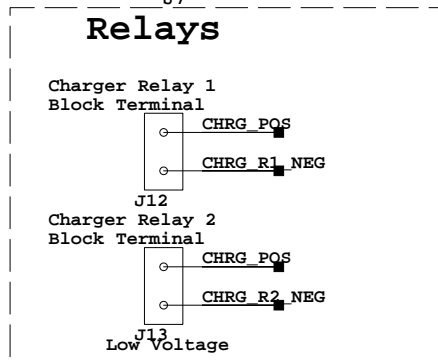
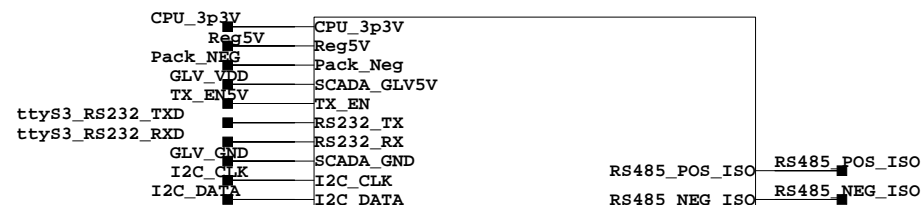
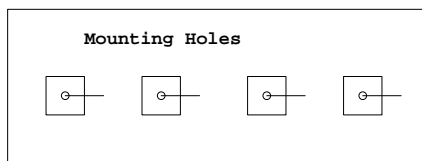
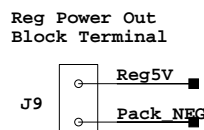
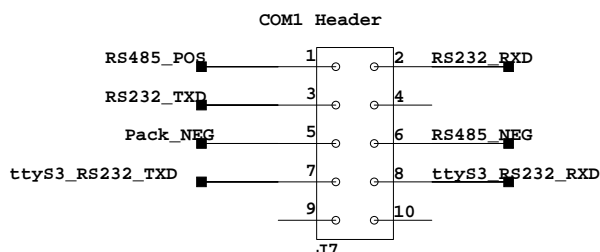
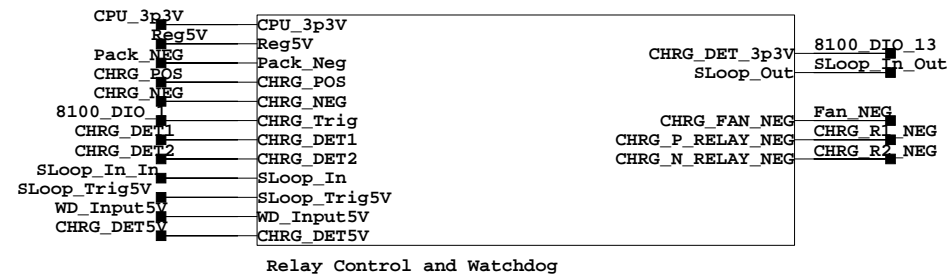
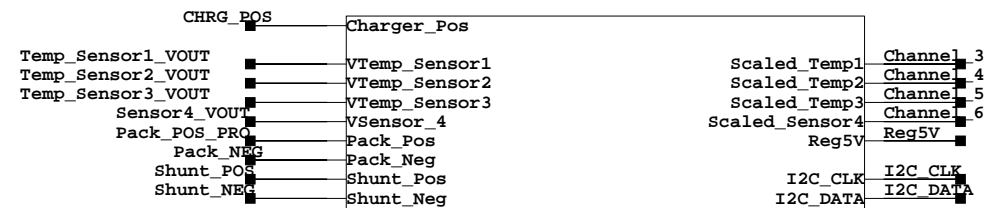
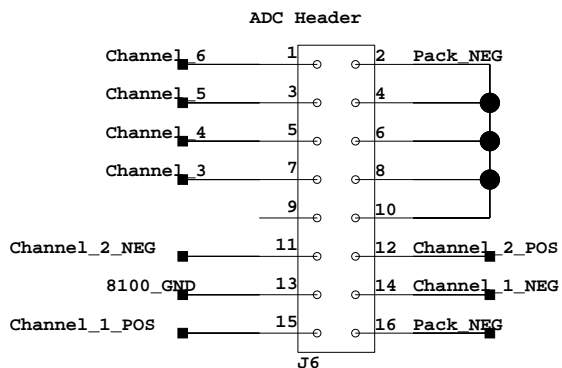
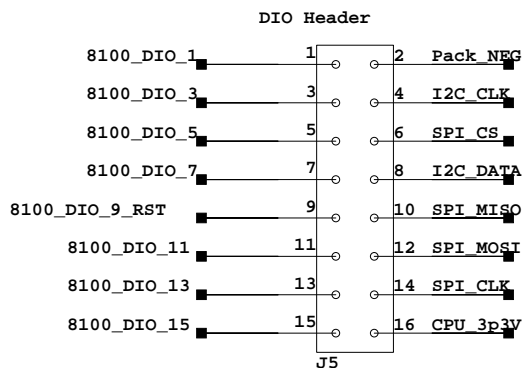
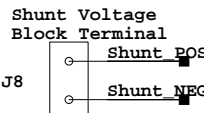
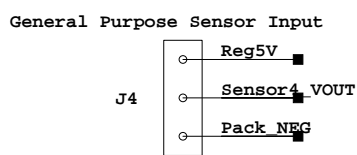
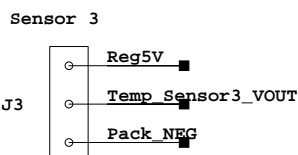
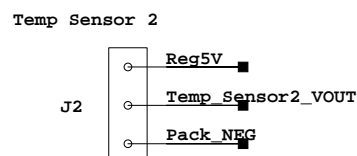
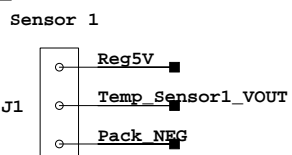
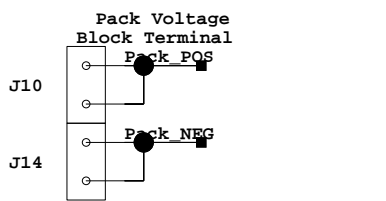


