

TS-7400_V2

TS-7400_V2 BOM

CN9 and FB19 not pop
R31 and 32 Not pop
Full Size SD card socket is optional
CAN and RS-232 transceivers are optional
5V Reg. is optional
MX283 CPU OK for non-CAN versions
D1 populated ?

Open Issues for Rev.A

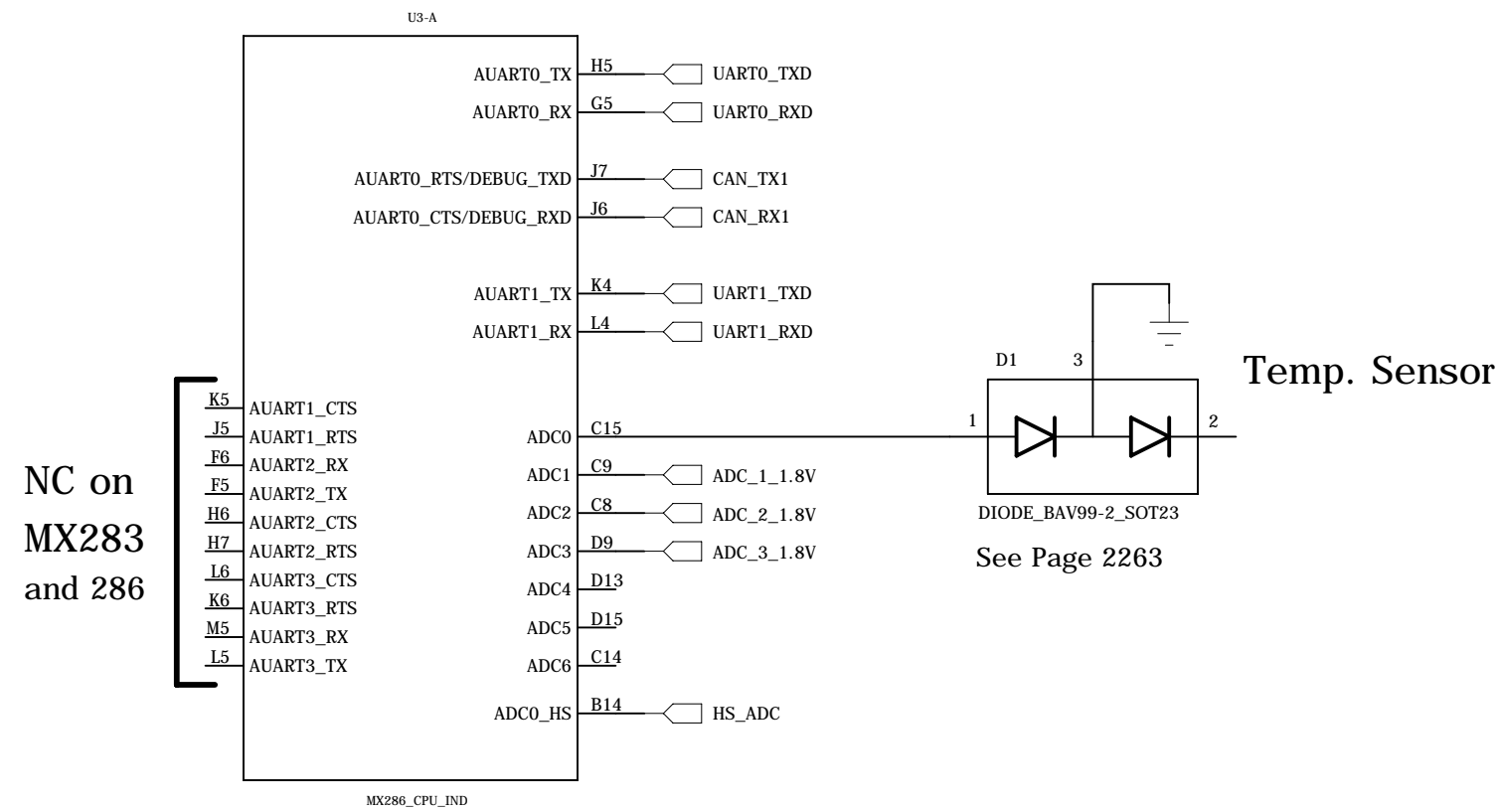
Fix USB_OTG stubs
RAM standby ever to be used ?
Separate 0.9V Vref ?

PWM outputs can be 24 MHz
divided by 16-bit integer
Allows clock 12MHz and lower

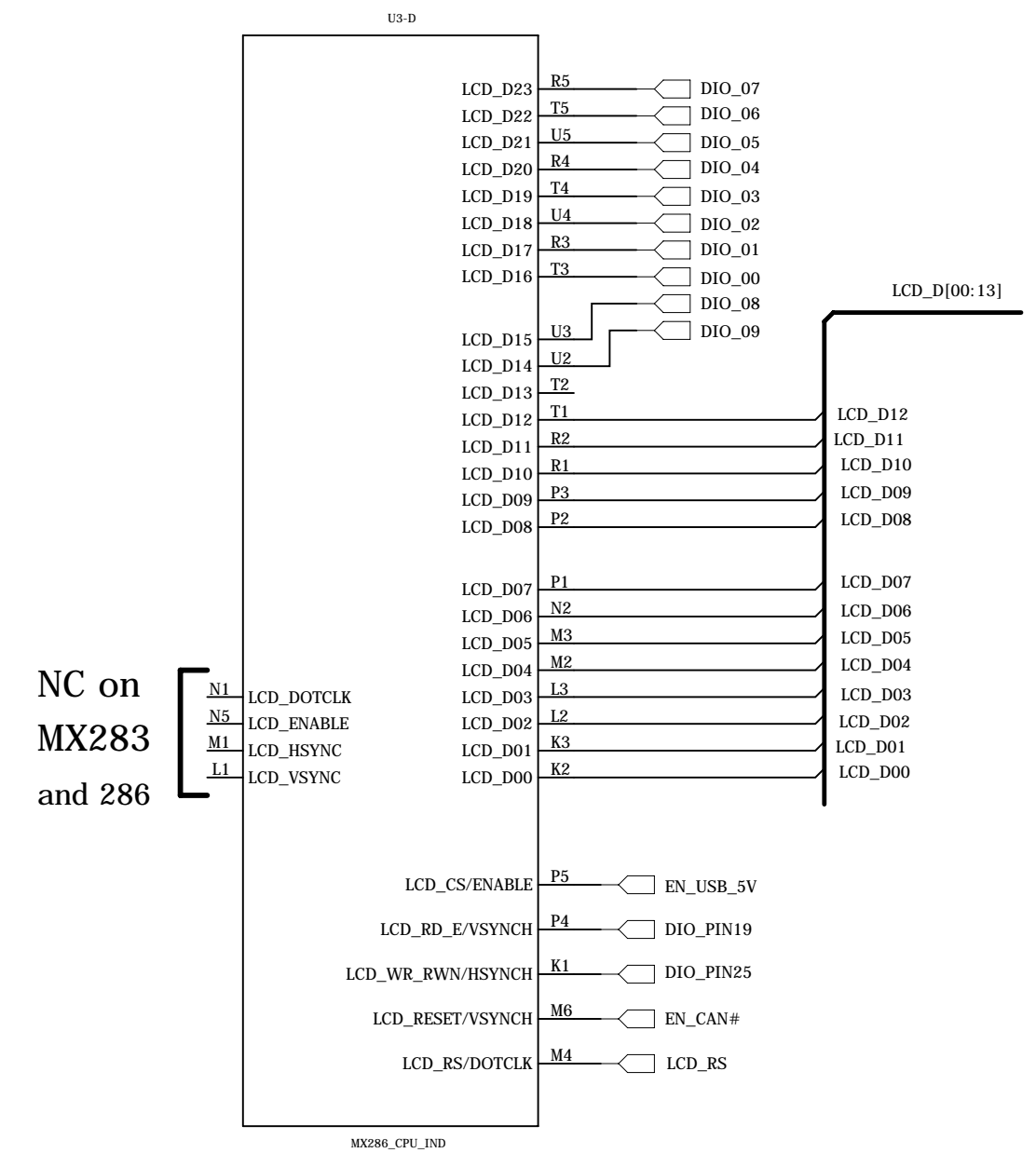
Technologic Systems	Date	Dec. 31, 2013
Title: TS-7400_V2 MX286 CPU		
Rev: A	Designer	Sheet 1 of 11

