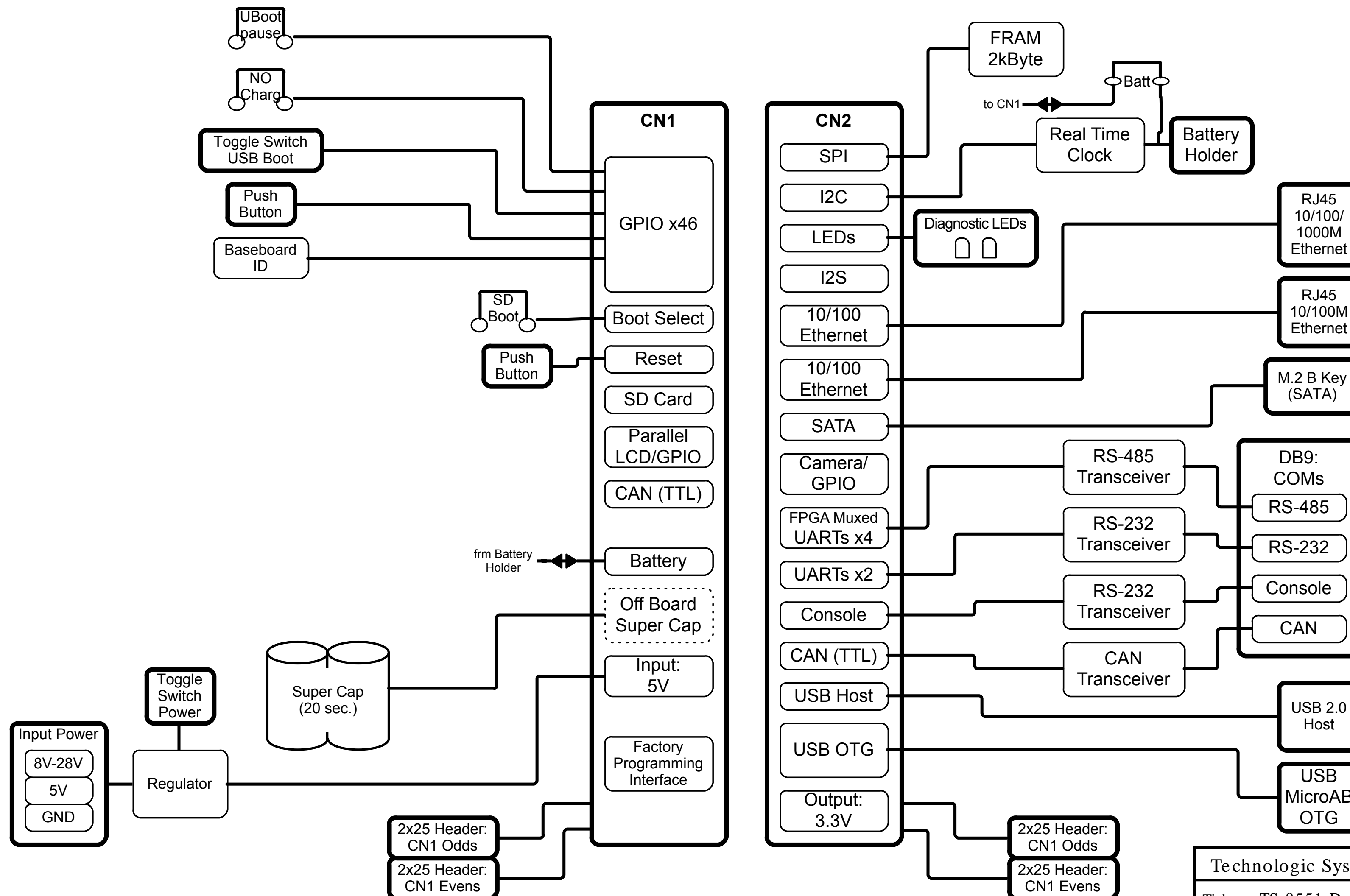


# TS-8551 = TS-4100 and 4400 Base Board

The TS-8551 is an evaluation platform for the TS-4100 and TS-4400

This platform brings out all major features of these Computer on Modules for development and evaluation purposes.

This platform can also be used as a reference design for creating a custom carrier/baseboard solution for the TS-4100 and/or the TS-4400



Web Schematic: Some proprietary information has been withheld.

Technologic Systems	Date Oct. 22, 2017
Title: TS-8551 Documentation	
Rev: A	Designer
Sheet 1 of 11	

# Warning:

The TS-8551 was designed for the TS-4100 and TS-4400  
Other macrocontrollers can be used, but  
care must be exercised when SuperCap is charged

## Rev. A Changes

Removed rechargeable battery

FRAM(U35) write protect to 3.3V always

Changed C68 to 1000 pF (quieter)

Changed both SW2 and SW3 to top push button

Removed silkscreen label for FRAM Prot

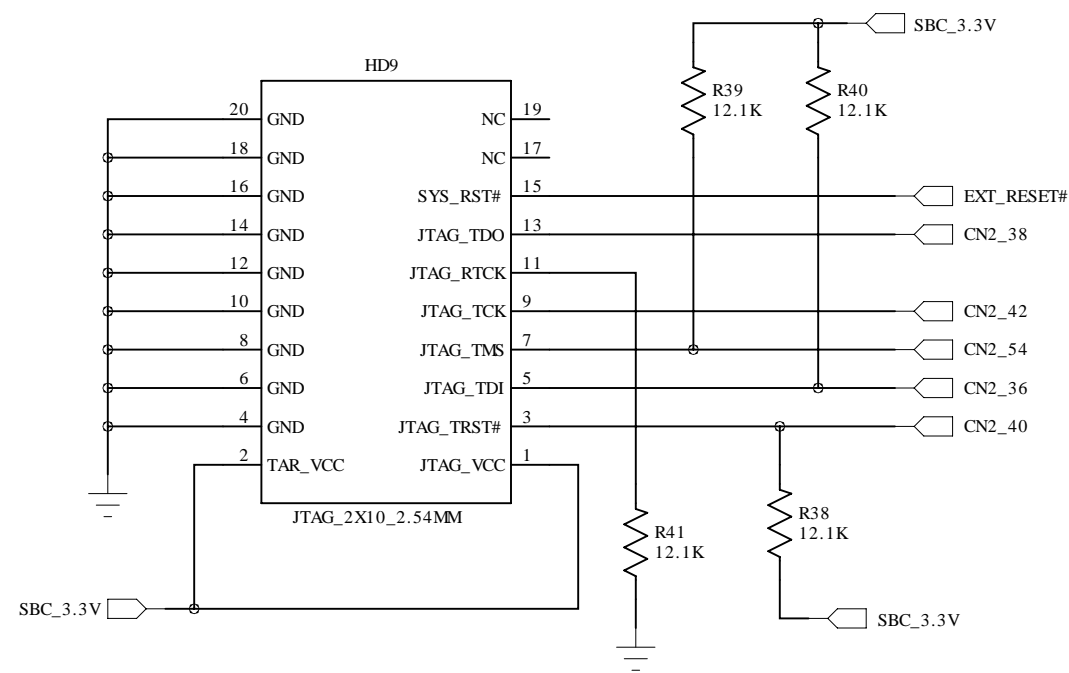
## Added for TS-4400 support:

CN99-2 for virgin TS-4400 bring up

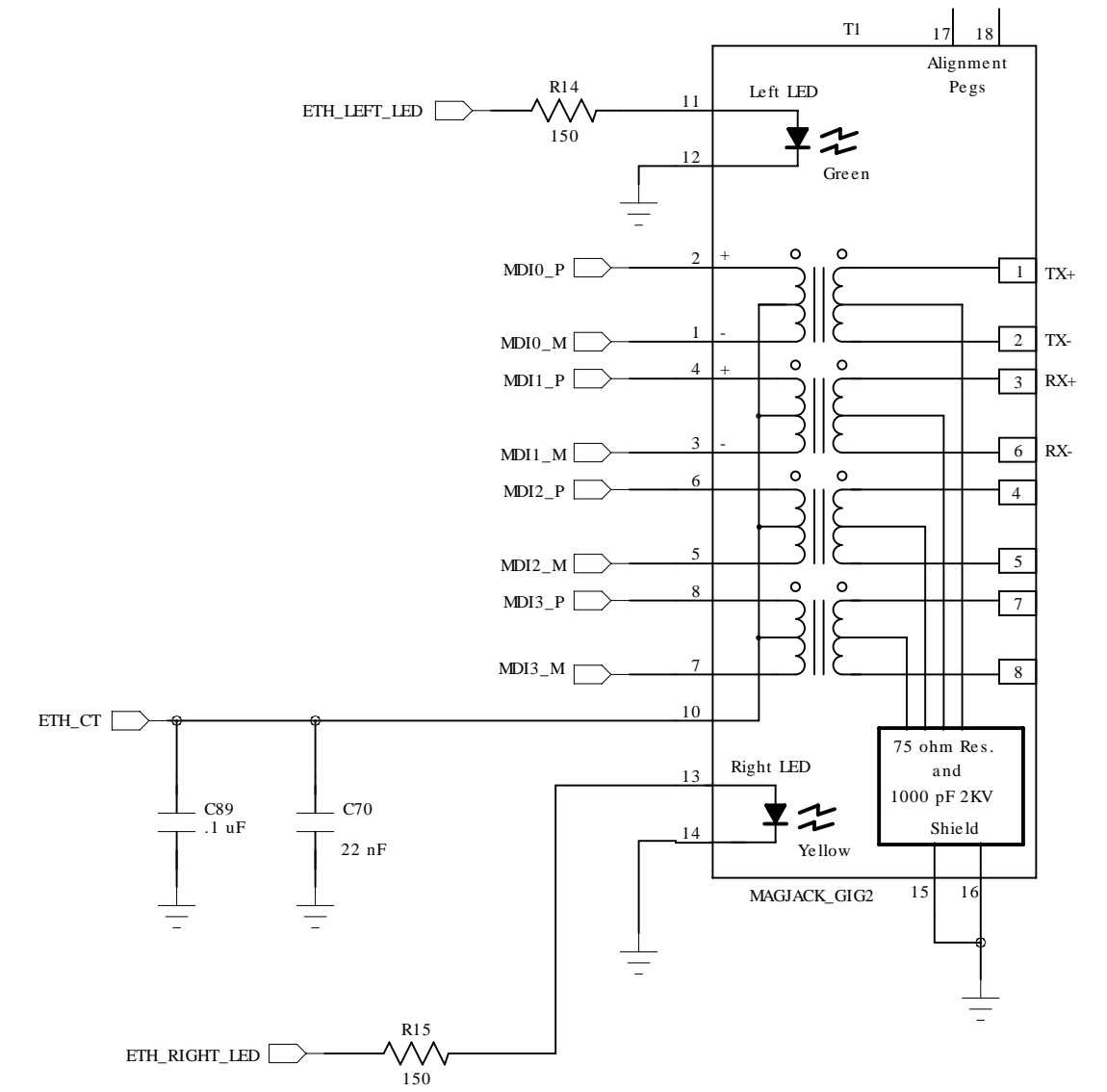
M.2 SATA conn (CN5) added

Battery jumper to CN1 pin 36

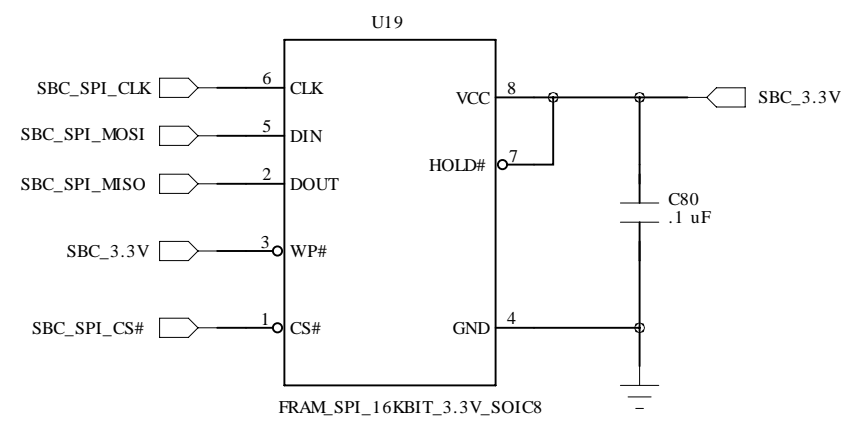
# CPU JTAG



# Gig MagJack

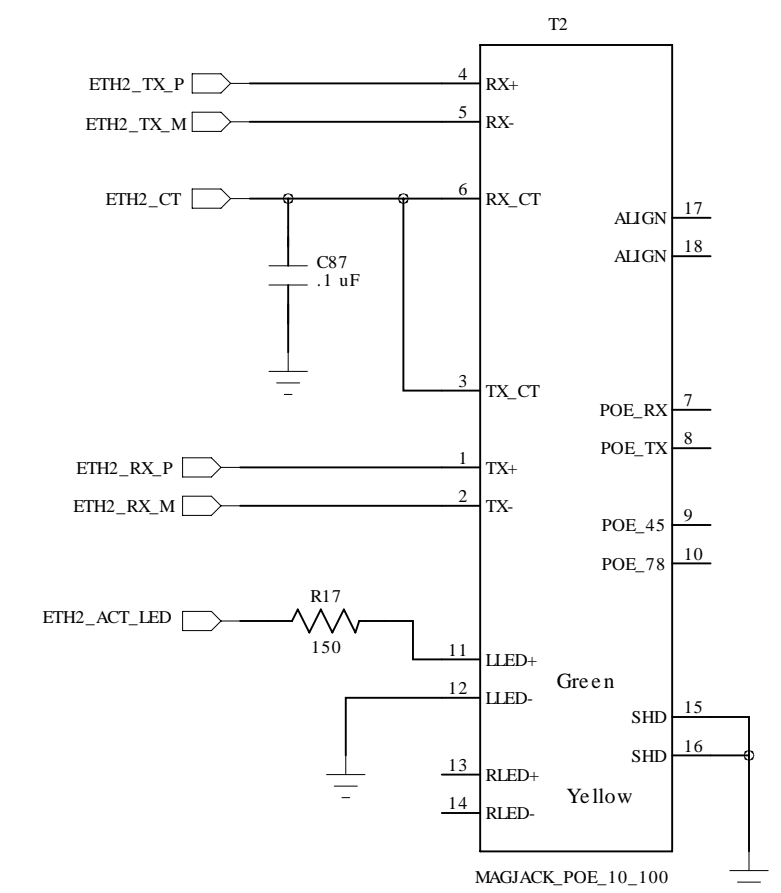


# FRAM Memory



2K Bytes

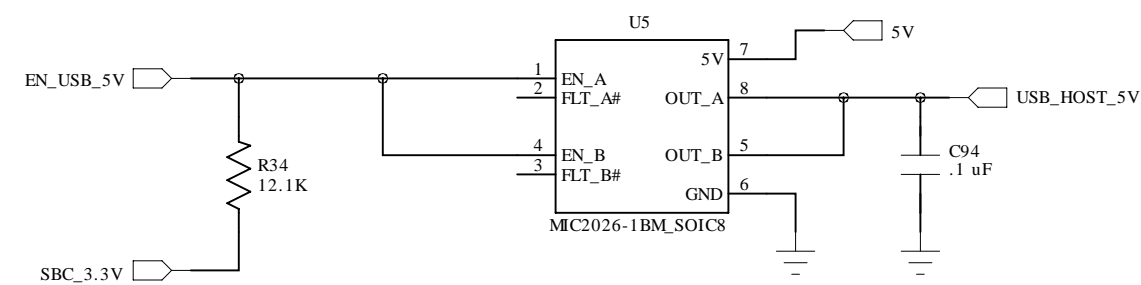
# 10/100 MagJack



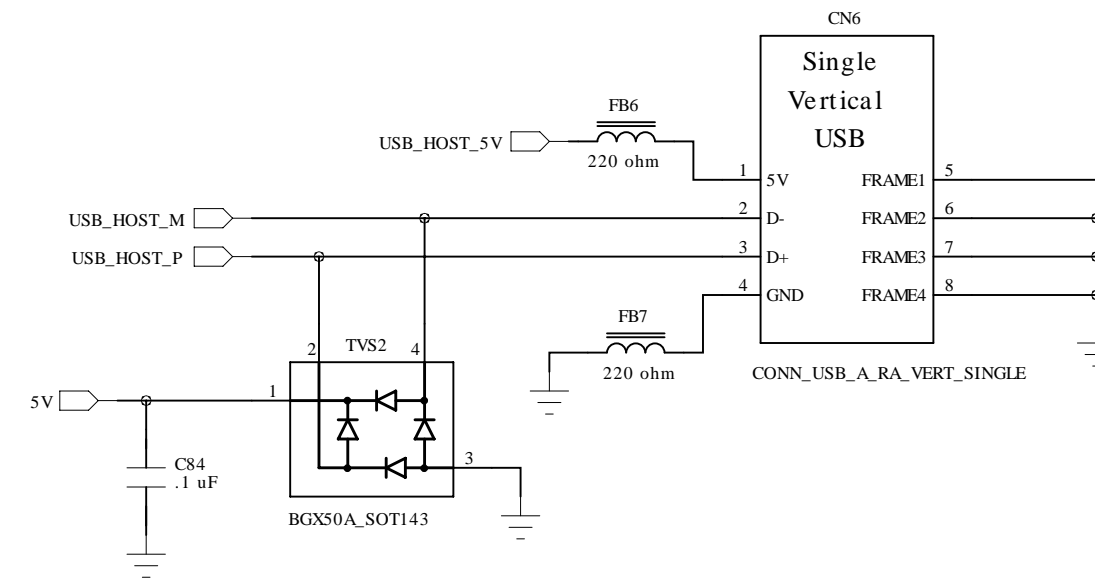
Swapped RX and TX Pairs

Technologic Systems	Date	Oct. 22, 2017
Title: TS-8551 MagJacks, JTAG, FRAM		
Rev: A	Designer	Sheet 3 of 11