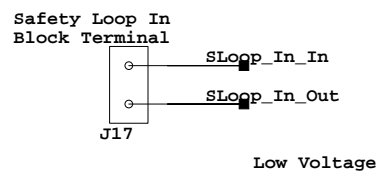
# TS-8160-4200 Connections



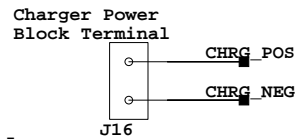
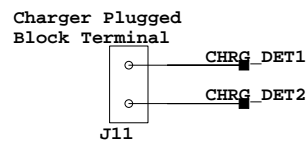
## SENSOR INPUTS



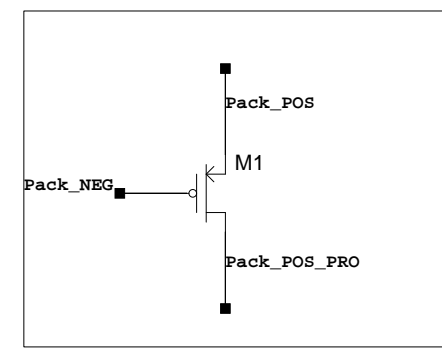
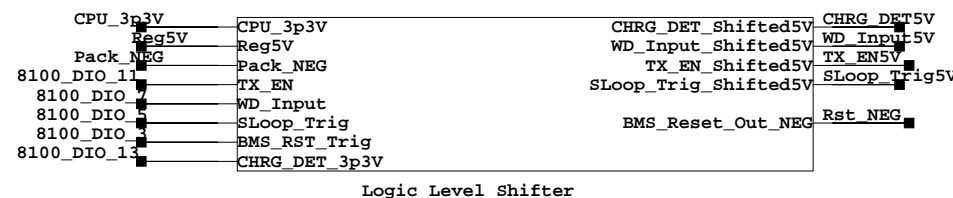
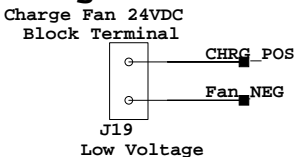
## Safety Loop



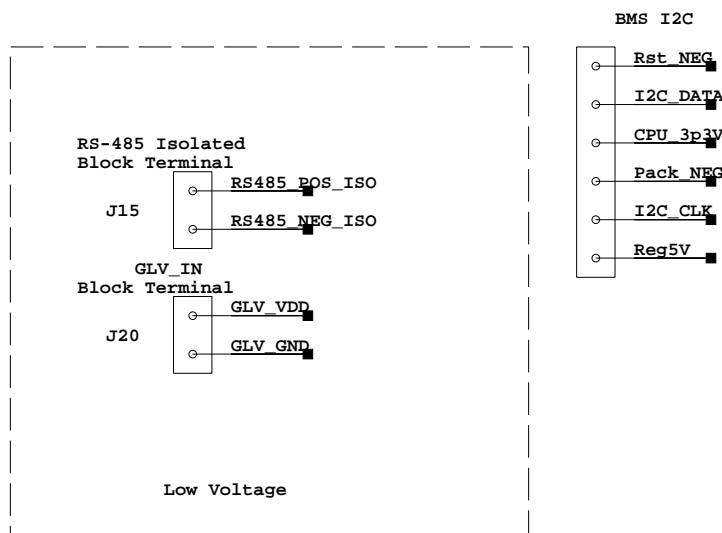
## Charger



## Charge Fan



## Serial Communications



**LAFAYETTE** Lafayette College  
 Easton, PA  
 ECE Department

TITLE			
<b>pactop</b>			
SIZE	DWG NO	ASSIGNMENT	REV
B		<ASSIGNMENT NAME>	0
COURSE	SHEET	of	
ECE323	1	1	
13-05-2014_22:42			