MX286 ARM9 CPU

UARTs, ADC

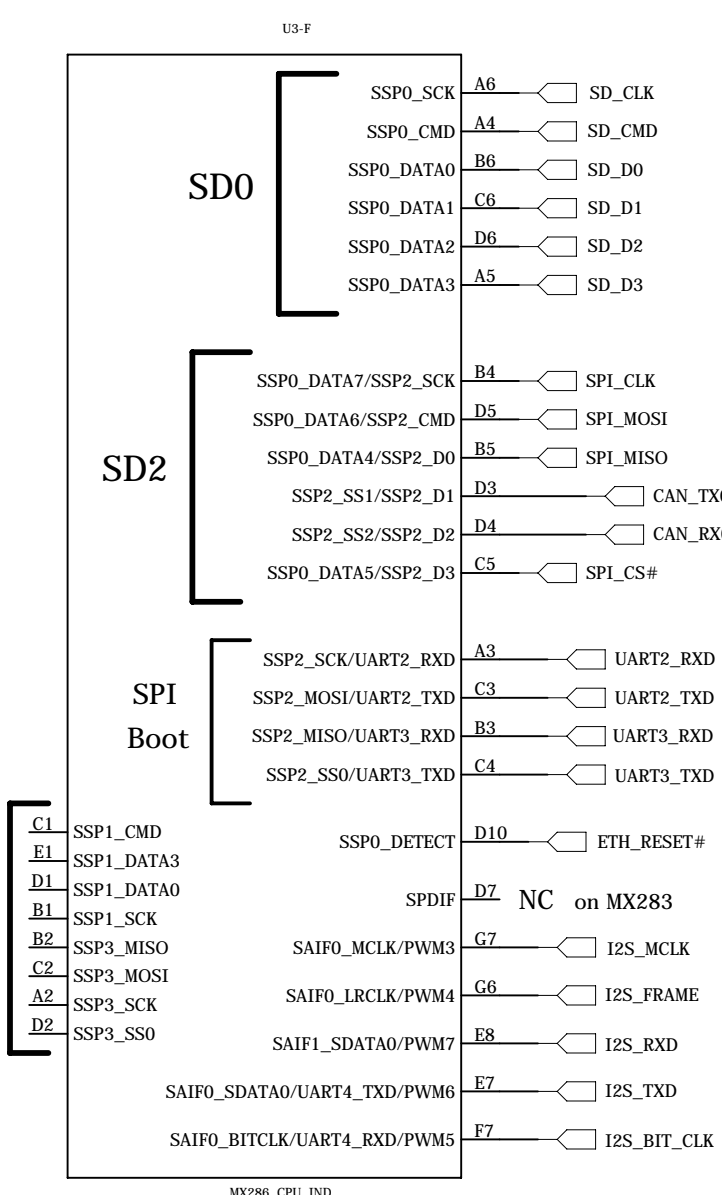


LCD



NAND, PWM JTAG, I2C

Audio SD Card SPI Boot

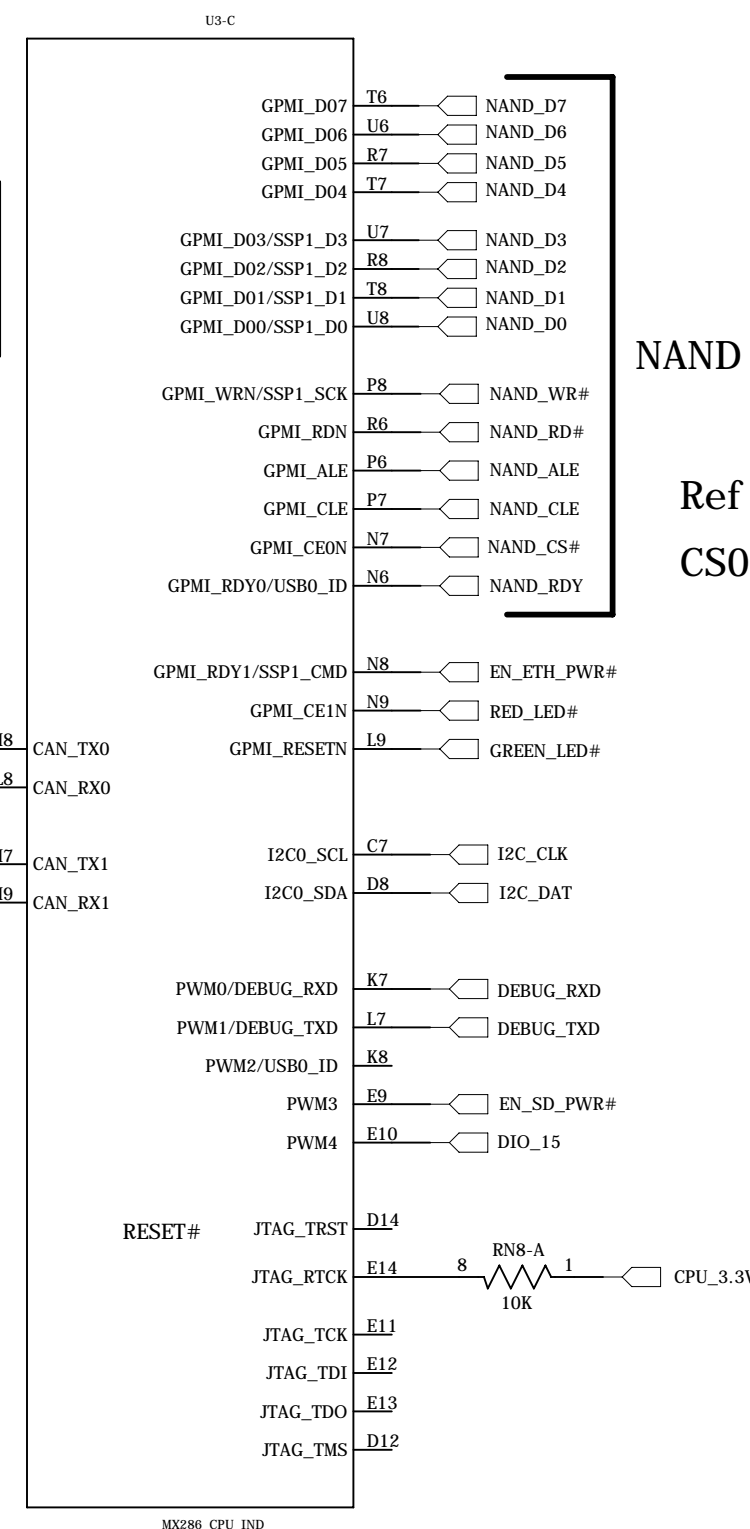


SPI
SCK = CLK
CMD = MOSI
DO = MISO
D3 = CS#

MX286 adds
4 CAN signals
and ball D7

12 MHz default boot clock
U3.D3 and U3.D4 are extra
2 data lines for SPI x4 read
Page 1313 of Data sheet

Page 1311 - Winbond SPI x2 and x4 supported
EVK schematic references a 8Mbit Winbond chip



NAND Interface
Ref Design uses CS0 and RDY0

LCD_00 thru LCD_04
Control Boot Source

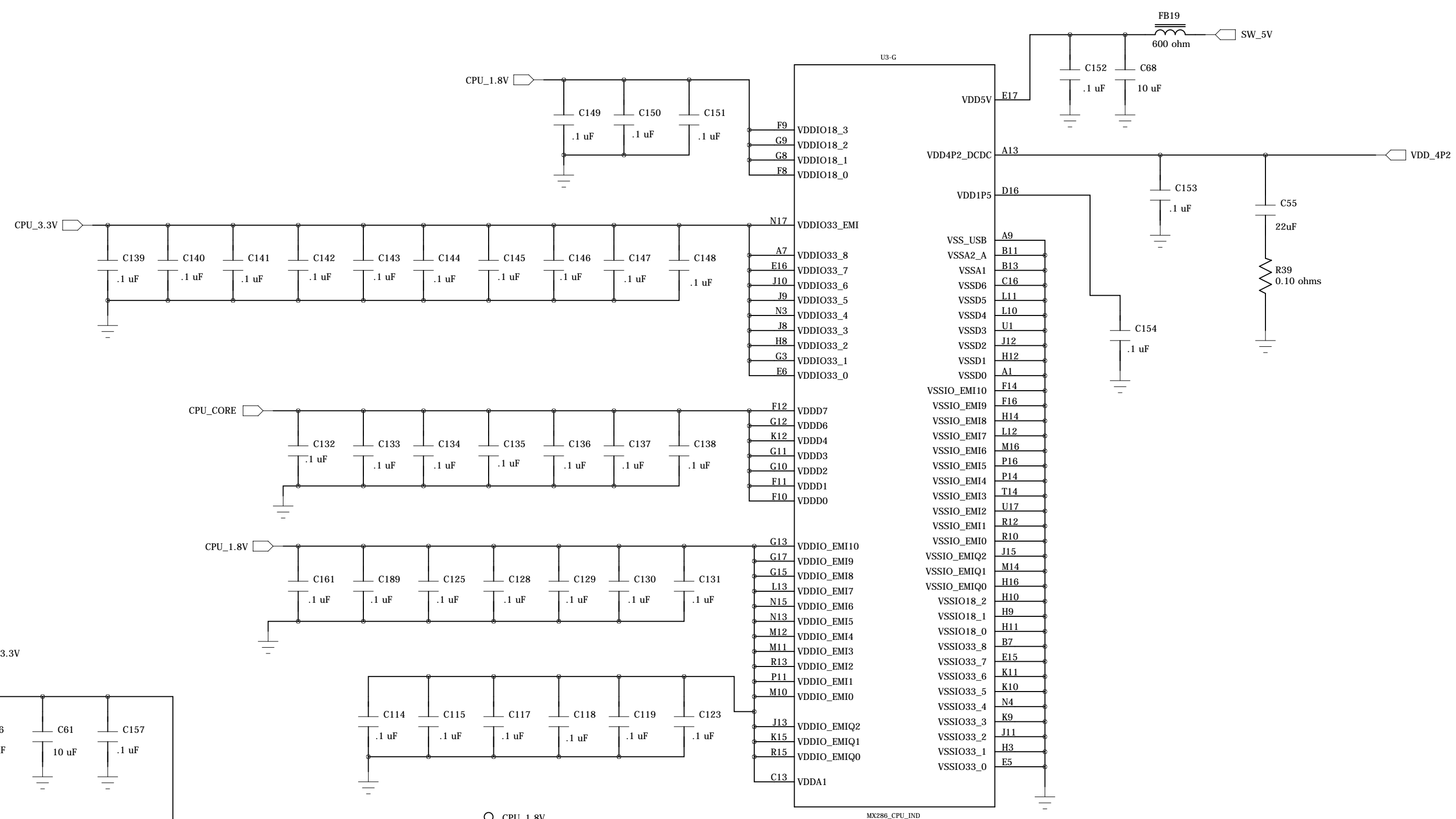
LCD_05 and 06 bias low
LCD_RS biased high
LCD_RS low = use OTP
See: EVK schematic, Page 15

F3 is EVK ETH_RESET#
F5, F6 are EVK USB_PWR_EN
E1 is EVK Eth_PWR_EN
C7 and D8 = EVK I2C
J5 is EVK USB_0_ID
K8 is EVK LCD PWM
K7 and L7 are EVK console

E10 is EVK SD1_PWR_EN
E9 is SD0 PWR_EN on both EVK and Green schematics

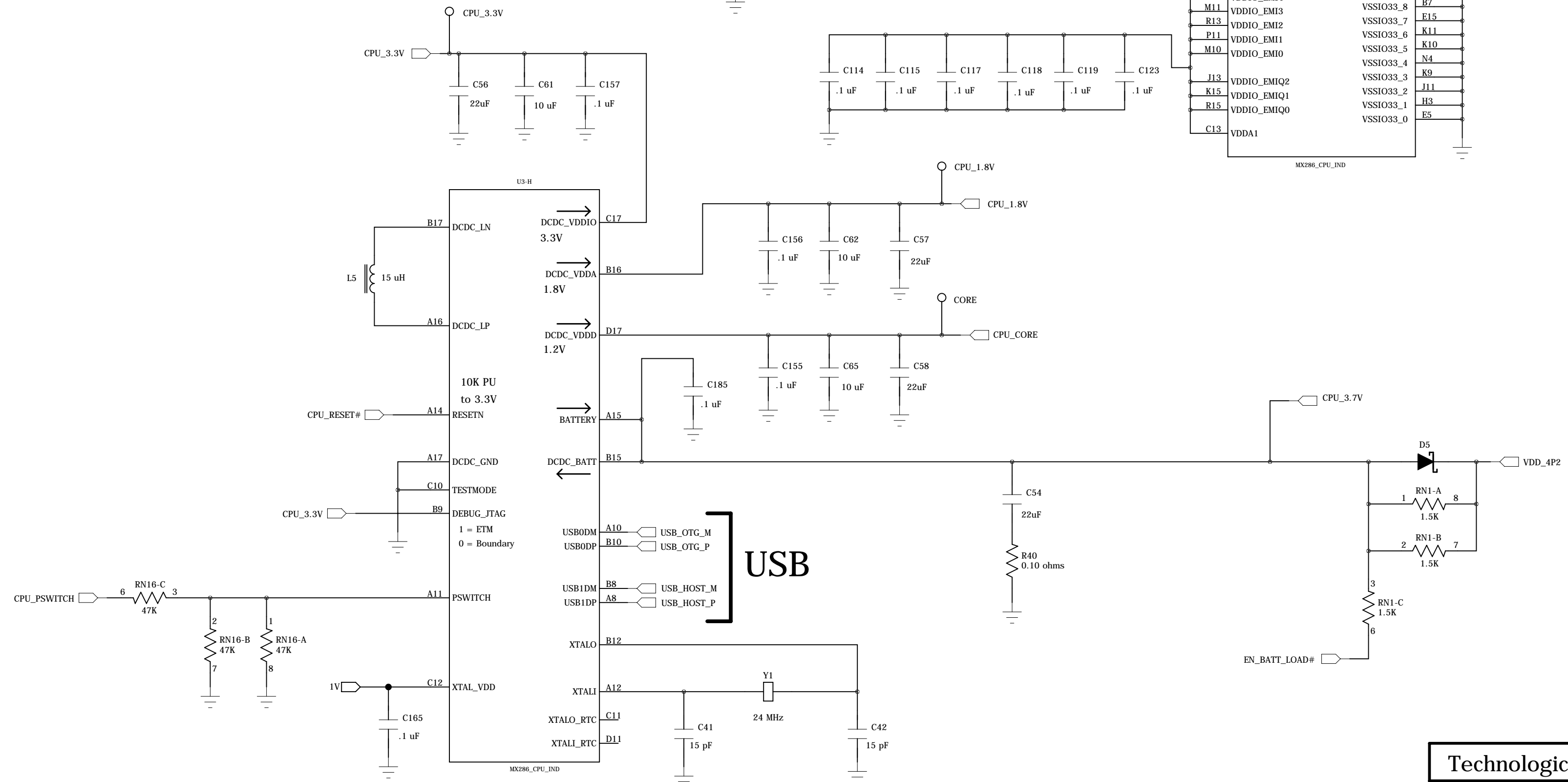
PWM outputs can be 24 MHz
divided by 16-bit integer
Allows clock 12MHz and lower

VDD4P2 is an output -- only feeds two 1.2K resistors
 Reg VDD1P5 goes to nothing



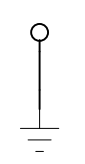
Battery pin supplies current to charge battery

