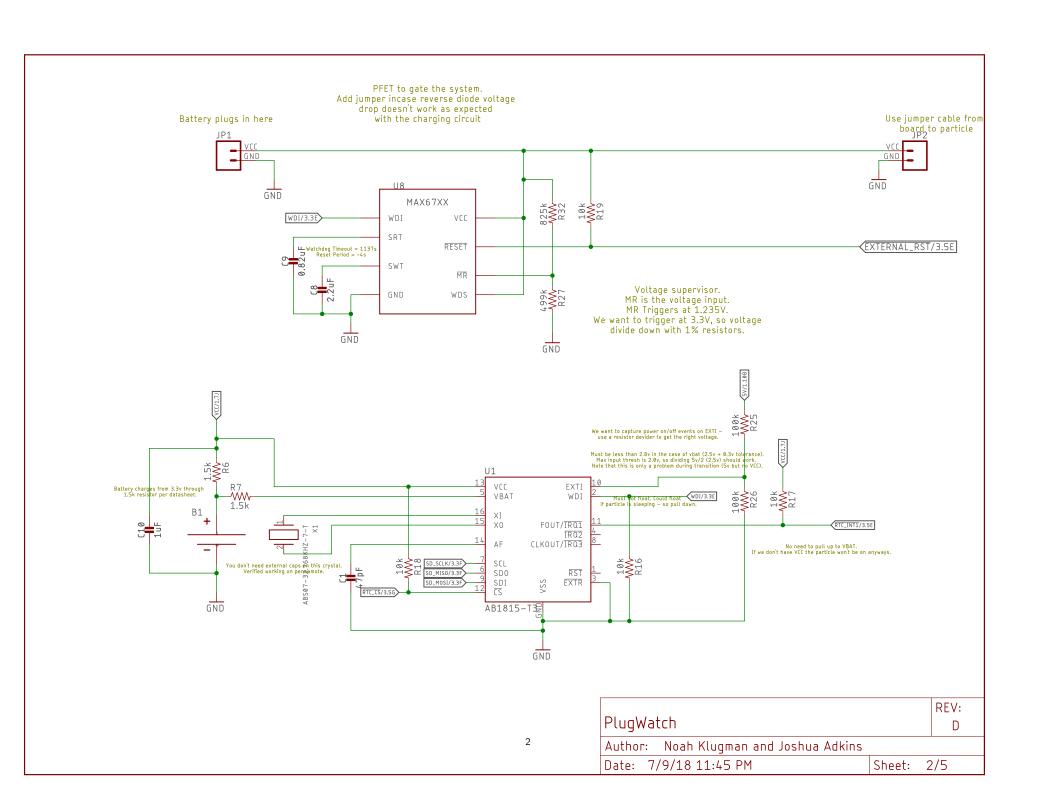
The peak power is $2A \star 600$ uS = -4.5mJ. We are adding 8mJ of energy buffer to be safe. 8mJ of energy with a 5V to 4V swing is about 2mF This will protect the sampling circuit against surges U5 AC/L V+ 5V/2.10I 300VAC - 500ma AC/N V-2000uF |S14K385 |V1 F IRM-03-5V AC/NO GND Assuming 340Vpp, a 750k resistor rill dissipate 0.15W, and a 3.3v zener will dissipate 1.4mW We use a seperate AI Measure pin so that we can more directly sense the perturbation by the digital output. The full-scale voltage sensing circuit below) could also be used, but would only sense <1% of its dynamic range. AC/N-MEASURE/3.3H AC/L-MEASURE/3.3G AC/L-PERTURB/3.3G AC/N-PERTURB/3.3G The schottkey diode is necessary to protect the MCU pin against the -0.7-1V potentially caused by the zener forward voltage if AC/L or AC/N are negative relative to GND. The schottkey has Vf <0.3 which is less than the internal diodes on most MCUs. GND Output voltage: -(RF/RI)*VTEST + VCC/2 Output voltage: -(RF/RI)*VTEST + VCC/2 R38 -**WW** 1M R37 **-////** 1M R40 -**WW** 1M R39 **-WW**-1M GND GND GND GND R36 **-WW**-953k R35 **-WW**-953k AC/L-SENSE/3.3G AC/N-SENSE/3.3H AC/L-FUSED AC/N-FUSED U9 U10 OPA369 0PA369 GND GND R33 **-WW**-953k R34 **-////** 953k 4.99k 4.99k This circuit handles up to 340V with a 3.3V reference. This circuit handles up to 340V with a 3.3V reference. GND GND

		REV:
PlugWatch		D
Author: Noah Klugman and Joshua Adkins		
Date: 7/9/18 11:45 PM	Sheet: 1	L/5

