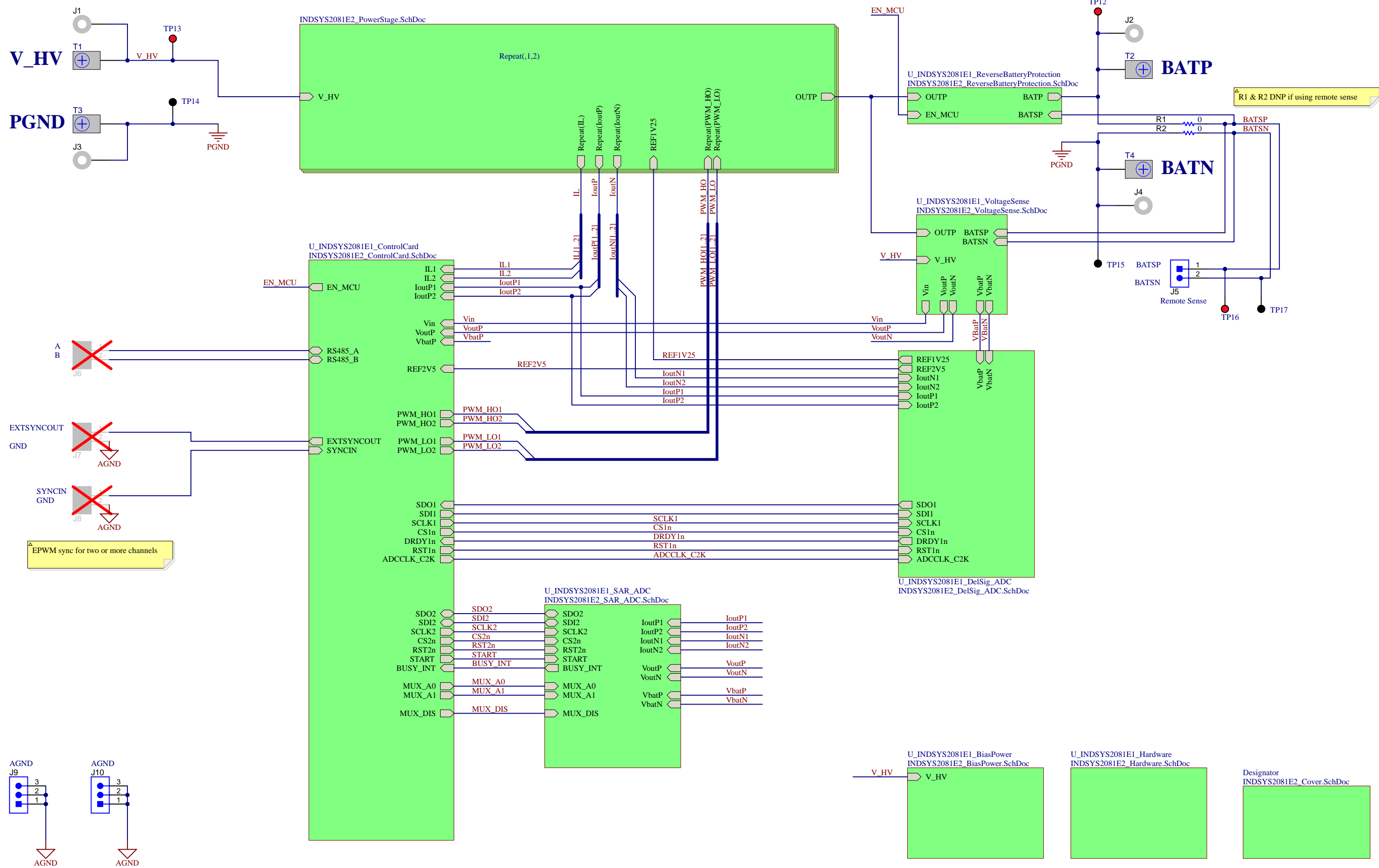


Parameters	Specifications
Input voltage	12V to 15V
Output voltage range	75mV to 6V
Output current range (bidirectional)	-100A to 100A
Switching Frequency	96kHz

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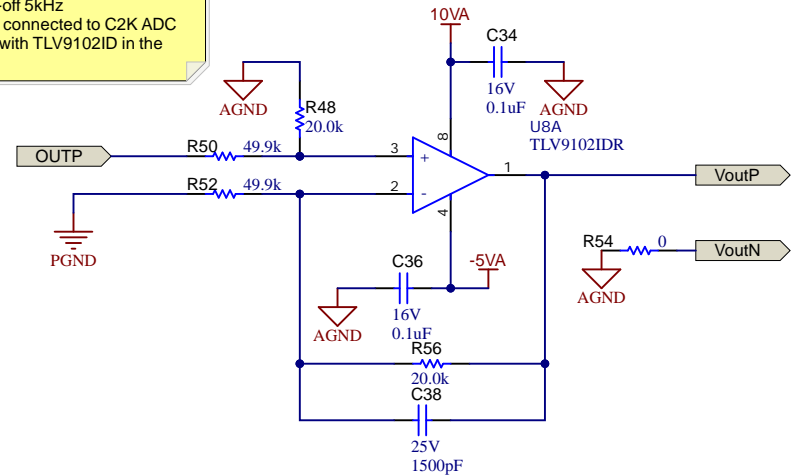
Orderable: ChangeMe in variant	Designed for: Public Release	Mod. Date: 5/2/2023
TID #: TIDA-010087	Project Title: 100A Digital Control Battery Tester	
Number: INDSYS-2081   Rev: E2	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 2 of 10
Drawn By: Battery test	File: INDSYS2081E2.SchDoc	Size: B
Engineer: Shaury Anand	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	