DRAWN BY  
 Drew Jeffrey

4

3

2

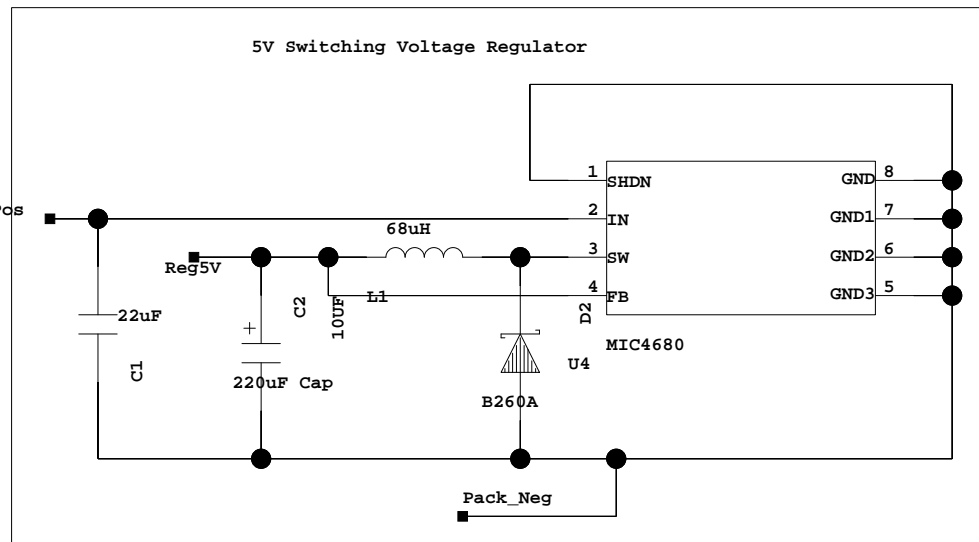
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B