DCDC_BAT pin is power input for DCDC converters -- connect direct to battery



EVK has FET in parallel with D5 "to improve efficiency"

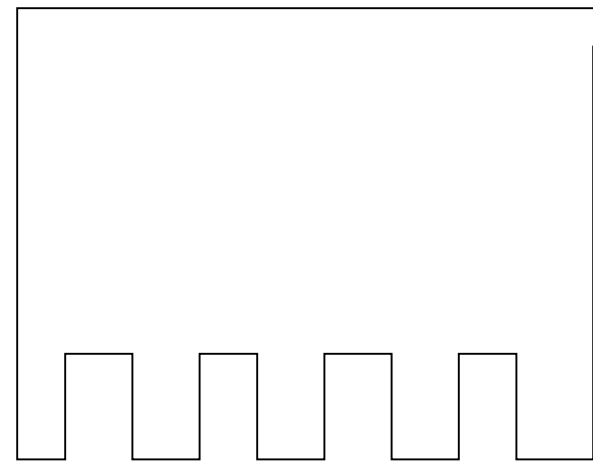
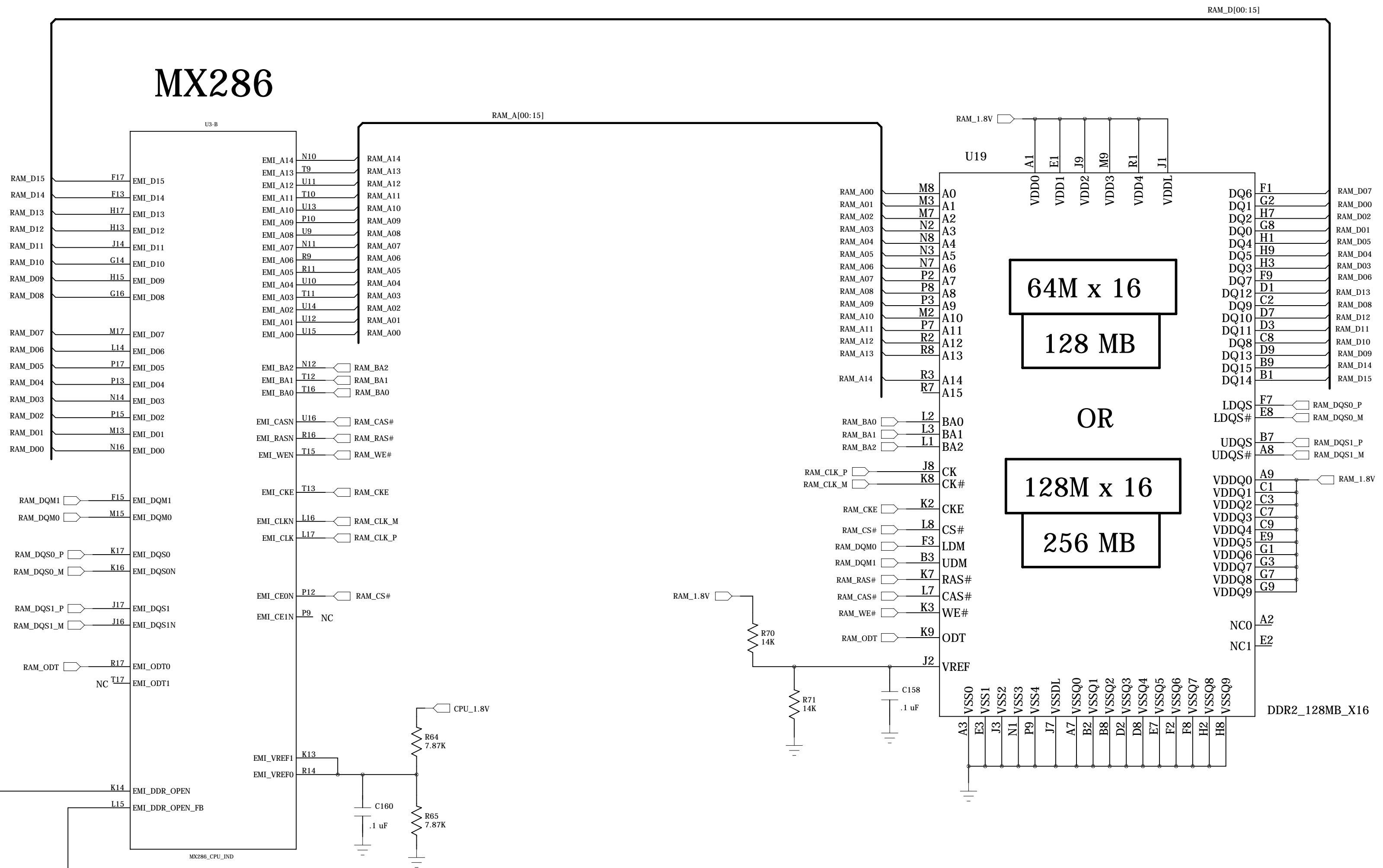
GND Test Point



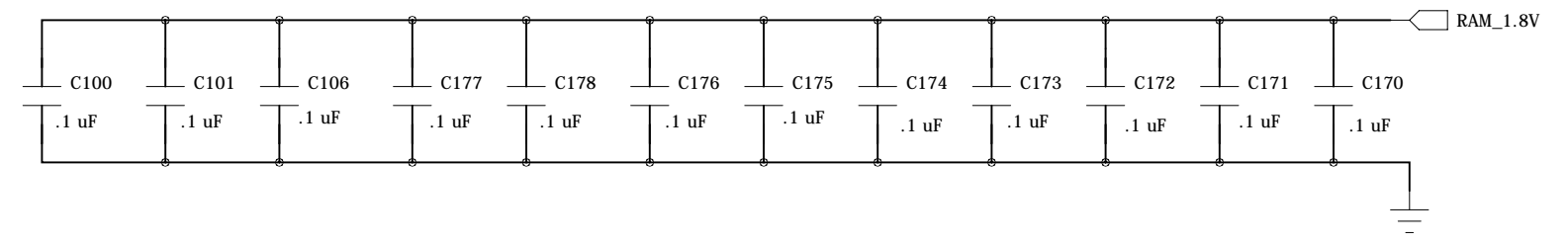
PSWITCH can be driven to 3.3V if a series 10K res is used

Technologic Systems	Date Dec. 31, 2013
Title: TS-7400_V2 MX286 CPU Power	
Rev: A	Designer
Sheet 3 of 11	

DDR2 SDRAM (128 or 256 MByte)

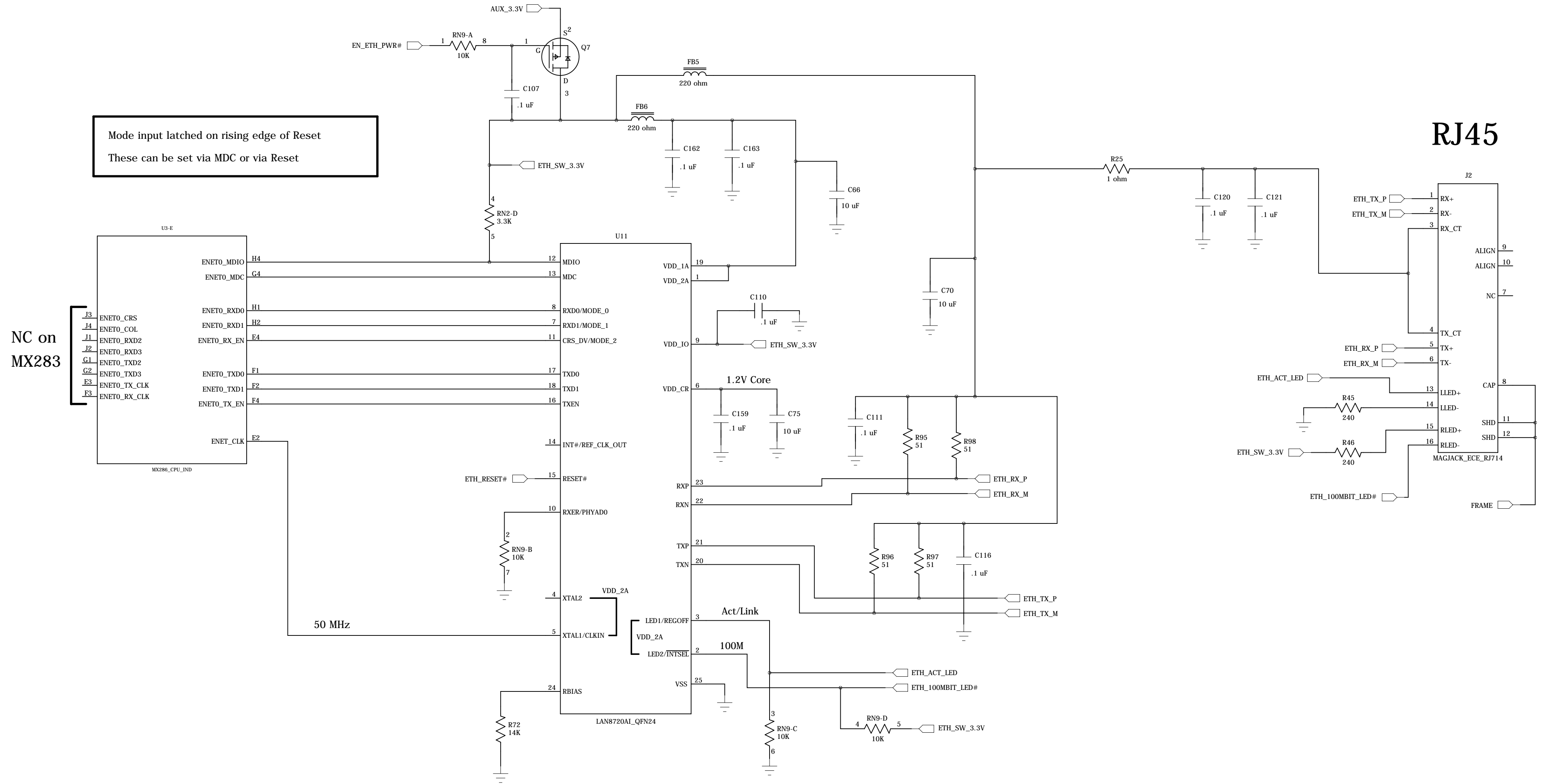


Length of this trace is equal to [CLK + Data] lengths
Data = Average length of all data traces



Technologic Systems		Date Dec. 31, 2013
Title: TS-7400_V2 DDR2 RAM		
Rev: A	Designer	Sheet 4 of 11