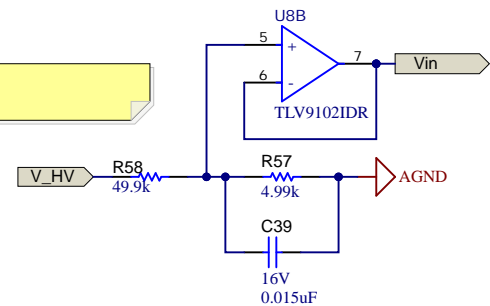


## Voltage sense: Remote and local

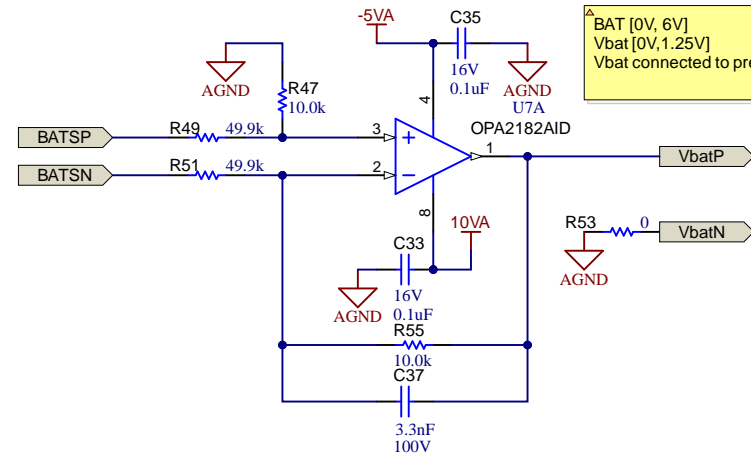
**A** OUT [0V, 6V]  
 Vout [0V, 2.5V]  
 Filter cut-off 5kHz  
 Normally connected to C2K ADC  
 Replace with TLV9102ID in the BOM



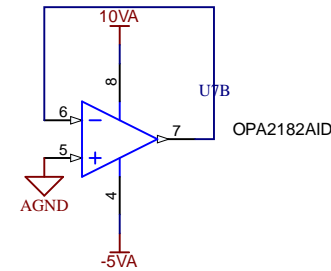
**A** V\_HV [0V, 25V]  
 Vin [0V, 2.5V]



**A** BAT [0V, 6V]  
 Vbat [0V, 1.25V]  
 Vbat connected to precision ADC



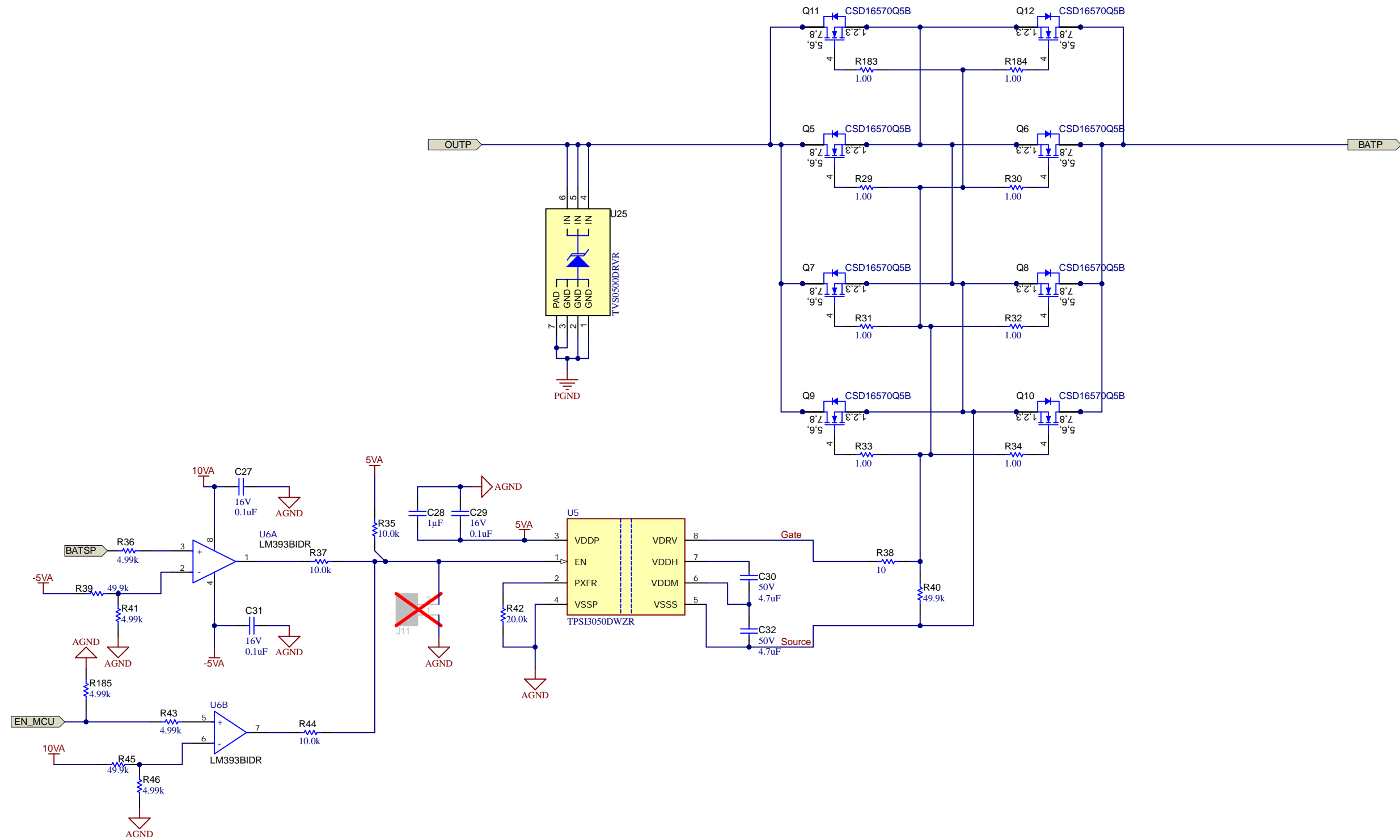
**A** Change feedback resistors to 20k  
 if using ADS8686S ADC



