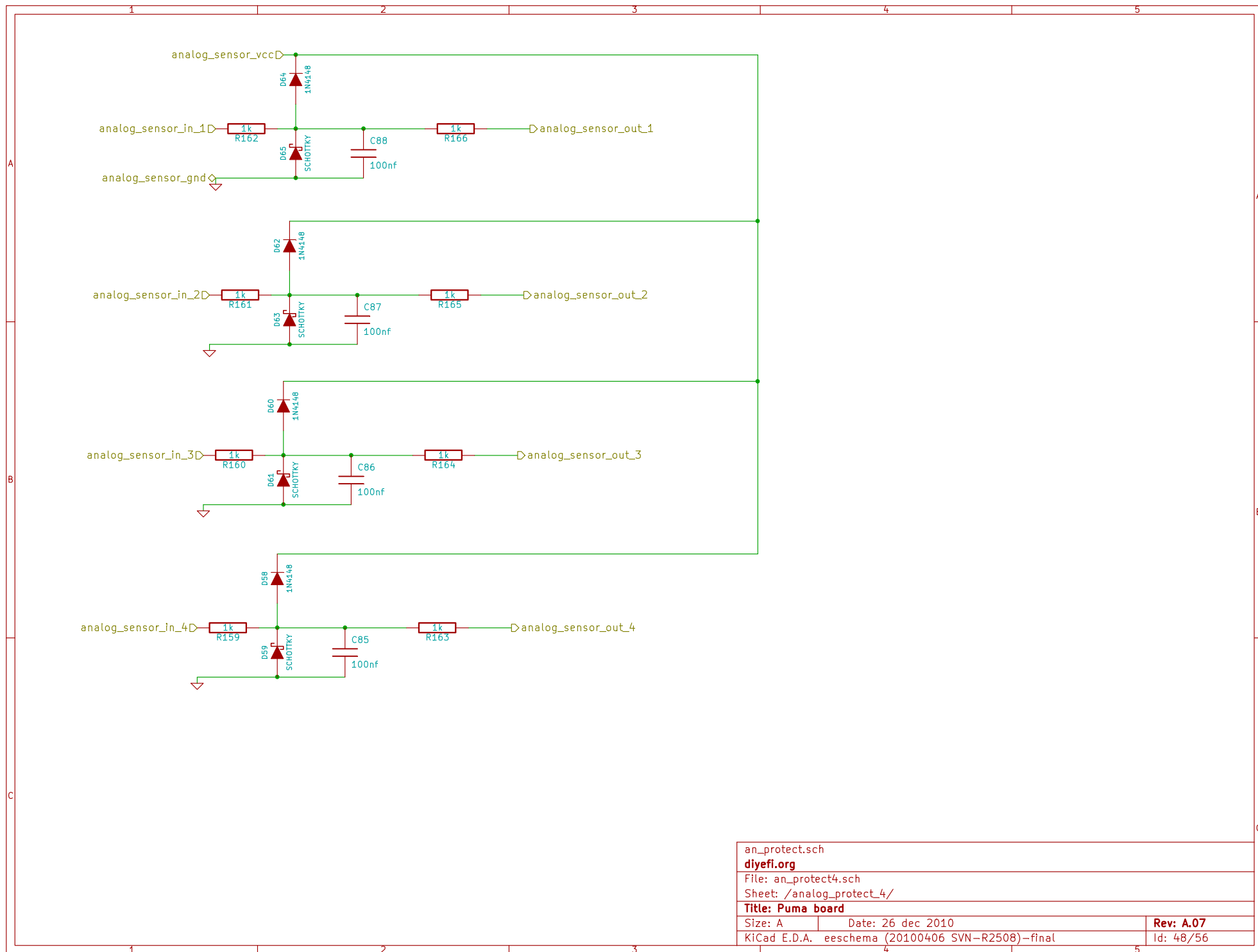


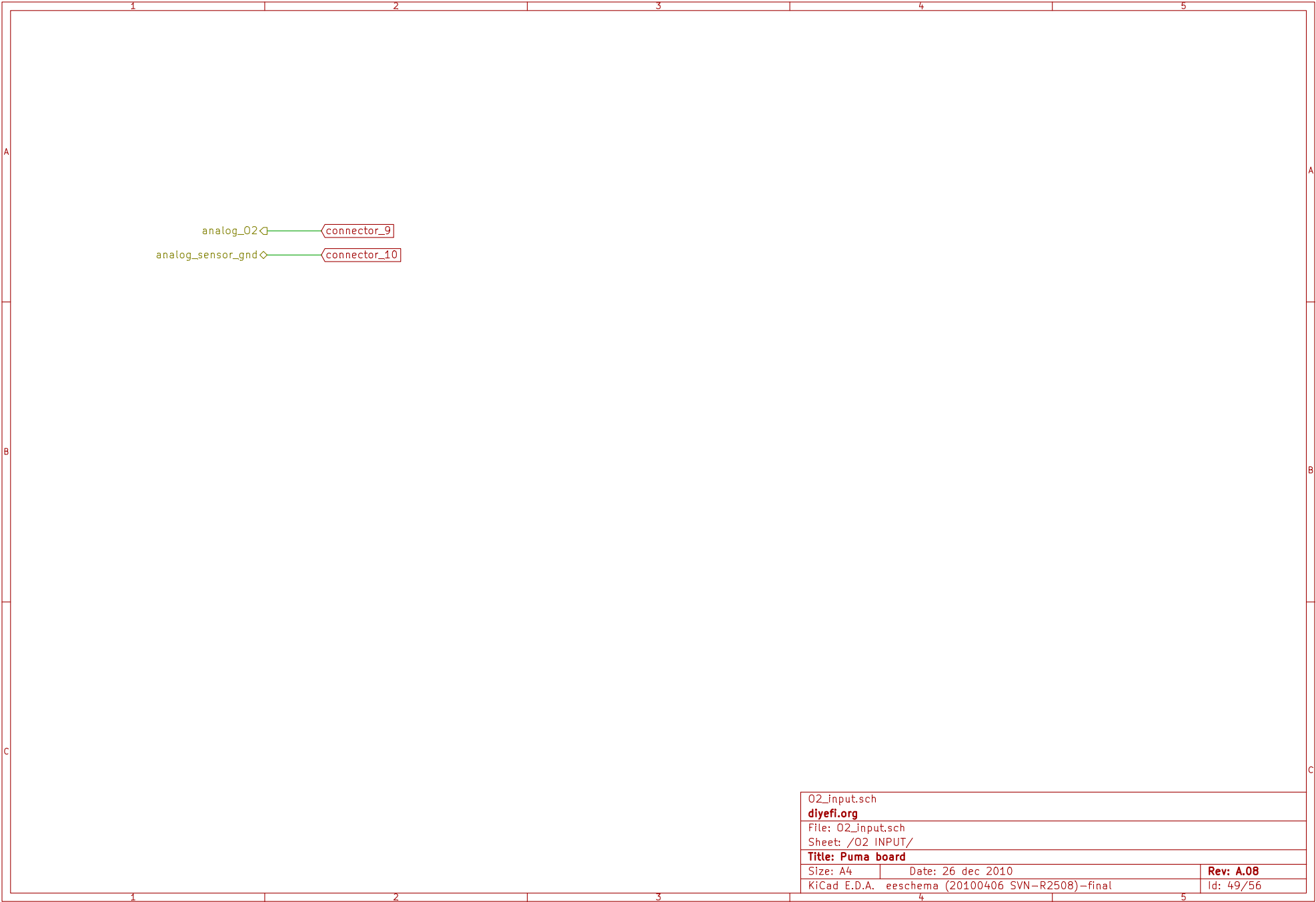
digi_protect.sch		
diyefi.org		
File: digi_protect_rpm1.sch		
Sheet: /digi_protect_rpm1/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.08
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 45/56



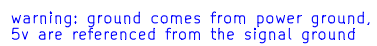
digi_protect.sch		
diyefi.org		
File: digi_protect_rpm2.sch		
