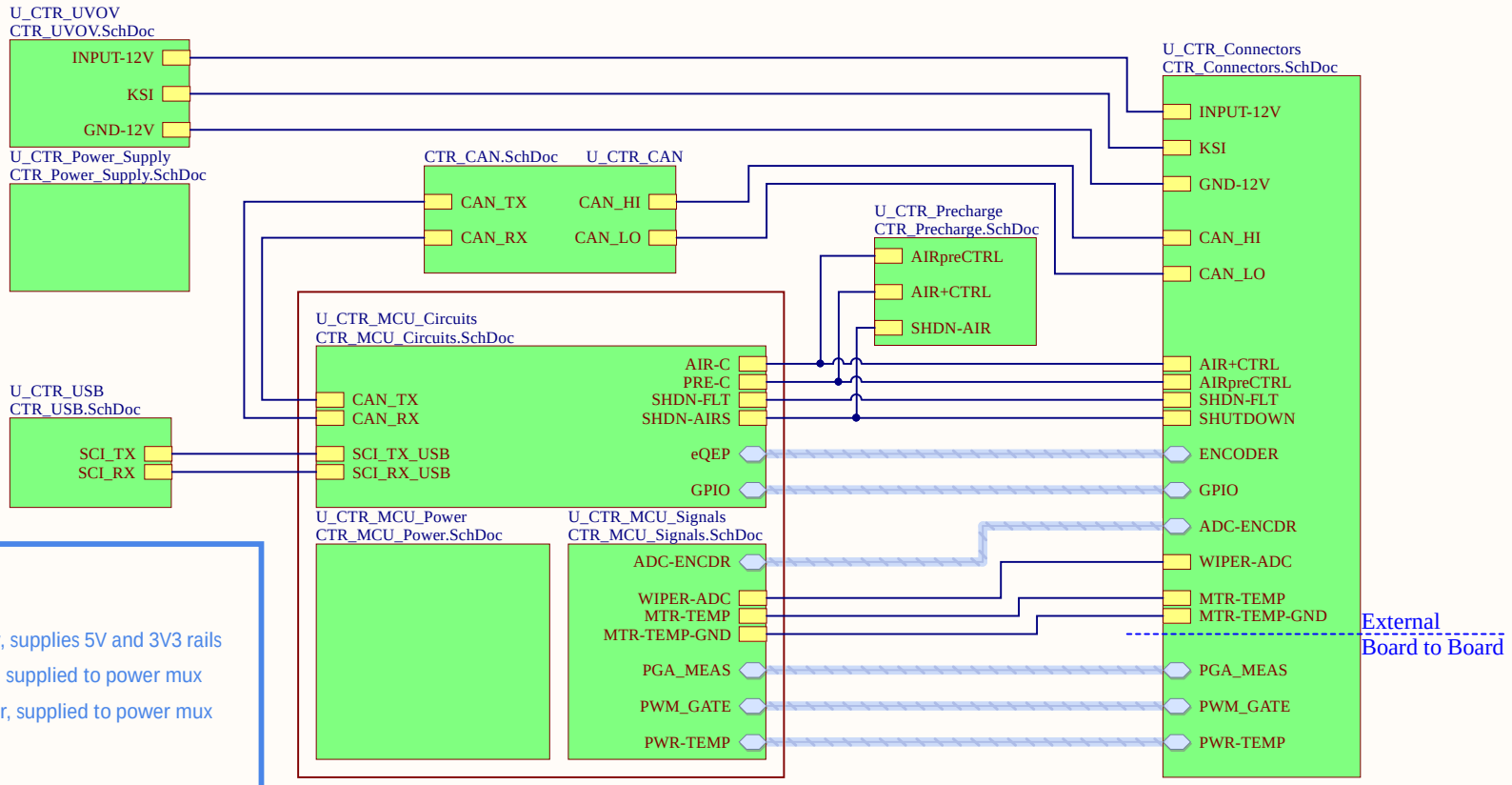
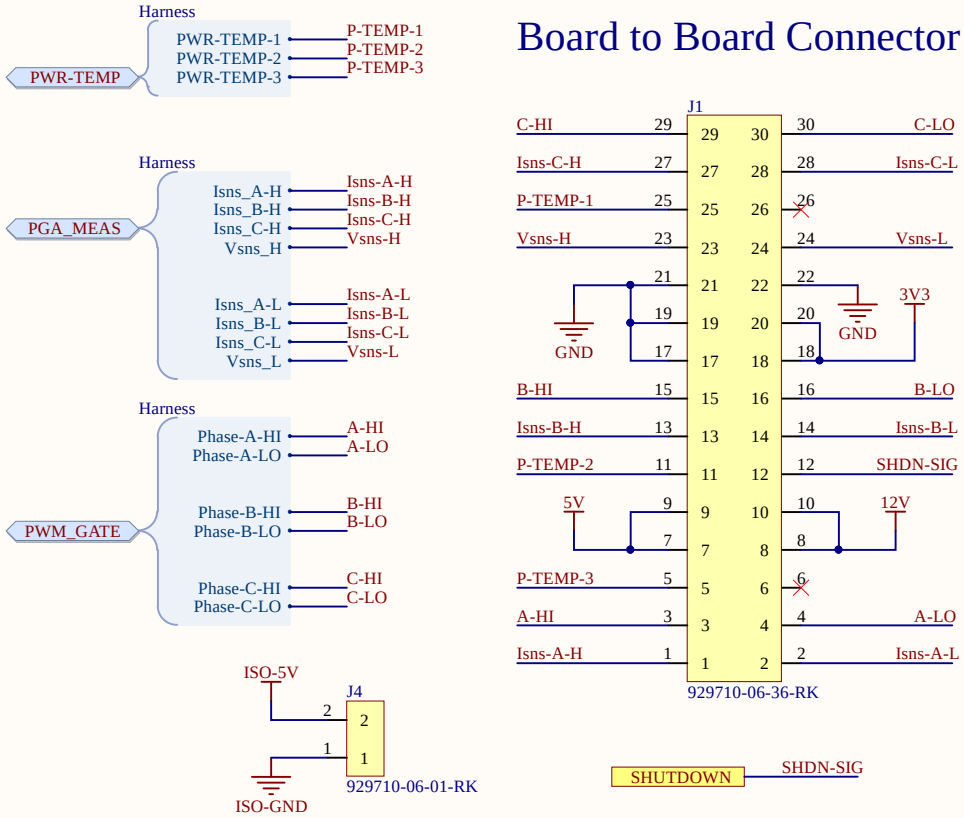