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Orderable: <a href="#">ChangeMe in variant</a>	Designed for: <a href="#">Public Release</a>	Mod. Date: 5/2/2023
TID #: TIDA-010087	Project Title: 100A Digital Control Battery Tester	
Number: INDSYS-2081   Rev: E2	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 4 of 10
Drawn By: Battery test	File: INDSYS2081E2_VoltageSense.SchDoc	Size: B
Engineer: Shaury Anand	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	

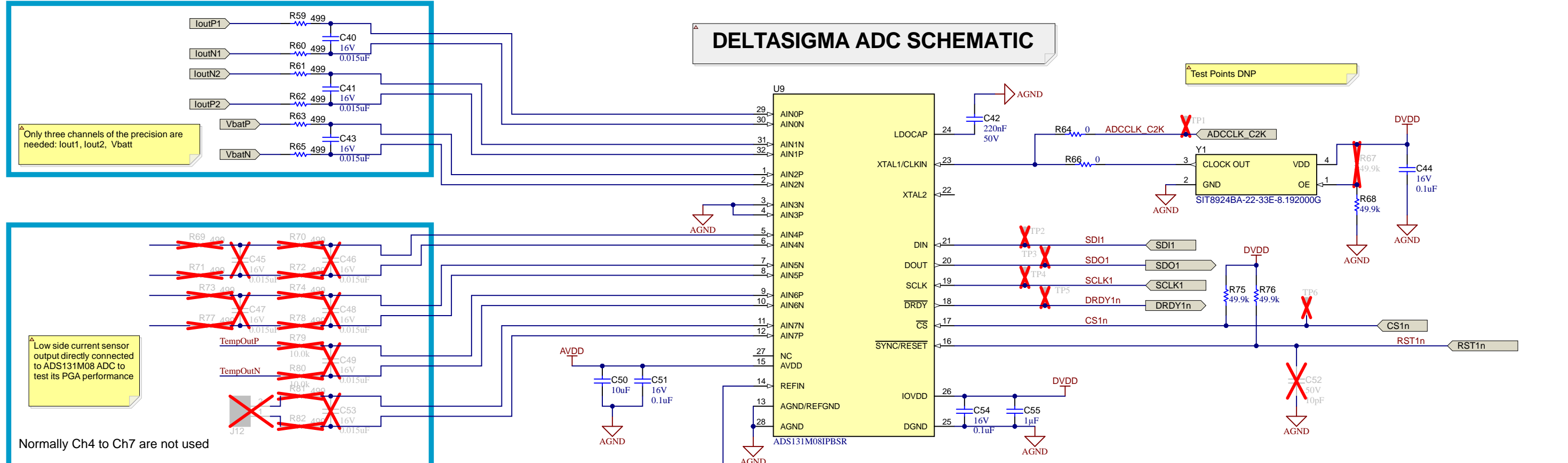
# REVERSE BATTERY PROTECTION



Orderable: <a href="#">ChangeMe in variant</a>	Designed for: <a href="#">Public Release</a>	Mod. Date: 5/2/2023
TID #: TIDA-010087	Project Title: 100A Digital Control Battery Tester	
Number: <a href="#">INDSYS-2081</a>   Rev: E2	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet 5 of 10
Drawn By: Battery test	File: <a href="#">INDSYS2081E2_ReverseBatteryProtection.Sch</a> Size: B	
Engineer: Shaury Anand	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	