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Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.08
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 46/56



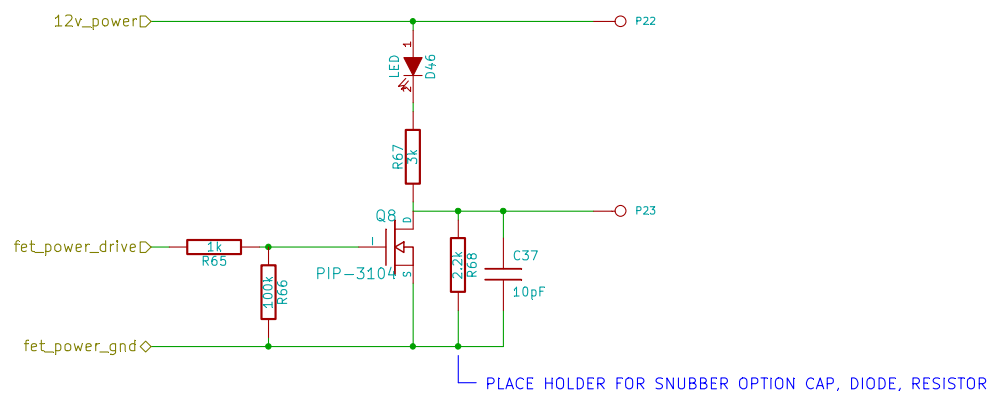




O2_input.sch		
diyefi.org		
File: O2_input.sch		
Sheet: /O2 INPUT/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.08
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 49/56