B

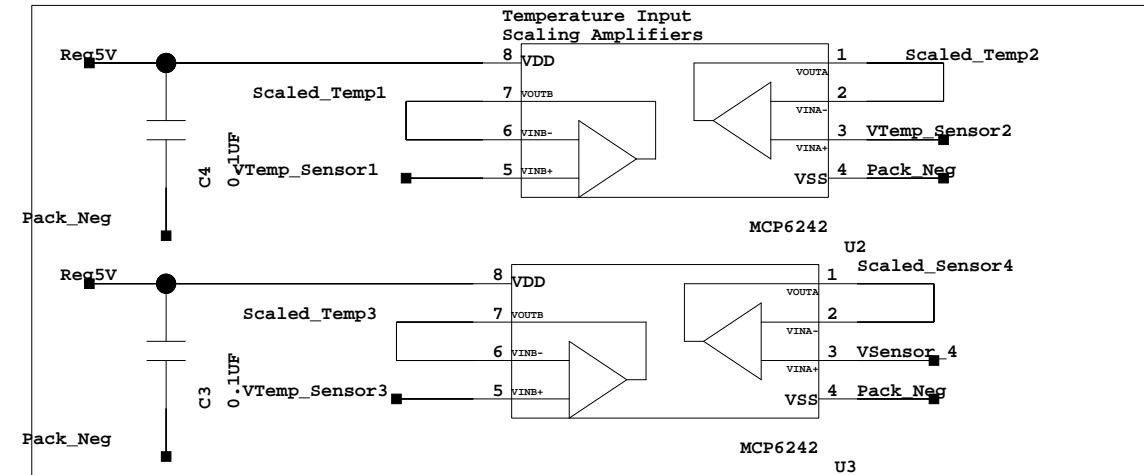
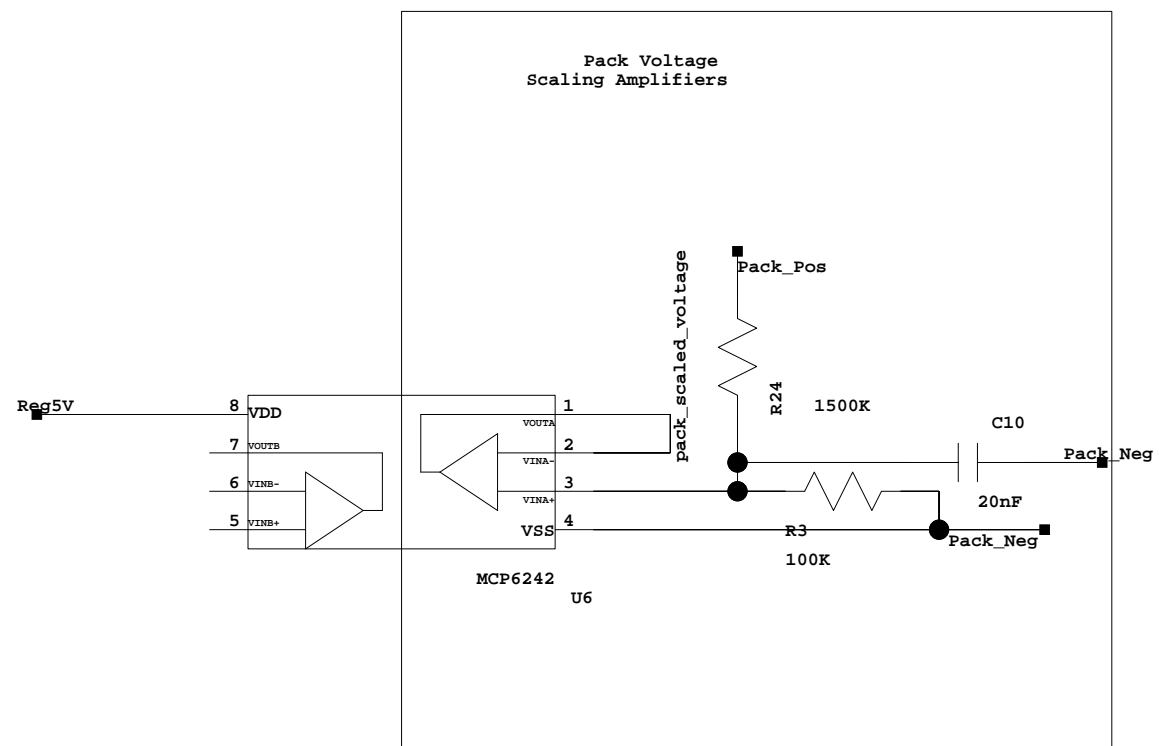
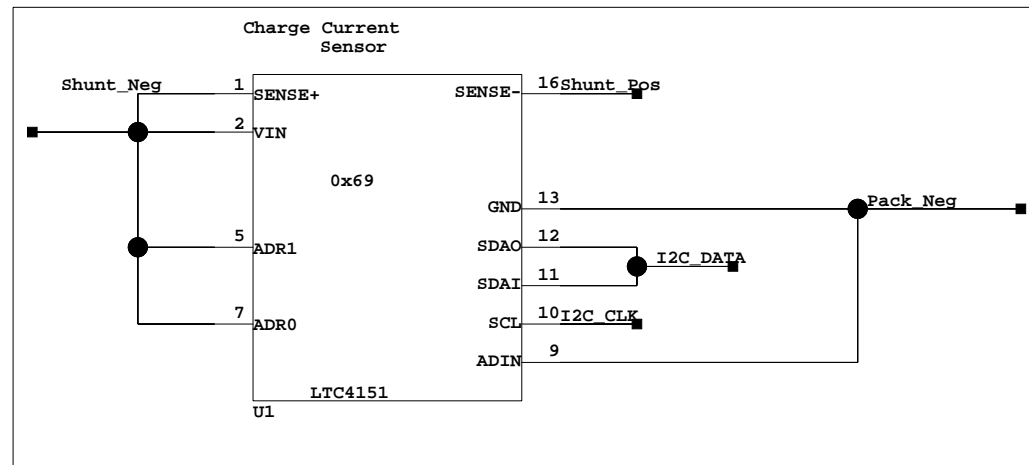
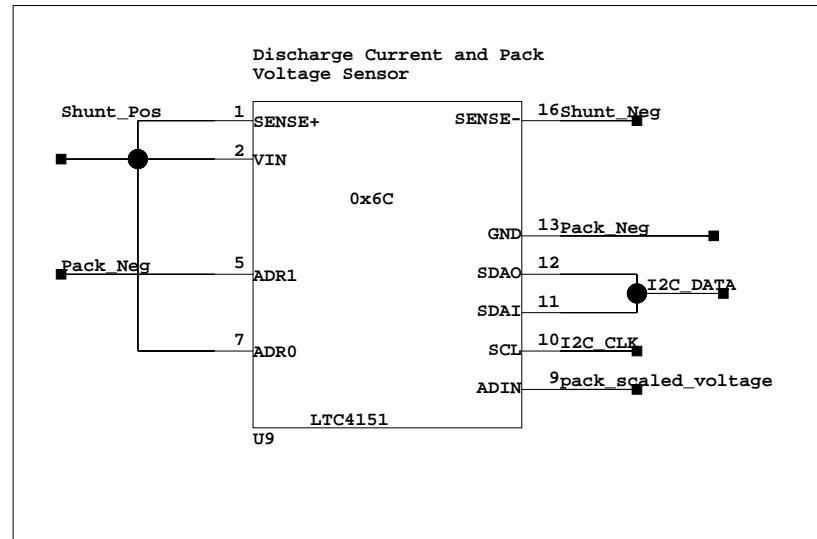
A