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# DELTASIGMA ADC SCHEMATIC

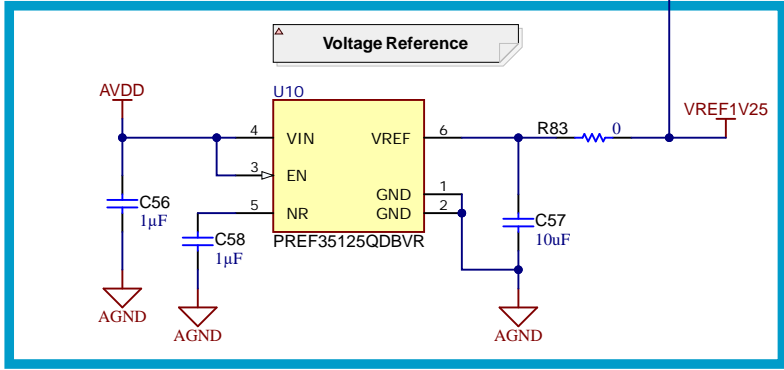


Only three channels of the precision are needed: Iout1, Iout2, Vbat

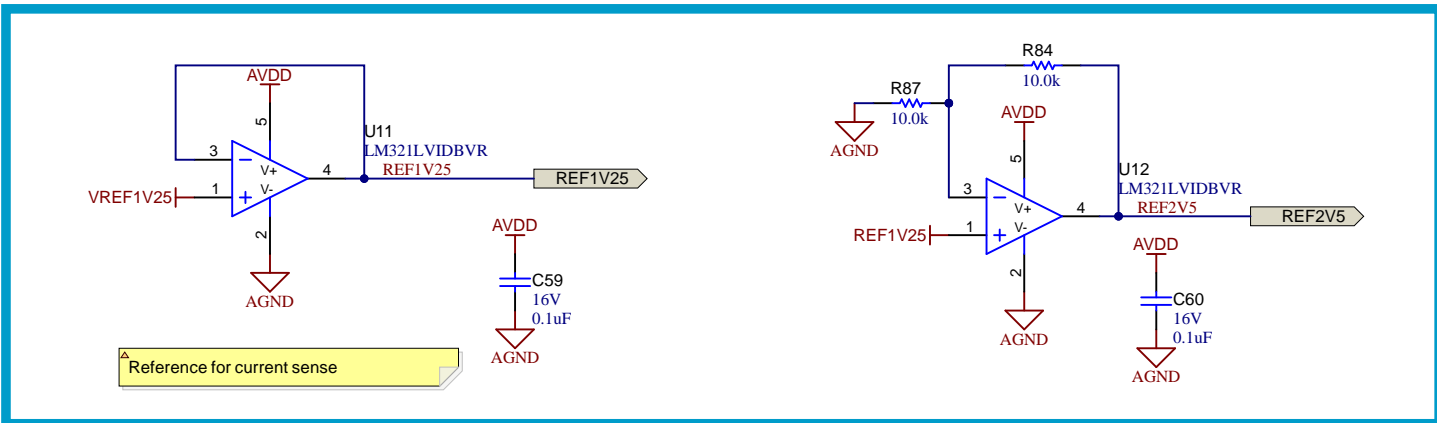
Low side current sensor output directly connected to ADS131M08 ADC to test its PGA performance

Normally Ch4 to Ch7 are not used

## Voltage Reference

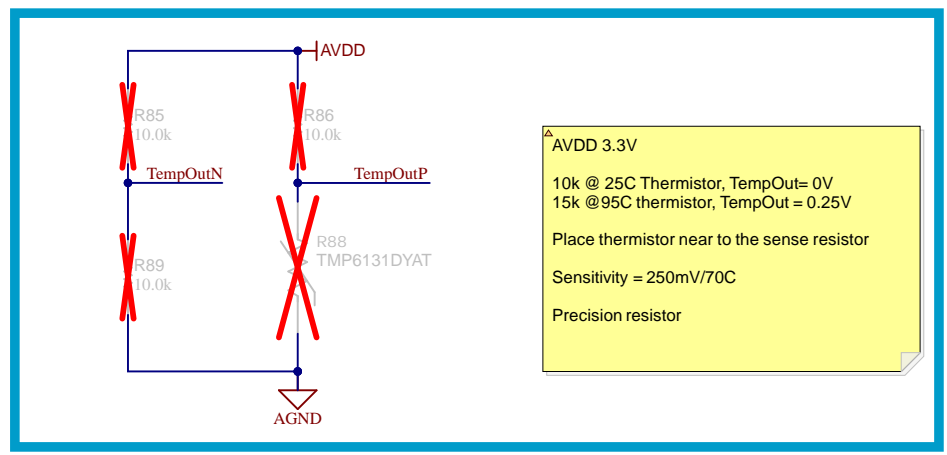


## VREF BUFFER



Reference for current sense

## TEMP SENSE



AVDD 3.3V  
 10k @ 25C Thermistor, TempOut= 0V  
 15k @ 95C thermistor, TempOut = 0.25V  
 Place thermistor near to the sense resistor  
 Sensitivity = 250mV/70C  
 Precision resistor