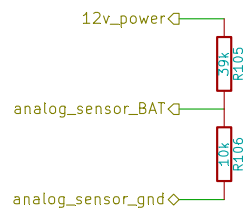
general_drive.sch		
diyefi.org		
File: general_drive2.sch		
Sheet: /Fuel Pump/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 50/56



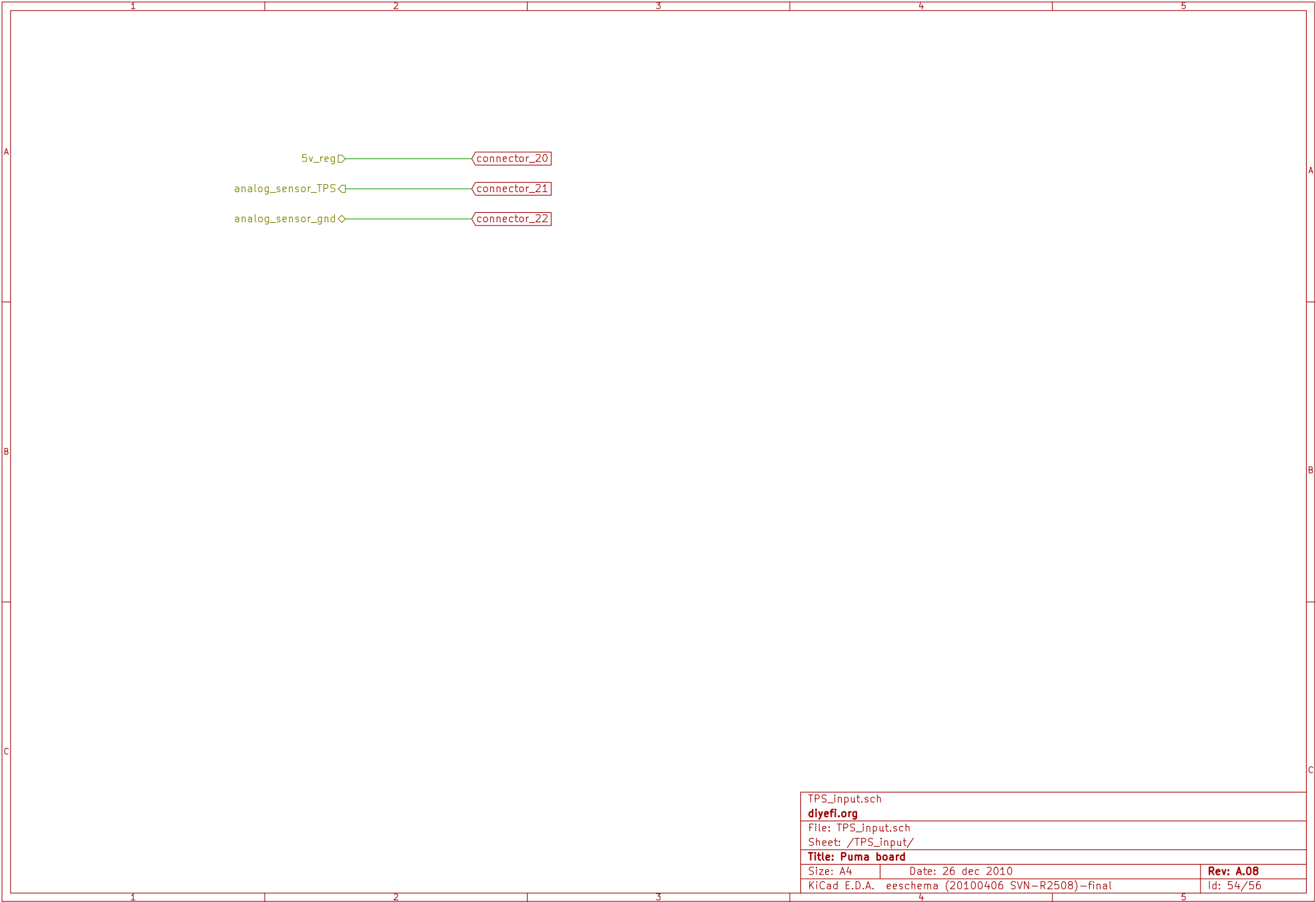
general_drive.sch		
diyefi.org		
File: general_drive1.sch		
Sheet: /misc ouput 2/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A.	eeschema (20100406 SVN-R2508)-final	Id: 51/56