A



- > Charger\_Pos
- > VTemp\_Sensor1
- > VTemp\_Sensor2
- > VTemp\_Sensor3
- > VSensor\_4
- > Pack\_Pos
- > Pack\_Neg
- > Shunt\_Pos
- > Shunt\_Neg
- > I2C\_CLK
- > I2C\_DATA

- Reg5V
- Scaled\_Temp1
- Scaled\_Temp2
- Scaled\_Temp3
- Scaled\_Sensor4



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TITLE

**pacSenseArray**

SIZE	DWG NO	ASSIGNMENT	REV
B		<ASSIGNMENT NAME>	0
COURSE	SHEET	of	
ECE323	1	1	13-05-2014_23:00

DRAWN BY  
Drew Jeffrey

4

3

2

1

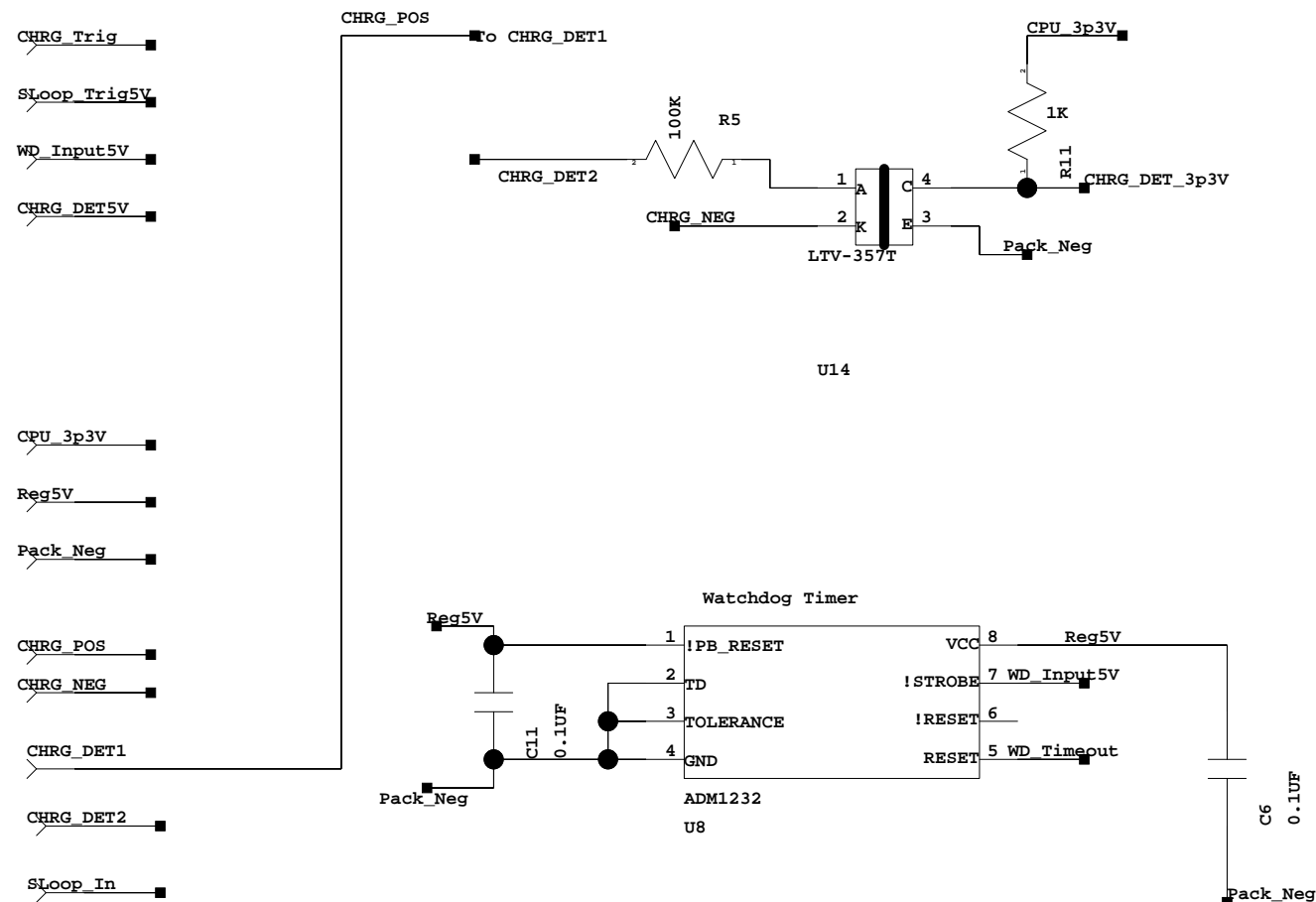
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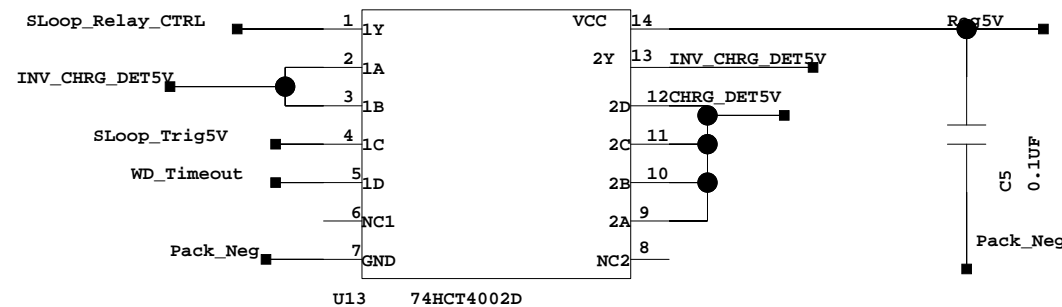
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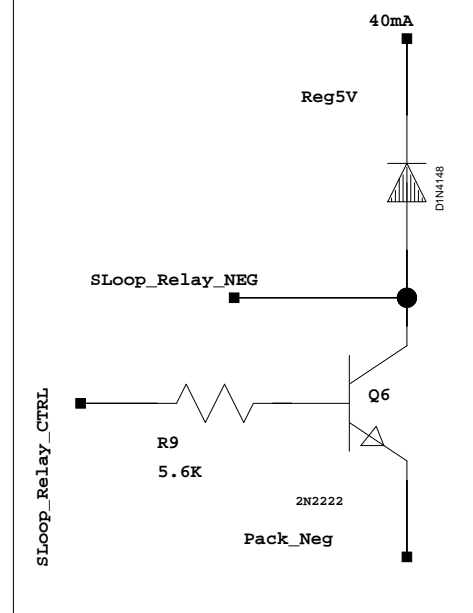
Isolated Charger Plugged In Detector