VOLTAGE RAILS

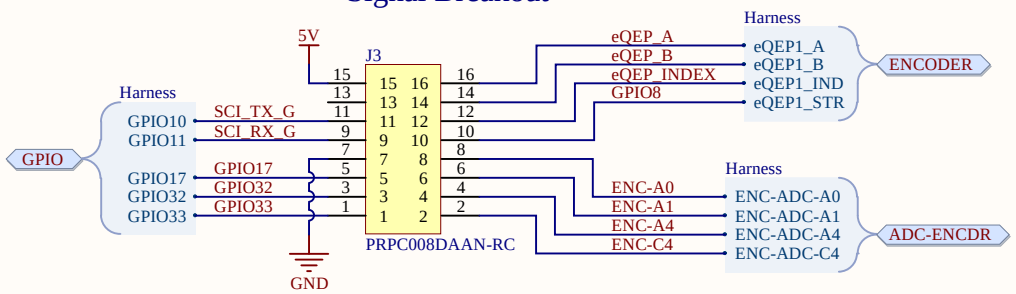
RAILS	NOTES
12V	12V supply form external battery, supplies 5V and 3V3 rails
5V-SUPP	5V supply from DC/DC converter, supplied to power mux
3V3-SUPP	3V3 supply from DC/DC converter, supplied to power mux
5V	5V supply, source for 5V-iso
3V3	3V3 supply
5V-ISO	Isolated 5V supply for iso-OpAmp and precharge
USB-5V	5V supply from USB
USB-3V3	3V3 supply from USB
VDDIO	3V3 digital supply to TMS320
VDDA	3V3 analog supply to TMS320
VDD	1V2 digital logic power from TMS320 (unused)

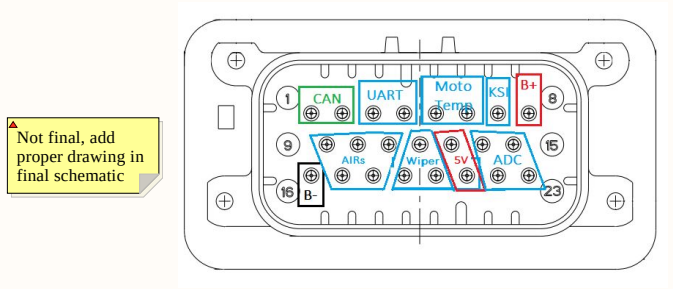
Title: Top Schematic			SPECTRE MOTION
Size: A4	Number:	Revision: 0A	
Date: 2021-06-19		Sheet 1 of 10	
File: D:\spectre-inverter\..\CTR_Top.SchDoc		Drawn By: Andrei Divinagracia	