10/100 Ethernet



Mode input latched on rising edge of Reset
These can be set via MDC or via Reset

NC on MX283

PHY address and modes latched on rising edge of Reset#

LED high voltage is VDD_2A = 3.3V

LED active state is always the opposite as the strap state

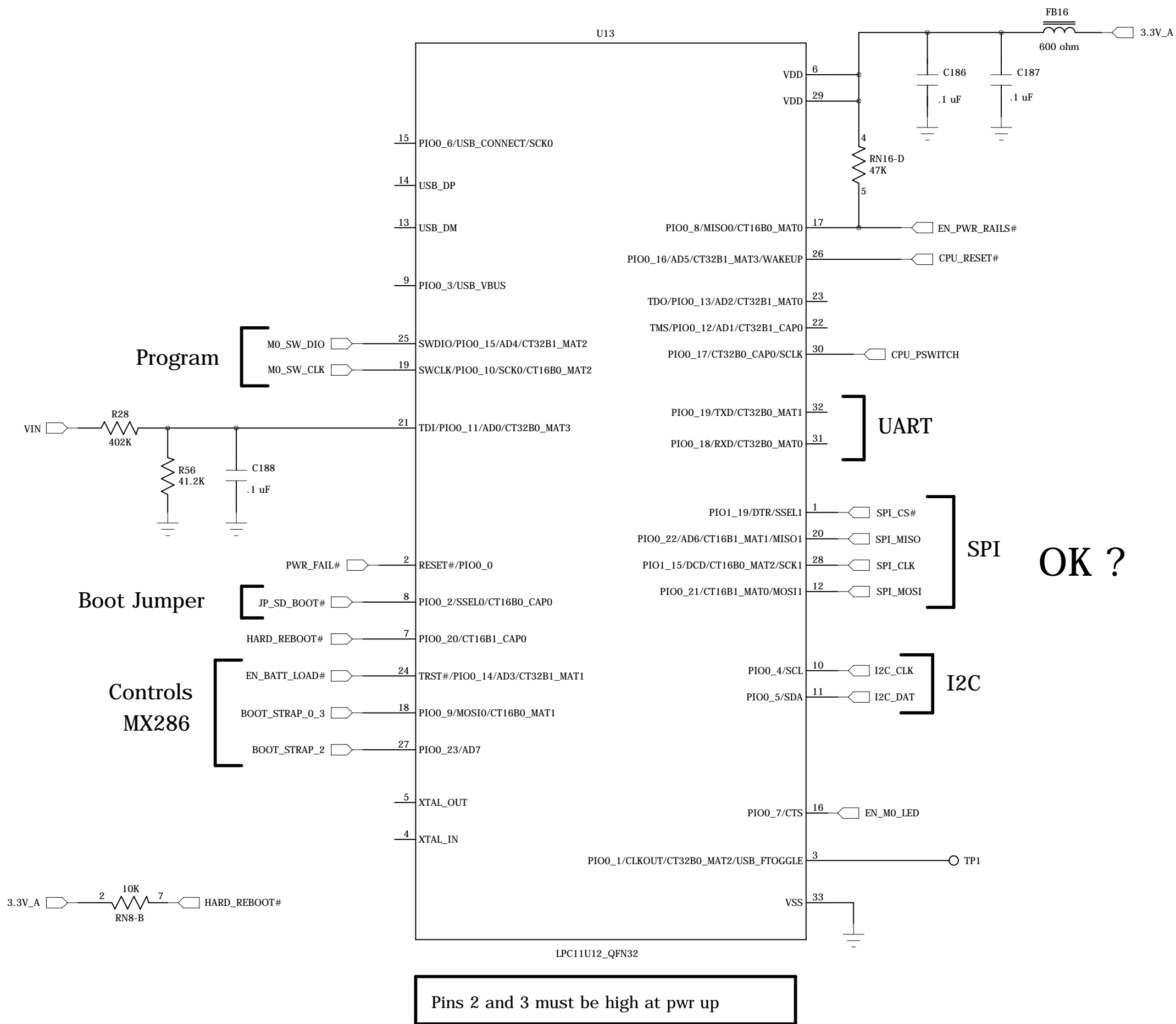
MDIO bus can not be used until 100 uS after Reset# is deasserted
MDCLK max is 2.5 MHz

Auto MDIX is supported and Polarity Correction supported

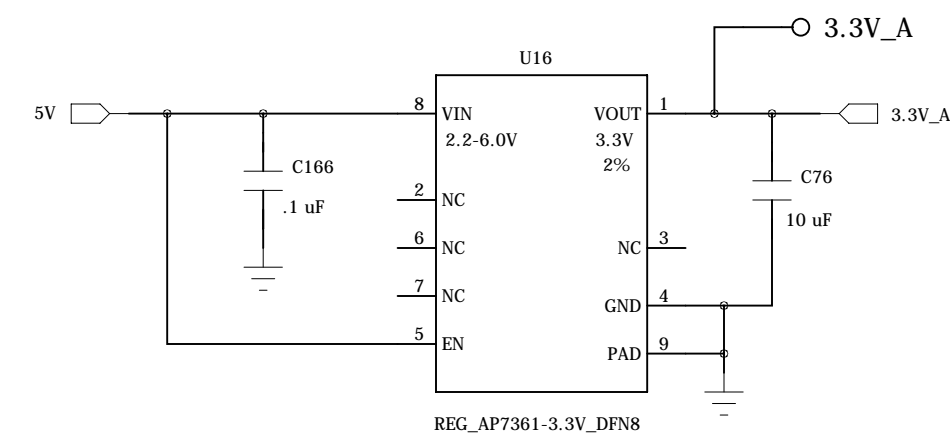
Technologic Systems	Date Dec. 31, 2013
Title: TS-7400_V2 Ethernet Port	
Rev: A	Designer
Sheet 5 of 11	