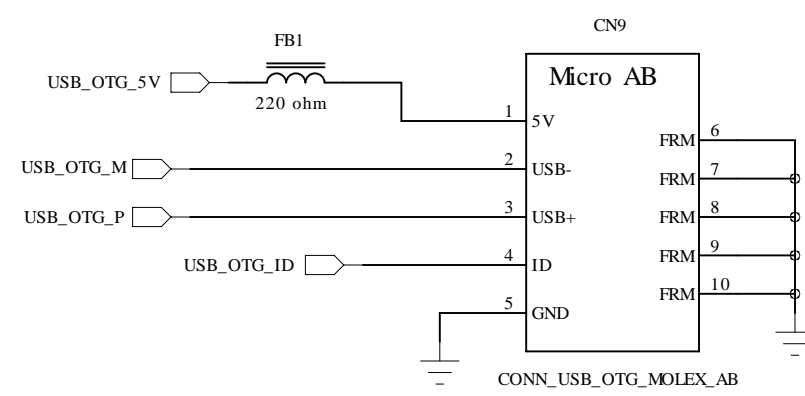
# Host USB Power Switch



# Host USB

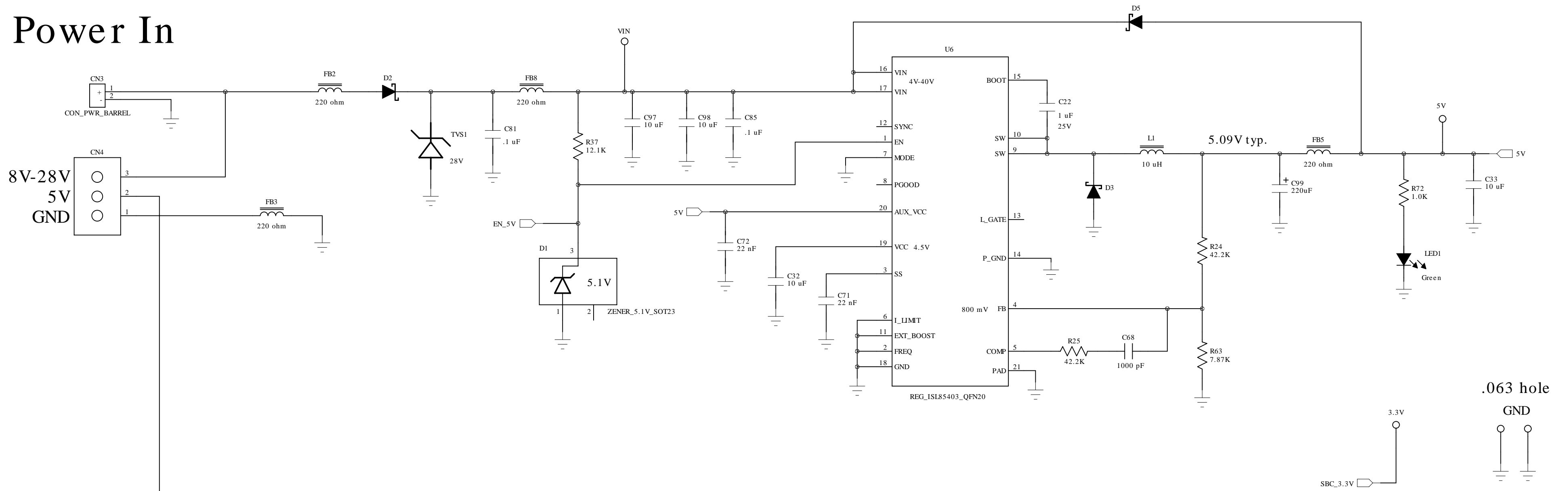


# USB OTG Micro AB

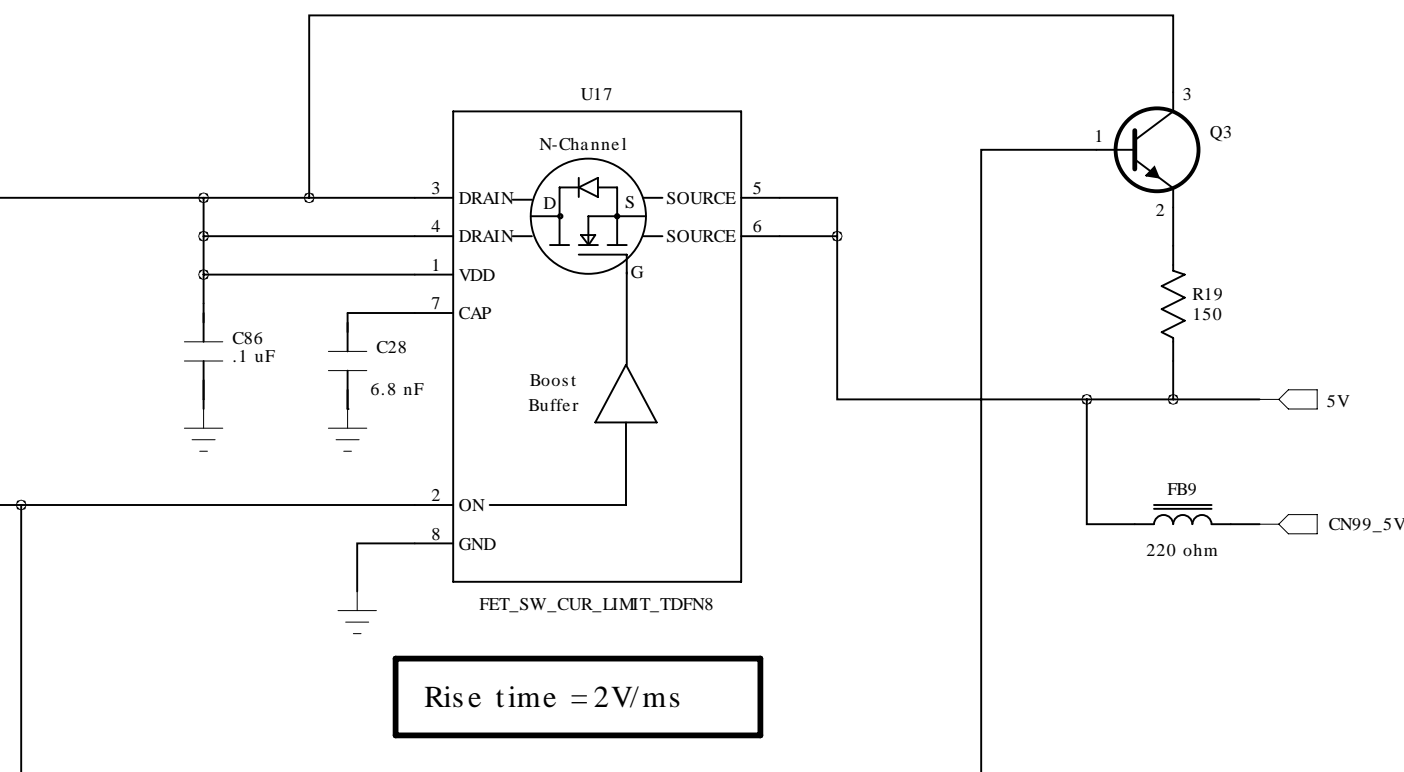


# 5V Power Supply (2000 mA)

## Power In

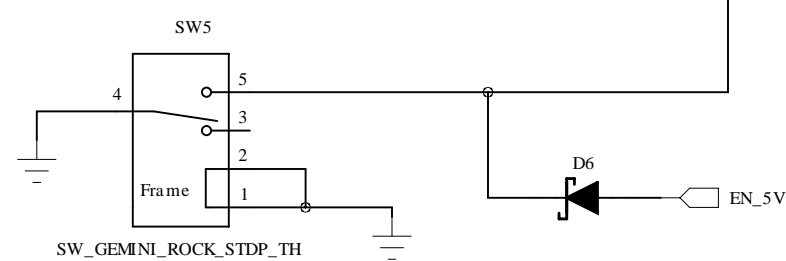


## 5V Power Switch

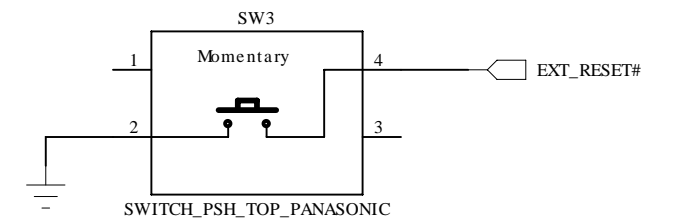


Rise time = 2V/ms

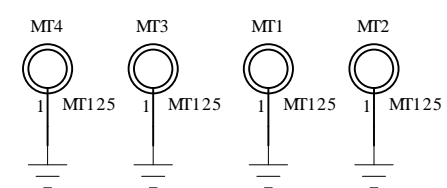
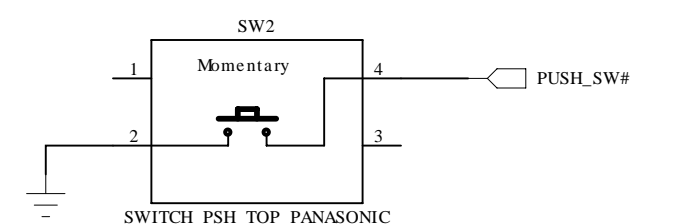
## Power Switch



## Reset Switch

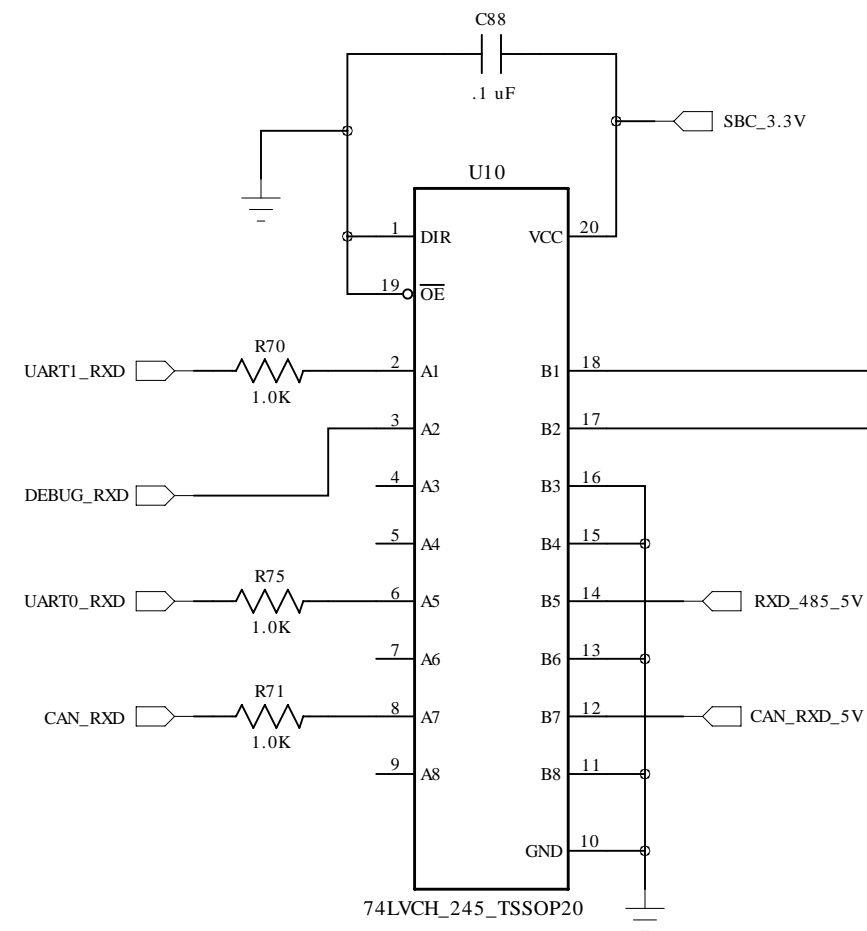


## Push Switch

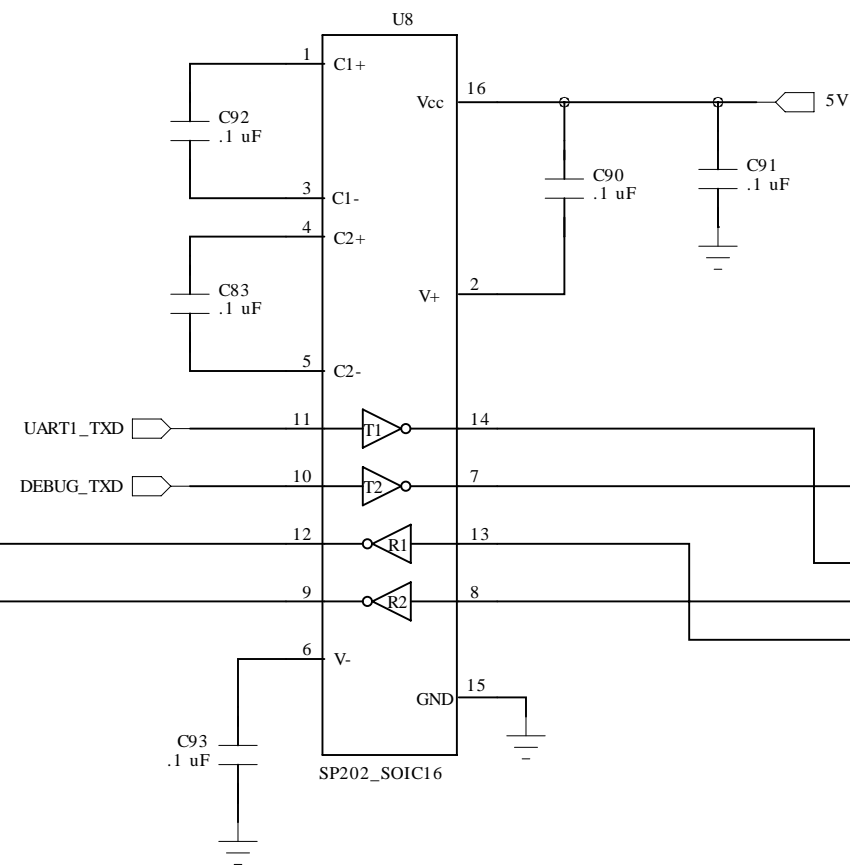


Technologic Systems	Date Oct. 22, 2017
Title: TS-8551 Power IN, 5V Reg, Switches	
Rev: A	Designer RLM Sheet 5 of 11