Board to Board Connector

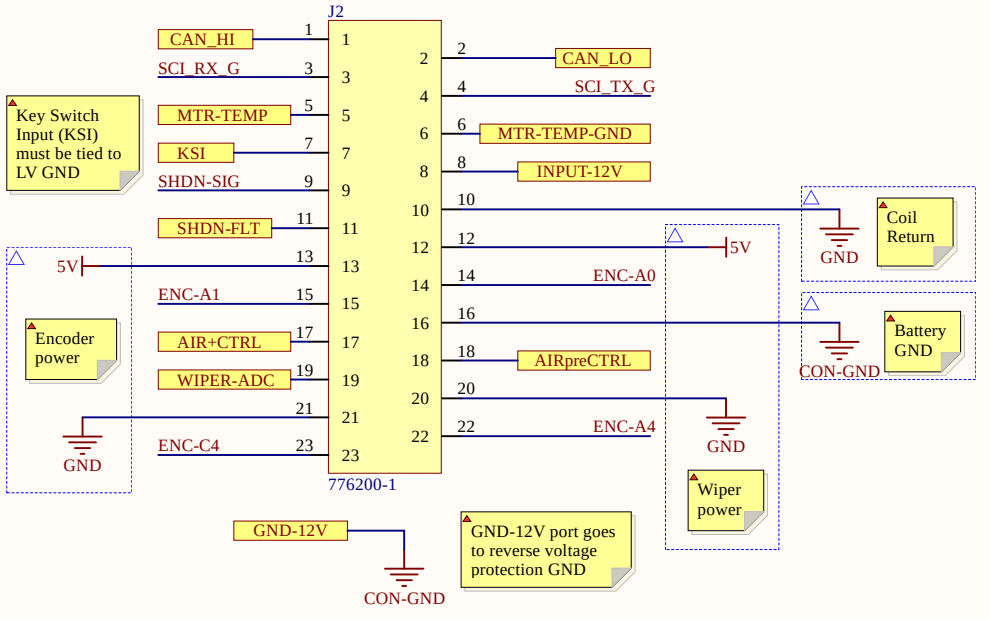


Signal Breakout





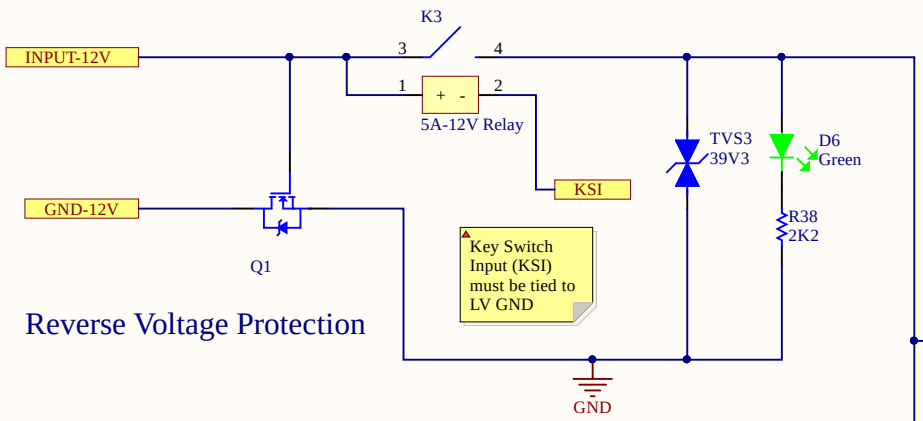
External Connector



Title: Connectors		
Size: A4	Number:	Revision: 0A
Date: 2021-06-19		Sheet 2 of 10
File: D:\spectre-inverter\..\CTR_Connectors.SchDoc		Drawn By: Andrei Divinagracia

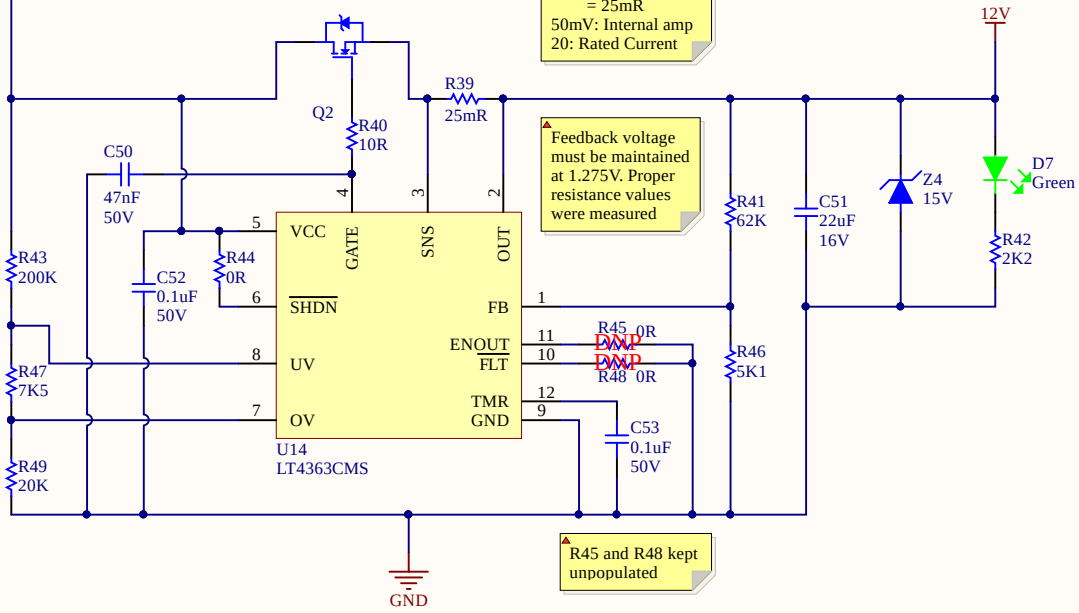
DESIGN NOTE:
N-FET placed for reverse polarity protection. Will conduct at correct 12V input polarity, will not conduct when polarity reversed.