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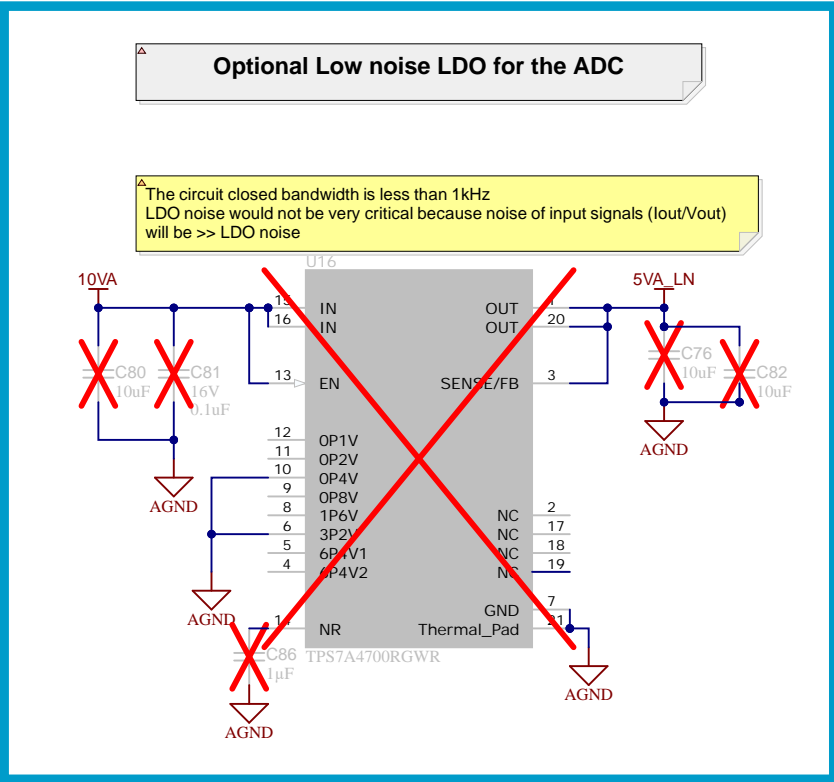
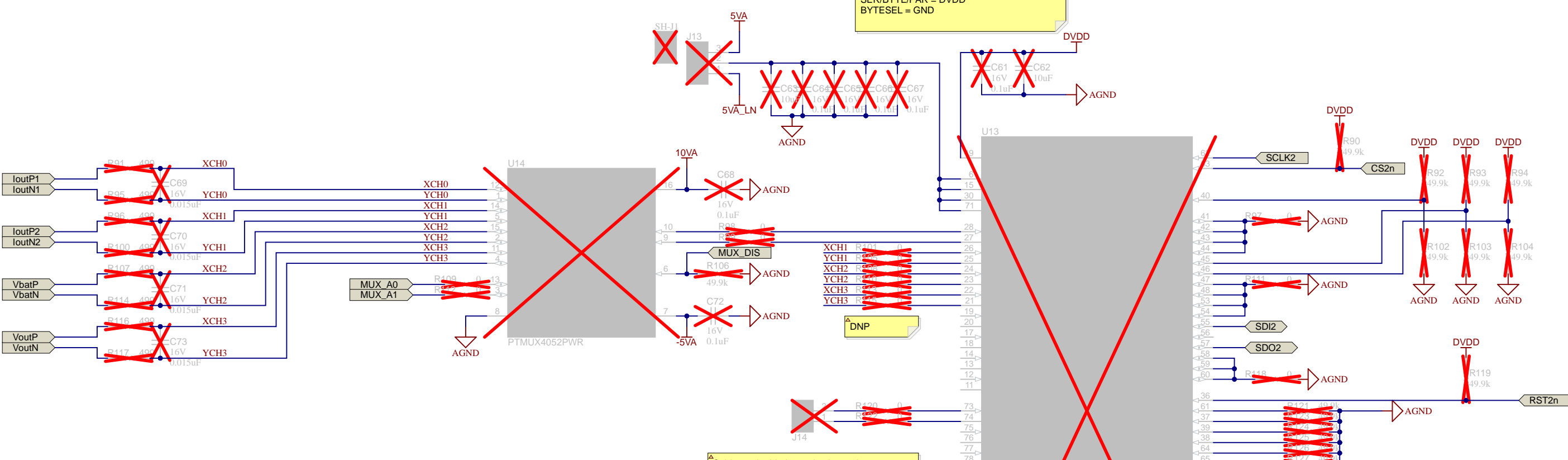


# SAR ADC SCHEMATIC

The ADS8686S supports serial (SPI) interface communication using the CS, SCLK, SDI, SDOA, and SDOB signals. To read the data using the serial interface, tie the SER/BYTE/ PAR pin high and the DB9/BYTESEL pin low when the device is released from a full reset.

In serial 2-wire mode, conversion results from channel AIN\_0A to channel AIN\_7A appear on SDOA, and conversion results from channel AIN\_0B to channel AIN\_7B appear on SDOB. Tie the DB4/ SER1W pin to logic high to configure the device to operate in serial 2-wire mode. Serial 1-wire or 2-wire mode is configured when the ADS8686S is released from a full reset.