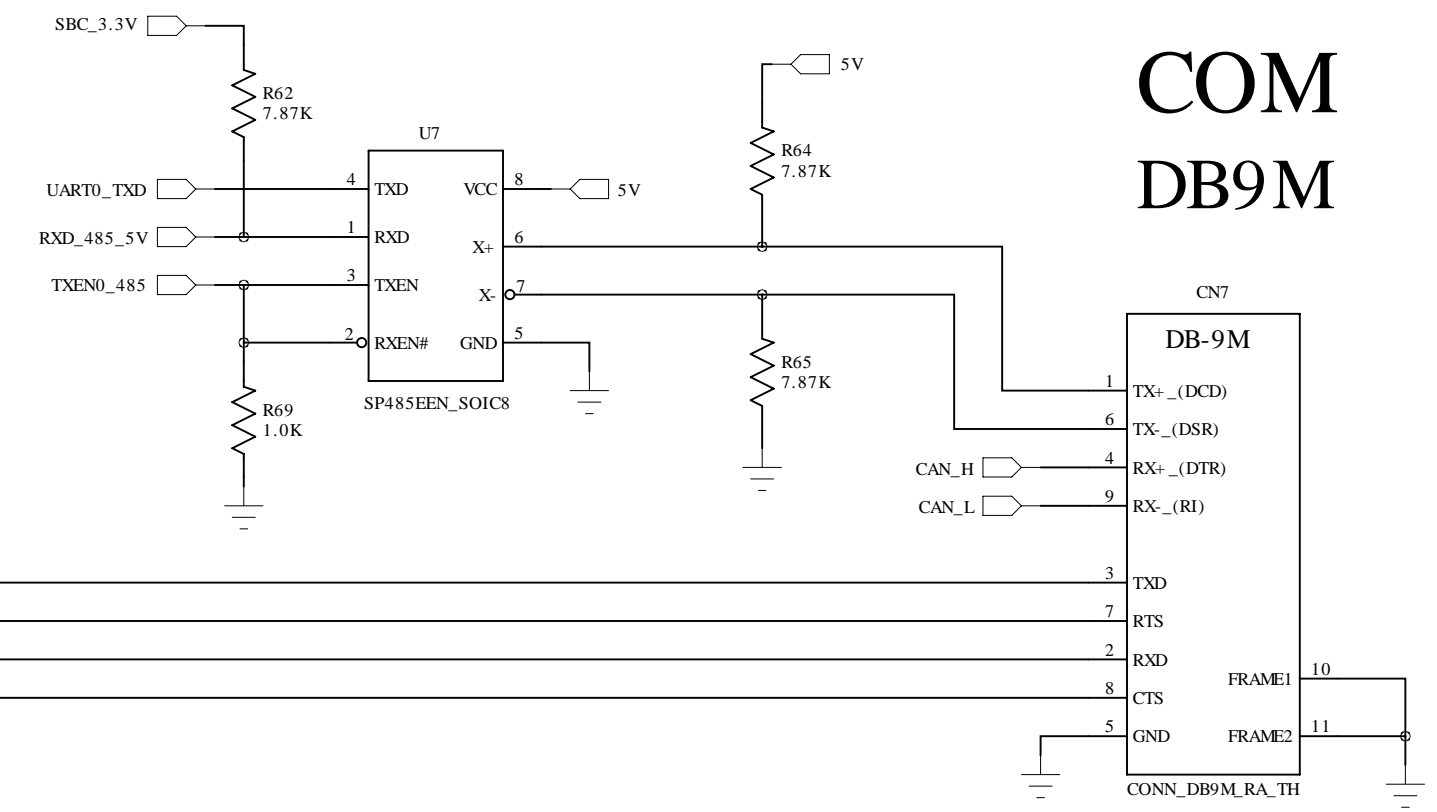
### 3.3V <-- 5V Level shifter



### RS-232 Transceiver



### RS-485 Driver

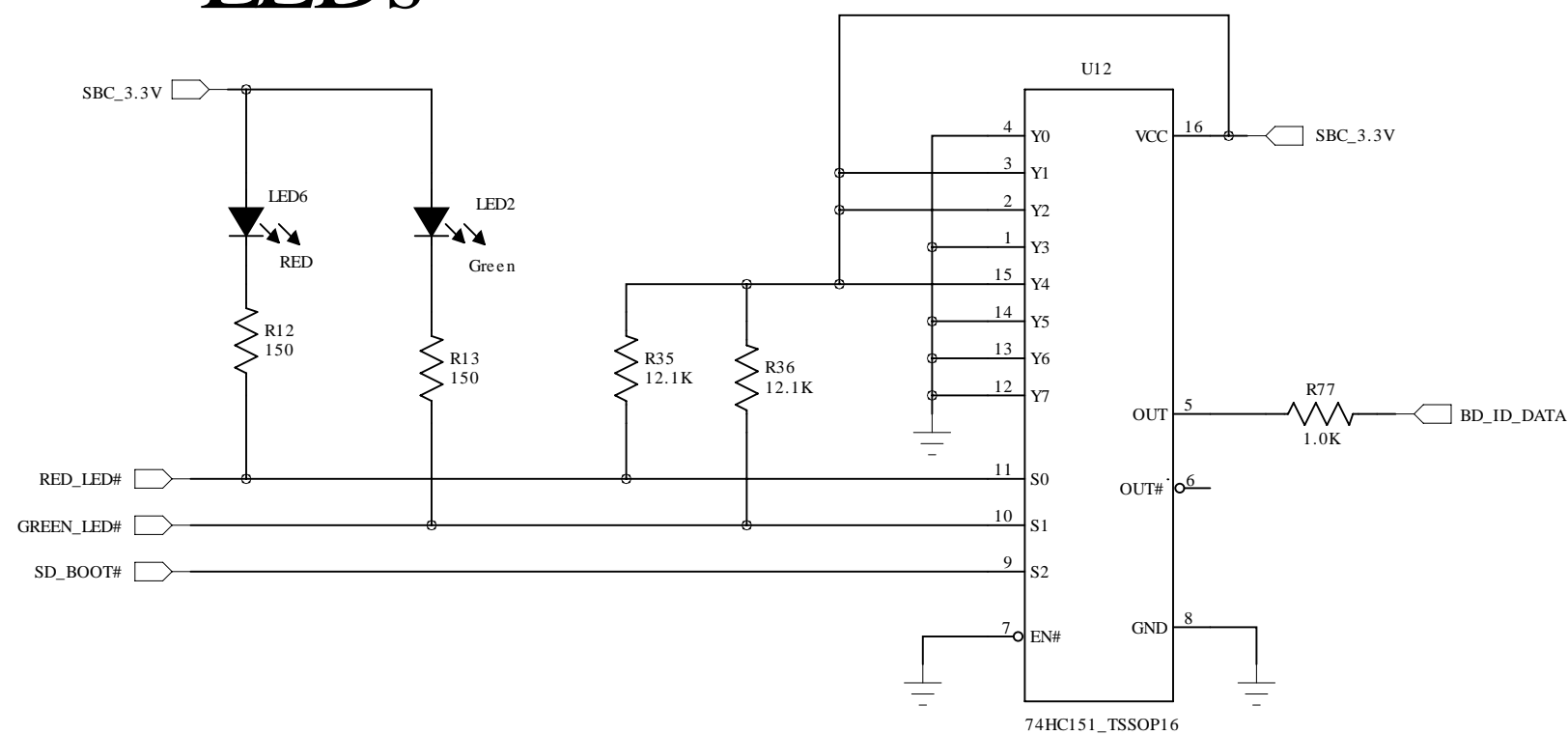


### COM DB9M

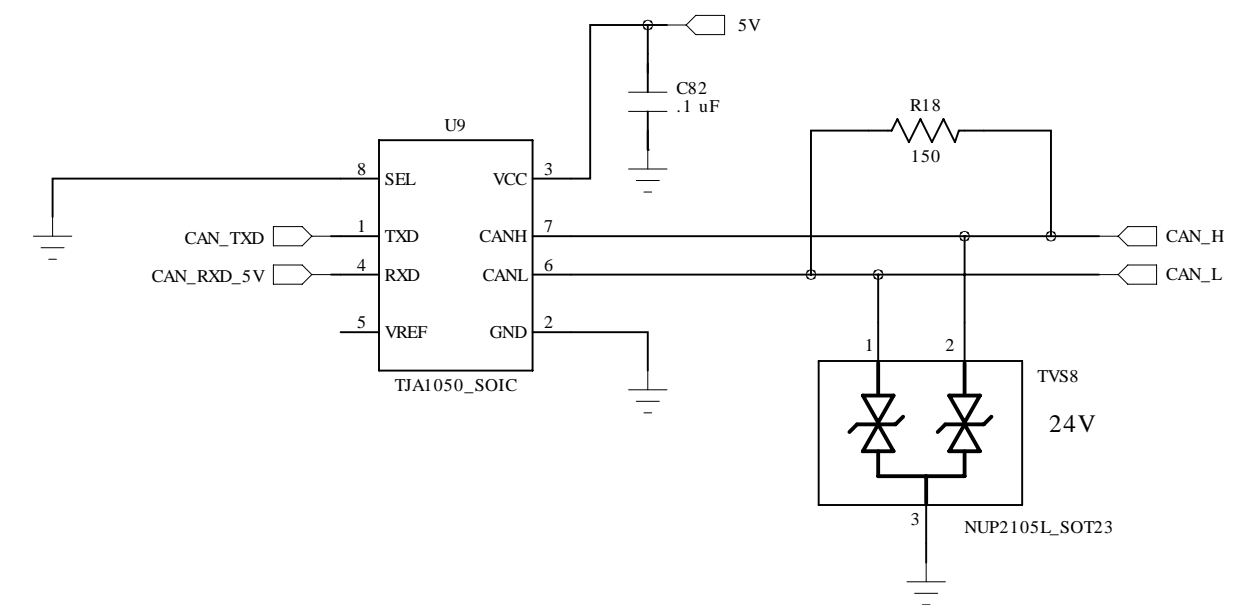
### Board ID = Hex 16

Identifies board to TS-4100 and TS-4400 as being the TS-8551  
Refer to the Users Guides for these products for information on setting a custom ID