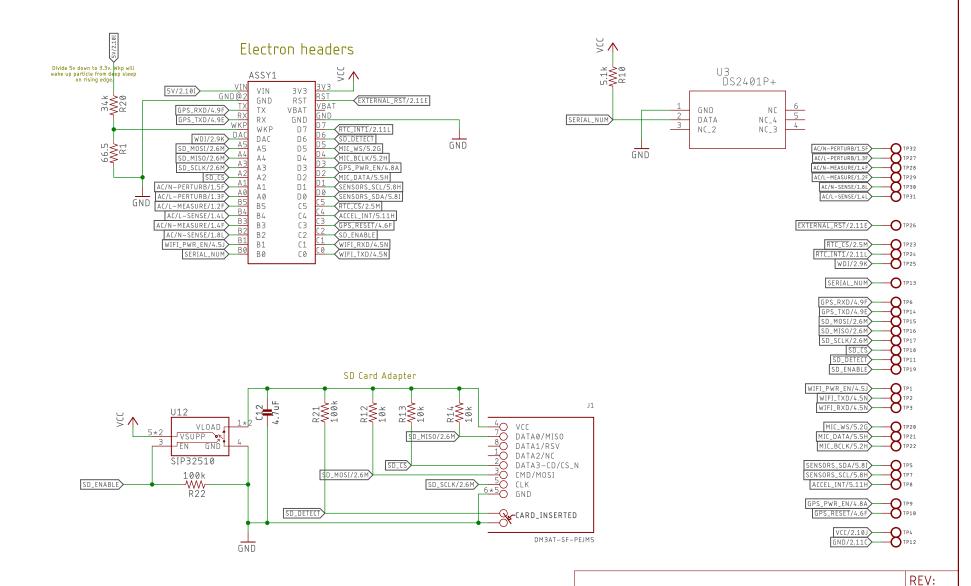


Headers

D

3/5

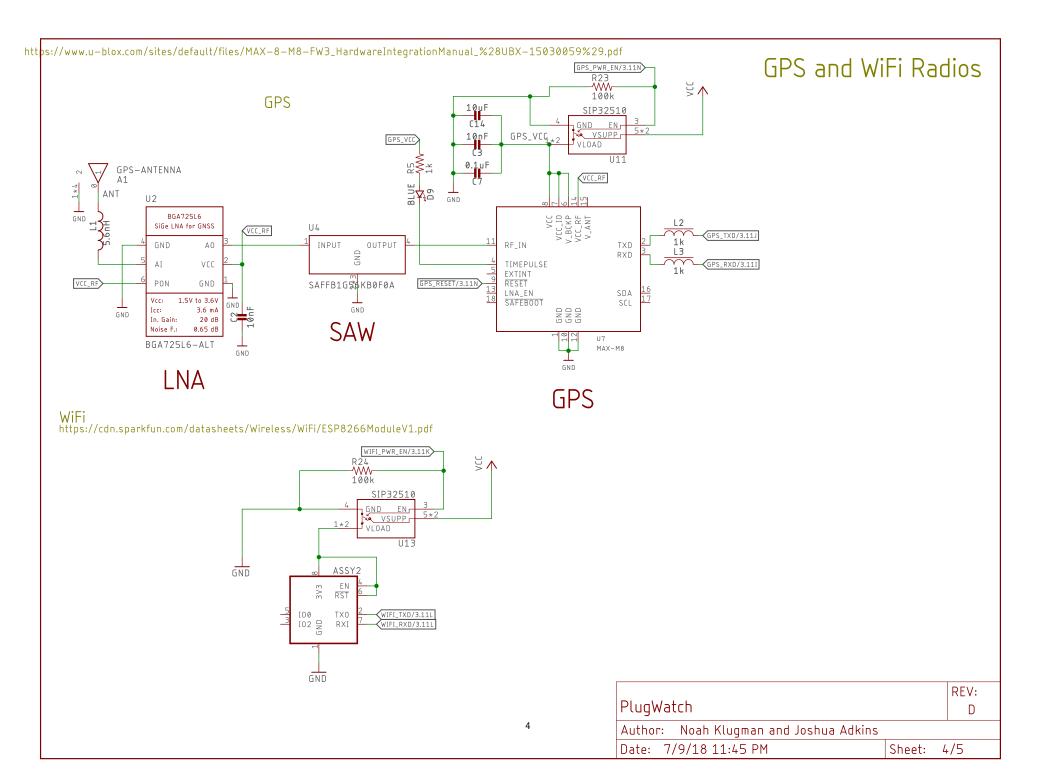
Sheet:



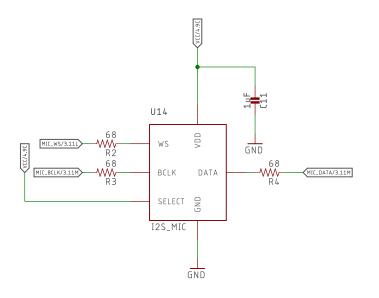
PlugWatch

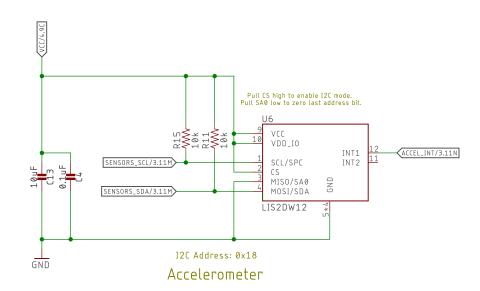
Date: 7/9/18 11:45 PM

Author: Noah Klugman and Joshua Adkins



Sensors





			REV:	
PlugWatch		D		
Author:	Noah Klugman and Joshua Adkins			

5

Date: 7/9/18 11:45 PM

Sheet: 5/5