Mode: software, serial 1 wire, use burst mode and sequencer  
 HW\_RNGSELx = 00, software mode  
 CRCEN = GND  
 SER1W = DVDD  
 SER/BYTE/PAR = DVDD  
 BYTESEL = GND



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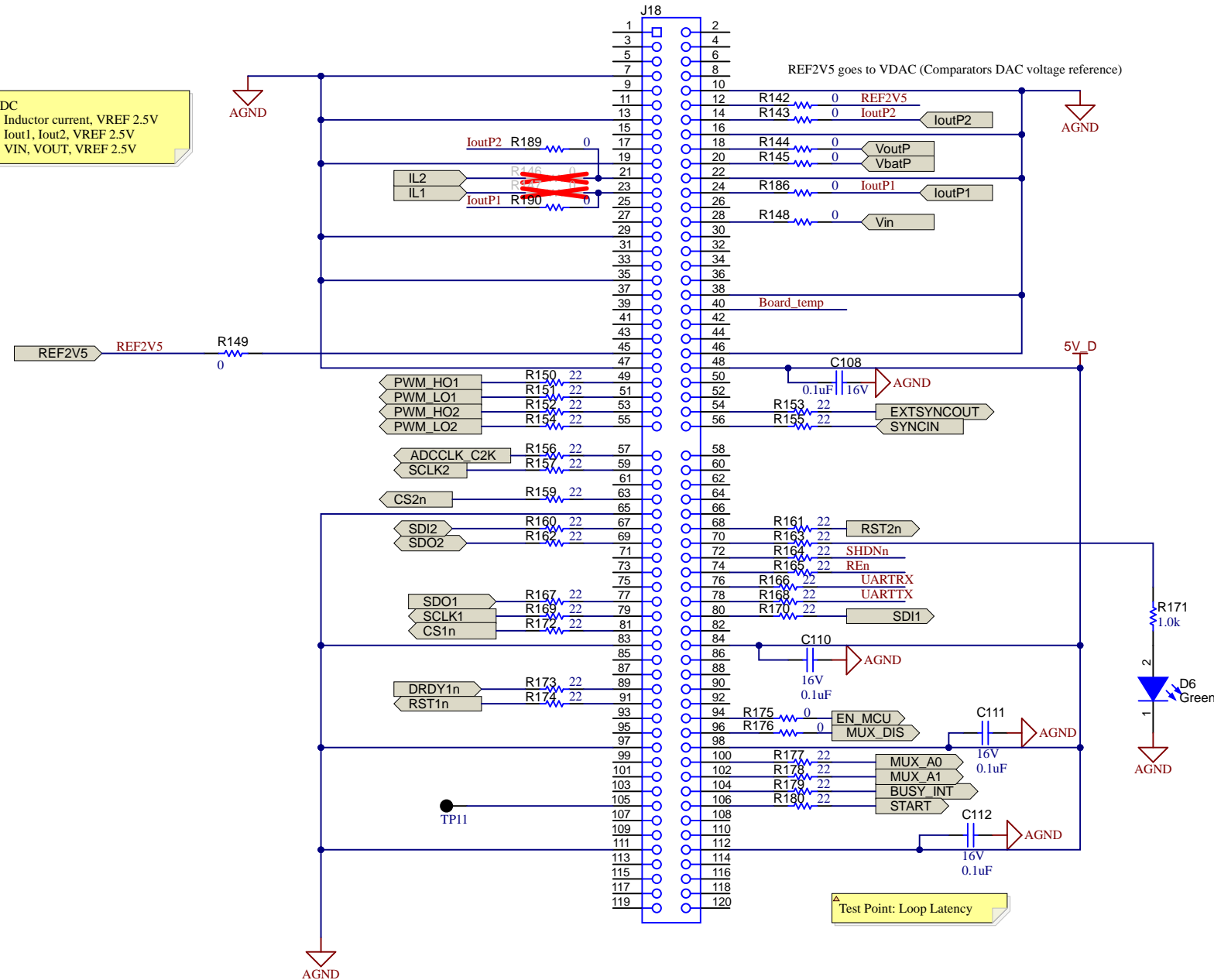
Orderable: ChangeMe in variant	Designed for: Public Release	Mod. Date: 5/2/2023
TID #: TIDA-010087	Project Title: 100A Digital Control Battery Tester	
Number: INDSYS-2081   Rev: E2	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 7 of 10
Drawn By: Battery test	File: INDSYS2081E2_SAR_ADC.SchDoc	Size: B
Engineer: Shaury Anand	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	