KSI Relay



Reverse Voltage Protection

UV/OV/OC Lockout



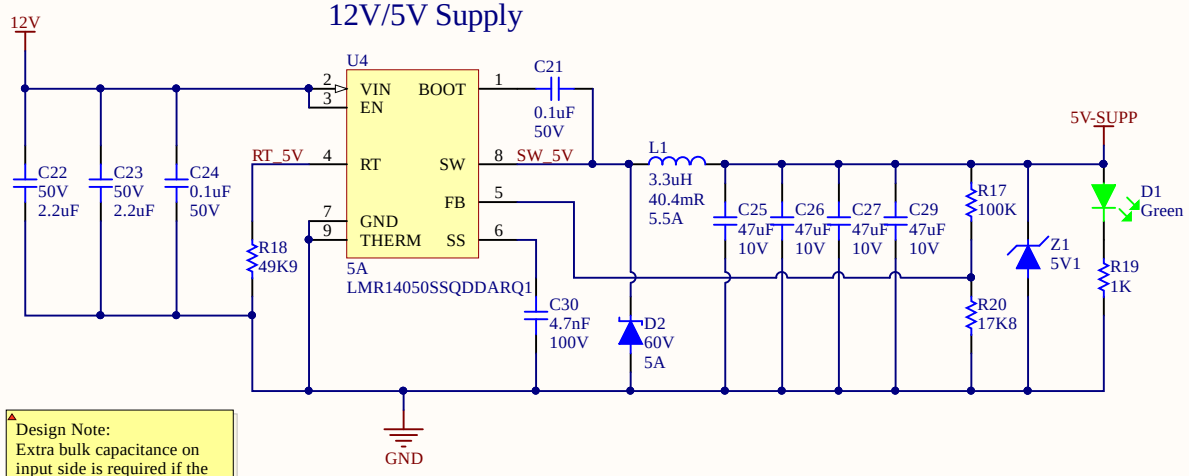
Rtop = 200e3;
Rmid = 7.5e3;
Rbot = 20e3;

Vuv = 1.275 * (Rbot + Rmid + Rtop)/(Rbot + Rmid)
Vov = 1.275 * (Rbot + Rmid + Rtop)/(Rbot)

Vuv = 10.5477V
Vov = 14.5031V

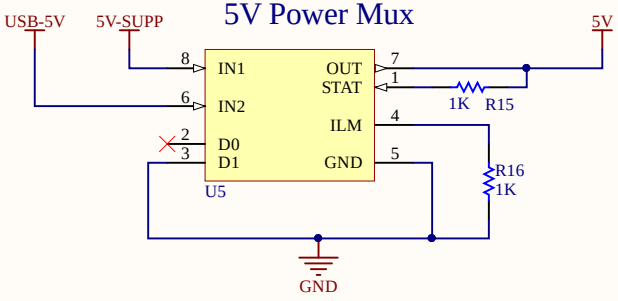
Title: Power Input		
Size: A4	Number:	Revision: 0A
Date: 2021-06-19		Sheet 3 of 10
File: D:\spectre-inverter\..\CTR_UVOV.SchDoc		Drawn By: Andrei Divinagracia

12V/5V Supply

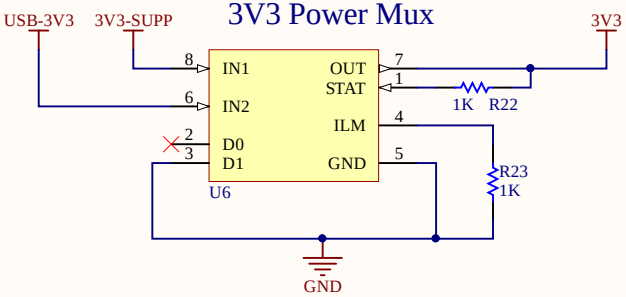


Design Note:
Extra bulk capacitance on input side is required if the chip is not located within 5cm from the voltage source