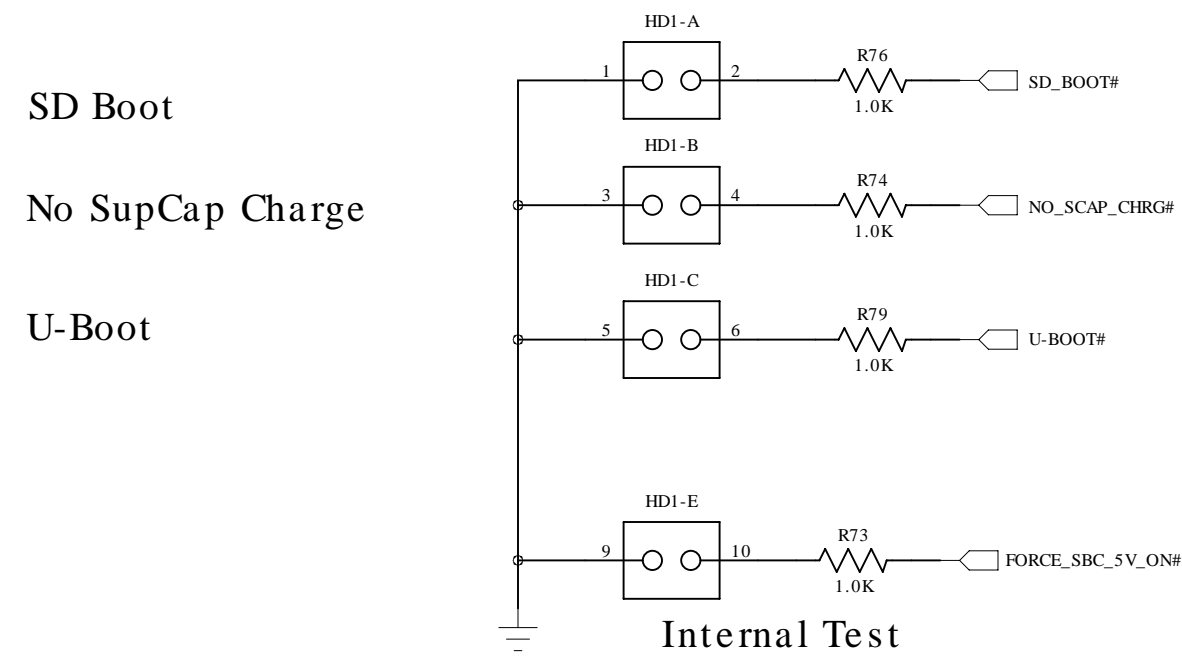
### LEDs



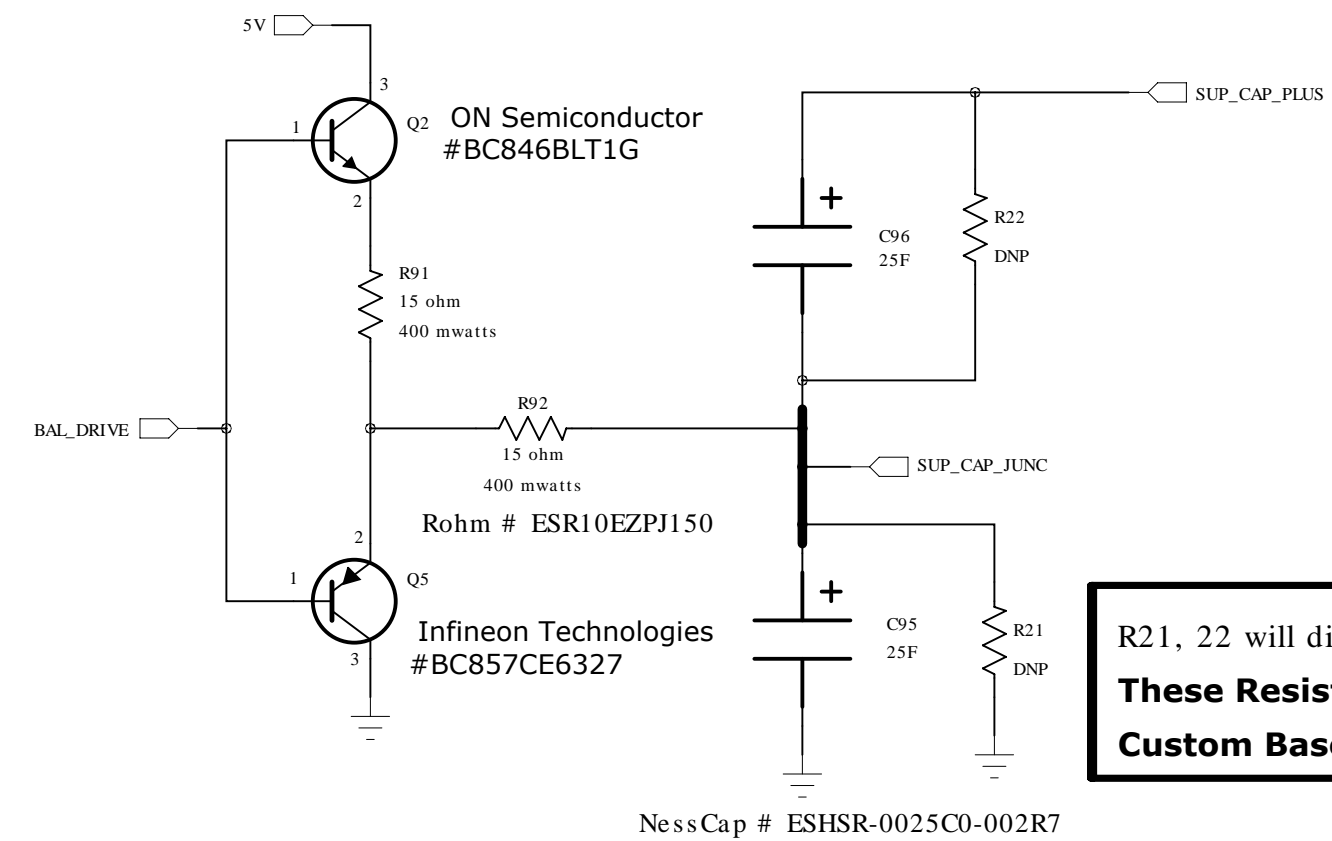
### CAN Transceiver



## Jumpers



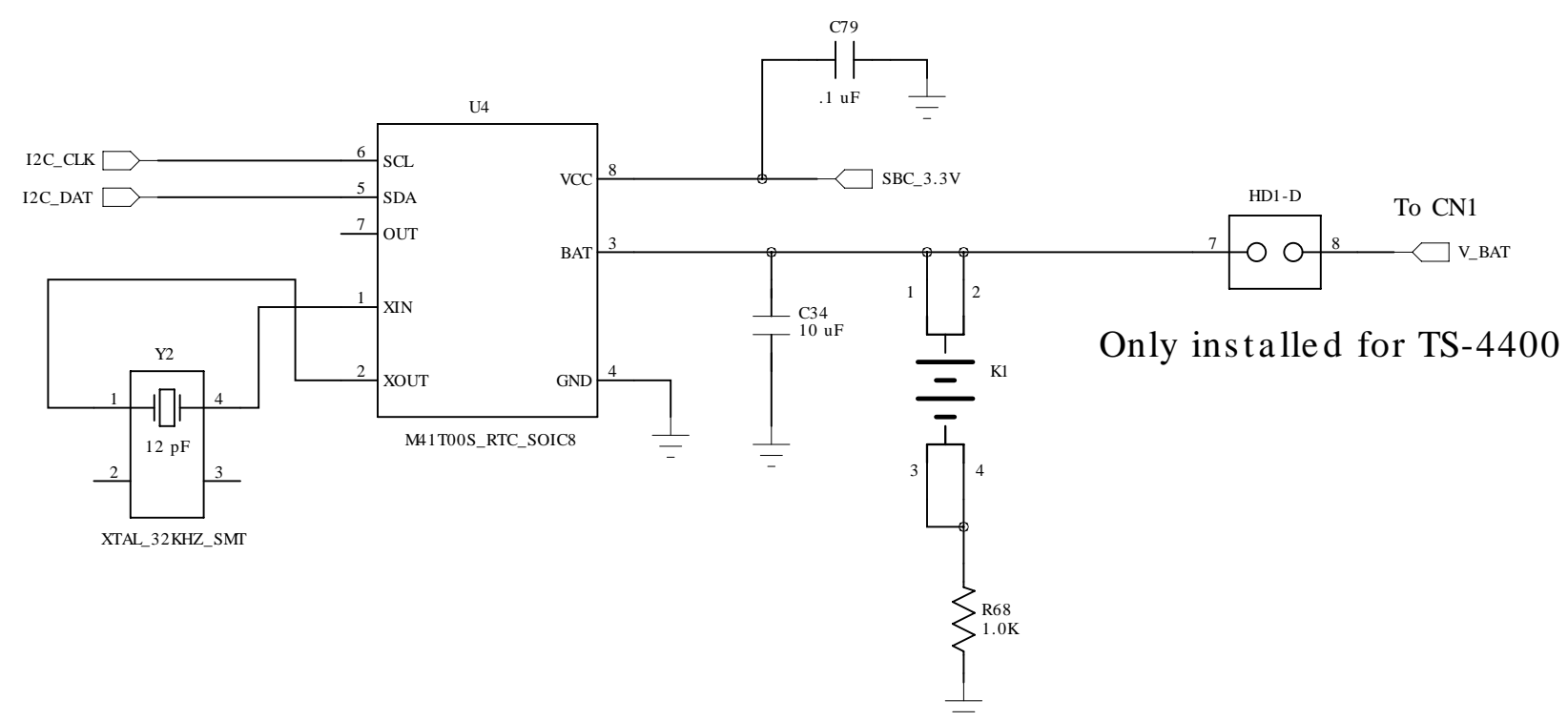
## 2 x 25 Farad Super Caps



R21, 22 will discharge SuperCaps  
**These Resistors are Not Recommended for Custom Baseboards**