Cortex M0

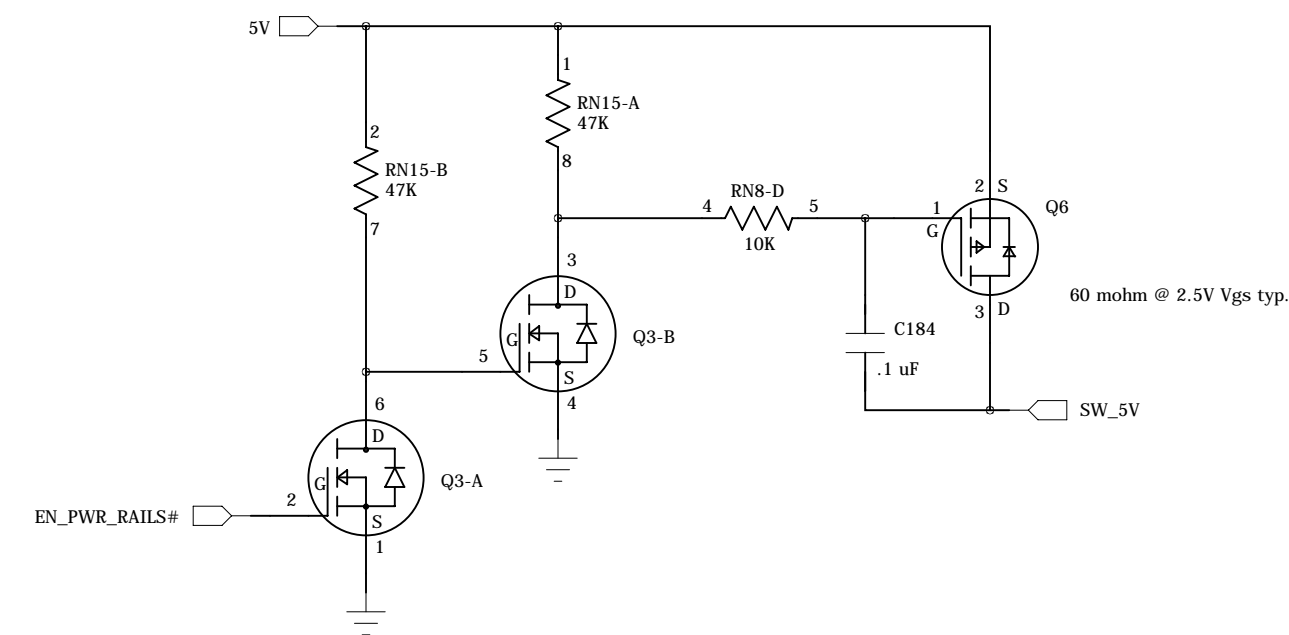
Cortex M0



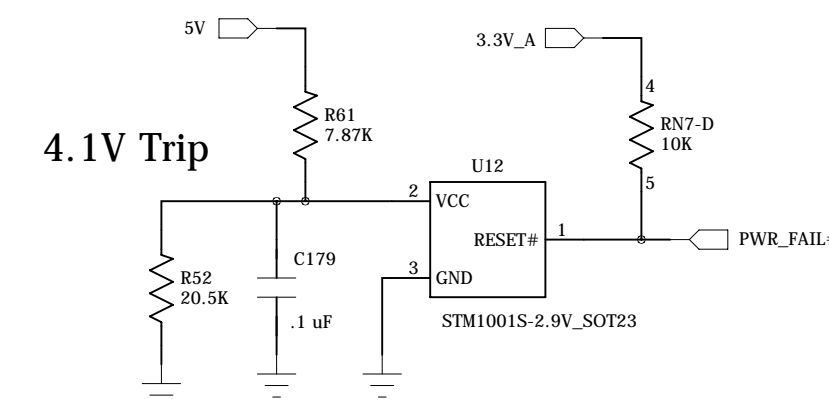
3.3V Reg. for M0



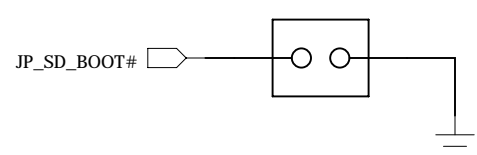
Switched 5V



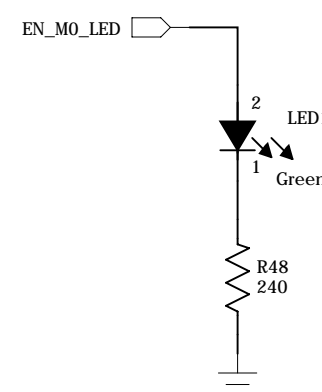
Brown out Detect



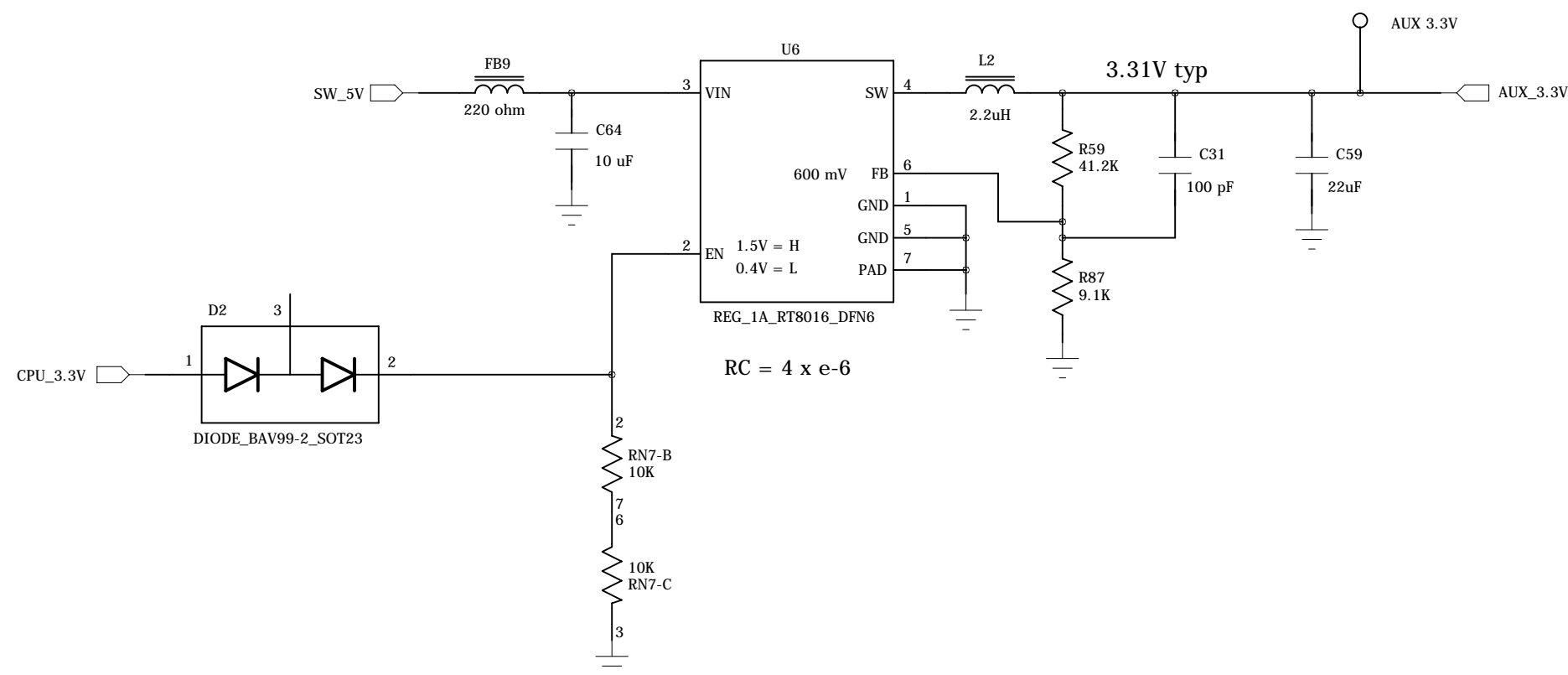
SD Jumper



M0 LED



Aux. 3.3V Reg



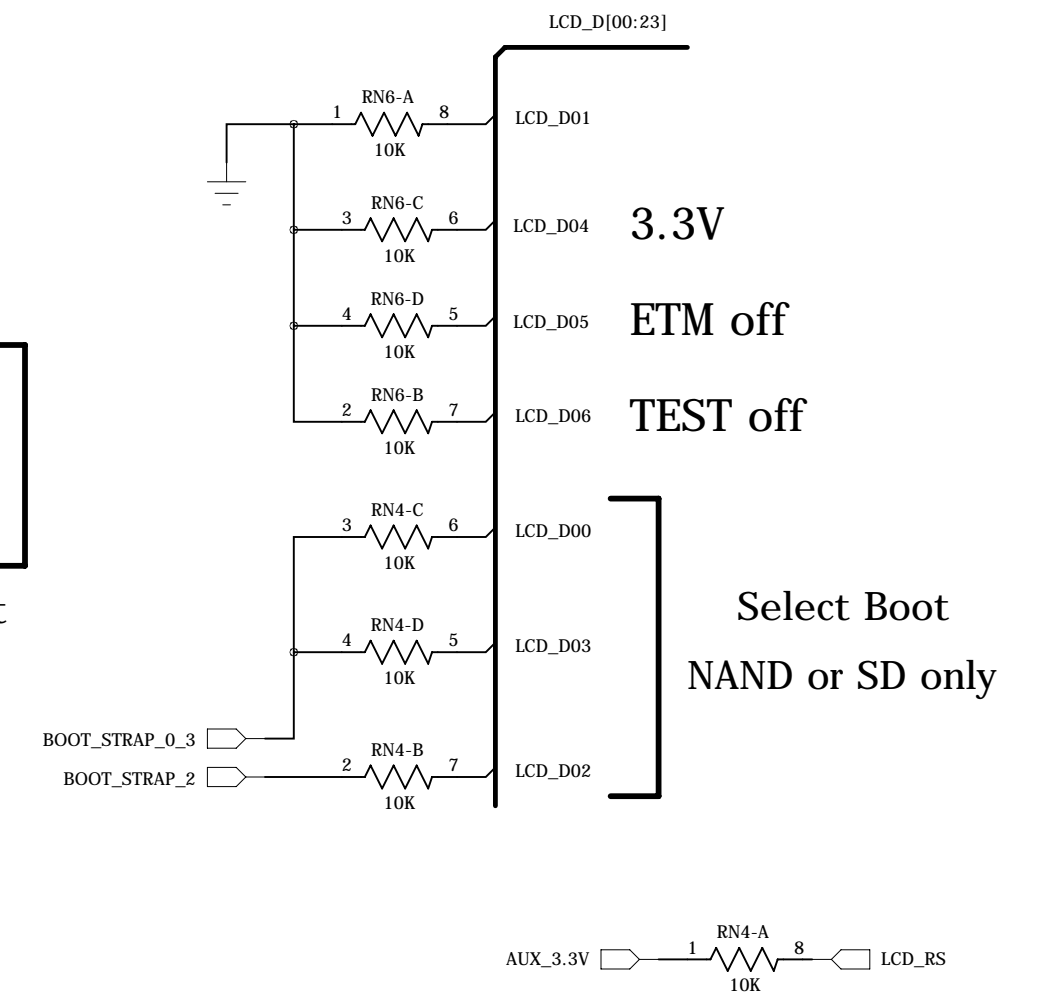
Boot Strap Bias Res.

Defaults to NAND

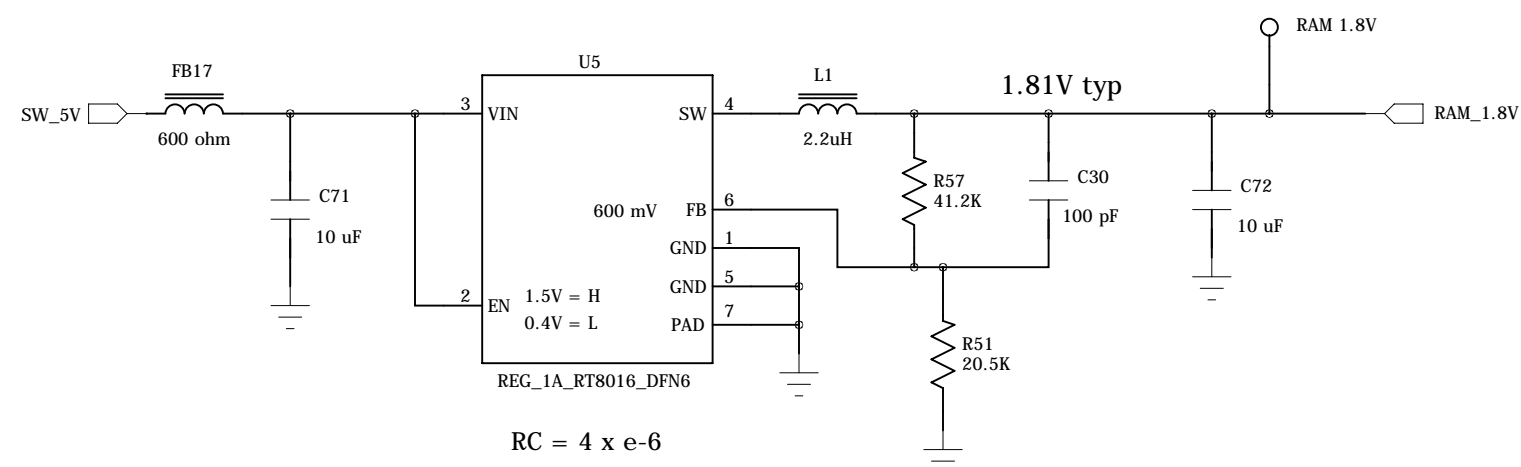
Boot Source

LCD_3	LCD_0	Boot Source
0 0 1 0		SPI
1 0 0 1		SD Card
0 0 0 0		USB
0 1 0 0		NAND

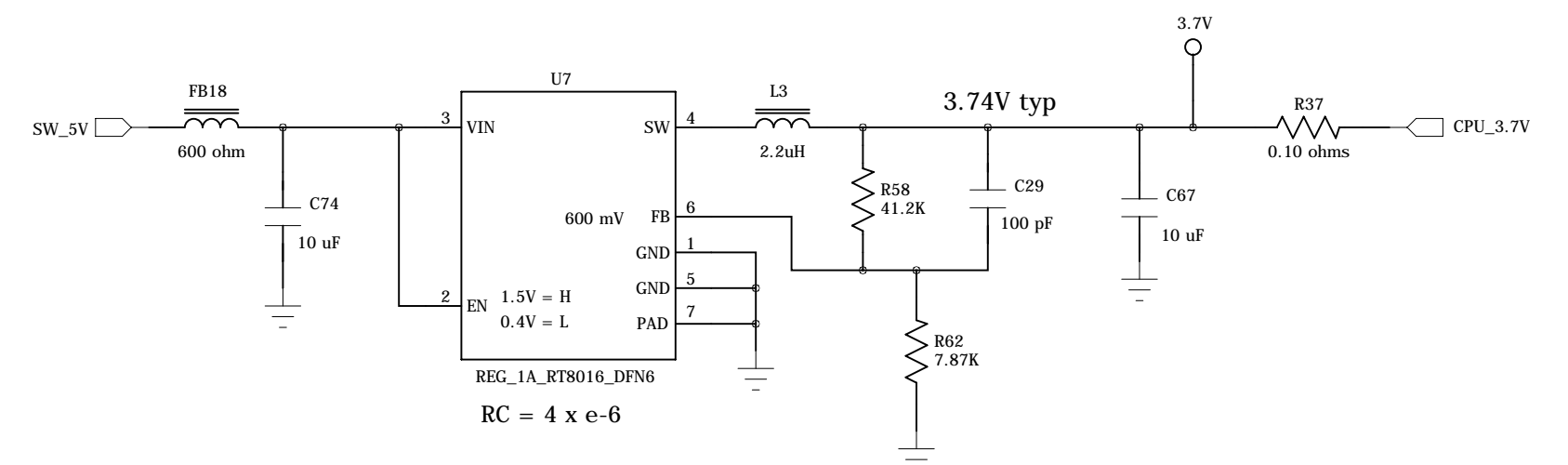
Jumper forces SD Boot



RAM 1.8V Reg



CPU BATT 3.7V



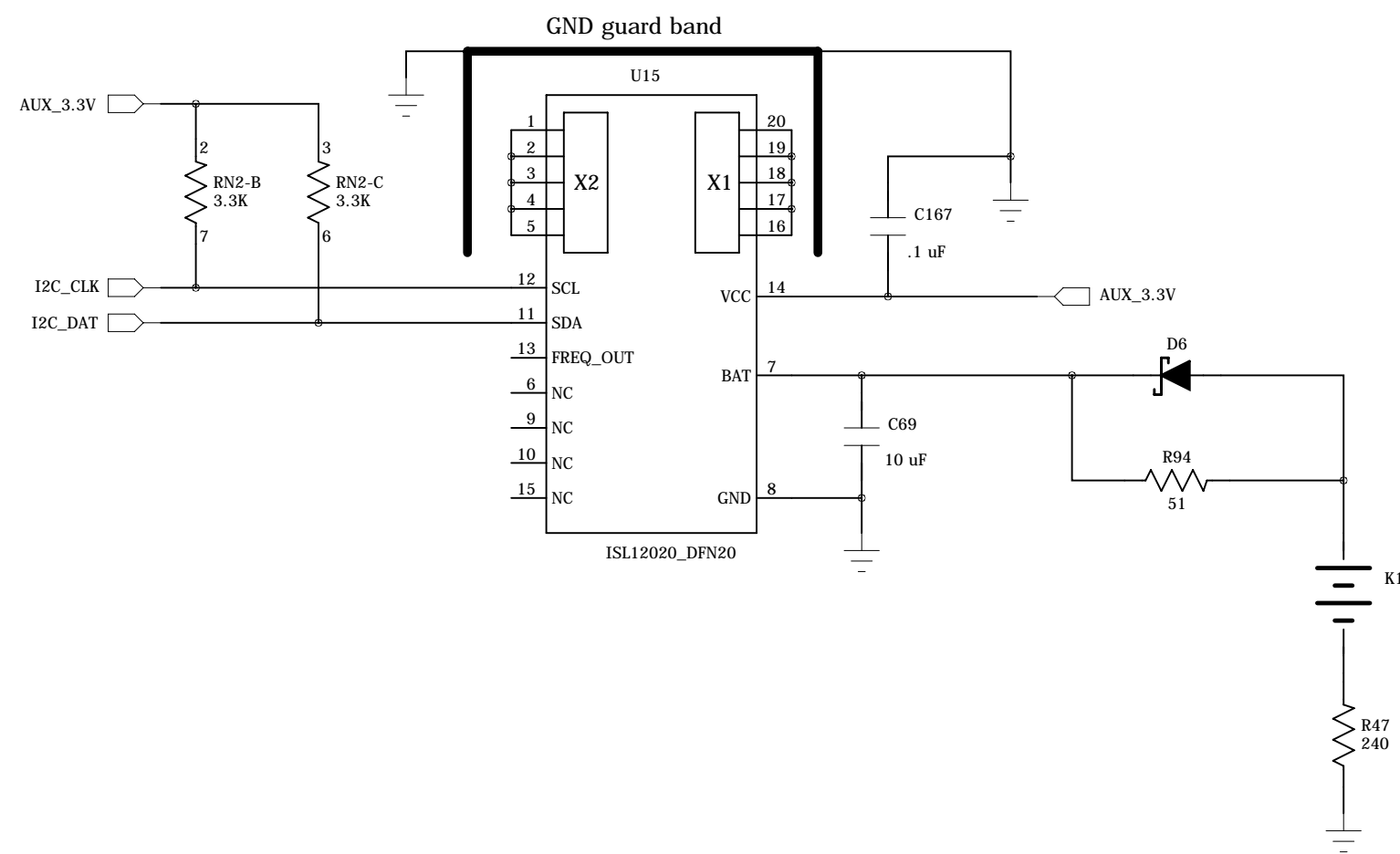
This Reg only required for extra low power mode