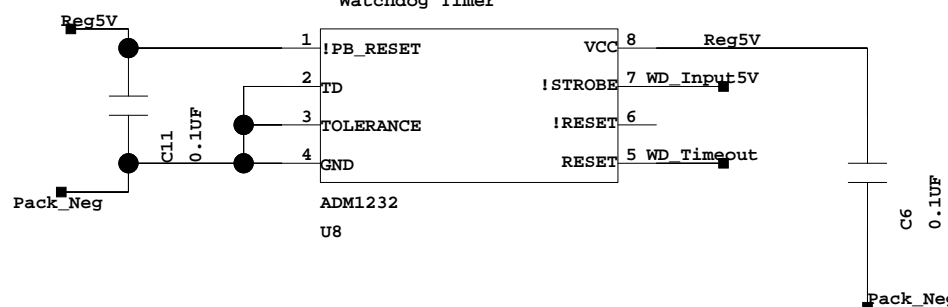
Safety Loop Triggering



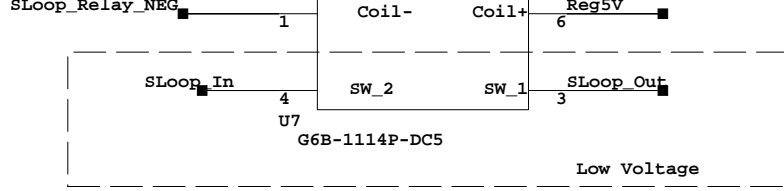
Safety Loop Relay Control



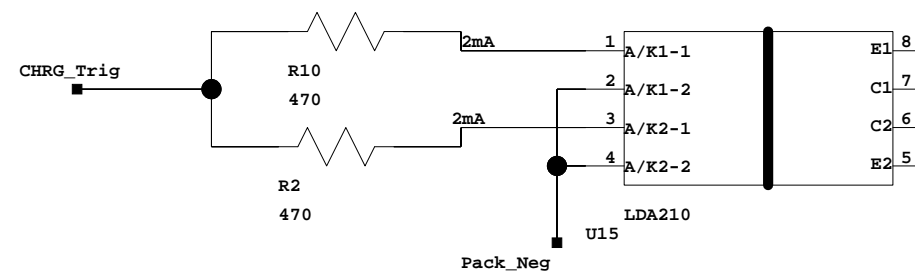
Watchdog Timer



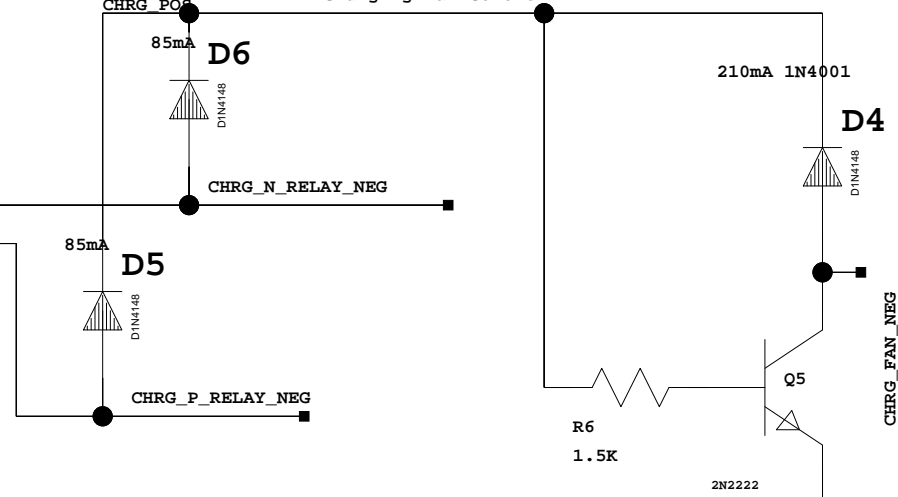
5V PCB SPST-NO Relay



Charge Relay OptoIsolator/Darlington Transistors



Charging Fan Control



- CHRG\_DET\_3p3V →
- CHRG\_FAN\_NEG →
- CHRG\_P\_RELAY\_NEG →
- CHRG\_N\_RELAY\_NEG →
- SLoop\_Out →

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pacRelayControl

SIZE	DWG NO	ASSIGNMENT	REV
B		<ASSIGNMENT NAME>	0
COURSE	SHEET	of	
ECE323	1	1	13-05-2014_22:48