## Super Cap balance circuit

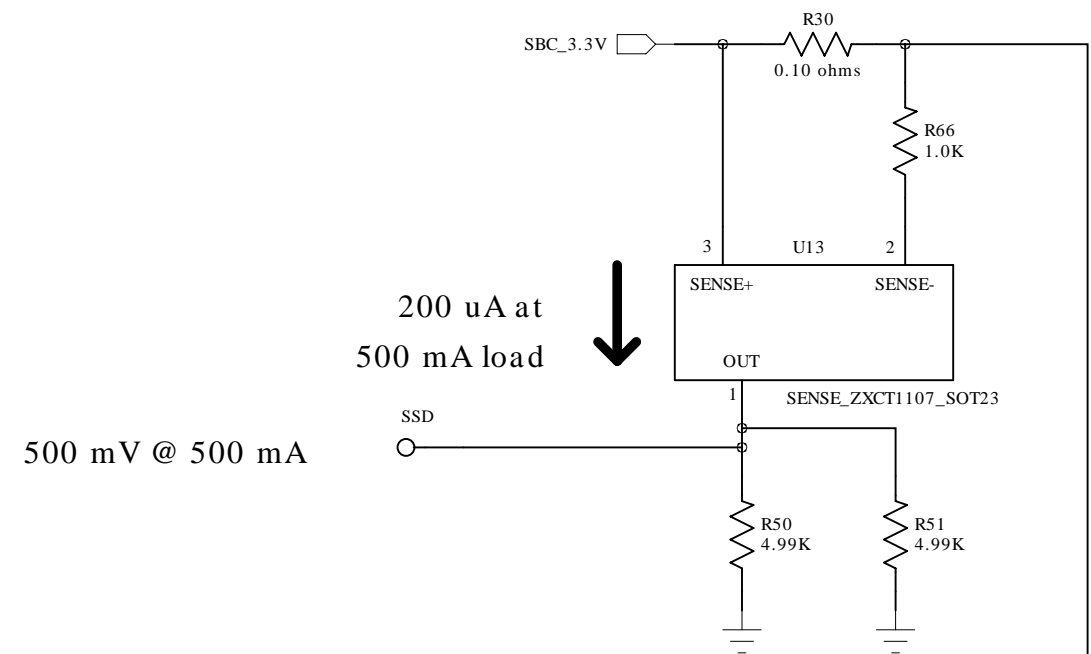
## ST Micro RTC



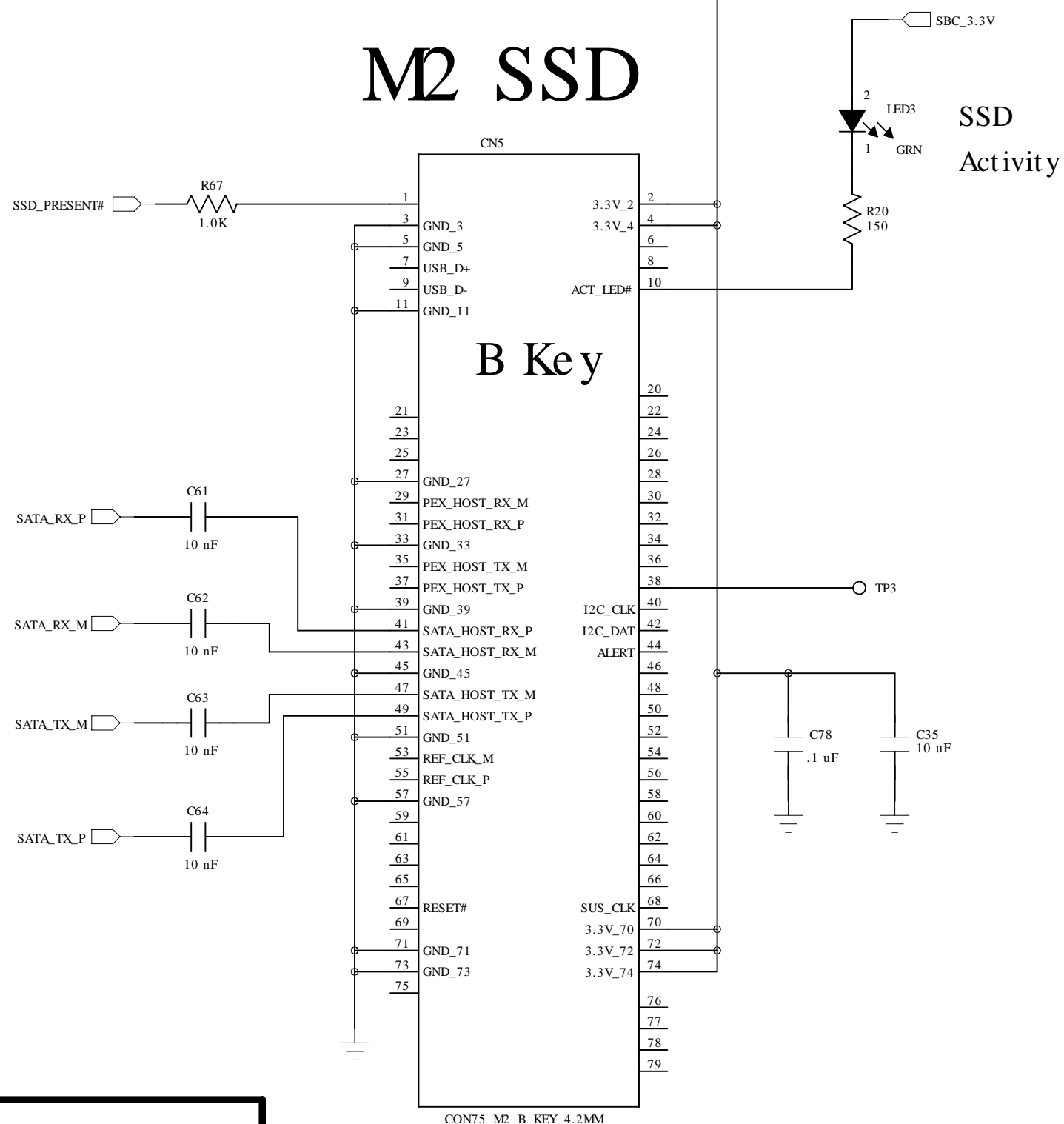
Technologic Systems	Date Oct. 22, 2017
Title: TS-8551 Super Caps, Jumpers	
Rev: A	Designer RLM Sheet 7 of 11