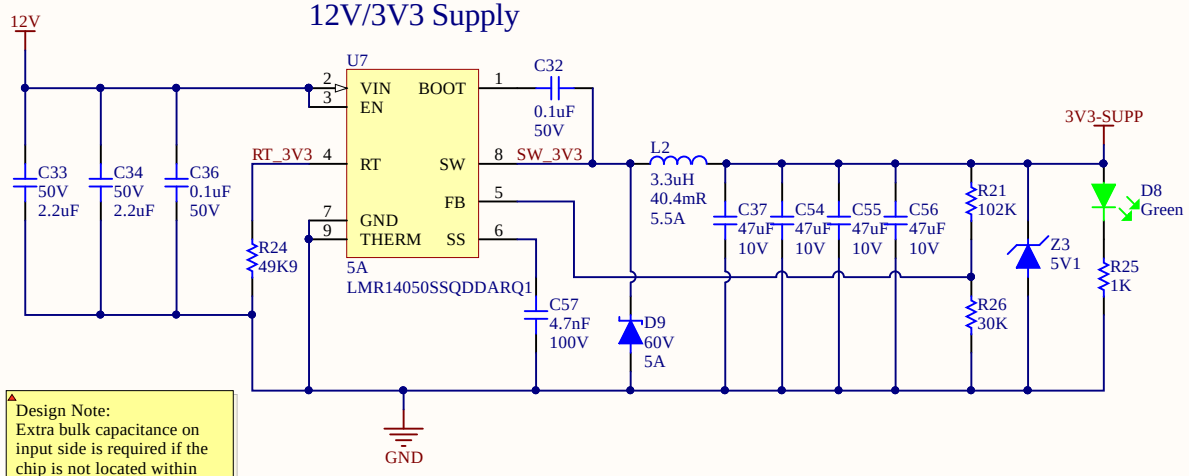
5V Power Mux



3V3 Power Mux

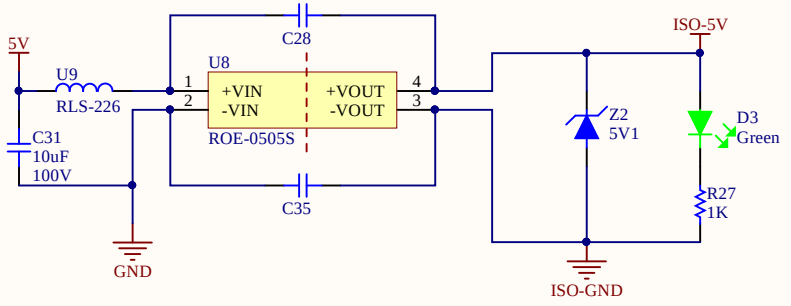


12V/3V3 Supply

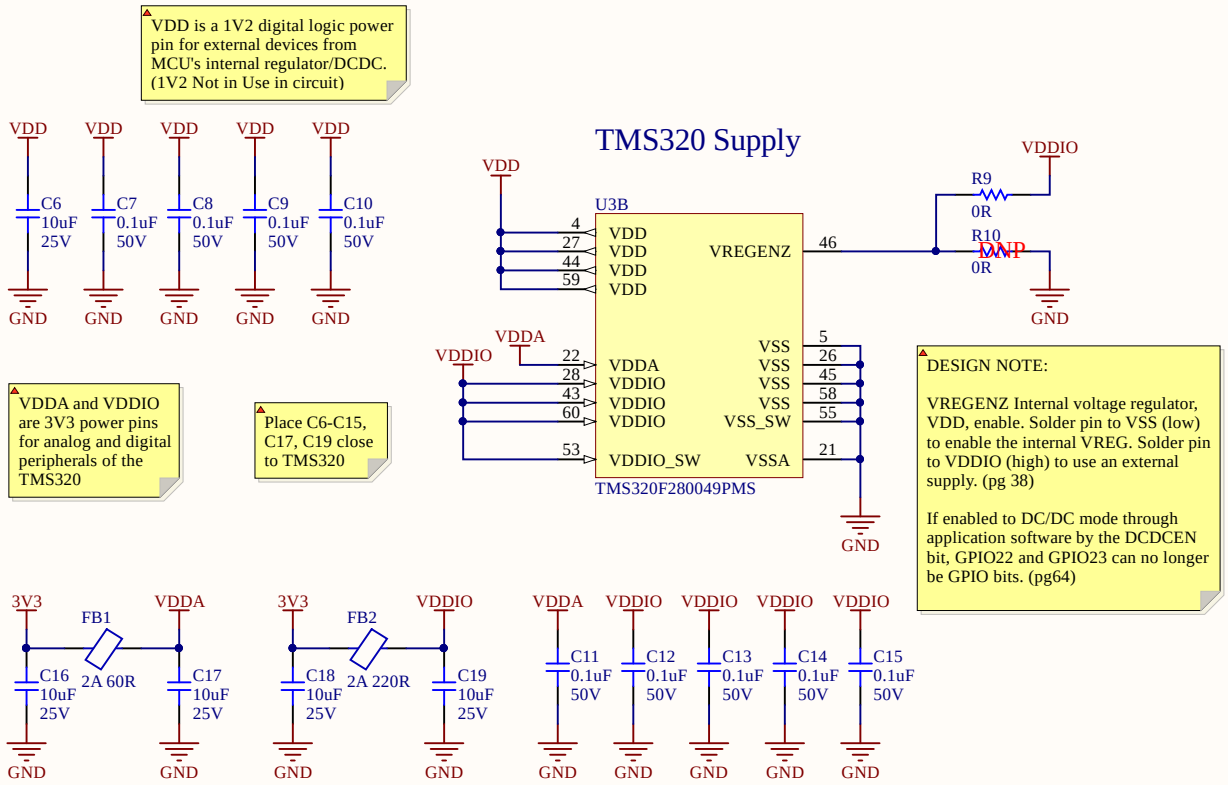


Design Note:
Extra bulk capacitance on input side is required if the chip is not located within 5cm from the voltage source