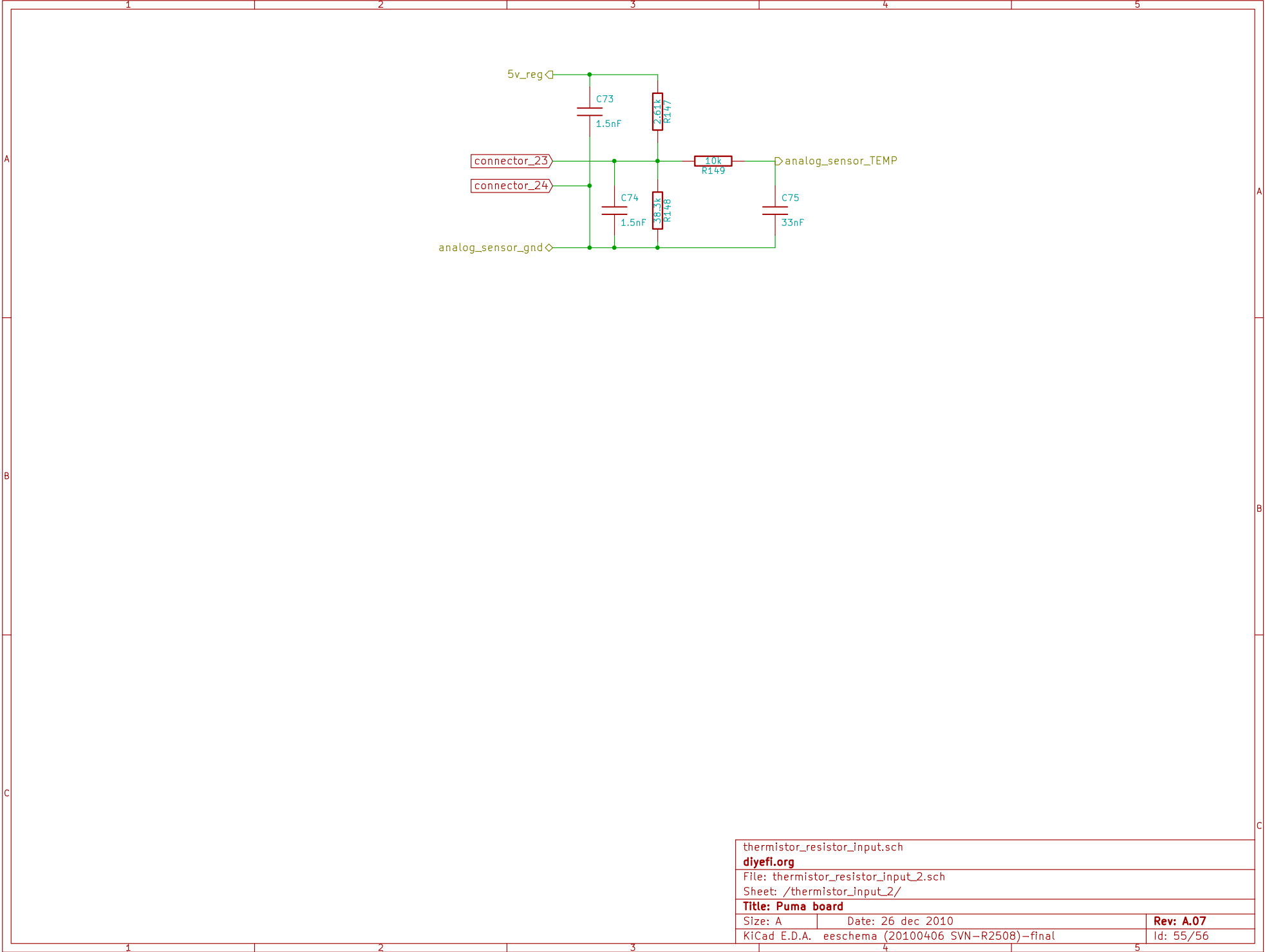


general_drive_fuel.sch		
diyefi.org		
File: general_drive_fuel.sch		
Sheet: /misc output 1/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A.	eeschema (20100406 SVN-R2508)–final	Id: 52/56

