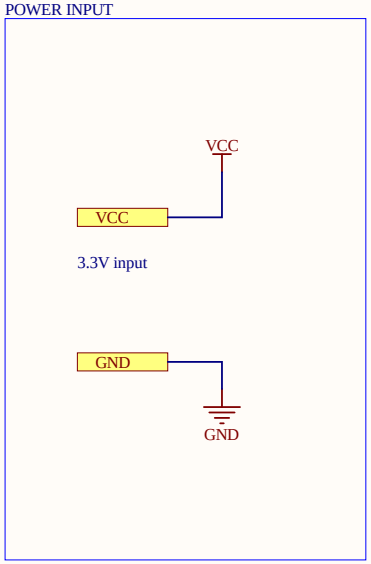
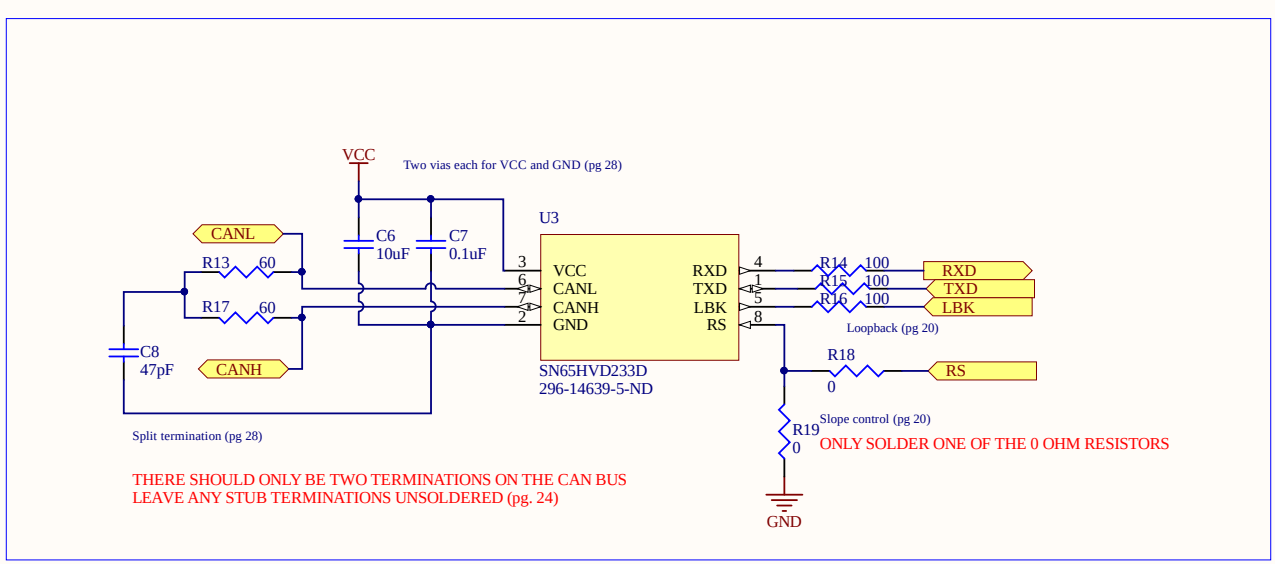
POWER INPUT





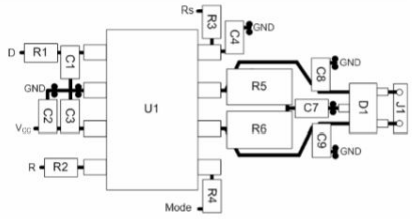


Figure 41. Layout Example Schematic

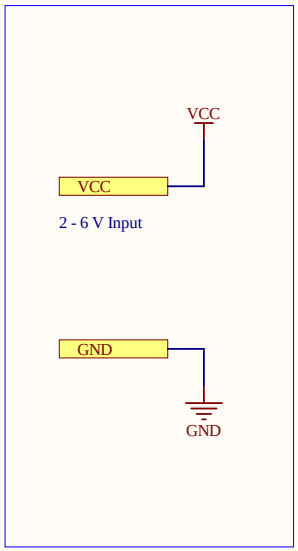
See pg. 28 of the datasheet for layout guidelines