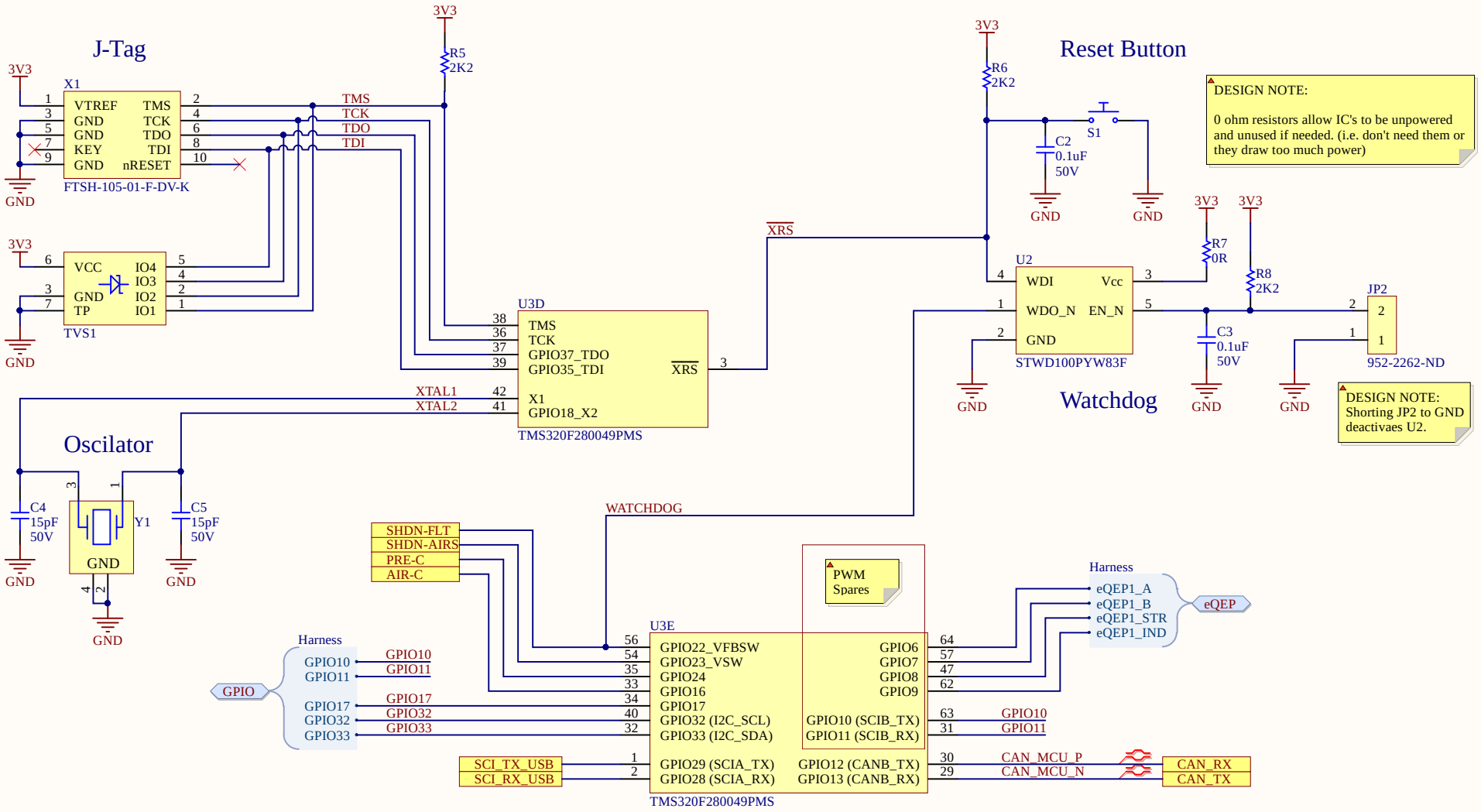
Iso Supply



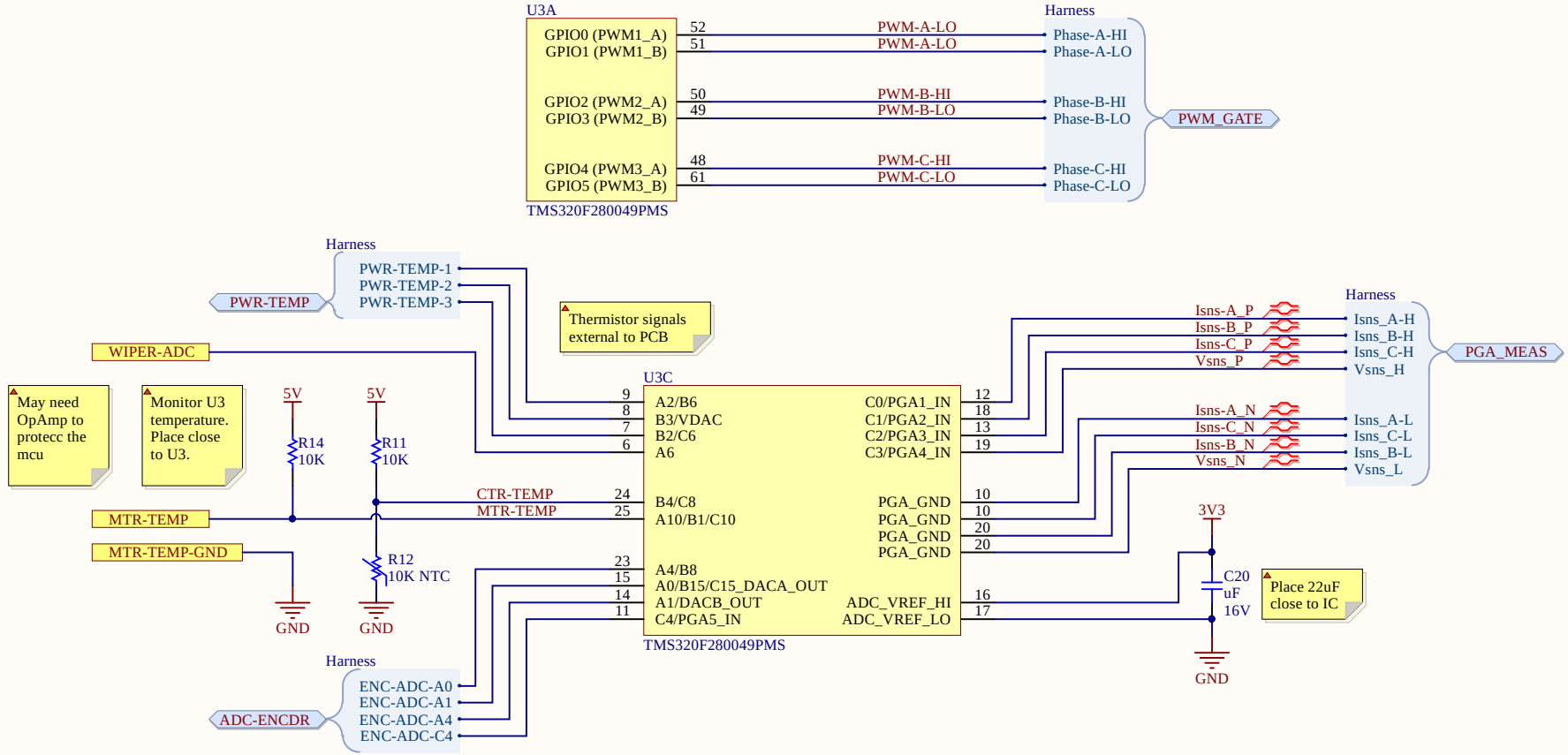
Title: Power Supplies		
Size: A4	Number:	Revision: 0A
Date: 2021-06-19	Sheet 4 of 10	
File: D:\spectre-inverter\..\CTR_Power_Supply.SchDoc	Drawn By: Andrei Divinagracia	