FB19 not installed when this reg. is used

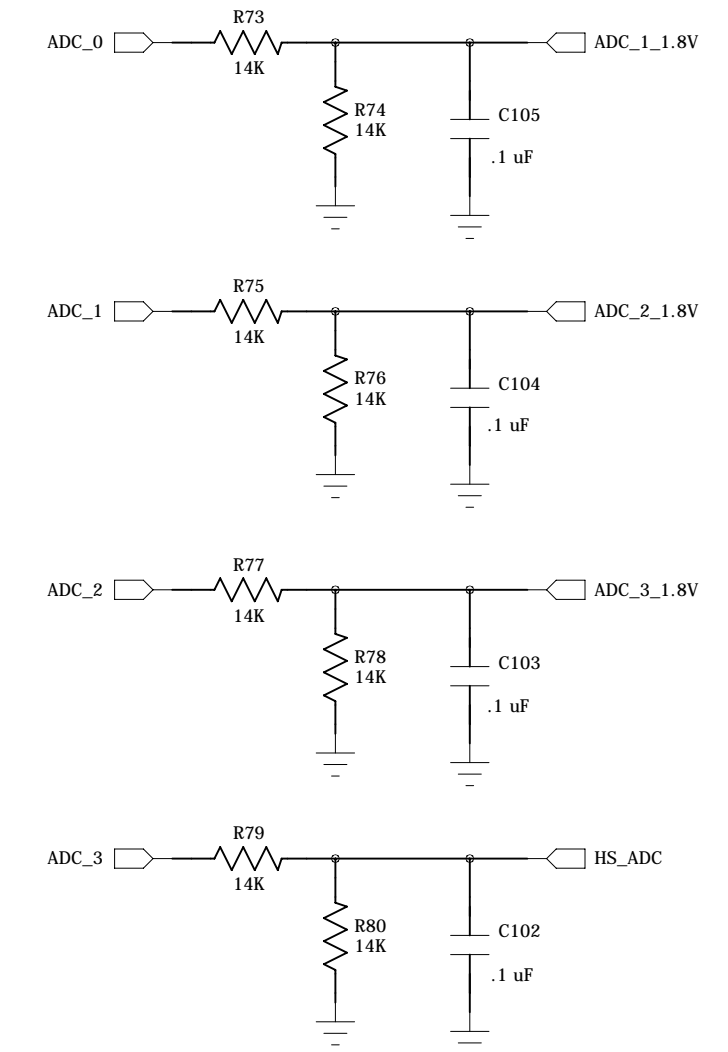
Requires a positive pulse on PSWITCH

RTC, RS-232 and Analog

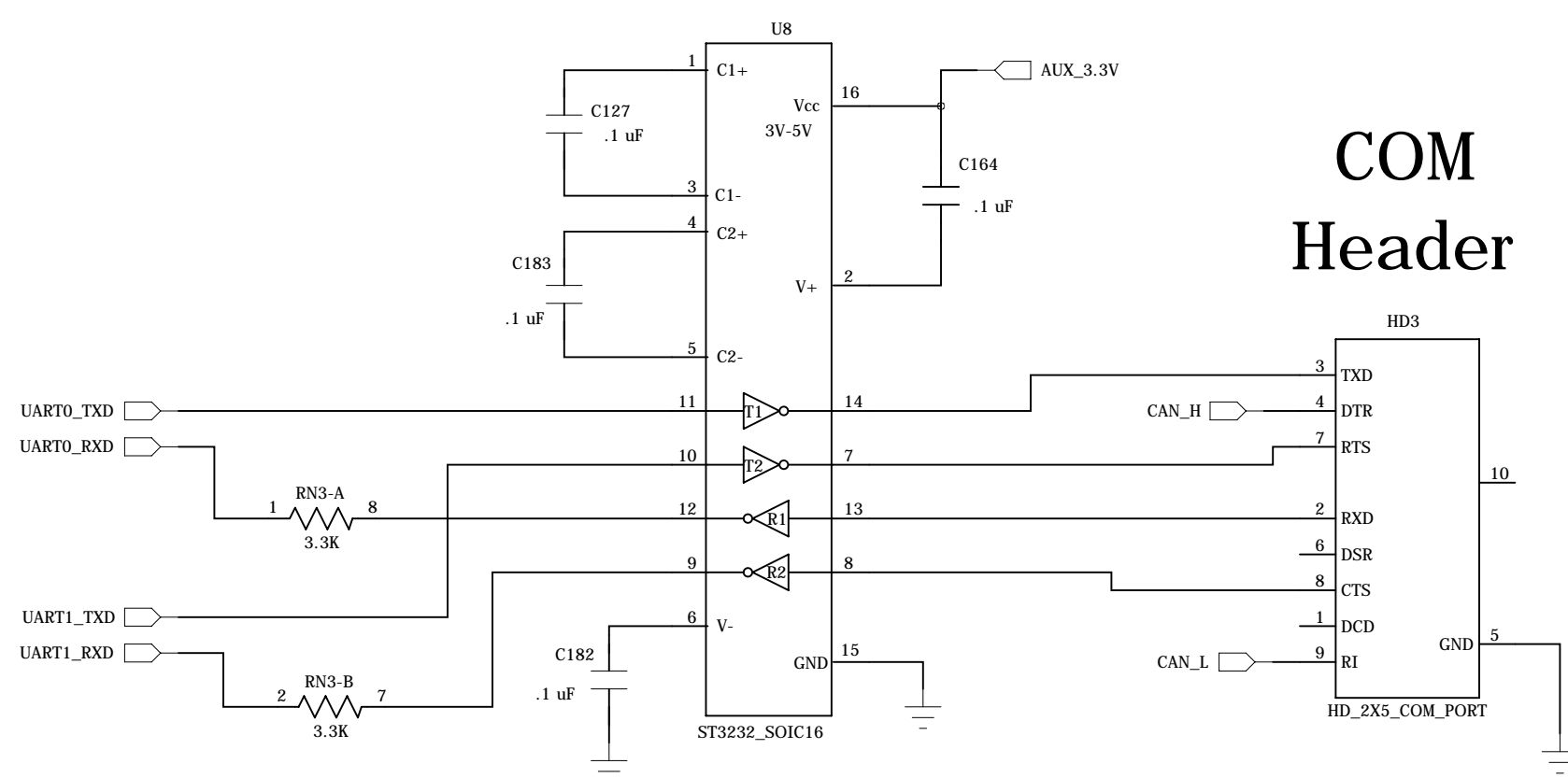
RTC and Temp. Sensor



Analog Inputs

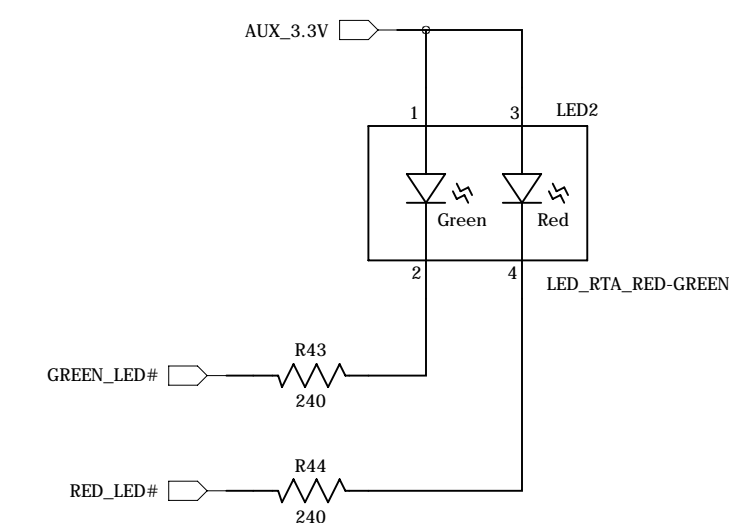


RS-232 Tran.