# M2 SATA Conn. TS-4400 Only

## SSD Current

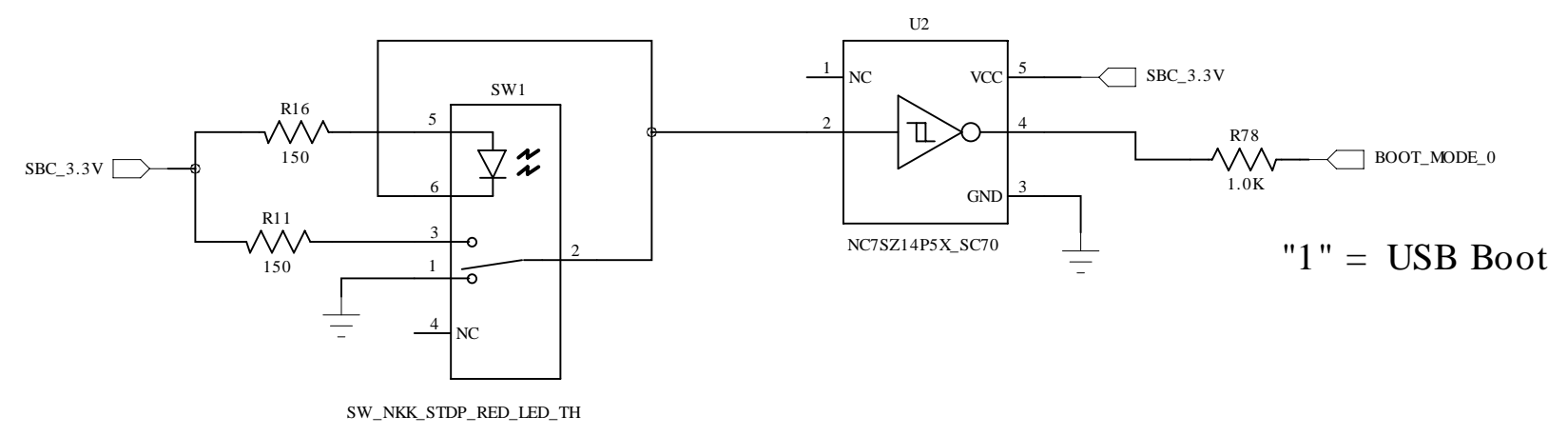


## M2 SSD



## Boot Switch

LED On = USB Boot



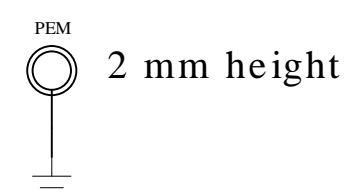
"1" = USB Boot

Allows TS-4100 booting to either eMMC or over the USB OTG port

No SATA support on TS-4100

TS-4400 Supports SATA at 3 Gbit/sec

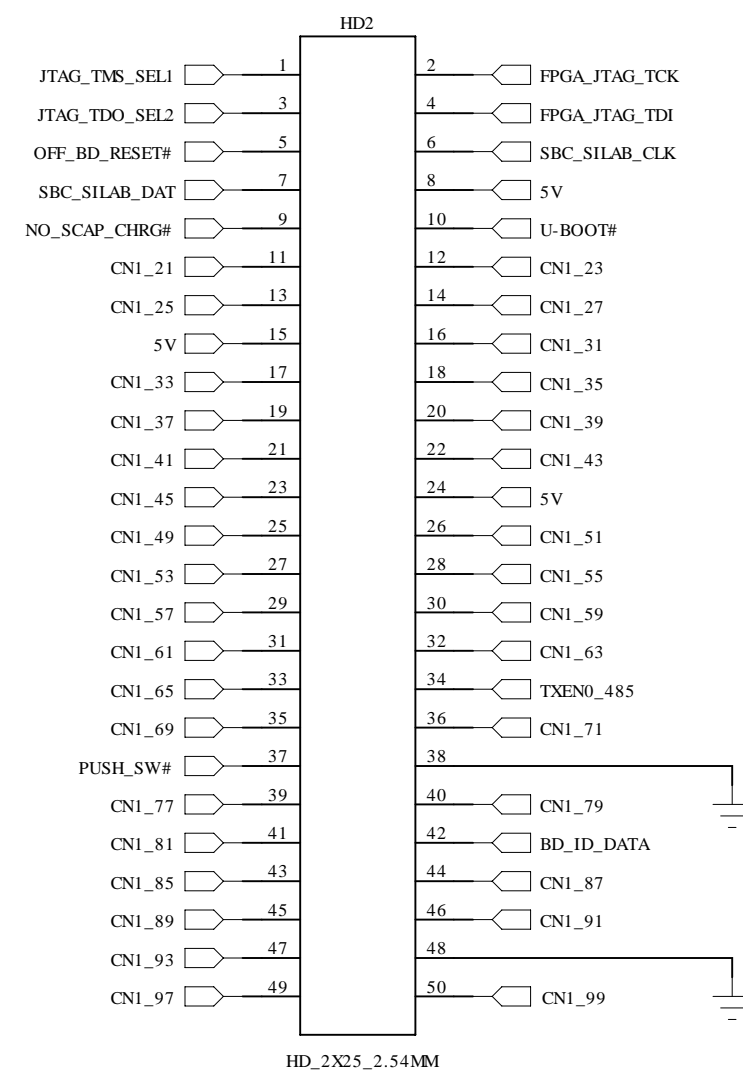
## M2 Mount



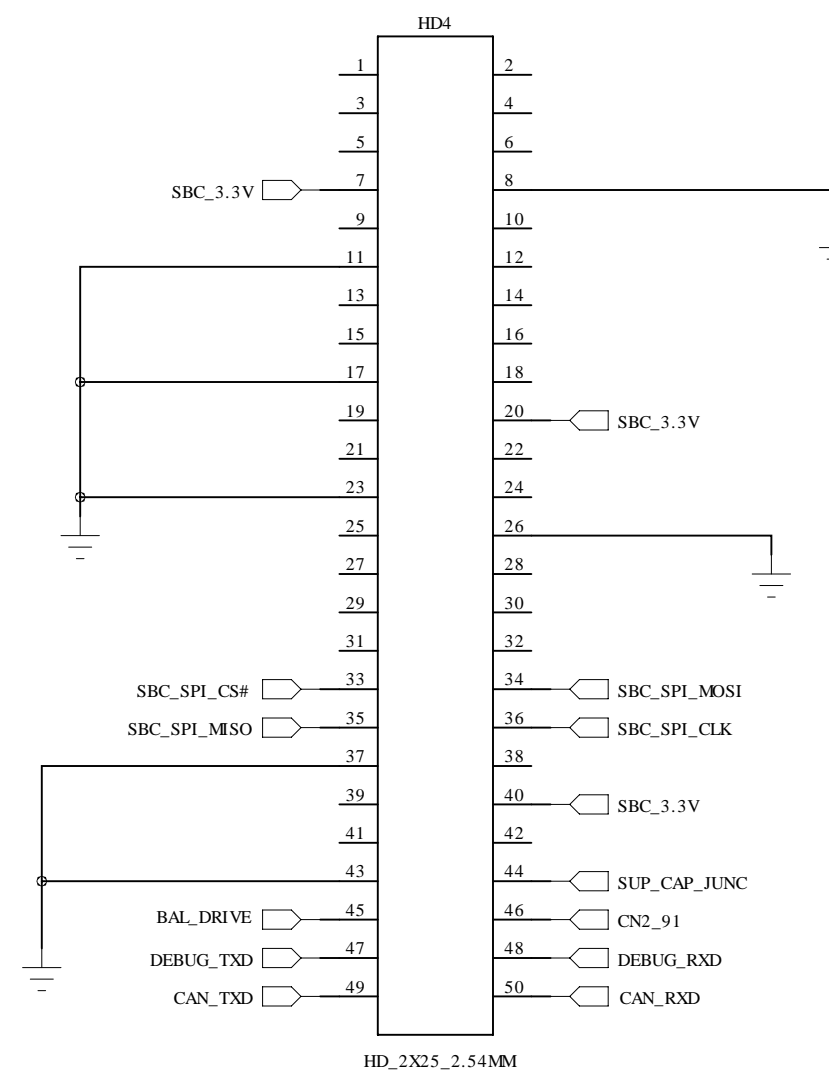


# Breakout Connectors for all I/O on the TS-4100 and/or TS-4400

## CN1 Odd Pins

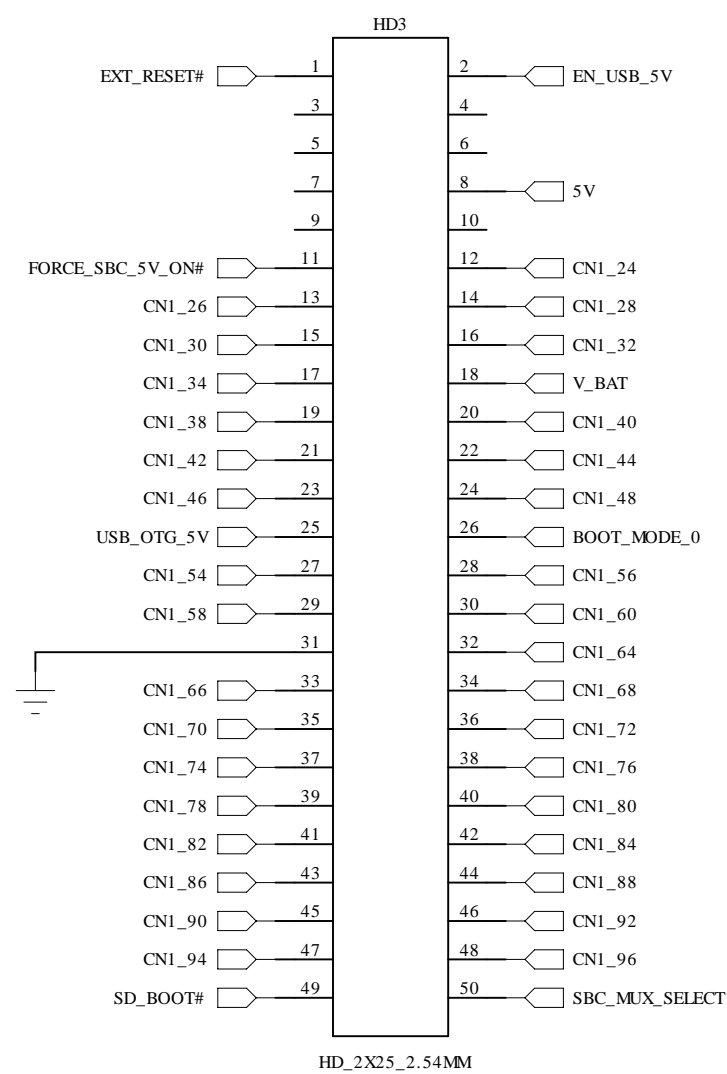


## CN2 Odd Pins

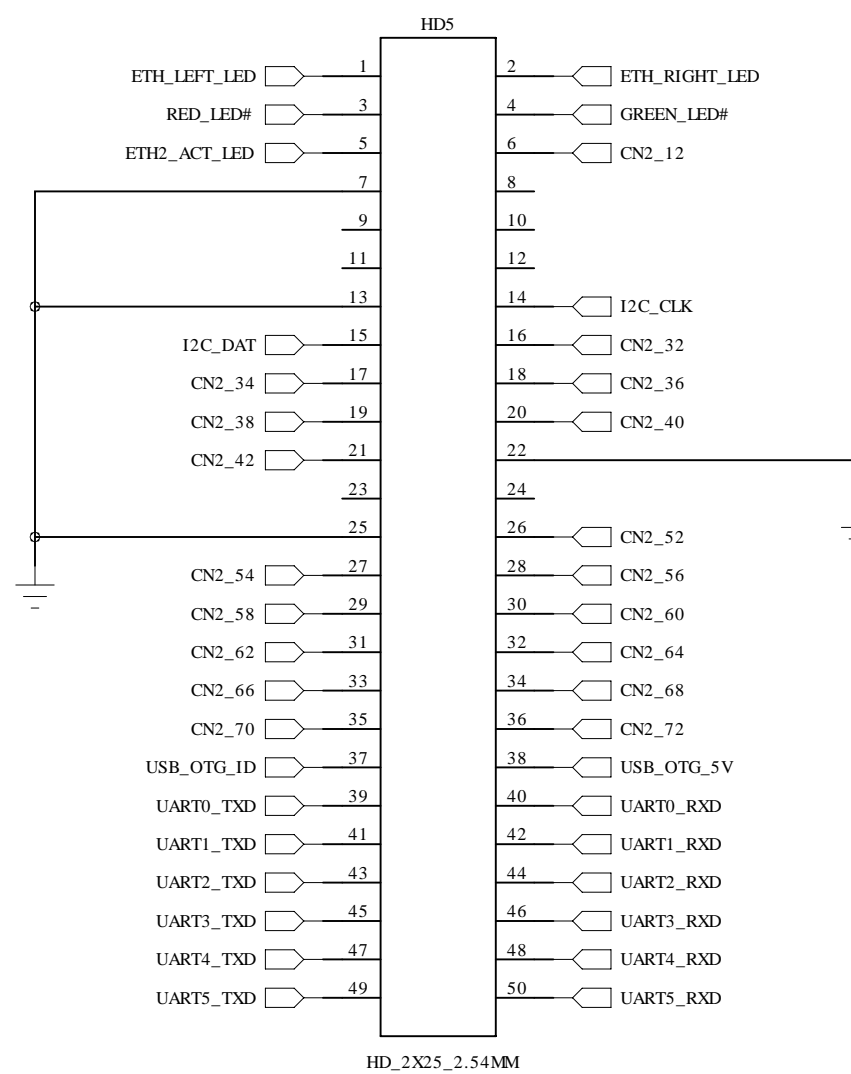


High-speed differential pairs (USB and Ethernet) and SD card are not routed to these headers

