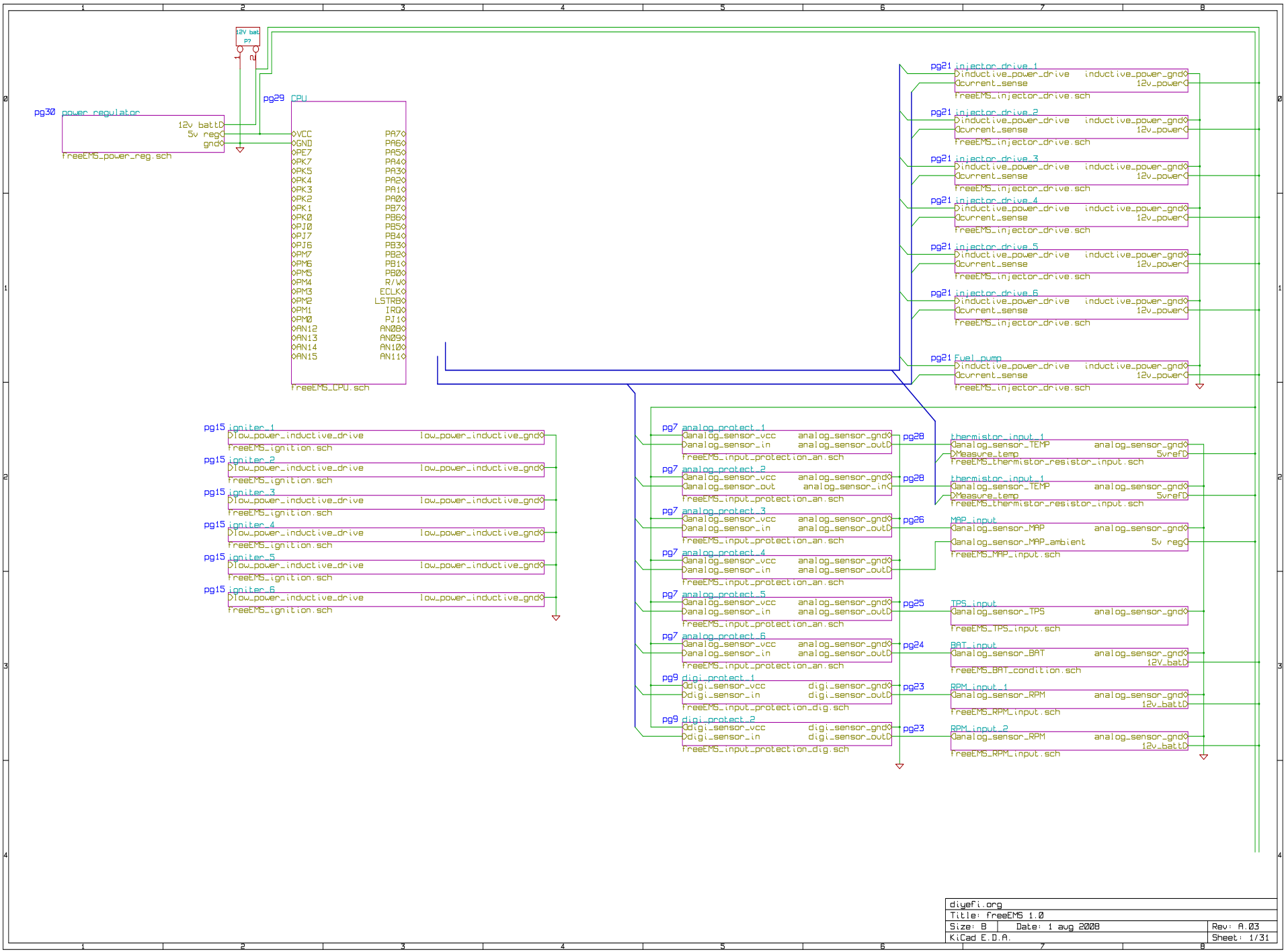
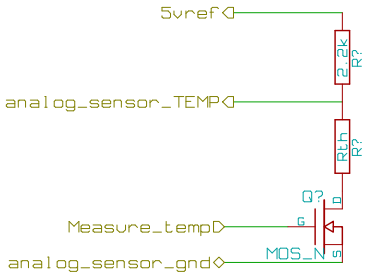
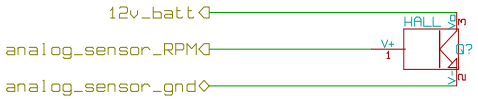