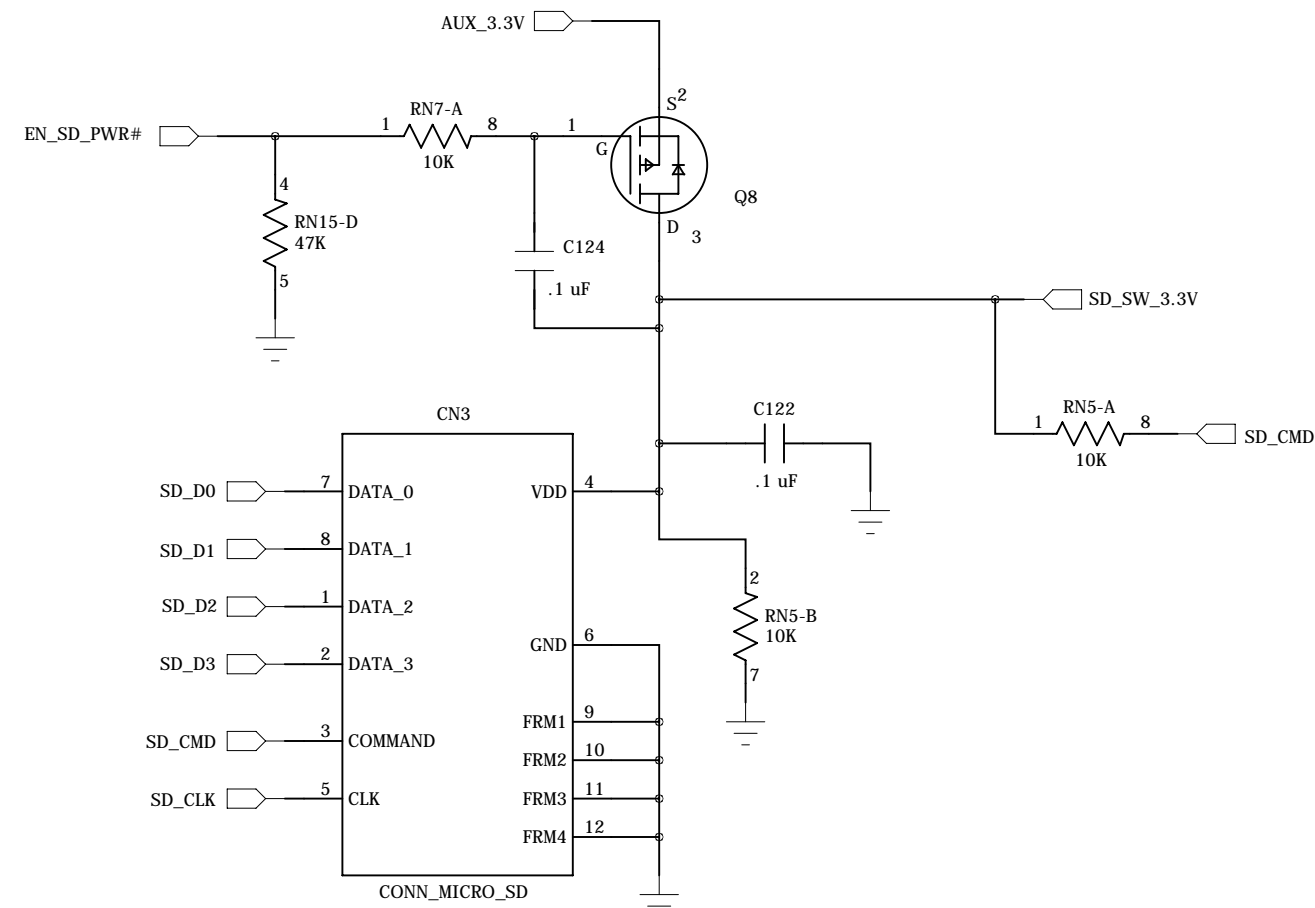
COM
Header

Red/Green LEDs



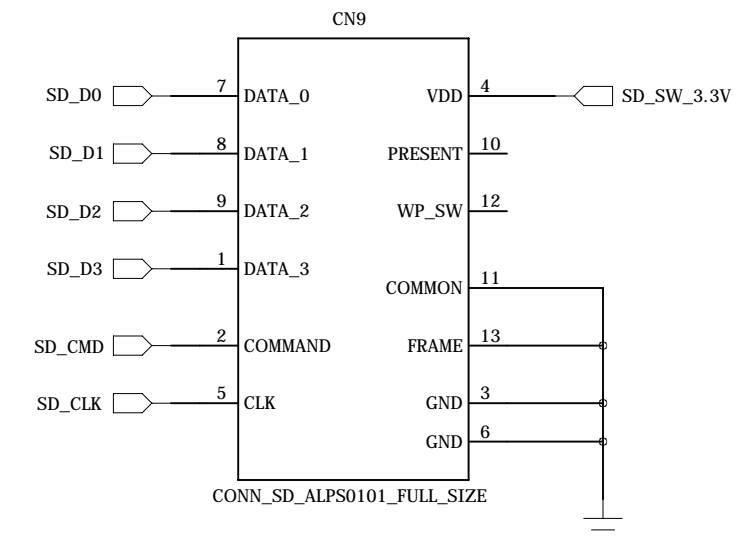
Flash Memory

Micro SD Card Socket

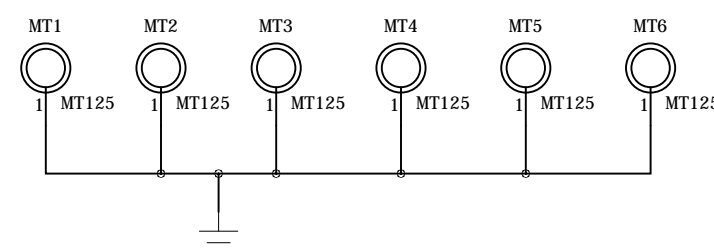
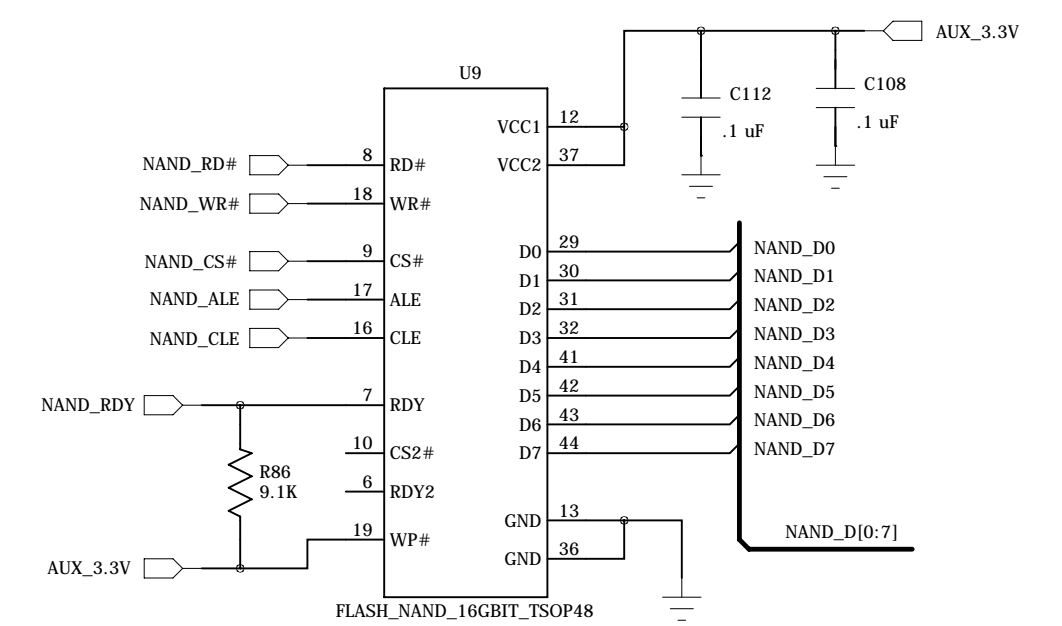


Only one SD card
can be installed !

Full Size SD Socket

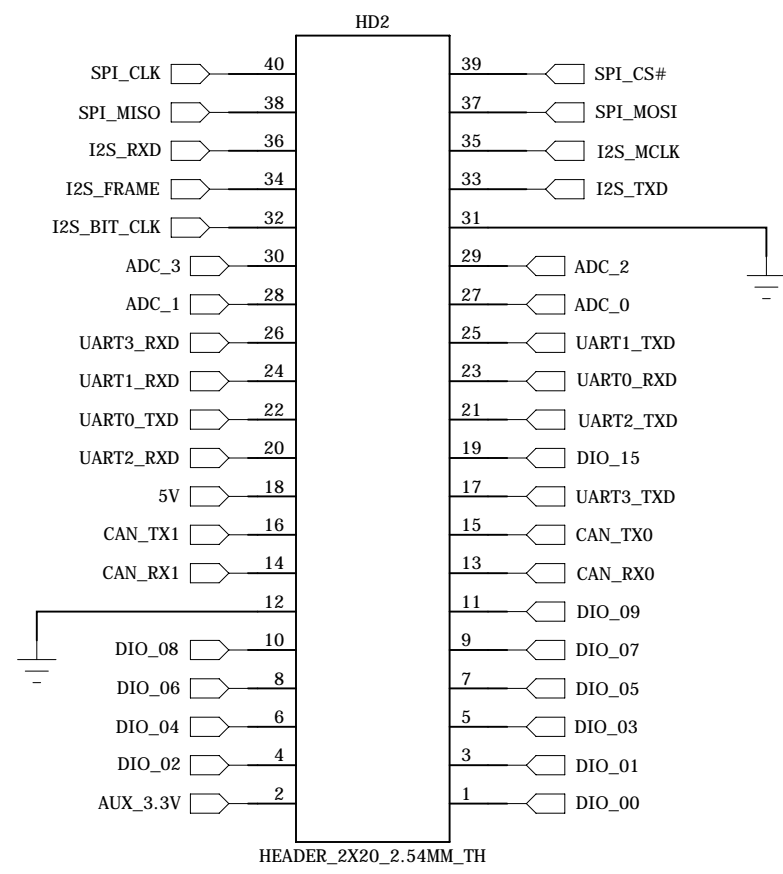


NAND Flash

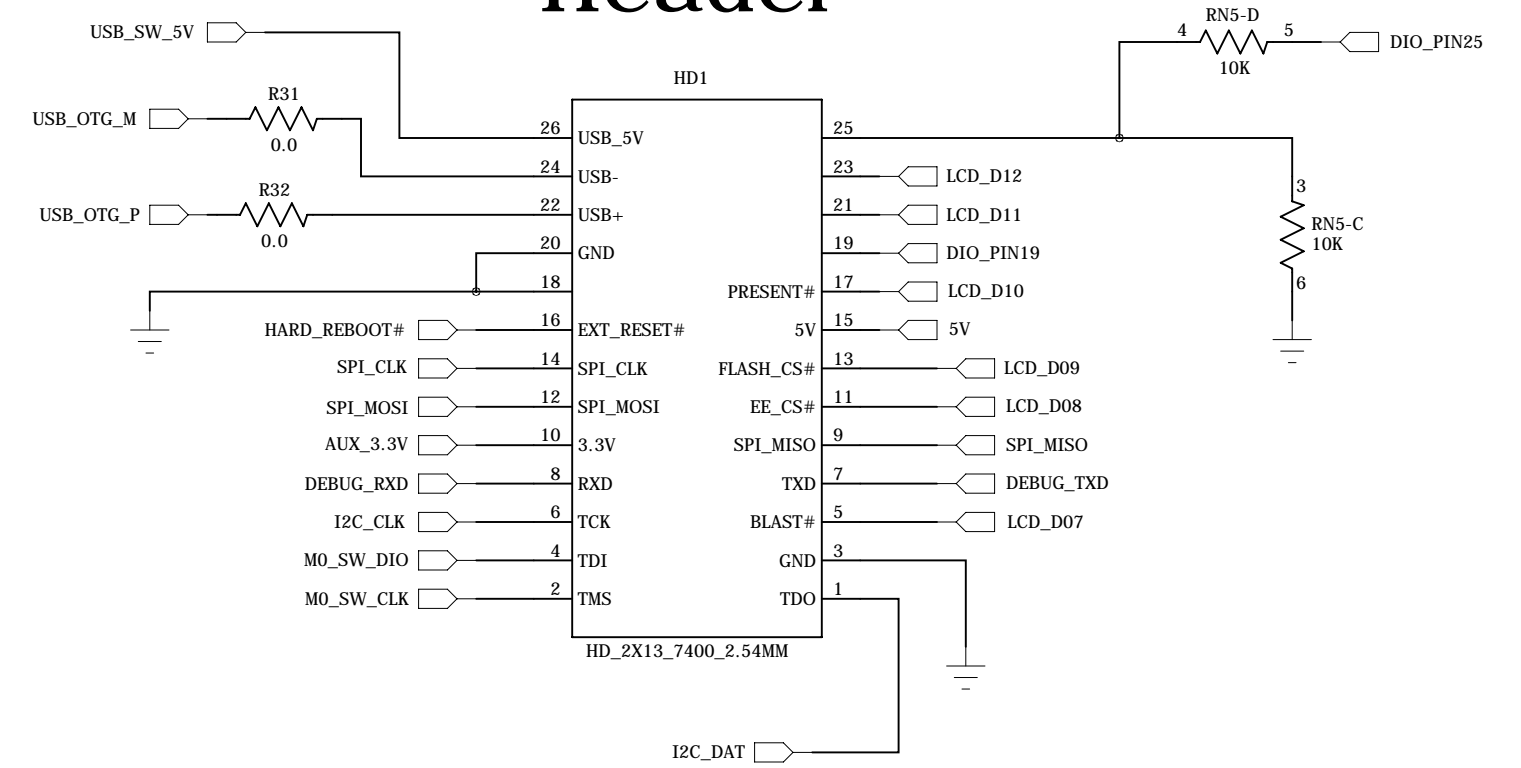


Technologic Systems	Date Dec. 31, 2013
Title: TS-7400_V2 SD Card, NAND, LEDs	
Rev: A	Designer
Sheet 9 of 11	