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Drew Jeffrey

4

3

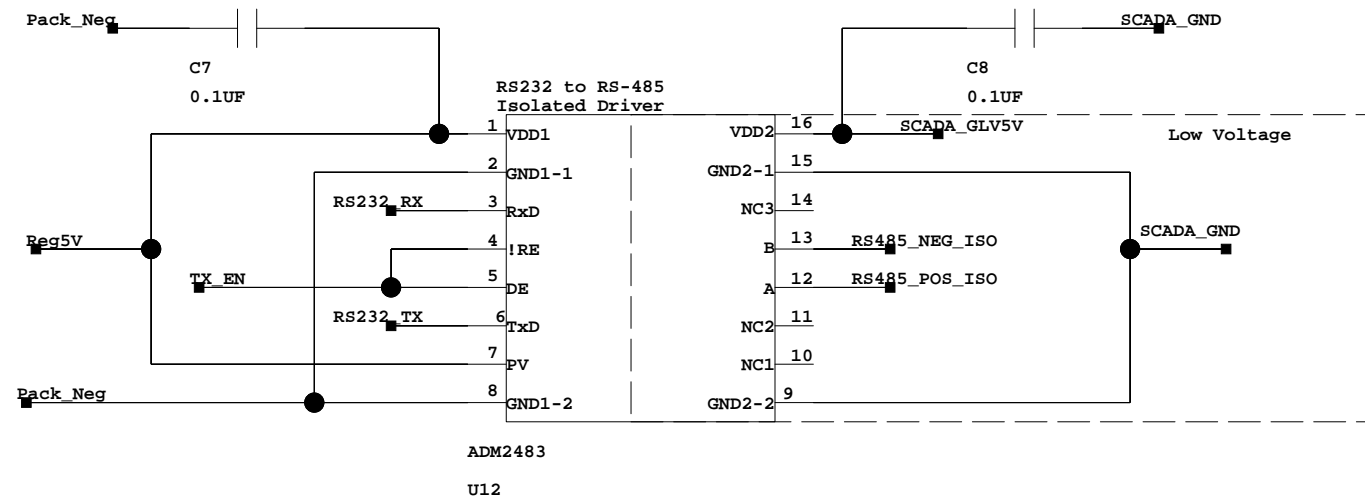
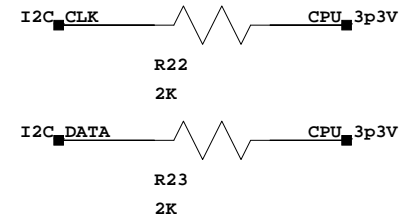
2

1

RS232\_TX  
 RS232\_RX  
 TX\_EN  
 SCADA\_GLV5V  
 SCADA\_GND  
 I2C\_CLK  
 I2C\_DATA  
 Reg5V  
 Pack\_Neg  
 CPU\_3p3V

RS485\_POS\_ISO  
 RS485\_NEG\_ISO

I2C Pullup Resistors



B

B

A

A

<b>LAFAYETTE</b>				Lafayette College Easton, PA ECE Department
TITLE				
<b>serialCommBlock</b>				
SIZE	DWG NO	ASSIGNMENT	REV	
<b>B</b>		<ASSIGNMENT NAME>	<b>0</b>	
DRAWN BY		COURSE	SHEET	of
Drew Jeffrey		ECE323	1	1
17-04-2014_13:08				