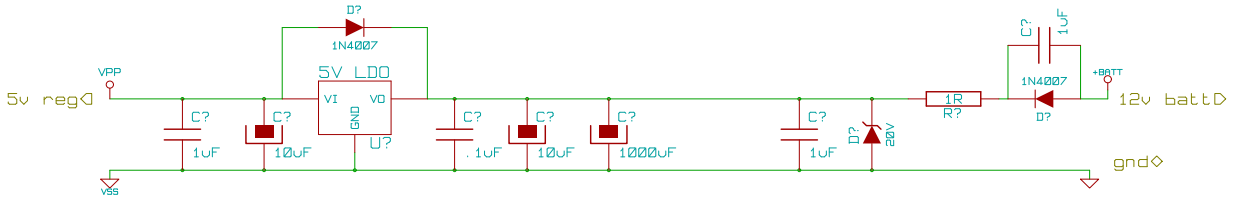
diyefi.org		
Title: freeEMS 1.0		
Size: B	Date: 1 aug 2008	Rev: A.03
KiCad E.D.A.		Sheet: 1/31



diyefi.org			
Title: freeEMS 1.0			
Size: A	Date: 1 aug 2008		Rev: A.03
KiCad E.D.A.			Sheet: 29/31

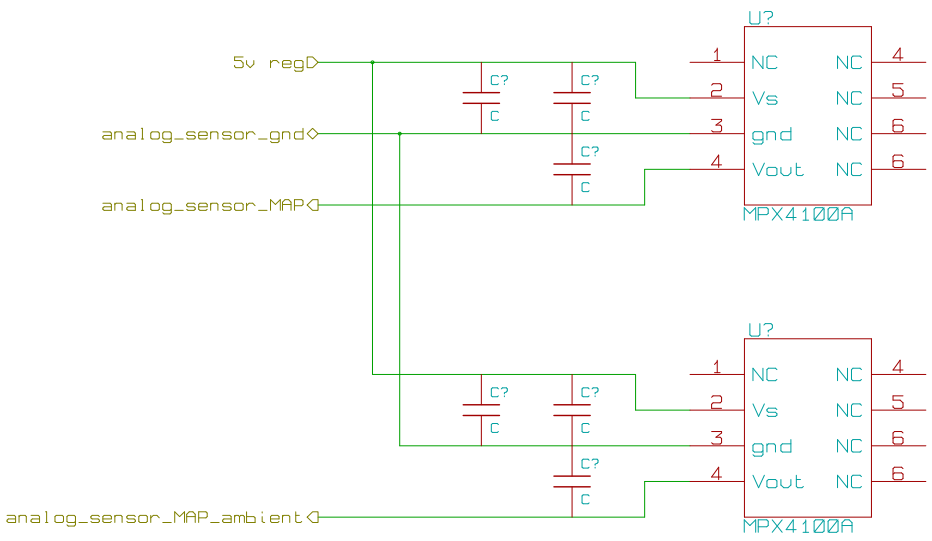


diyefi.org			
Title: freeEMS 1.0			
Size: A4	Date: 1 aug 2008		Rev: A.03
KiCad E.D.A.			Sheet: 24/31

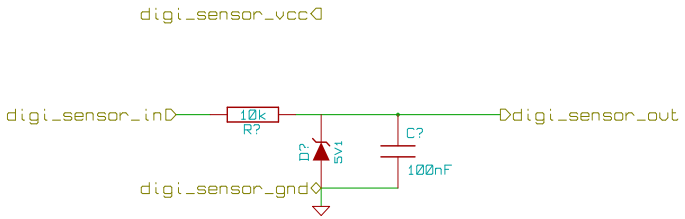


Starting from right and moving to the left we have in order :
-- Power feed and ground from battery and/or block
-- Reverse polarity hook up protection diode
-- Snubbing capacitor for that diode (diodes are electrically noisy when they switch on and off)
-- Current limiting resistor (value yet to be calculated)
-- Zener over voltage clamping diode (voltage yet to be determined, but must be below the max voltage of the components following it)
-- Snubbing capacitor for that diode (diodes are electrically noisy when they switch on and off)
-- 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

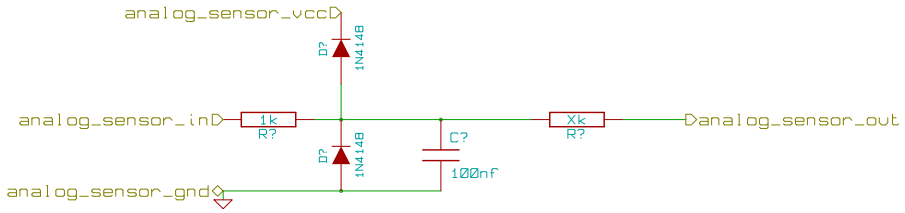
diyefi.org		
Title: freeEMS 1.0		
Size: A	Date: 1 aug 2008	Rev: A.03
KiCad E.D.A.		Sheet: 31/31