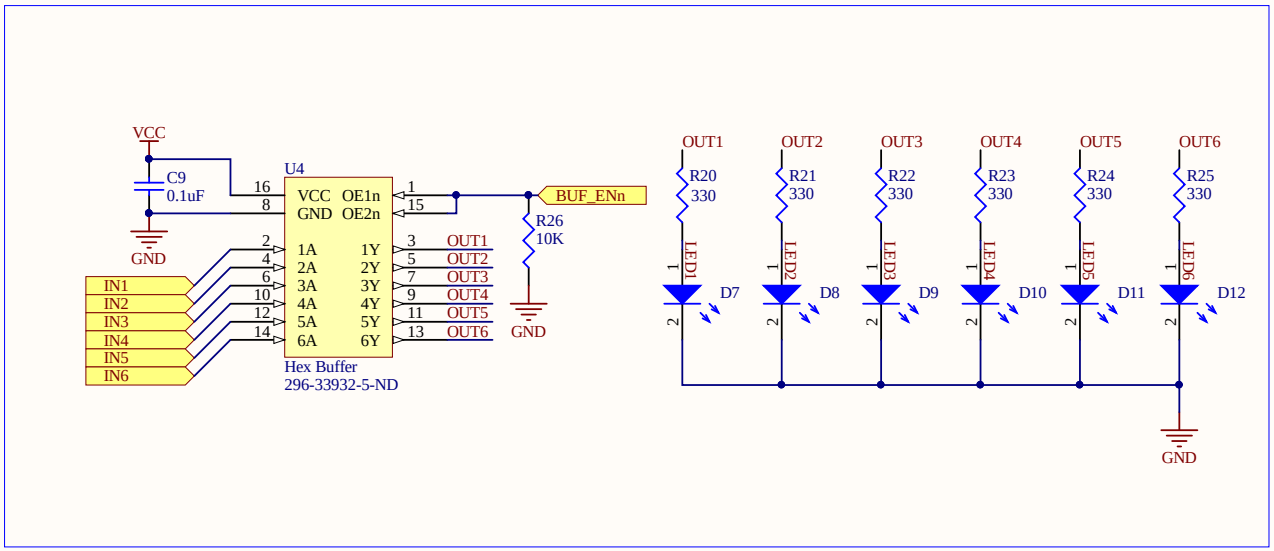
This schematic implements the SN65HVD233 CAN transciever with loopback control and two options for slope control.

A 0 Ohm resistor can be soldered to GND to permanently put the device in High Speed mode (20 V / us slew), or a 0 Ohm resistor can be soldered to the RS port to control the device via an external uController. Connecting the RS pin to a uController allows the device to be put into low-power mode by setting a voltage high.

- Device is meant to be used in a 3.3 V system
- 100 Ohm current limiting resistors placed on the digital lines to minimize digital noise to the device
- Only two CAN transcievers on the bus should have 120 ohm terminations. Other devices should be placed on 'stub' networks where the terminations are left unsoldered

Title	SN65HVD233		UTAT SS
Size	Number		Revision
A4	*		1.0
Date:	10/29/2018	Sheet * of *	
File:	C:\Users\..\can-SN65HVD233.SchDoc	Drawn By:	Dylan Vogel