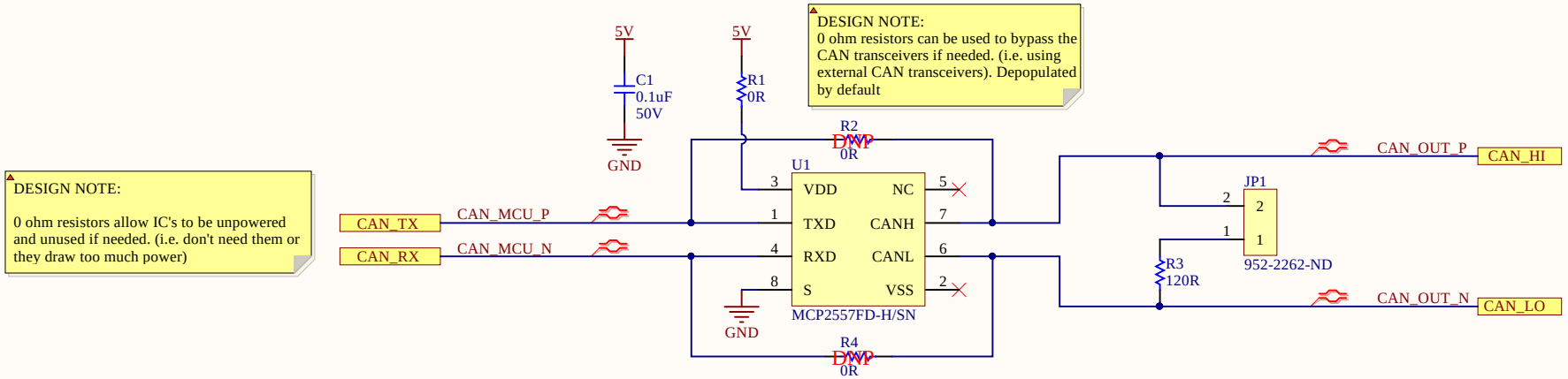
Title: TMS320 Power		
Size: A4	Number:	Revision: 0A
Date: 2021-06-19	Sheet 5 of 10	
File: D:\spectre-inverter\..\CTR_MCU_Power.SchDoc	Drawn By: Andrei Divinagracia	



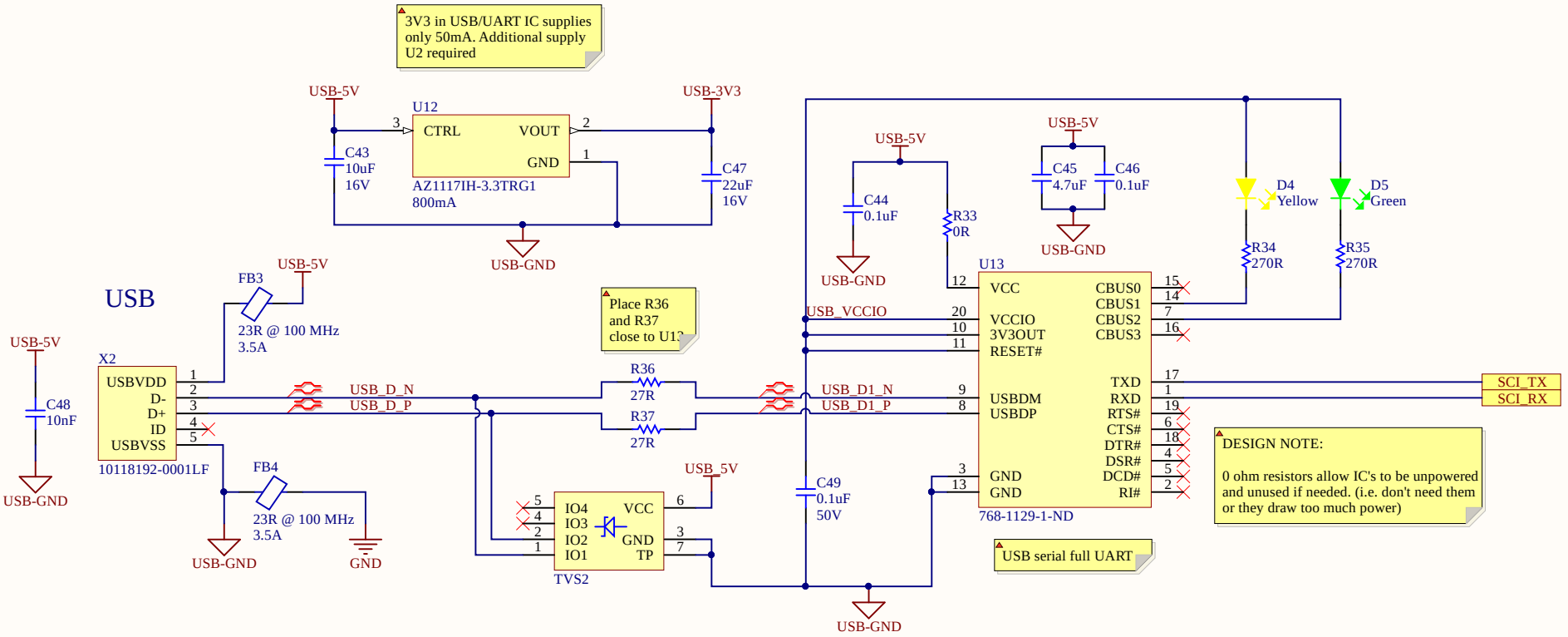
Title	TMS320 Circuits	
Size: A4	Number	Revision: 0A
Date: 2021-06-19	Sheet 6 of 10	
File: D:\spectre-inverter\..\CTR_MCU_Circuits.SchDoc	Drawn By: Andrei Divinagracia	