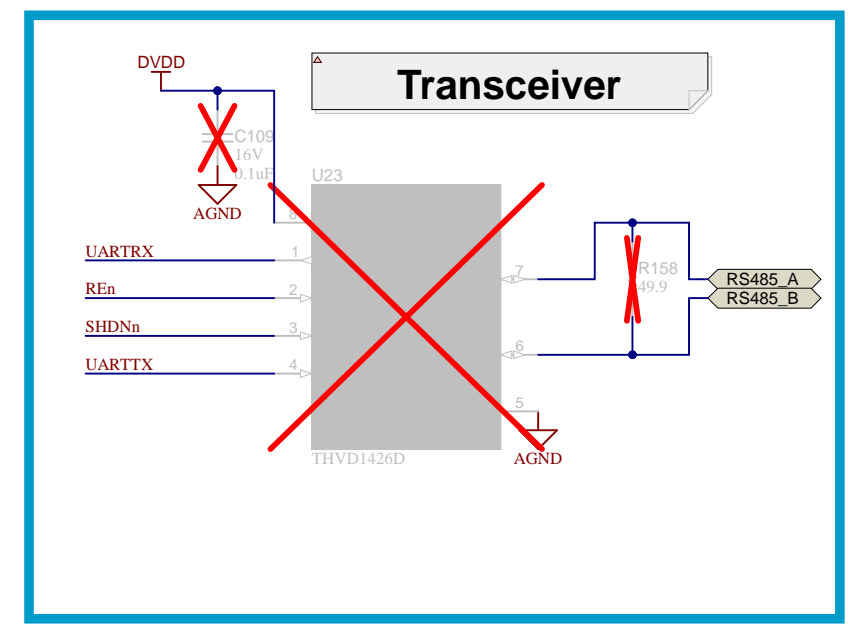
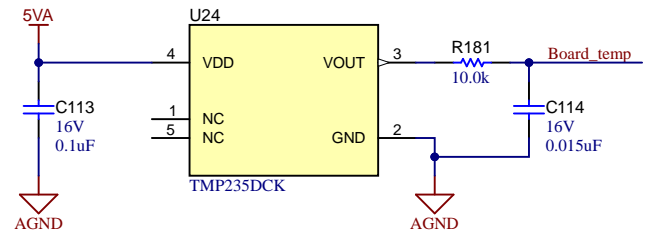


# CONTROL CARD PIN MAPPING\_F28003x

**C2K ADC**  
 ADC1: Iout1, Iout2, VREF 2.5V  
 ADC2: Iout1, Iout2, VREF 2.5V  
 ADC3: VIN, VOUT, VREF 2.5V



Test Point: Loop Latency



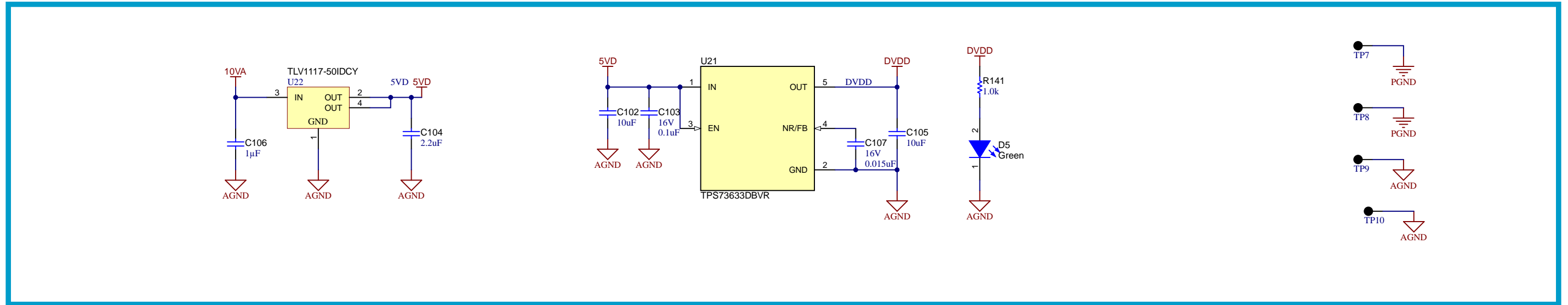
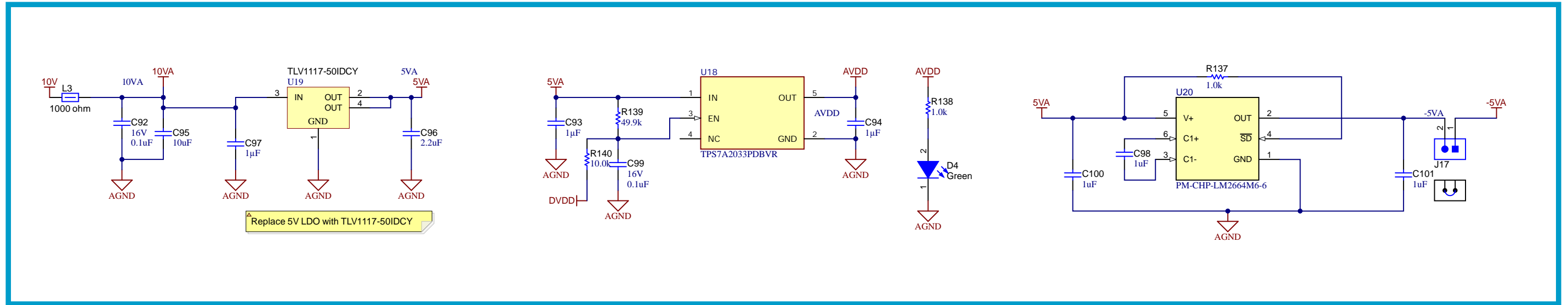
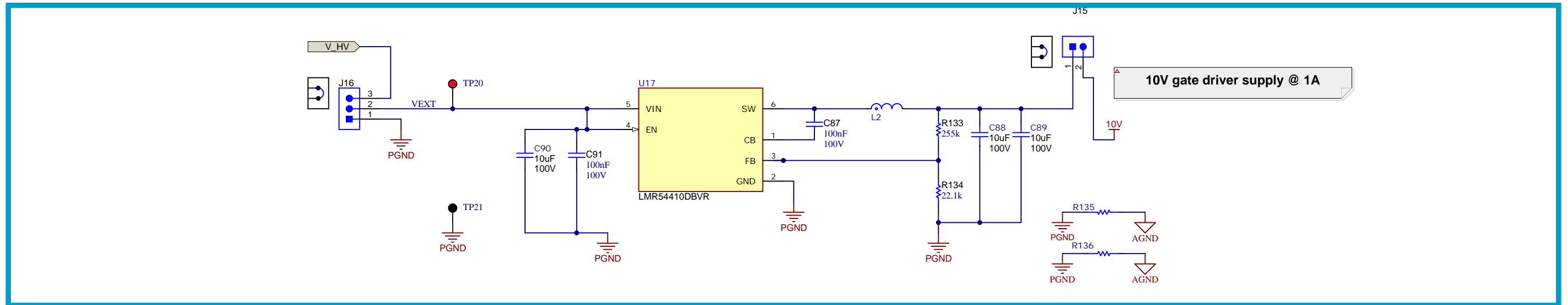
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TID #: TIDA-010087	Project Title: 100A Digital Control Battery Tester	
Number: <a href="#">INDSYS-2081</a>   Rev: E2	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 8 of 10
Drawn By: <a href="#">Battery test</a>	File: <a href="#">INDSYS2081E2_ControlCard.SchDoc</a>	Size: B
Engineer: <a href="#">Shaury Anand</a>	Contact: <a href="#">http://www.ti.com/support</a>	