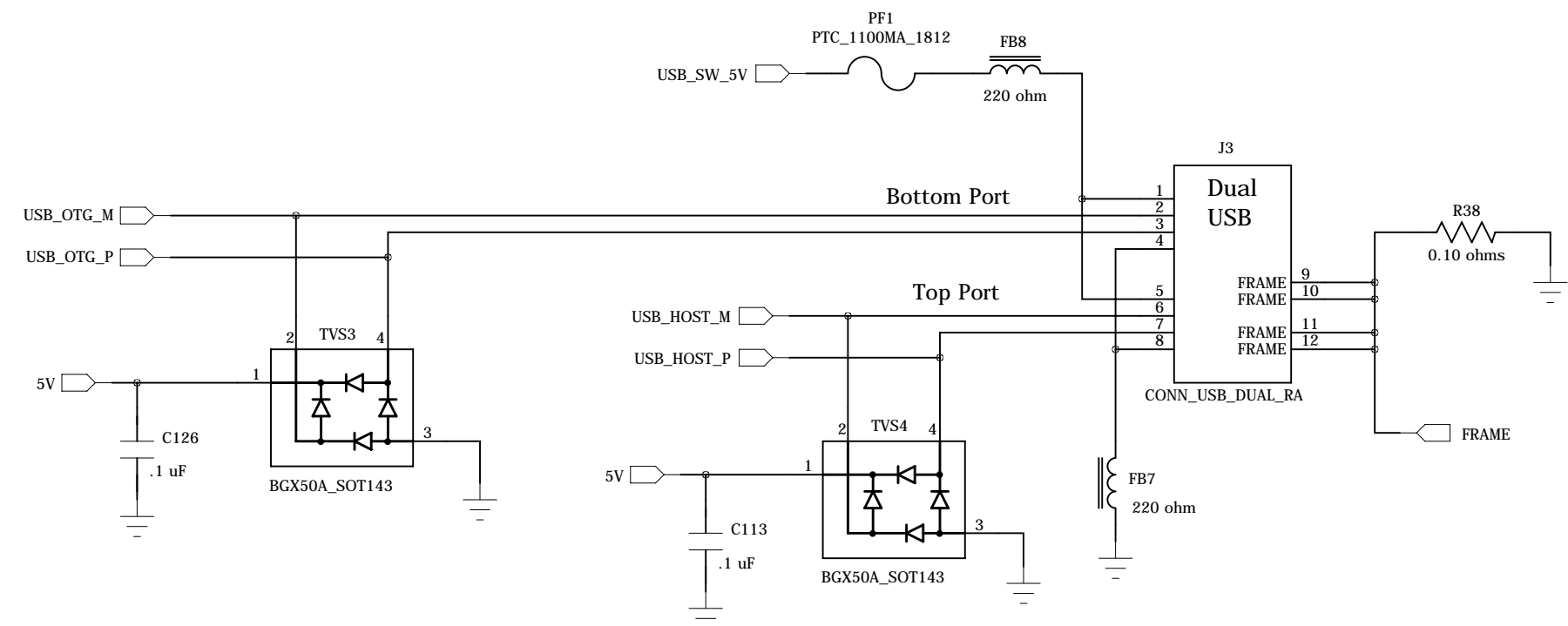
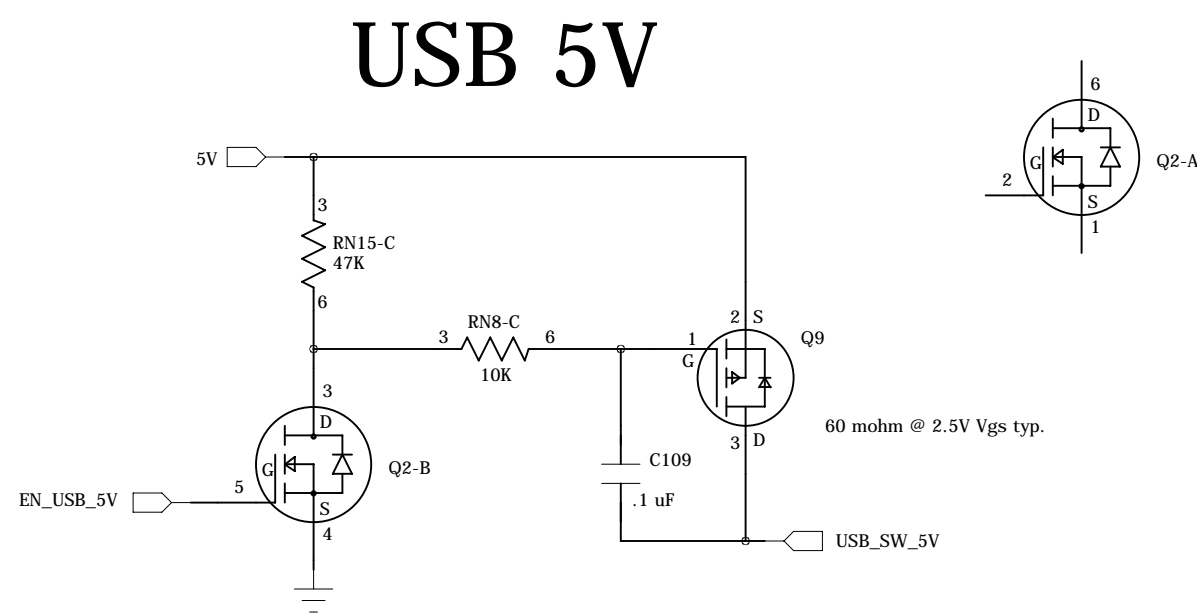
40-Pin DIO Header



26-Pin DIO Header



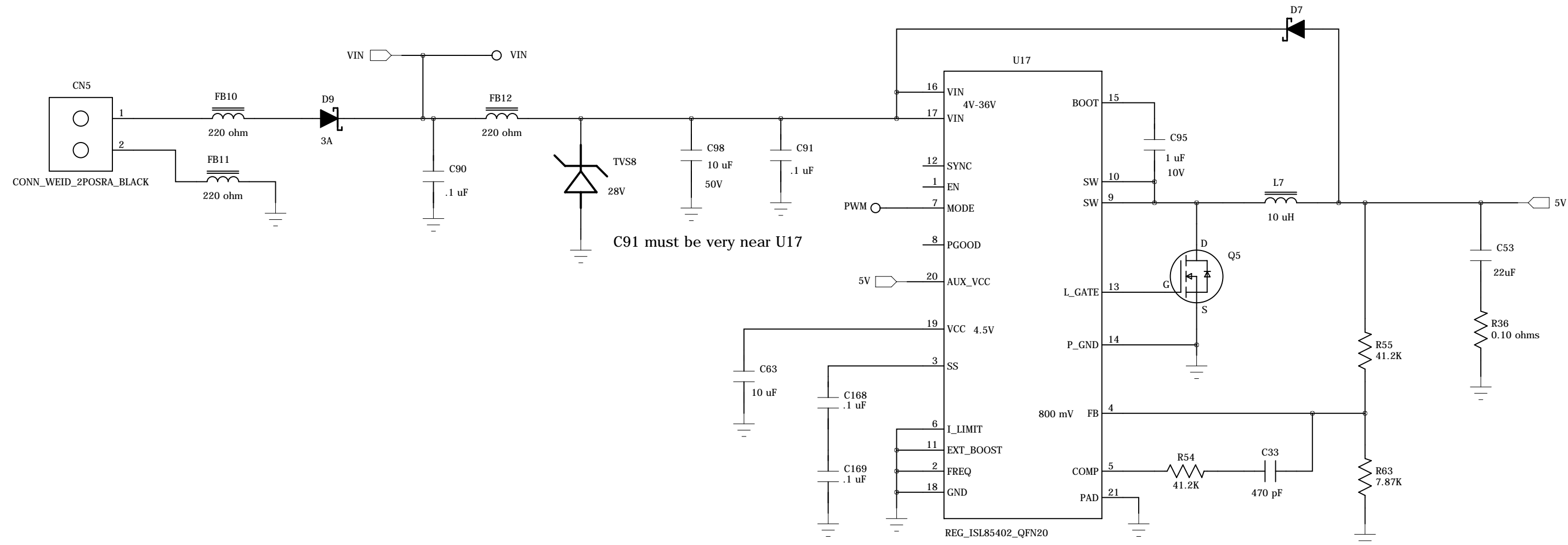
USB Host Ports



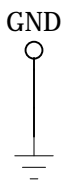
Technologic Systems	Date Dec. 31, 2013
Title: TS-7400_V2 44-pin, 26-pin DIO, USB	
Rev: A	Designer
Sheet 10 of 11	

5V Power Supply (2000 mA)

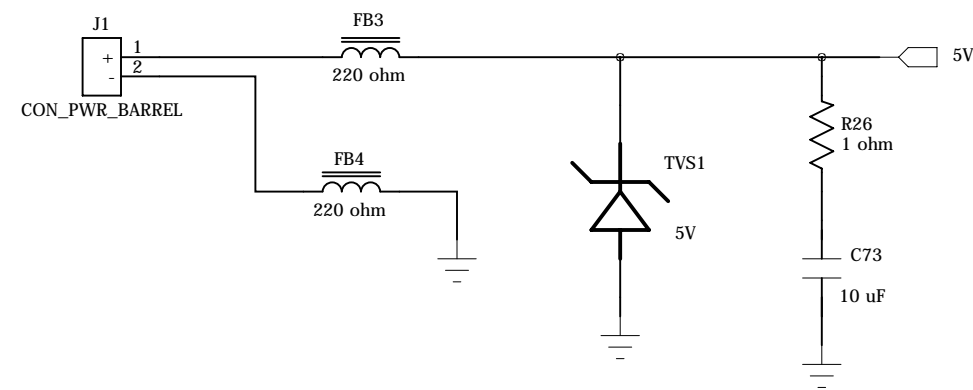
8-28 VDC
Power Input



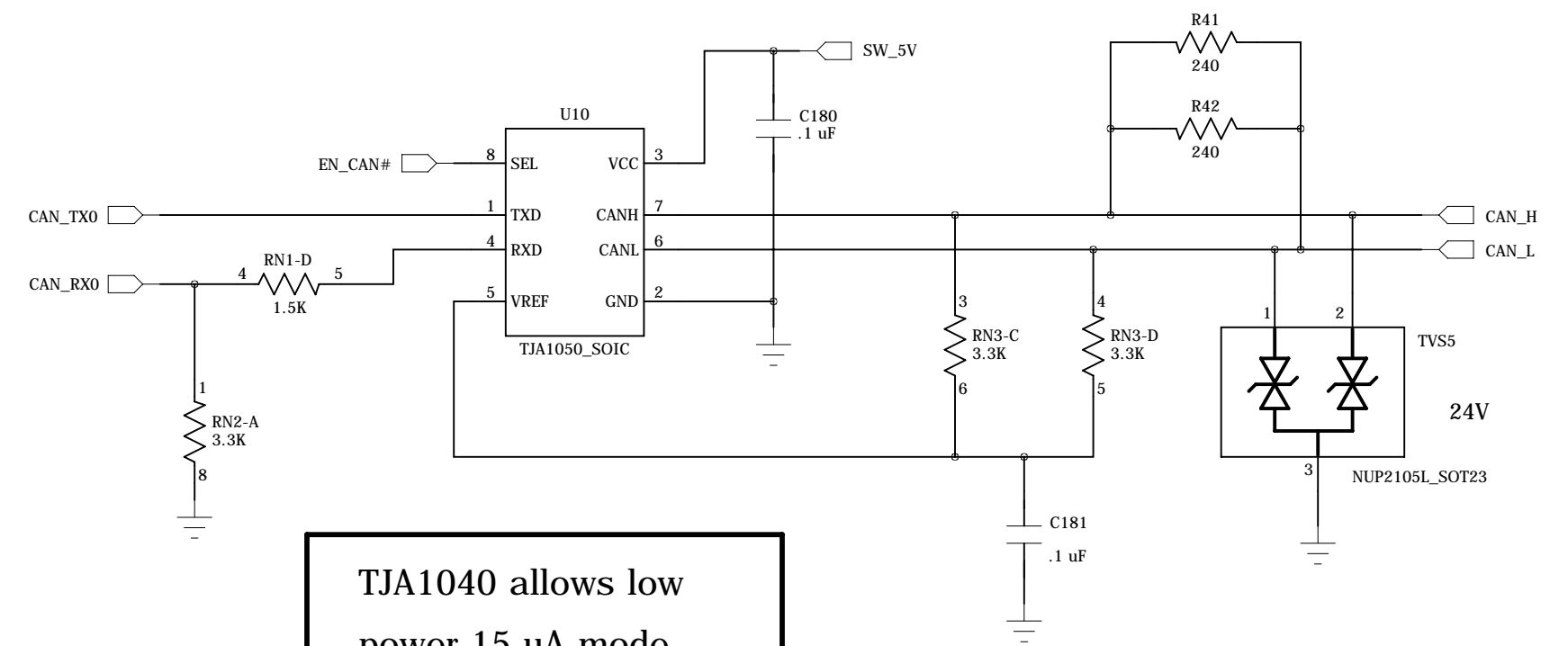
.063 hole



5V Power Barrel Conn.



CAN Transceiver



TJA1040 allows low power 15 uA mode

Technologic Systems	Date Dec. 31, 2013
Title: TS-7400_V2 5V Reg.	
Rev: A	Designer
Sheet 11 of 11	