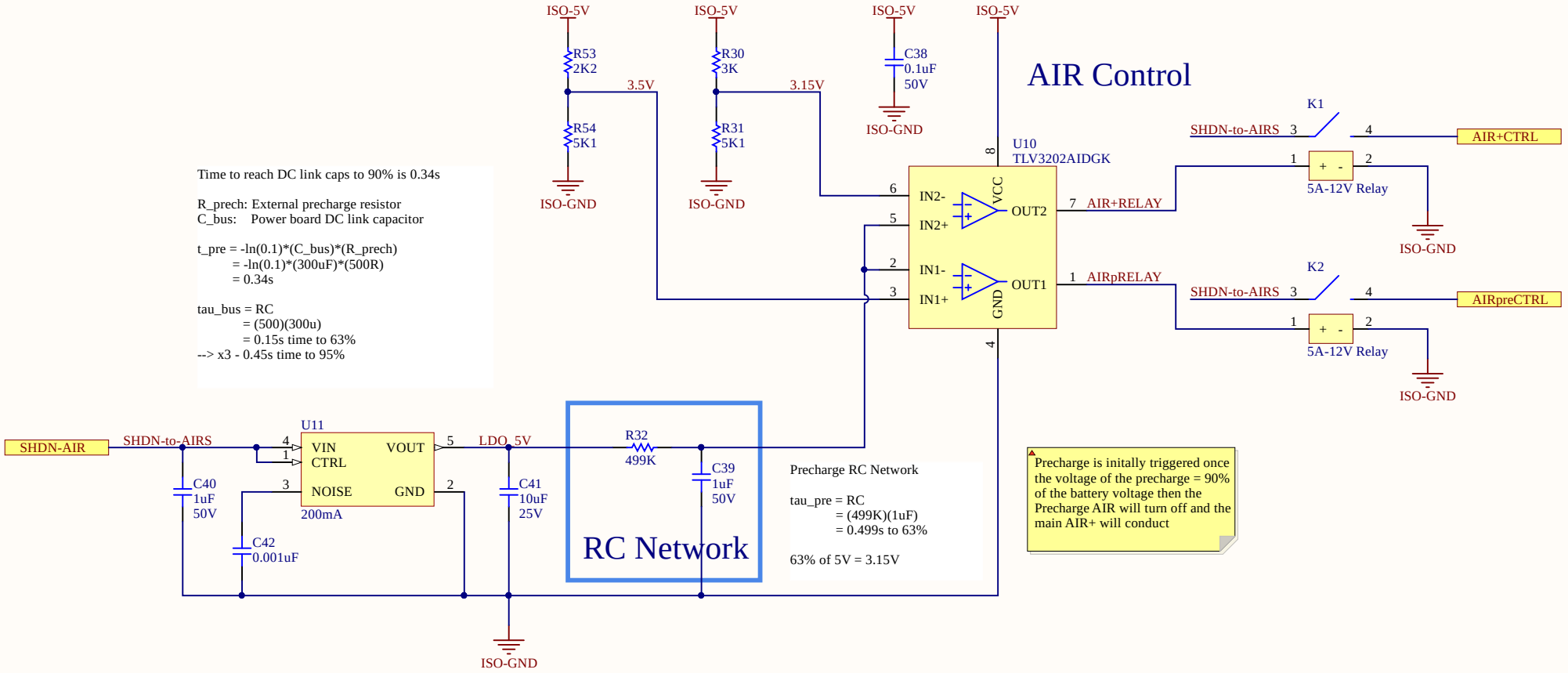
Title	PWM and Sensor Signals	
Size: A4	Number:	Revision: 0A
Date: 2021-06-19	Sheet 7 of 10	
File: D:\spectre-inverter\..\CTR_MCU_Signals.SchDoc	Drawn By: Andrei Divinagracia	



Title: CAN		
Size: A4	Number:	Revision: 0A
Date: 2021-06-19	Sheet 8 of 10	
File: D:\spectre-inverter\..\CTR_CAN.SchDoc	Drawn By: Andrei Divinagracia	



Title: USB		
Size: A4	Number:	Revision: 0A
Date: 2021-06-19		Sheet 9 of 10
File: D:\spectre-inverter\..\CTR_USB.SchDoc		Drawn By: Andrei Divinagracia



Title: Precharge		
Size: A4	Number:	Revision: 0A
Date: 2021-06-19		Sheet 10 of 10
File: D:\spectre-inverter\..\CTR_Precharge.SchDoc		Drawn By: Andrei Divinagracia