# BIAS POWER

## 10V gate driver supply @ 1A



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Orderable: ChangeMe in variant	Designed for: Public Release	Mod. Date: 5/2/2023
TID #: TIDA-010087	Project Title: 100A Digital Control Battery Tester	
Number: INDSYS-2081   Rev: E2	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 9 of 10
Drawn By: Battery test	File: INDSYS2081E2_BiasPower_SchDoc	Size: B
Engineer: Shaury Anand	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	

H1 NY PMS 440 0025 PH  
 H2 NY PMS 440 0025 PH  
 H3 NY PMS 440 0025 PH  
 H4 NY PMS 440 0025 PH

H5 1902C  
 H6 1902C  
 H7 1902C  
 H8 1902C

~~FID1~~ ~~FID2~~ ~~FID3~~ FID4 FID5 FID6

PCB Number: INDSYS-2081  
 PCB Rev: E2



PCB LOGO  
 FCC disclaimer

PCB LOGO  
 WEEE logo

Logo5 CAUTION HOT SURFACE  
 Logo4 CAUTION HOT SURFACE  
 Logo6 CAUTION HOT SURFACE  
 Logo7 CAUTION HOT SURFACE

LBL1  
 PCB Label  
 THT-14-423-10  
 Size: 0.65" x 0.20 "

Variant/Label Table	
Variant	Label Text
001	ChangeMe!
002	ChangeMe!

You should delete the nylon screws/standoffs and/or the bump-ons as needed for your design (or substitute other parts from Hardware.IntLib). Bump-ons are cheaper, but provide less clearance.

Deleting anything else from this page may result in your EVM submission being rejected (until you add them back).

Update the Label Text in the Label Table as needed for each Assembly Variant.

You should delete this note too.

ZZ1  
 Label Assembly Note  
 This Assembly Note is for PCB labels only

ZZ2  
 Assembly Note  
 These assemblies are ESD sensitive, ESD precautions shall be observed.

ZZ3  
 Assembly Note  
 These assemblies must be clean and free from flux and all contaminants. Use of no clean flux is not acceptable.

ZZ4  
 Assembly Note  
 These assemblies must comply with workmanship standards IPC-A-610 Class 2, unless otherwise specified.

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Orderable: <a href="#">ChangeMe in variant</a>	Designed for: <a href="#">Public Release</a>	Mod. Date: 6/21/2023	 <a href="http://www.ti.com">http://www.ti.com</a> © Texas Instruments 2023
TID #: <a href="#">TIDA-010087</a>	Project Title: <a href="#">100A Digital Control Battery Tester</a>		
Number: <a href="#">INDSYS-2081</a>   Rev: <a href="#">E2</a>	Sheet: 10 of 10		
SVN Rev: <a href="#">Not in version control</a>	Assembly Variant: <a href="#">001</a>	File: <a href="#">INDSYS2081E2_Hardware.SchDoc</a>	
Drawn By: <a href="#">Battery test</a>	Engineer: <a href="#">Shaury Anand</a>	Contact: <a href="http://www.ti.com/support">http://www.ti.com/support</a>	

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