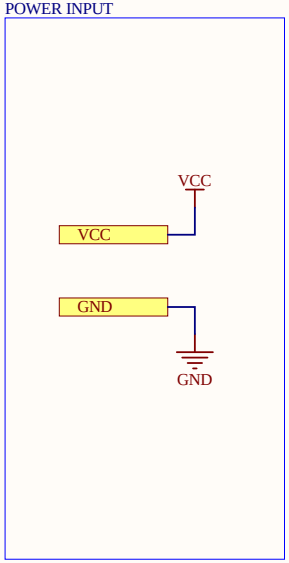


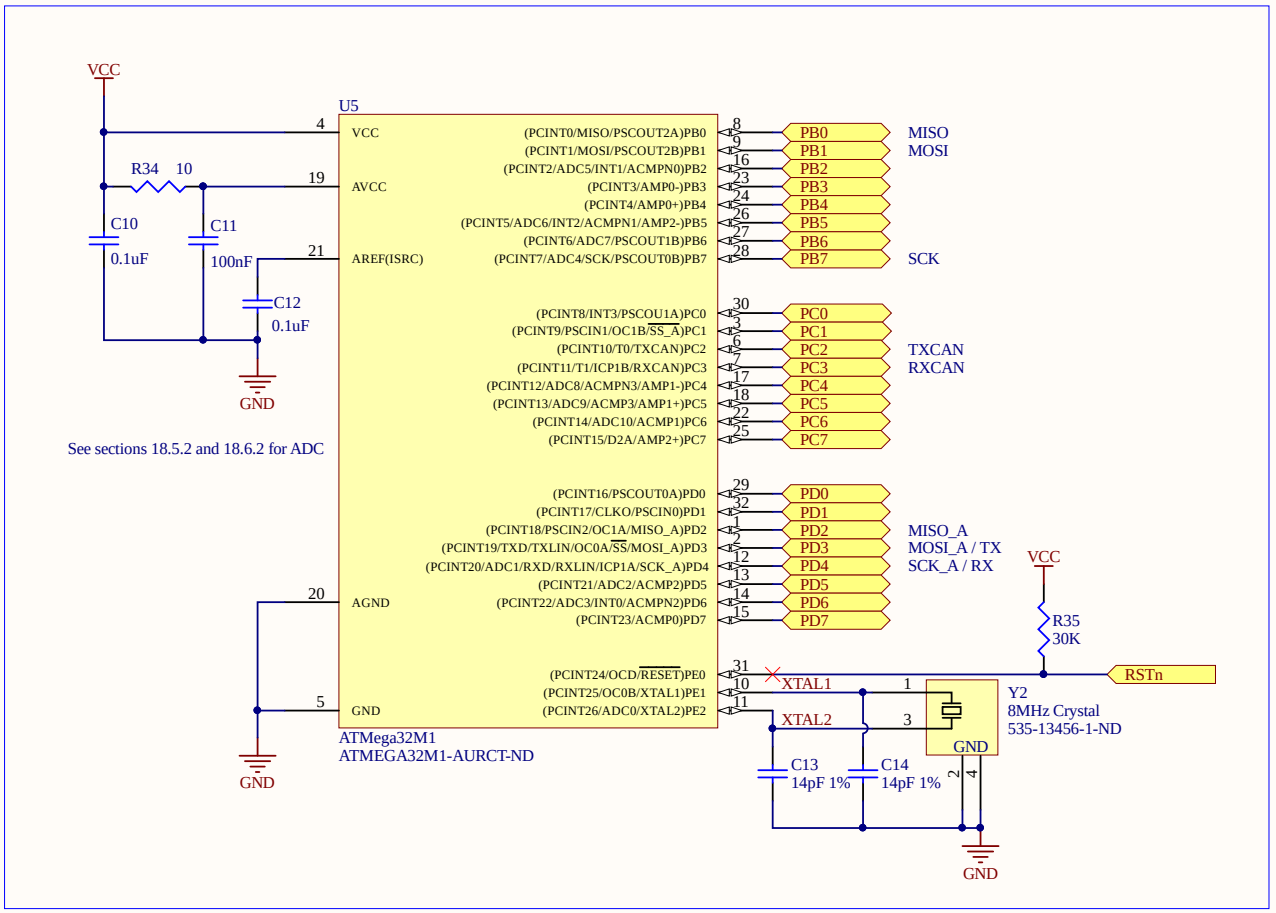
This schematic implements the SN74HC365PW non-inverting, tri-state hex buffer as an LED monitoring circuit. Connecting a signal to IN[1:6] will light up the corresponding LED on OUT[1:6].

- The BUF_ENn input can be connected to a mircocontroller to control the buffer. An input HIGH will set the outputs to high-impedance and disable the LEDs.
- In the schematic symbol which references this schematic sheet, parameters LED[1:6] can be added to specify the colour of each LED. See the micro-circuit common sheet for an example of this.
- Unconnected inputs should be grounded if you don't want random flickering of the LEDs.