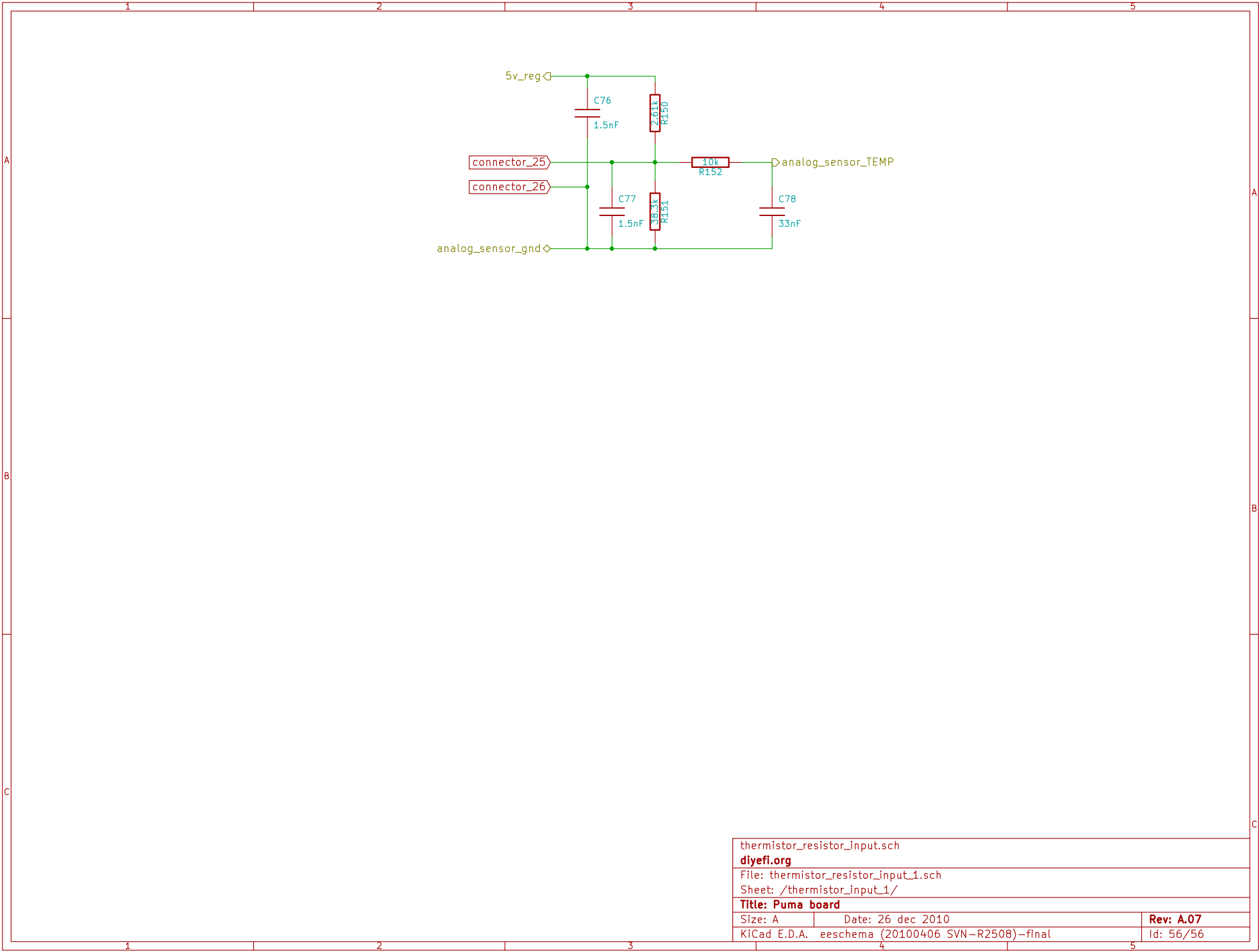


BAT_condition		
diyefi.org		
File: BAT_condition.sch		
Sheet: /BAT_input/		
Title: Puma board		
Size: A4	Date: 26 dec 2010	Rev: A.08
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 53/56





thermistor_resistor_input.sch		
diyefi.org		
File: thermistor_resistor_input_2.sch		
Sheet: /thermistor_input_2/		
Title: Puma board		
Size: A	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 55/56



thermistor_resistor_input.sch		
diyefi.org		
File: thermistor_resistor_input_1.sch		
Sheet: /thermistor_input_1/		
Title: Puma board		
Size: A	Date: 26 dec 2010	Rev: A.07
KiCad E.D.A. eeschema (20100406 SVN-R2508)-final		Id: 56/56