## CN1 Even Pins



## CN2 Even Pins



# Two 100-pin Module Connectors

"5V" pins supply all power to the module  
Apply 4.5V to 5.5V to these pins

Current drain is < 800 mA  
(less than 4 Watts)

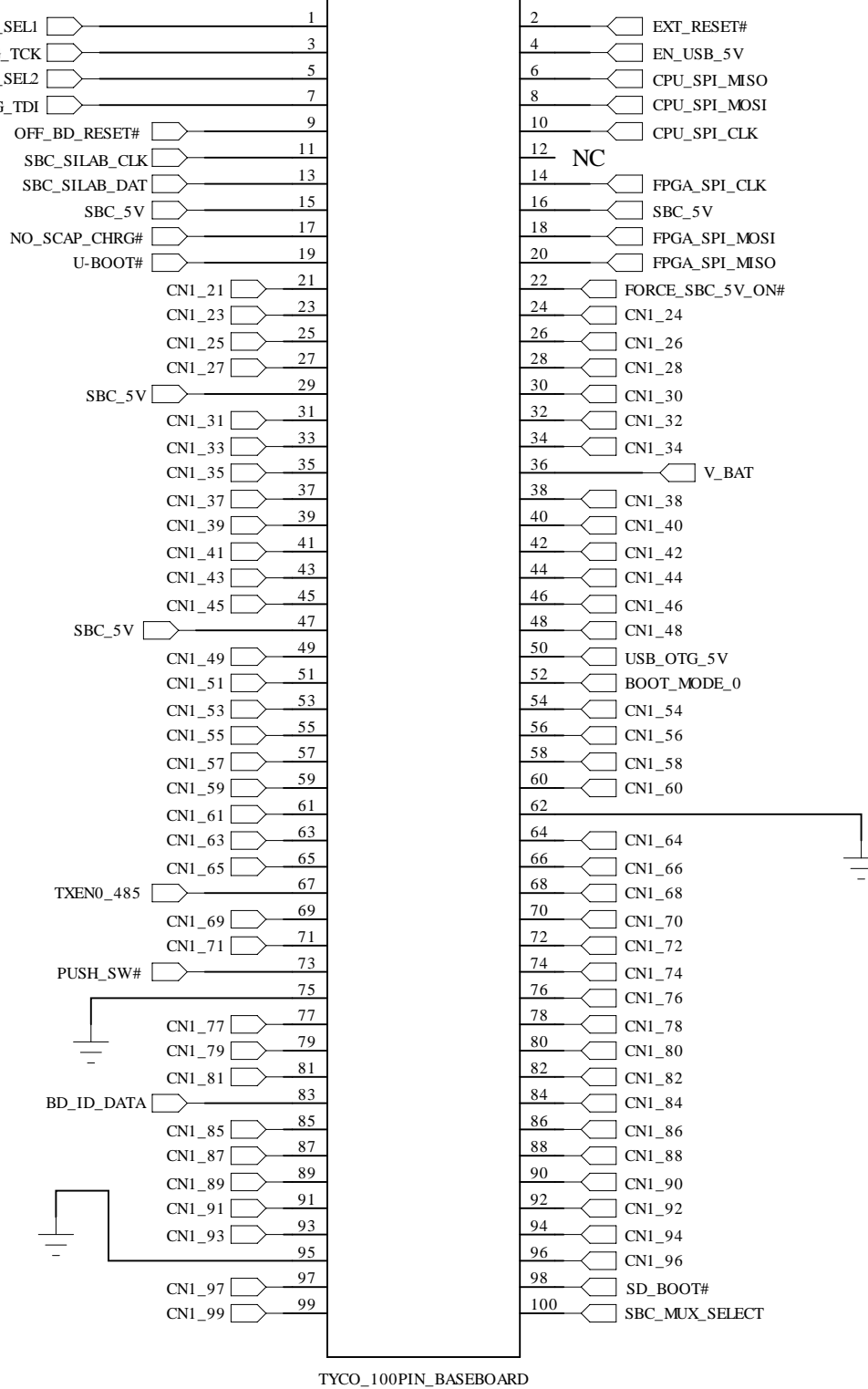
EXT\_RESET# is an Input to the  
SBC used to reboot the CPU

Do not drive active high  
(use open drain)

Left

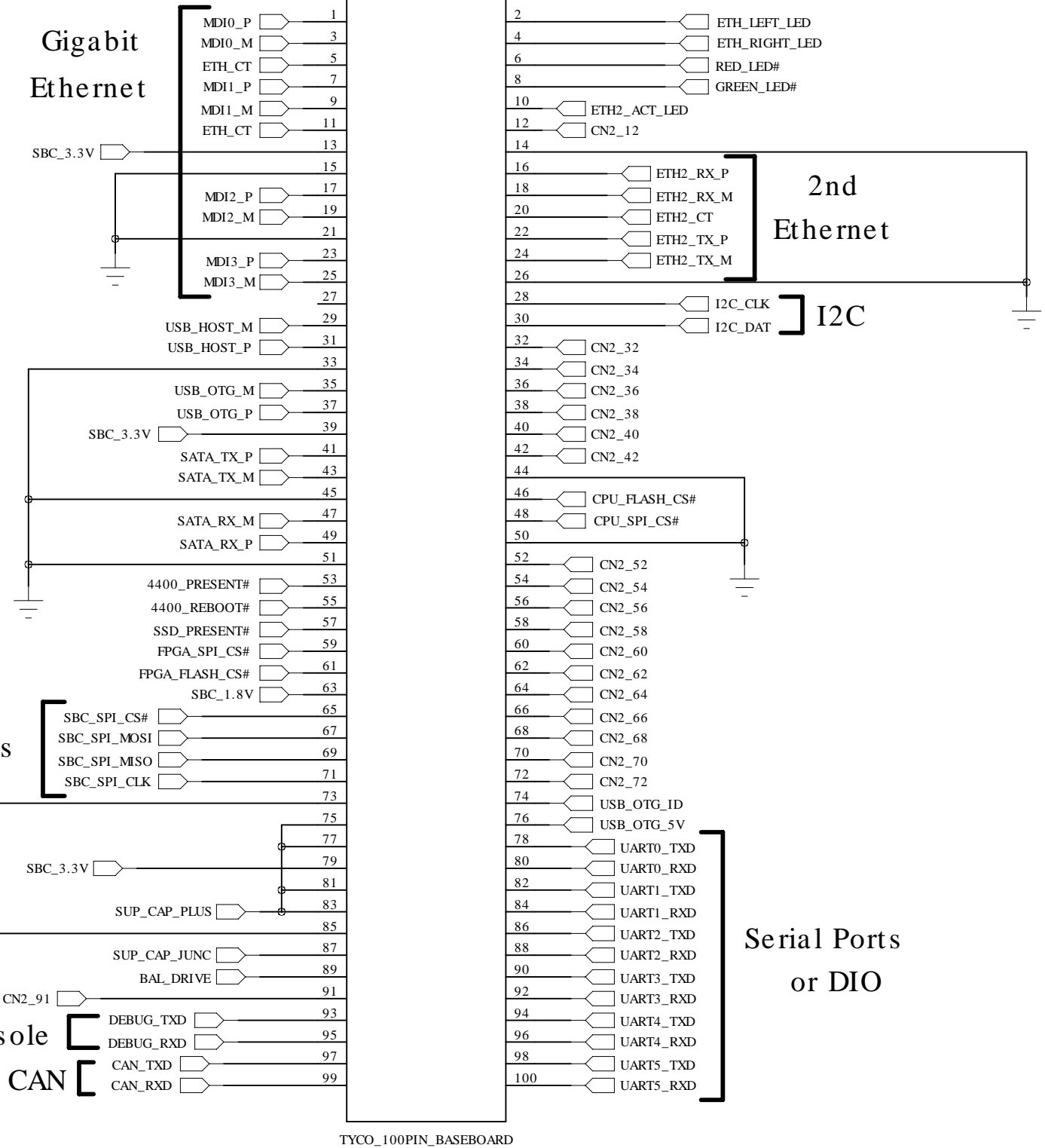
Right

TS-4100  
FPGA  
JTAG

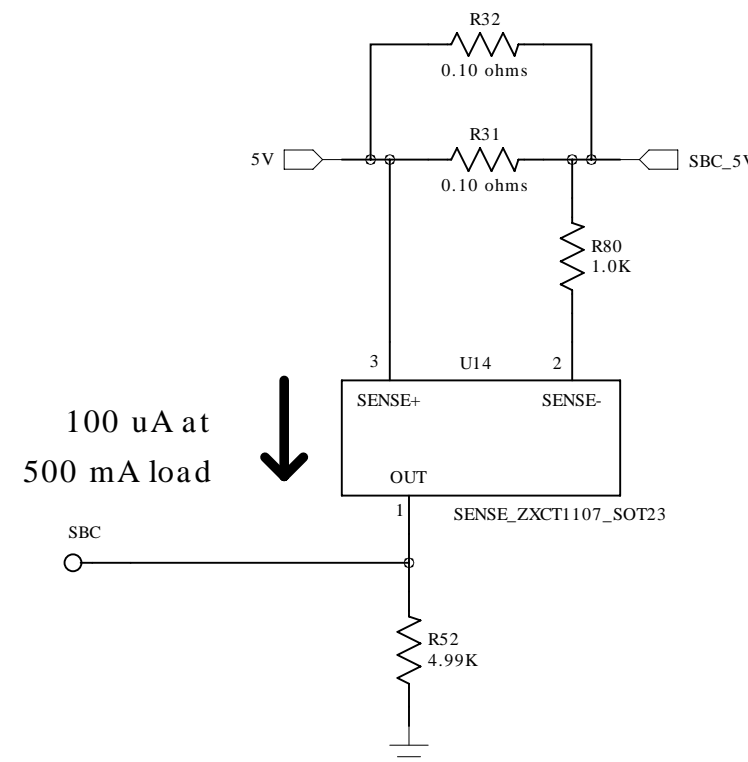


OFF\_BD\_RESET# is an  
output from the SBC

Maximum load on  
3.3V rail is 500 mA



## SBC Current



CN1_98	TS-4100 Boots from
1	eMMC Flash
0	SD Card

CN1\_98 state is latched prior  
to OFF\_BD\_RESET# deasserted

CN1\_98 has weak PU  
on the SBC module

500 mV @ 500 mA

**⚠ All signals driving DIO on CN1 & CN2 must be powered by the 3.3V on CN2, or remain at 0V until the CN2 3.3V rail is > 3.0V**