Title: SN74HC365PW LED Monitoring		UTAT SS
Size: A4	Number: *	Revision: 1.0
Date: 10/29/2018		Sheet * of *
File: C:\Users\..\led-monitoring-SN74HC365PW.SchDoc		Drawn By: Dylan Vogel

POWER INPUT



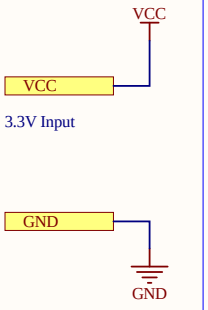


This schematic implements the ATMega32M1 microcontroller with a 8 MHz external crystal and necessary power connections.

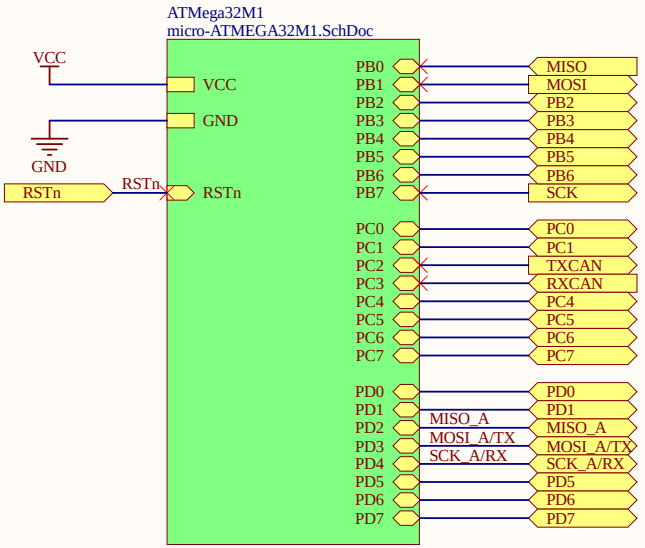
- Crystal is connected in a Pierce configuration, values of the capacitors were calculated based on the capacitance of the crystal and ESR.
- I would read through 18.5.2 and 18.6.2 of the complete 32M1 datasheet if you're interested in the motivation behind the ADC input connections. They recommend connecting AVCC through a RC lowpass network to minimize noise.
- If the ADC functionality of the device is used, either AVCC or the internal 2.56 V source can be seleted in software as the reference voltage.

Title: ATMega32M1		UTAT SS
Size: A4	Number: *	Revision: 1.0
Date: 10/29/2018	Sheet * of *	
File: C:\Users\..\micro-ATMEGA32M1.SchDoc	Drawn By: Dylan Vogel	