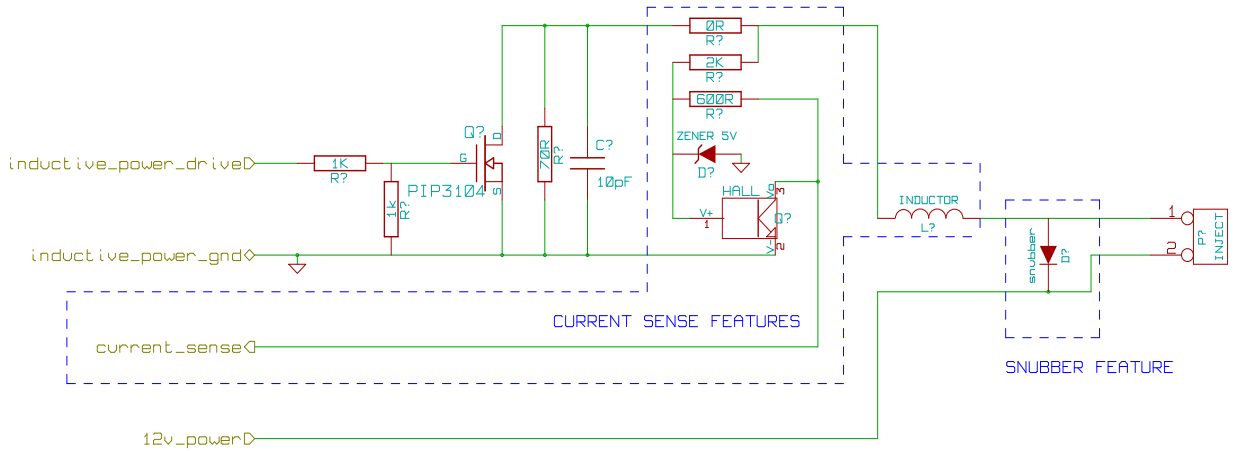
diyefi.org			
Title: freeEMS 1.0			
Size: A	Date: 1 aug 2008		Rev: A.03
KiCad E.D.A.			Sheet: 27/31



diyefi.org			
Title: freeEMS 1.0			
Size: A4	Date: 1 aug 2008		Rev: A.03
KiCad E.D.A.			Sheet: 9/31



diyefi.org			
Title: freeEMS 1.0			
Size: A	Date: 1 aug 2008		Rev: A.03
KiCad E.D.A.			Sheet: 8/31



NOTES:

YOU CAN POPULATE DIFFERENT FEATRUES WITH THIS CIRCUIT

CURRENT SENSING ALLOWS YOU TO MEASURE WHEN THE INJECTOR IS ON VS OFF

THE SNUBBER DIODE TO DECREASE INDUCTIVE CURRENT SPIKES

IF YOU DON'T POPULATE THE SNUBBER FEATURE, THE MOSFET WILL DISAPATE ENERGY FROM THE INJECTOR

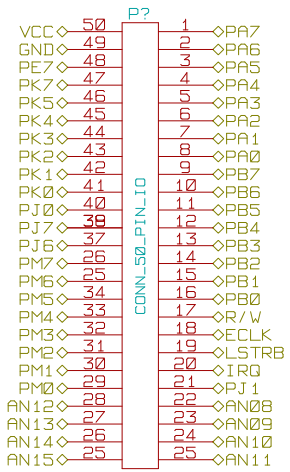
diyefi.org		
Title: freeEMS 1.0		
Size: A4	Date: 1 aug 2008	Rev: A.03
KiCad E.D.A.		Sheet: 22/31

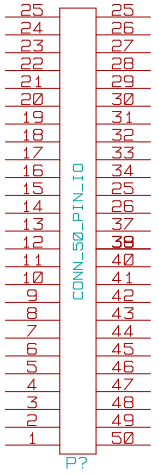
low_power_inductive_drive

low_power_inductive_gnd

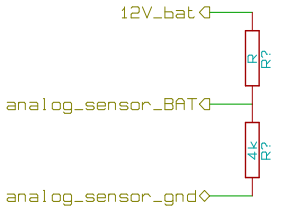
diyefi.org			
Title: freeEMS 1.0			
Size: A4	Date: 1 aug 2008		Rev: A.03
KiCad E.D.A.			Sheet: 16/31

diyefi.org		
Title: freeEMS 1.0		
Size: A4	Date: 1 aug 2008	Rev: A.03
KiCad E.D.A.		Sheet: 26/31





diyefi.org		
Title: freeEMS 1.0		
Size: A	Date: 1 aug 2008	Rev: A.03
KiCad E.D.A.		Sheet: 30/31



diyefi.org			
Title: freeEMS 1.0			
Size: A4	Date: 1 aug 2008		Rev: A.03
KiCad E.D.A.			Sheet: 25/31