4

3

2

1

B

B

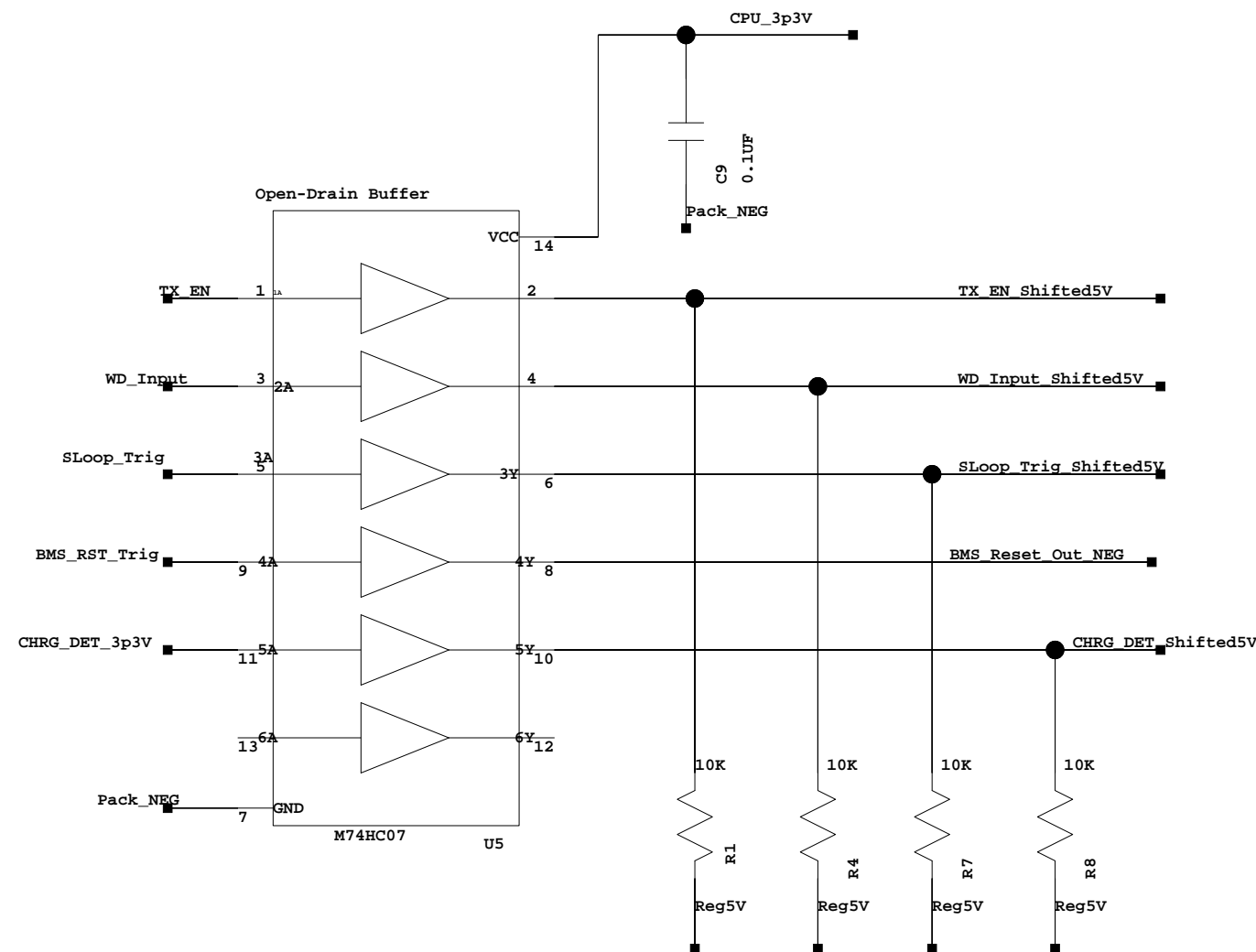
A

A

TX\_EN  
 WD\_Input  
 SLoop\_Trig  
 BMS\_RST\_Trig  
 CHRG\_DET\_3p3V

Reg5V  
 CPU\_3p3V  
 Pack\_NEG

WD\_Input\_Shifted5V  
 TX\_EN\_Shifted5V  
 SLoop\_Trig\_Shifted5V  
 CHRG\_DET\_Shifted5V  
 BMS\_Reset\_Out\_NEG



<b>LAFAYETTE</b>		Lafayette College Easton, PA ECE Department	
TITLE <b>levelShifter</b>			
SIZE <b>B</b>	DWG NO	ASSIGNMENT <ASSIGNMENT NAME>	REV <b>0</b>
COURSE ECE323	SHEET 1	of 1	13-05-2014_22:37

DRAWN BY  
Drew Jeffrey

4

3

2

1