POWER INPUTS

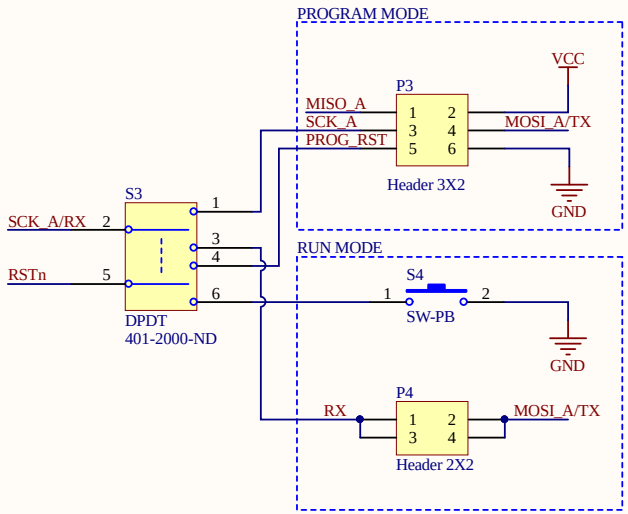


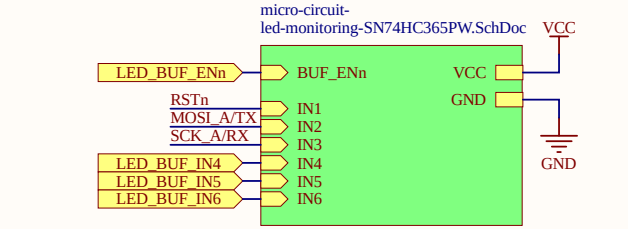
ATMEGA32M1



Specific No-ERCs placed for I/O Port and Bidirectional Sheet Entry

MODE SELECT CIRCUITRY

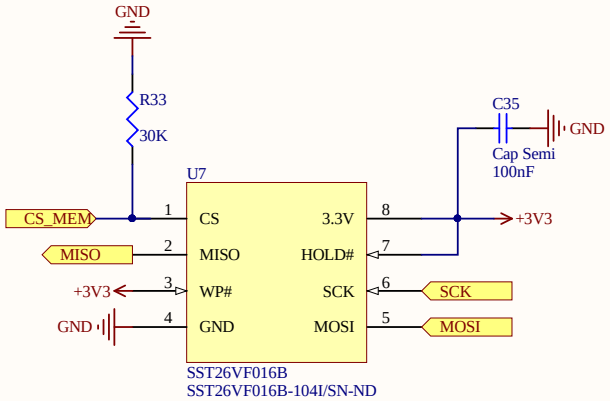




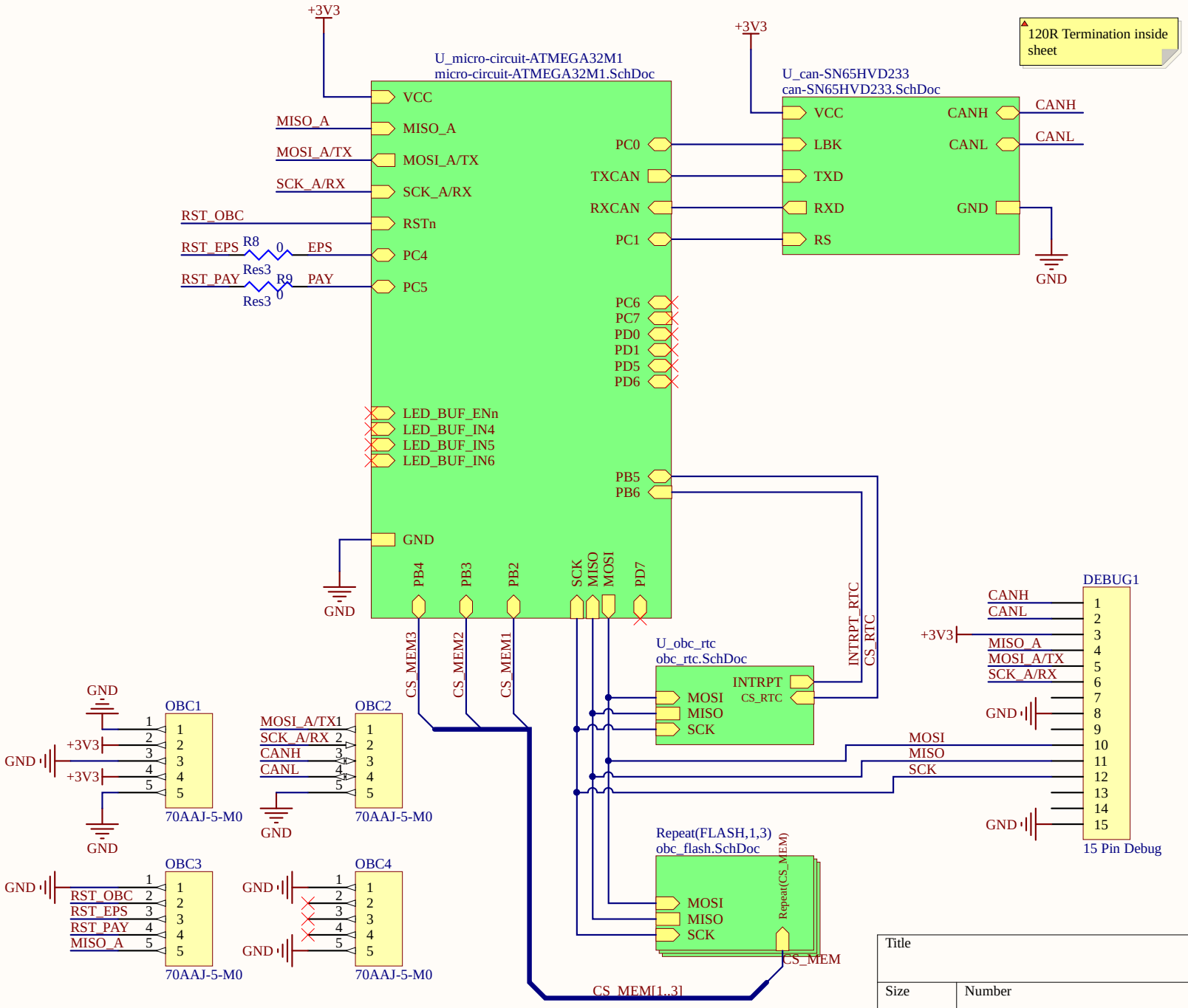
This schematic extends the functionality already included in the micro-ATMEGA32M1 schematc, adding a mode select switch, programming header, reset button and LED indication for TX, RX and RSTn.

- IN[4:6] of the LED buffer have been left unconnected, but are broken out on ports LED_BUF_IN[4:6]. They can be connected in the schematic which includes this sheet to monitor up to an additional 3 lines. Highly recommend more blinking lights.

Title	ATMega32M1 Circuit	UTAT SS
Size	Number	Revision
A4	*	1.0
Date:	10/29/2018	Sheet * of *
File:	C:\Users\..\micro-circuit-ATMEGA32M1.SchDoc	Drawn By: Dylan Vogel



Title		
Size: A4	Number	Revision
Date: 10/29/2018		Sheet of
File: C:\Users\..\obc_flash.SchDoc		Drawn By:


+3V3
U_micro-circuit-ATMEGA32M1
micro-circuit-ATMEGA32M1.SchDoc
VCC
MISO_A
MOSI_A/TX
SCK_A/RX
RSTn
PC4
PC5
PC0
TXCAN
RXCAN
PC1
PC6
PC7
PD0
PD1
PD5
PD6
LED_BUF_ENn
LED_BUF_IN4
LED_BUF_IN5
LED_BUF_IN6
PB5
PB6
GND
PB4
PB3
PB2
SCK
MISO
MOSI
PD7
RST_OBC
RST_EPS
RST_PAY
R8
0
EPS
Res3
R9
PAY
+3V3
U_can-SN65HVD233
can-SN65HVD233.SchDoc
VCC
LBK
TXD
RXD
RS
CANH
CANL
GND
120R Termination inside sheet
U_obc_rtc
obc_rtc.SchDoc
INTRPT
CS_RTC
MOSI
MISO
SCK
INTRPT_RTC
CS_RTC
DEBUG1
CANH
CANL
+3V3
MISO_A
MOSI_A/TX
SCK_A/RX
GND
MOSI
MISO
SCK
15 Pin Debug
CS_MEM3
CS_MEM2
CS_MEM1
OBC1
OBC2
OBC3
OBC4
70AAJ-5-M0
MOSI_A/TX1
SCK_A/RX
CANH
CANL
RST_OBC
RST_EPS
RST_PAY
MISO_A
Repeat(FLASH,1,3)
obc_flash.SchDoc
Repeat(CS_MEM)
CS_MEM
CS_MEM[1..3]
Title
Size
A
Number
Revision
Date:
10/29/2018
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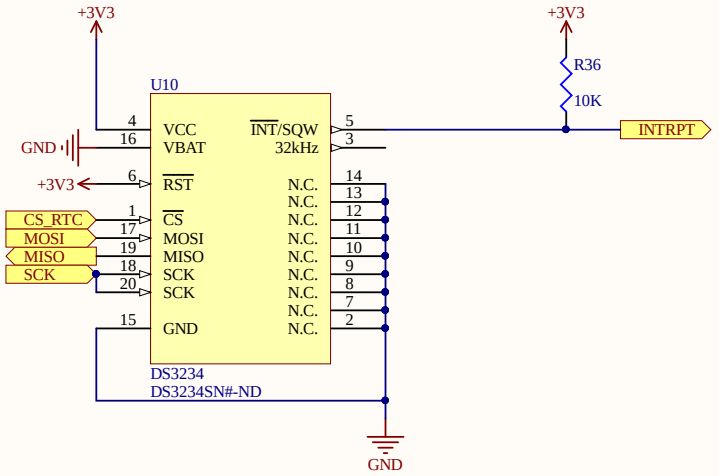
of
File:
C:\Users\..\obc_main_3.0.SchDoc
Drawn By:



Title		
Size: A4	Number	Revision
Date: 10/29/2018		Sheet of
File: C:\Users\..\obc_rtc.SchDoc		Drawn By: