

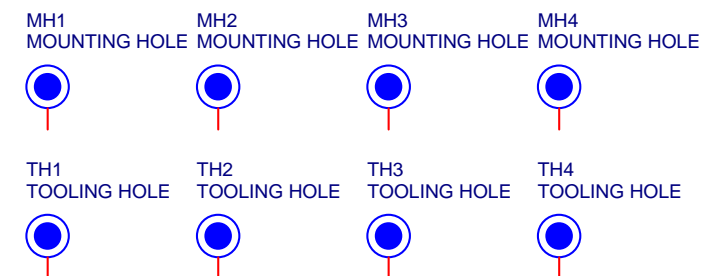
# RENESAS DEVELOPMENT KIT FOR RX63N

## REVISION HISTORY

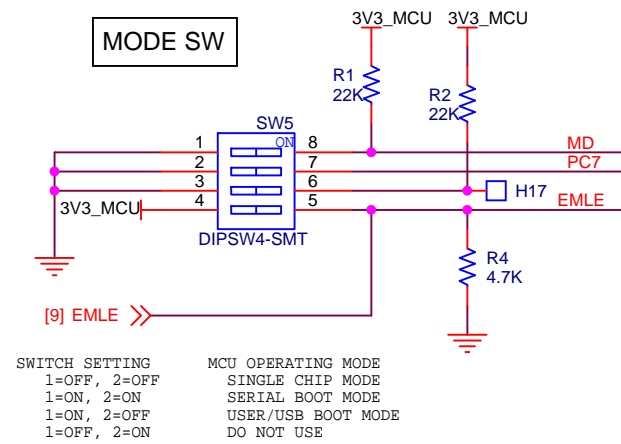
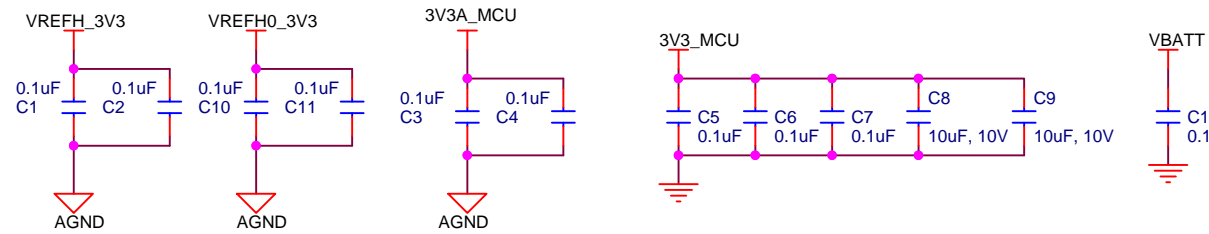
| PAGE | DESCRIPTION                   |
|------|-------------------------------|
| 1    | INDEX                         |
| 2    | RX63N MCU                     |
| 3    | ETHERNET, BEAGLE/BID HEADER   |
| 4    | ANALOG, CAN, FLASH, PWR       |
| 5    | USB PORT                      |
| 6    | PMOD, EXP, LCD, APP HDR, PBTN |
| 7    | AUDIO OUT, MICROPHONE         |
| 8    | uSD, LED, SERIAL, ACCEL       |
| 9    | SEGGER JLINK-OB               |

**NOTE:**  
**R : FIXED RESISTOR**  
**VR : POTENTIOMETER**  
**U : INTEGRATED CIRCUIT**  
**X : CRYSTAL**  
**SW : PUSHBUTTON/DIP SWITCH**  
**LED : LIGHT EMITTING DIODE**  
**J : CONNECTOR, JUMPER**  
**L : FERRITE BEAD/INDUCTOR**  
**D : DIODE**

1.0 6/22/2011 PROTOTYPE RELEASE  
 1.1 7/27/2011 CHANGE USB PWR IC (U12) AND LEFT AUDIO SOURCE  
 2.0 11/09/2011 CHANGE JLINK TO RX621, CHANGE SPK AMP TO ADI, CORRECT SIGNAL NAMES FOR RX63N, ADD ALT PWR  
 3.0 01/17/2012 CHANGE TEMP SENSOR AND ADD ALTERNATE TEMP SENSOR, ADD OPTIONAL OFF-BOARD BATTERY INPUT

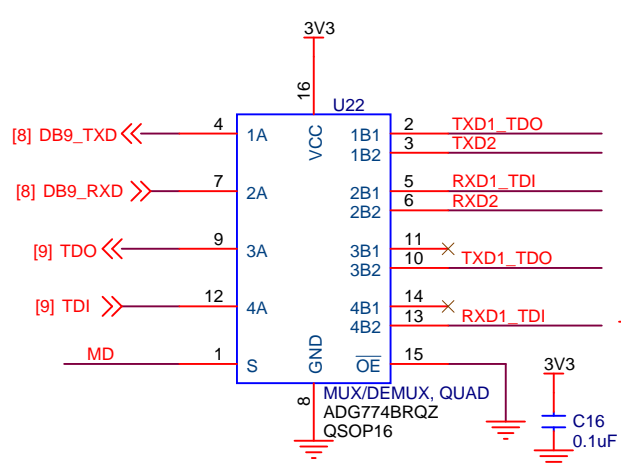
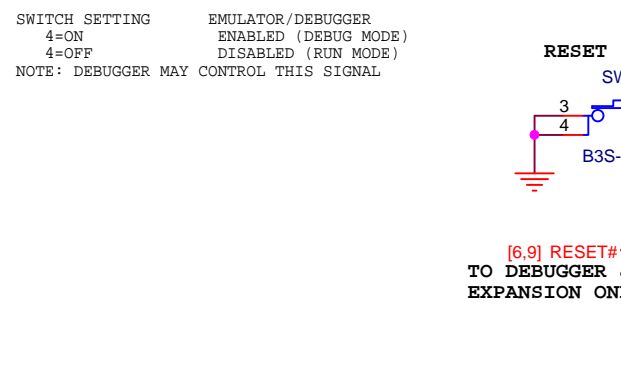


|                      |                           |              |
|----------------------|---------------------------|--------------|
| FUTURE DESIGNS, INC. |                           |              |
| Title                | RX63N RDK                 |              |
| Size                 | Document Number           | Rev          |
| B                    | YRDKRX63N                 | 3unrelease   |
| Date:                | Tuesday, January 24, 2012 | Sheet 1 of 9 |



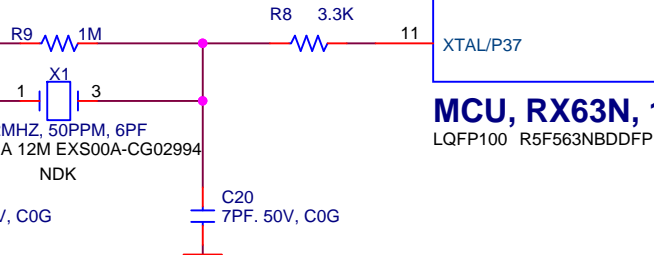
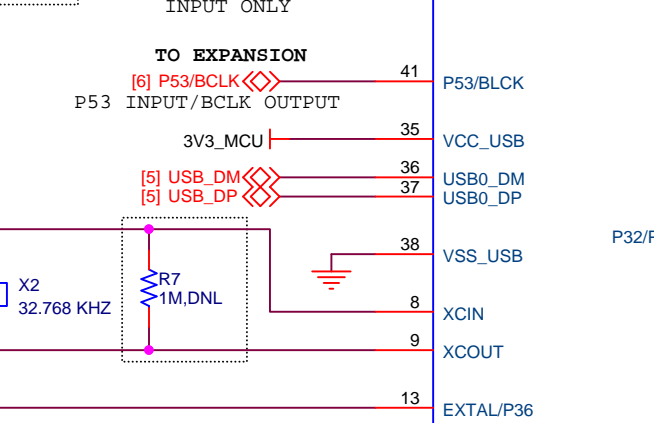
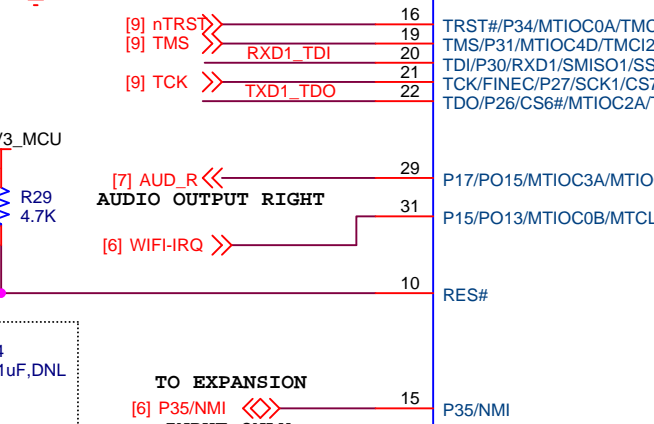
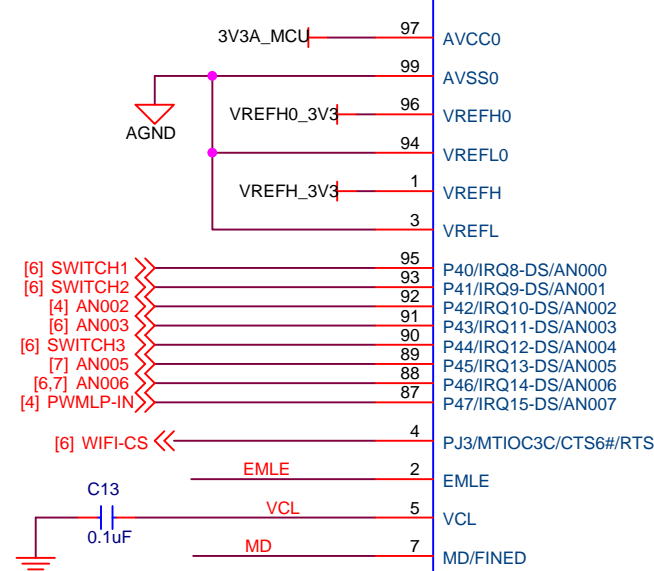
SWITCH SETTING  
 1=OFF, 2=OFF  
 1=ON, 2=ON  
 1=ON, 2=OFF  
 1=OFF, 2=ON

MCU OPERATING MODE  
 SINGLE CHIP MODE  
 SERIAL BOOT MODE  
 USER/USB BOOT MODE  
 DO NOT USE

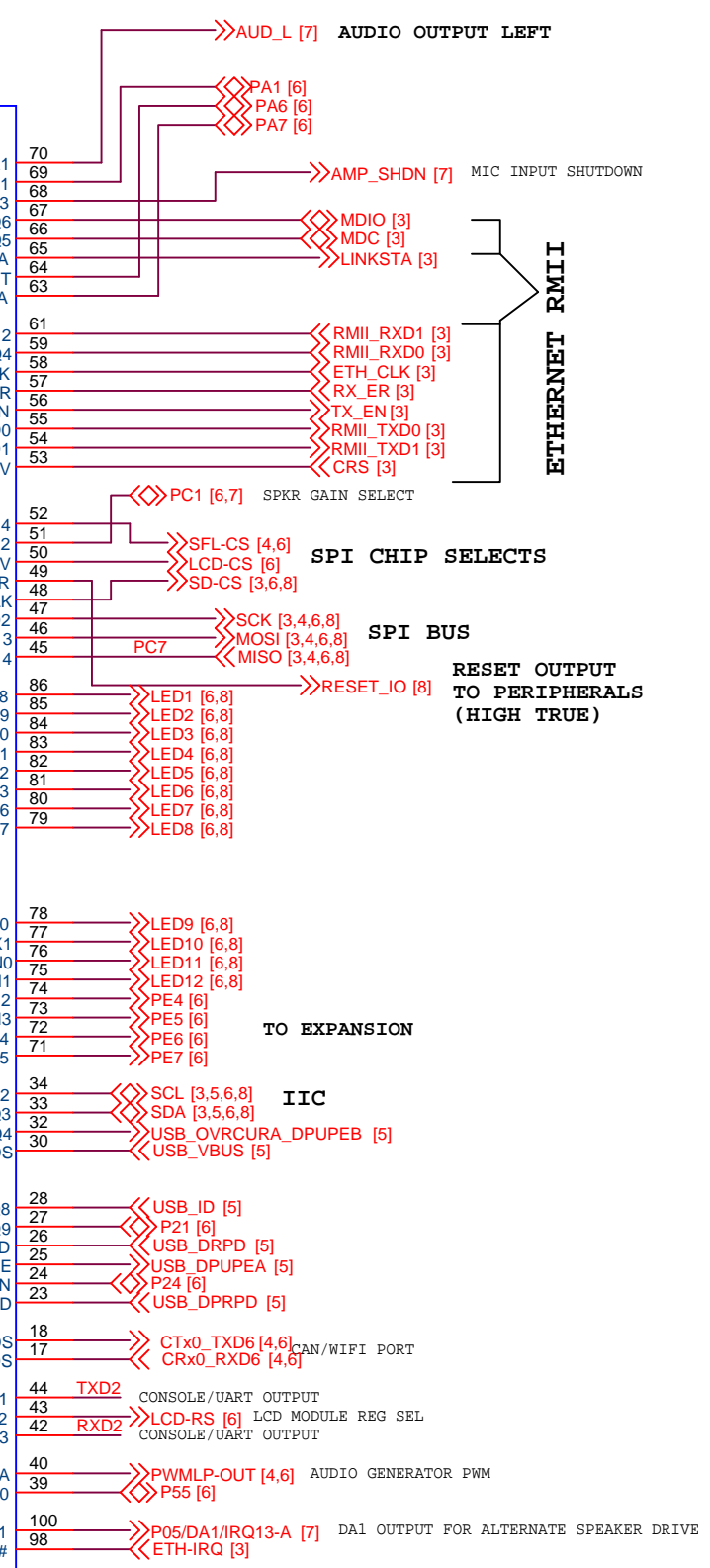


Analog Mux Connections:  
 - Normal Operation (MD=1)  
 DB9=SCI2, JLINK=MCU JTAG  
 - Serial Boot (MD=0)  
 DB9=SCI1, JLINK=DISABLED

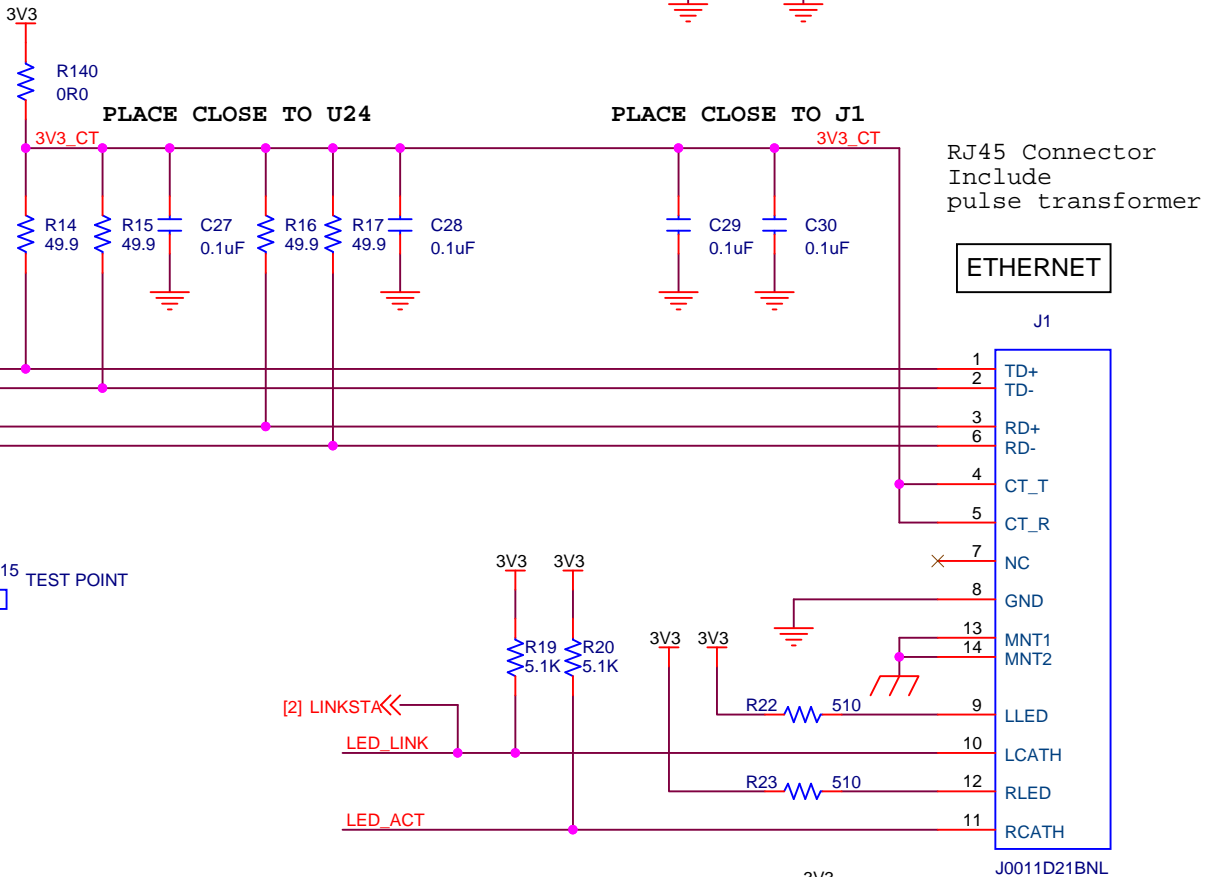
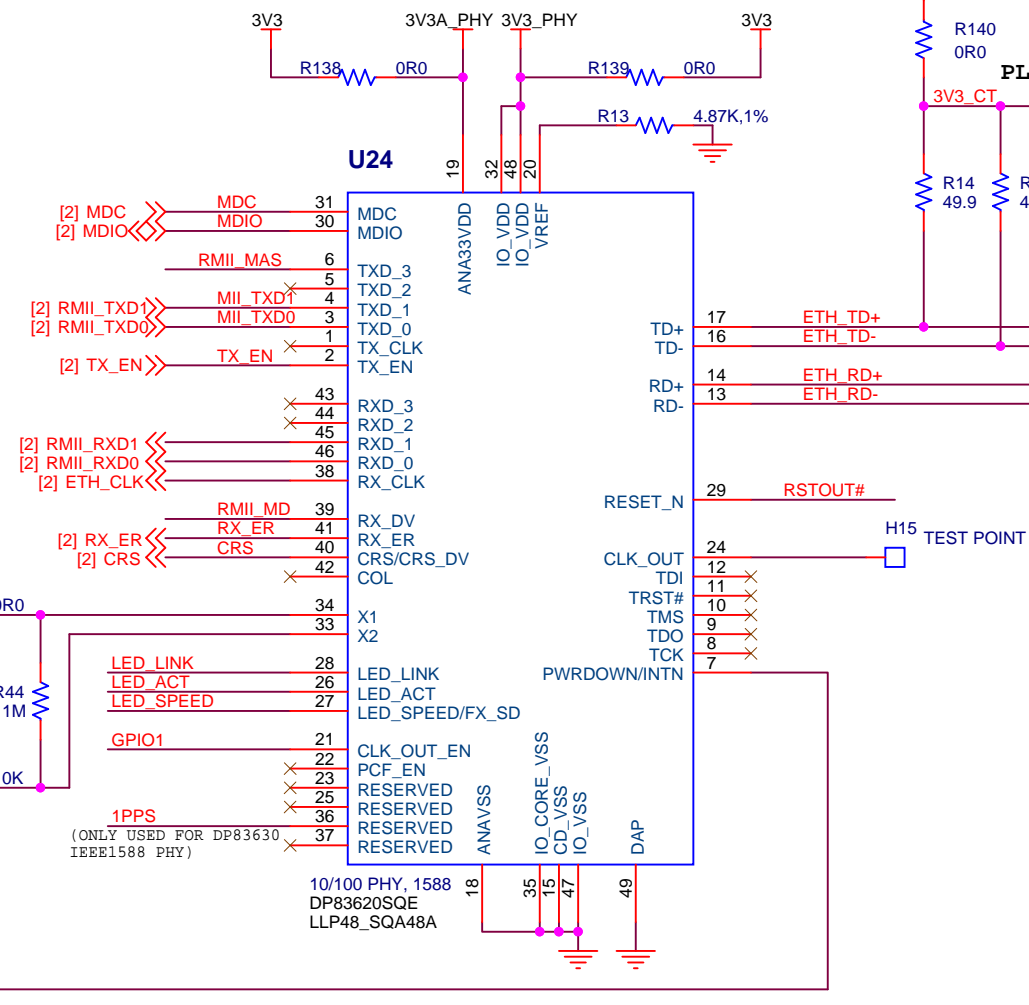
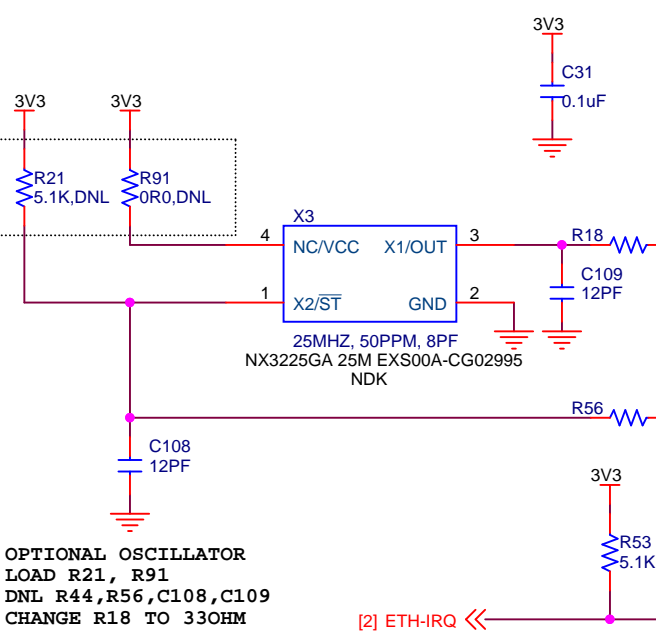
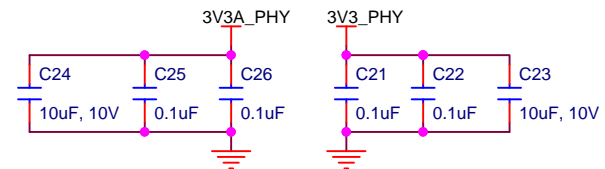
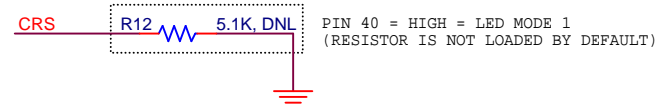
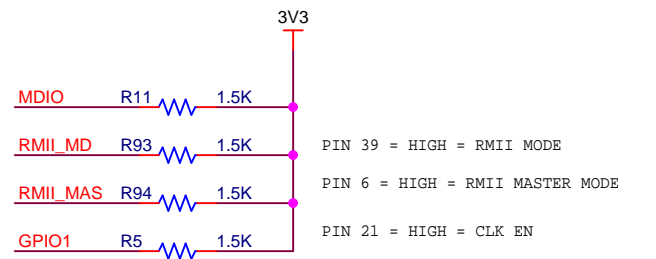
□ :not mounted



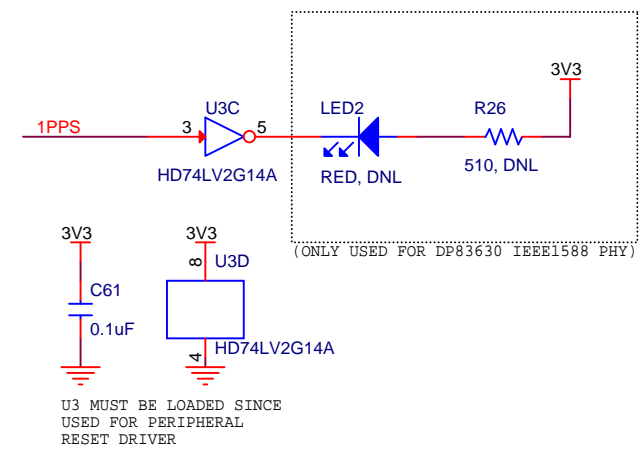
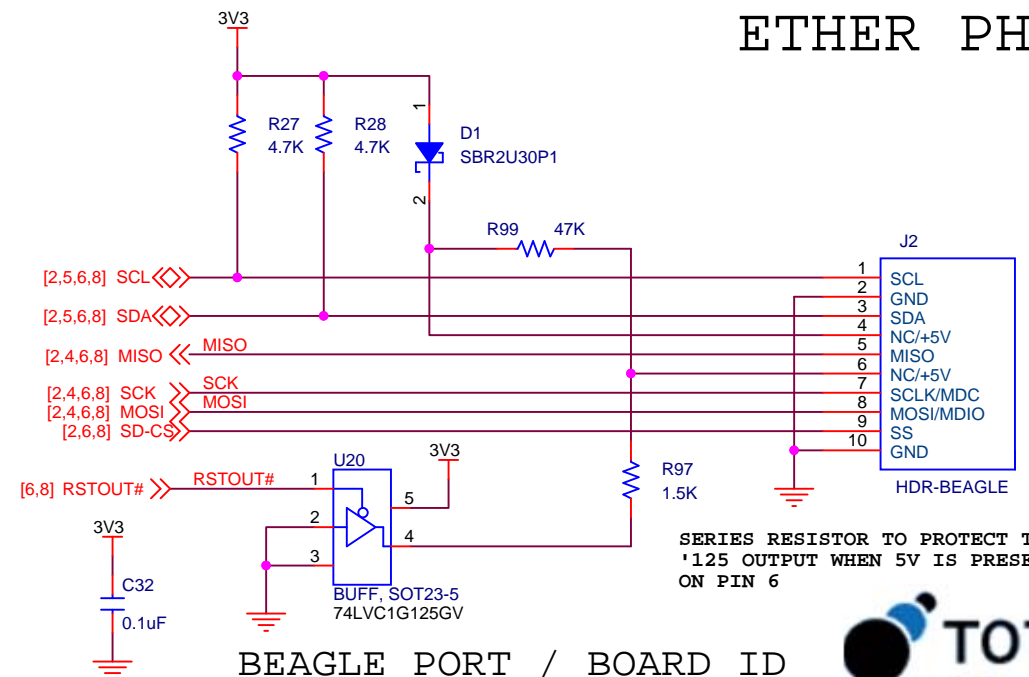
MCU, RX63N, 1M  
 LQFP100 R5F563NBDDFP



|                      |                              |                    |
|----------------------|------------------------------|--------------------|
| FUTURE DESIGNS, INC. |                              |                    |
| Title<br>RX63N RDK   |                              |                    |
| Size                 | Document Number<br>YRDKRX63N | Rev<br>3unreleased |
| Date:                | Tuesday, January 24, 2012    | Sheet 2 of 9       |

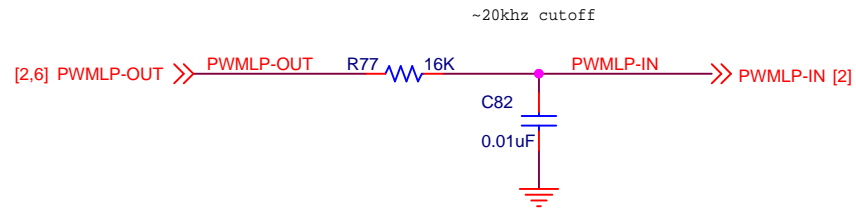


### ETHER PHY-LSI

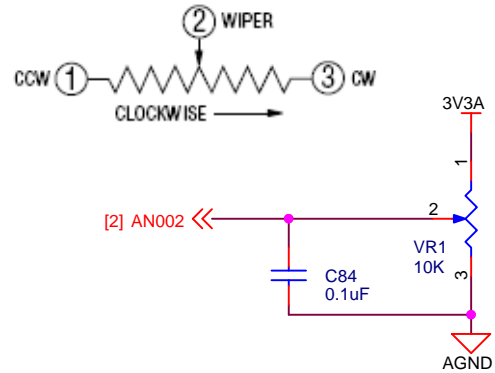


not mounted

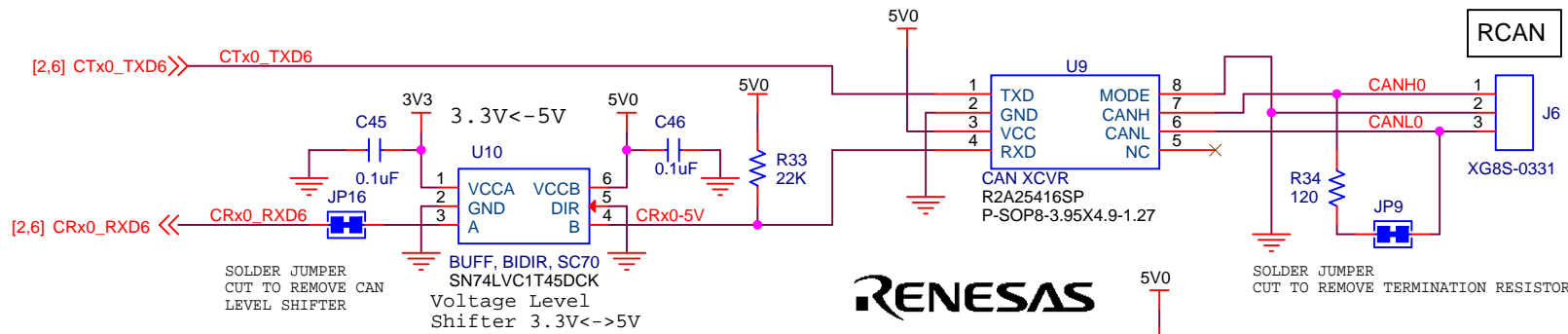
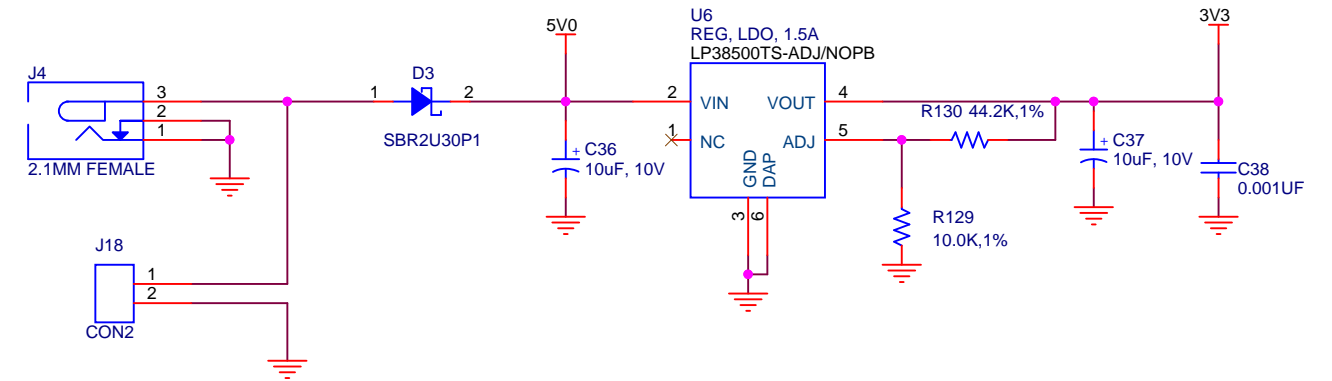
# 3.3V LDO POWER SUPPLY 1.5A MAX



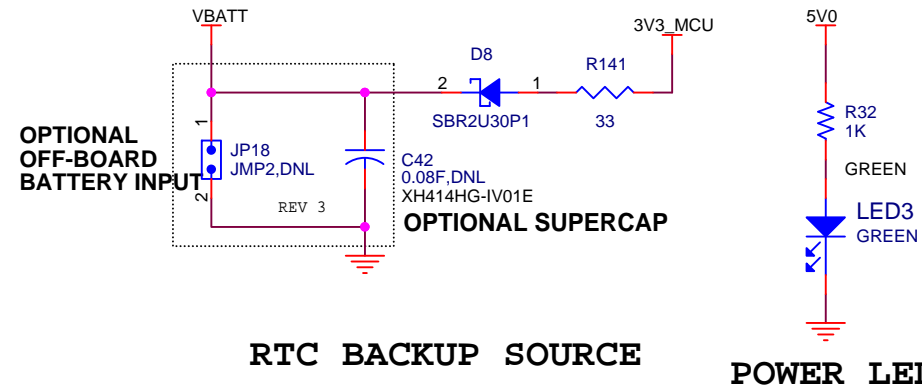
AUDIO FILTER



POTENTIOMETER

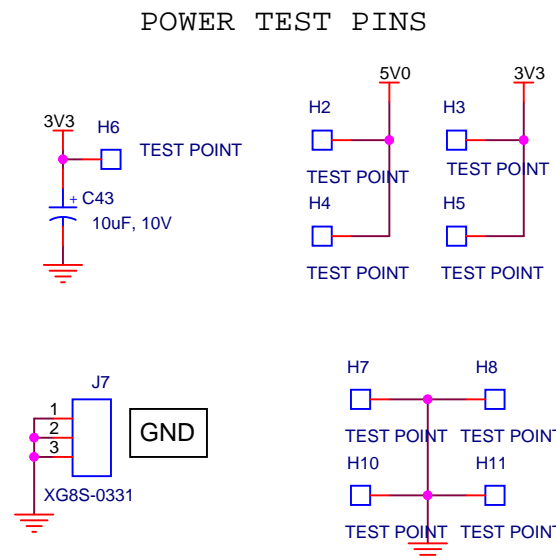
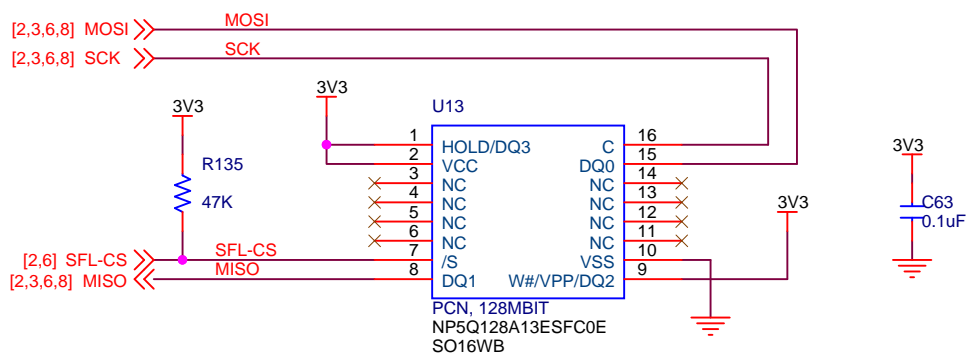


RCAN Transceiver

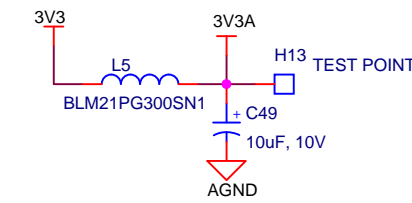


RTC BACKUP SOURCE

POWER LED

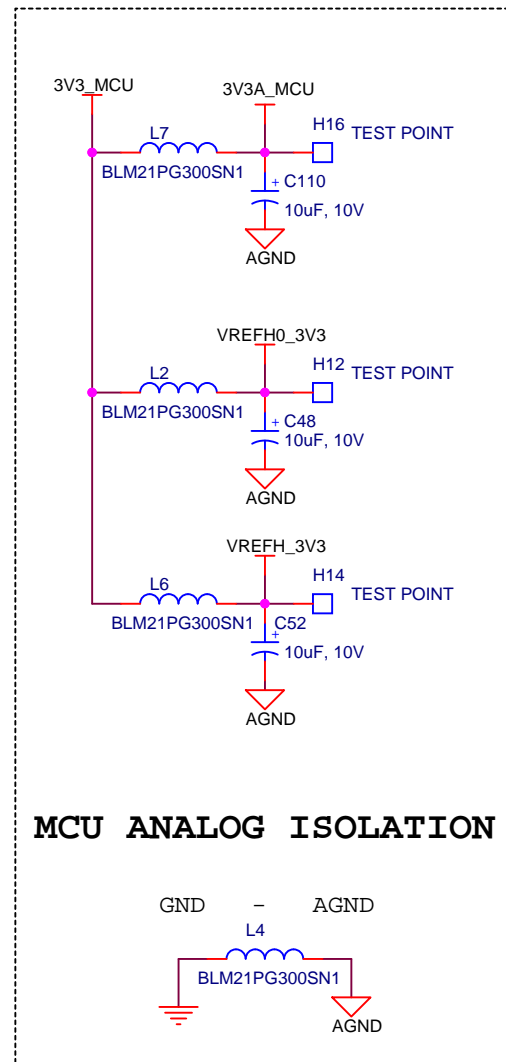


POWER TEST PINS

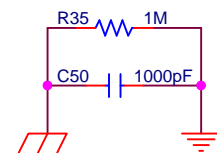


AUDIO/ANALOG ISOLATION

MCU CURENT MEASUREMENT



MCU ANALOG ISOLATION



EARTH GROUND ISOLATION

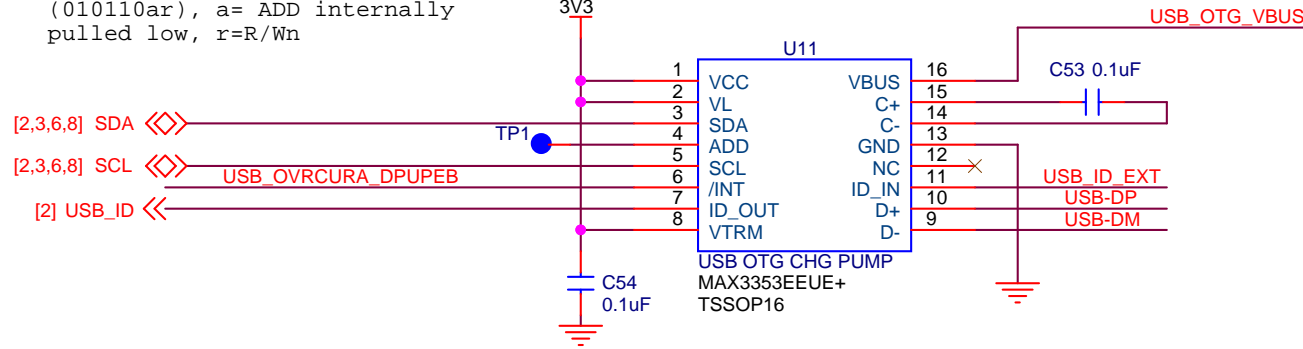
□ :not mounted



|                      |                              |                    |
|----------------------|------------------------------|--------------------|
| FUTURE DESIGNS, INC. |                              |                    |
| Title<br>RX63N RDK   |                              |                    |
| Size                 | Document Number<br>YRDKRX63N | Rev<br>3unreleased |
| Date:                | Tuesday, January 24, 2012    | Sheet 4 of 9       |

I2C ADDR = 0x58  
 (010110ar), a= ADD internally  
 pulled low, r=R/Wn

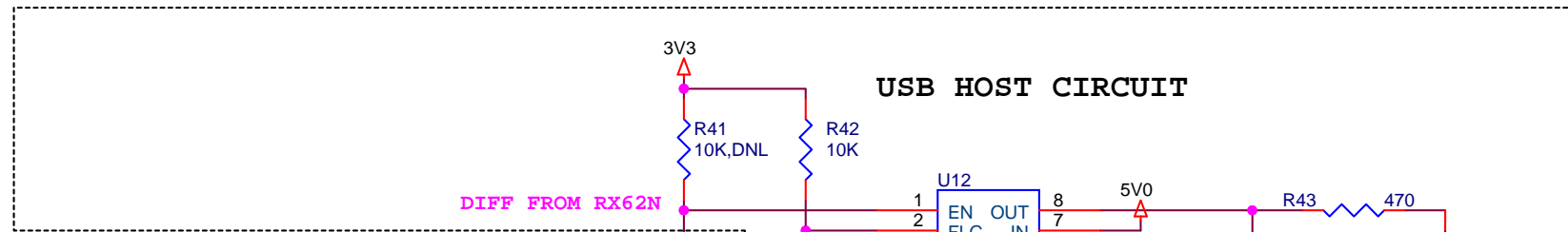
### USB OTG CHARGE PUMP



TO CONVERT FROM USB MINI-AB TO USB A  
 UTILIZE CABLE SHOWN BELOW, AVAILABLE  
 FROM DIGI-KEY, PN: 10-0003-ND



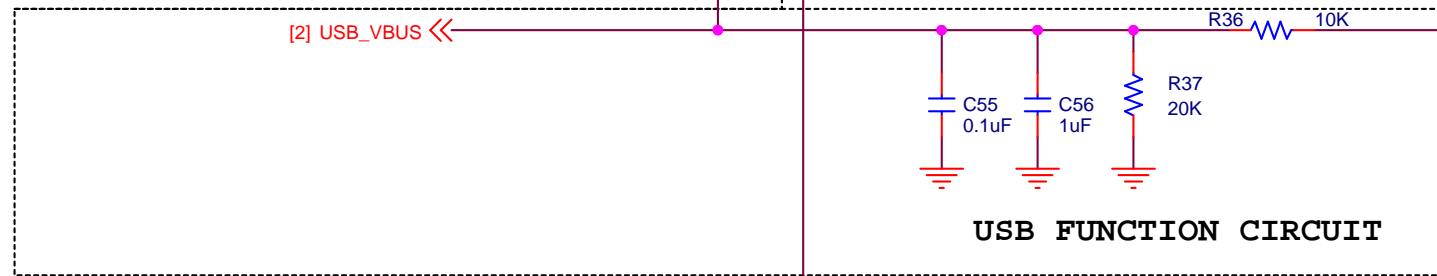
### USB HOST CIRCUIT



[2] USB\_OVRCURA\_DPUPEB <<<  
 IN HOST/OTG MODE, THIS PIN IS OVRCURA (INPUT)  
 IN FUNCTION MODE, THIS PIN IS USB\_DPUPE-B (OUTPUT)

[2] USB\_DPUPEA >>> R38 1.5K  
 USED FOR OTG MODE ONLY.  
 WHEN IN FUNCTION OR HOST MODE,  
 SET AS INPUT

### USB FUNCTION CIRCUIT



[2] USB\_VBUS <<<  
 [2] USB\_DM <<< R39 24  
 [2] USB\_DP <<< R40 24

| DIP SWITCH 6 DEFINITION |                                    |
|-------------------------|------------------------------------|
| FOR USB FUNCTION:       | SWITCH 1 & 4 ON / SWITCH 2 & 3 OFF |
| FOR USB HOST:           | SWITCH 3 ON / SWITCH 1, 2, & 4 OFF |
| FOR USB OTG:            | SWITCH 2 ON / SWITCH 1, 3, 4 OFF   |

USB ID = LOW = HOST/MASTER MODE  
 USB ID = NC (or HIGH) = DEVICE/FUNCTION MODE

| SIGNAL             | USB MODE | DIRECTION | DESCRIPTION           |
|--------------------|----------|-----------|-----------------------|
| USB_OVRCURA_DPUPEB | FUNCTION | OUTPUT    | PULL-UP ENABLE        |
|                    | HOST     | INPUT     | OVERCURRENT INDICATOR |

[2] USB\_DPRPD <<<  
 [2] USB\_DRPD <<<

FOR USB FUNCTION - THESE SIGNALS MUST BE SET INPUT ONLY BY THE SW

FOR USB HOST - THESE SIGNALS MUST BE SET TO OUTPUT, LOW ALL THE TIME BY THE SW

FOR USB OTG - THESE SIGNALS WILL BE UTILIZED UNDER SOFTWARE CONTROL ACCORDING TO THE USB-ID SIGNAL

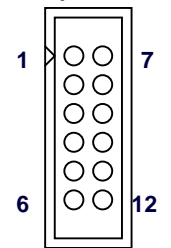
## USB CIRCUITRY



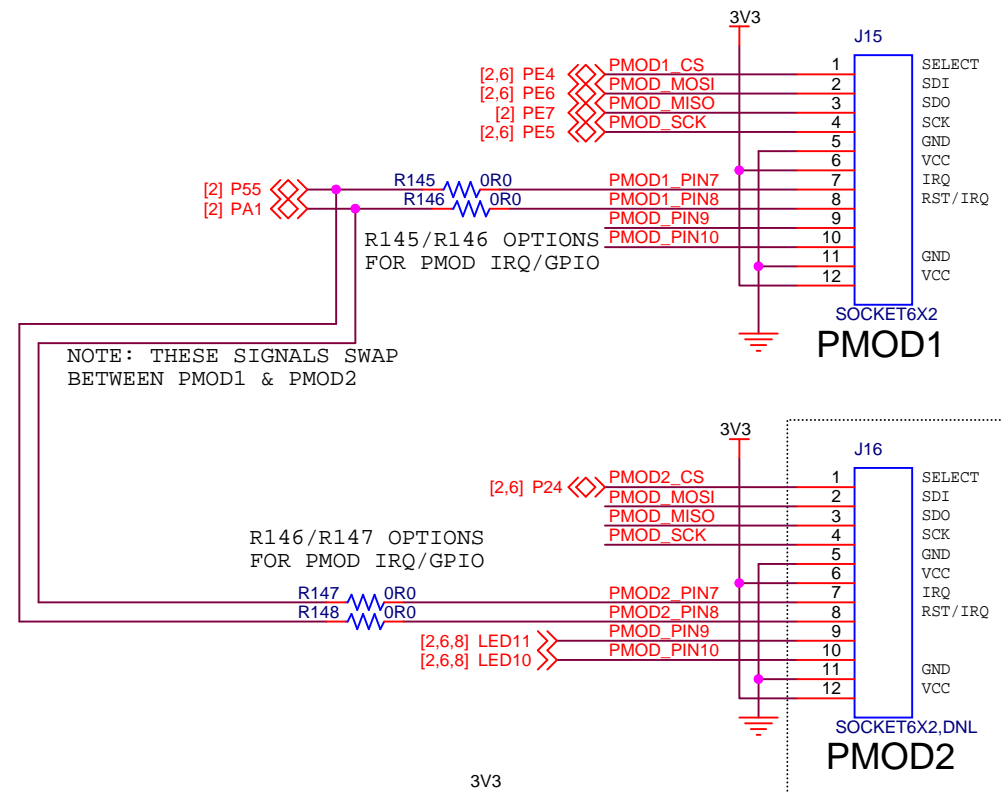
|                      |                           |              |
|----------------------|---------------------------|--------------|
| FUTURE DESIGNS, INC. |                           |              |
| Title                | RX63N RDK                 |              |
| Size                 | Document Number           | Rev          |
|                      | YRDKRX63N                 | 3unreleased  |
| Date:                | Tuesday, January 24, 2012 | Sheet 5 of 9 |



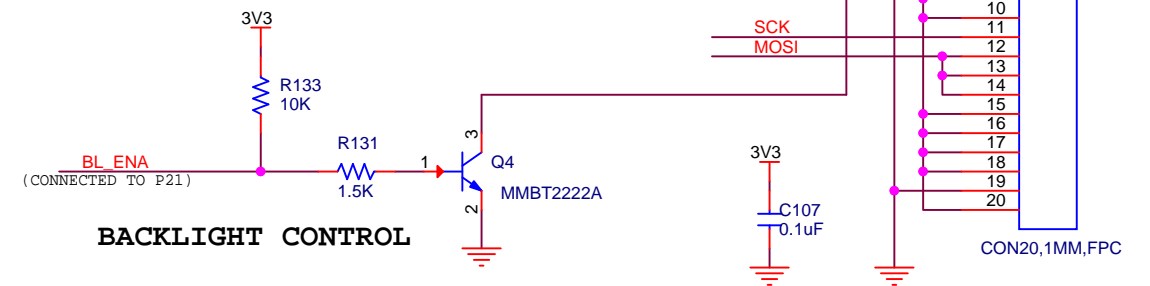
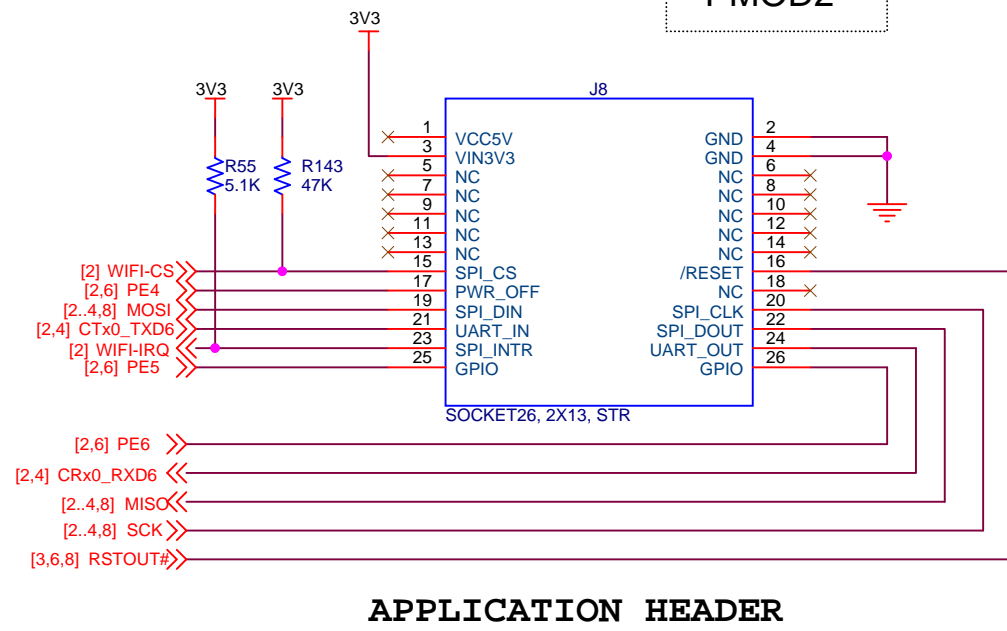
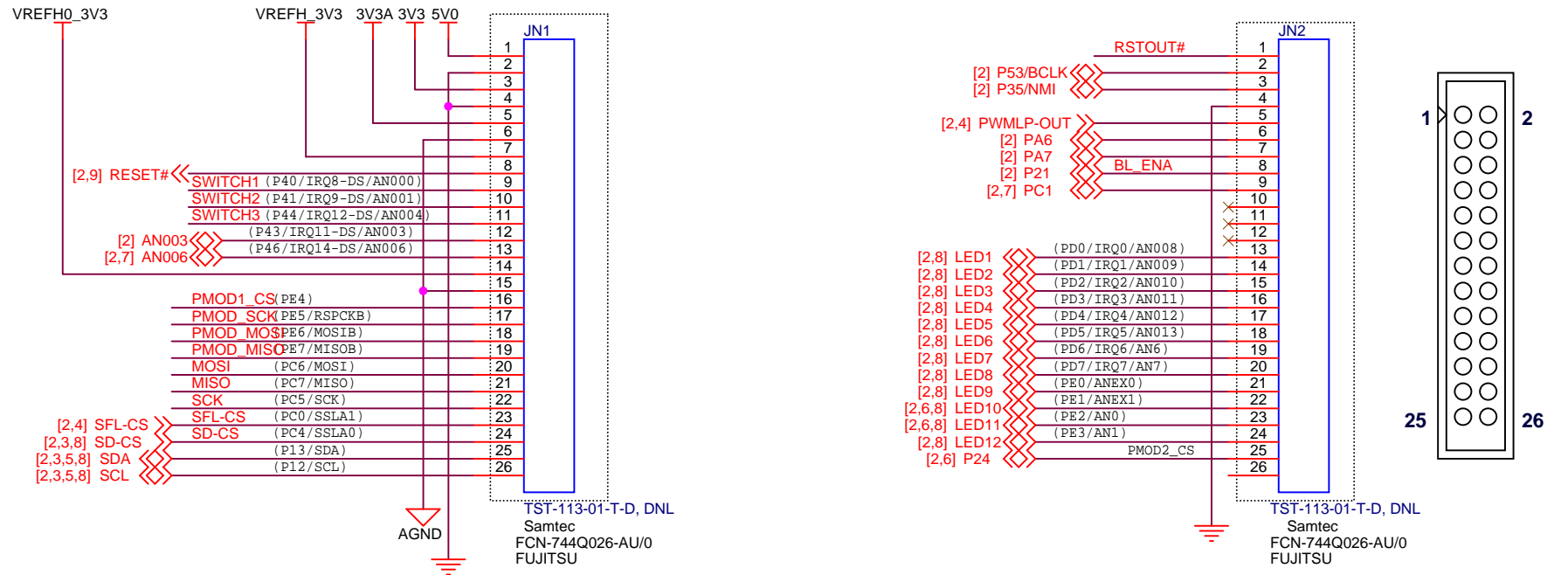
Top View



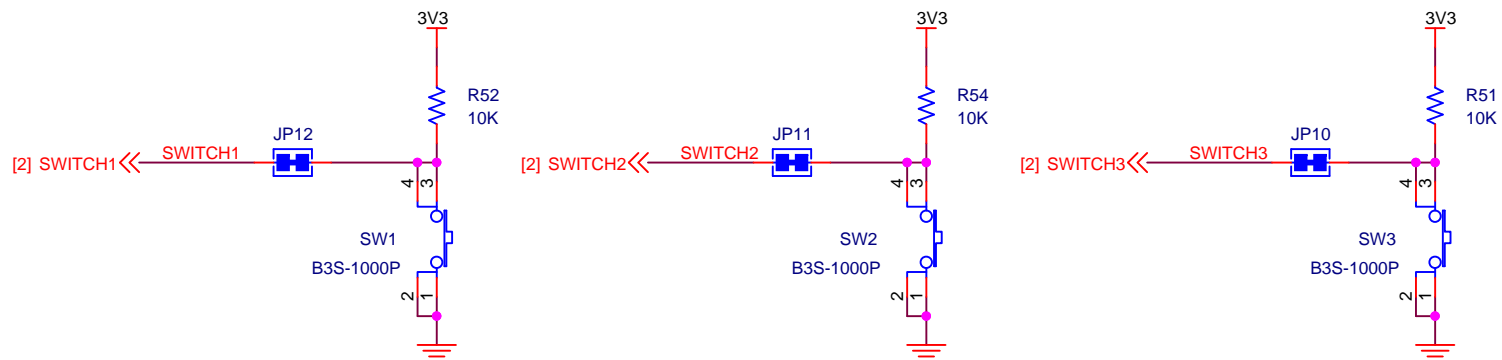
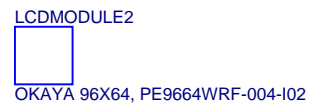
PMOD CONNECTORS



RX63N Extension Connectors



GRAPHICAL LCD DISPLAY

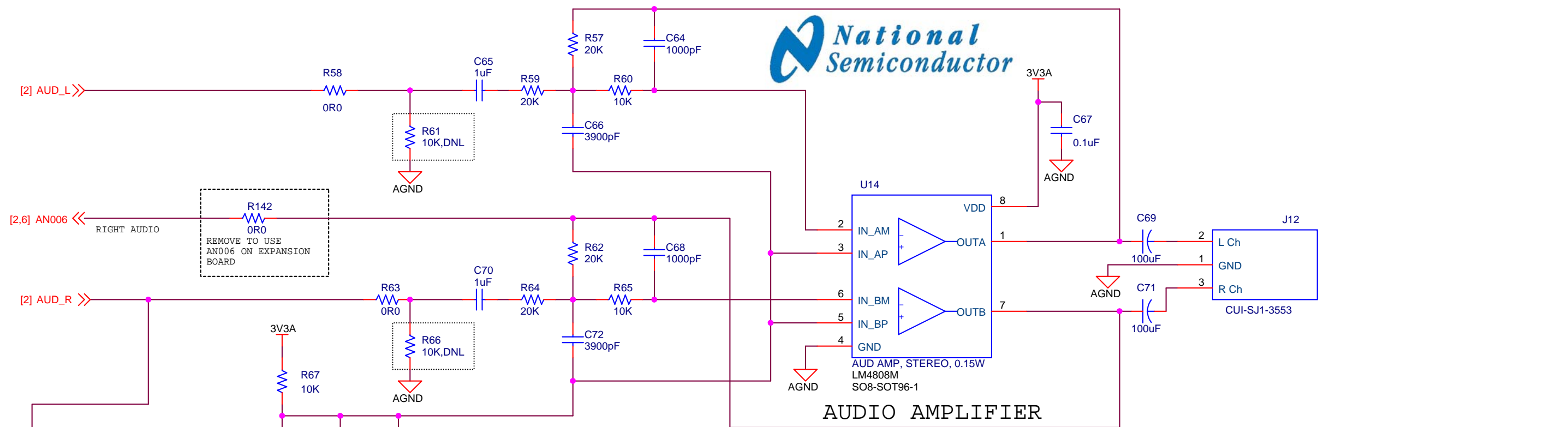


USER PUSHBUTTONS

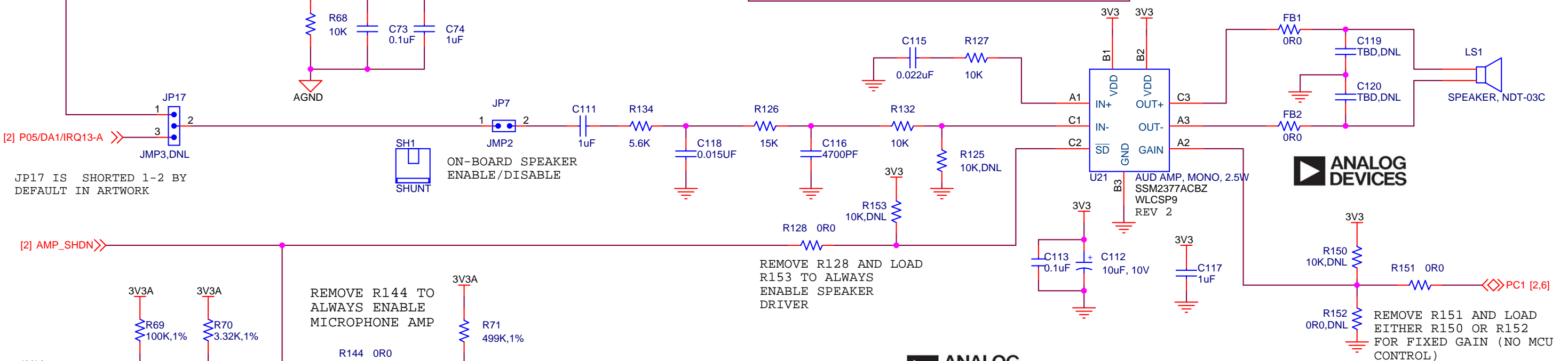


|                      |                              |                    |
|----------------------|------------------------------|--------------------|
| FUTURE DESIGNS, INC. |                              |                    |
| Title<br>RX63N RDK   |                              |                    |
| Size                 | Document Number<br>YRDKRX63N | Rev<br>3unreleased |
| Date:                | Tuesday, January 24, 2012    | Sheet 6 of 9       |

□ :not mounted



**AUDIO AMPLIFIER**



**MICROPHONE AND CIRCUIT**

JP17 IS SHORTED 1-2 BY DEFAULT IN ARTWORK

REMOVE R144 TO ALWAYS ENABLE MICROPHONE AMP

REMOVE R128 AND LOAD R153 TO ALWAYS ENABLE SPEAKER DRIVER

**ANALOG DEVICES**

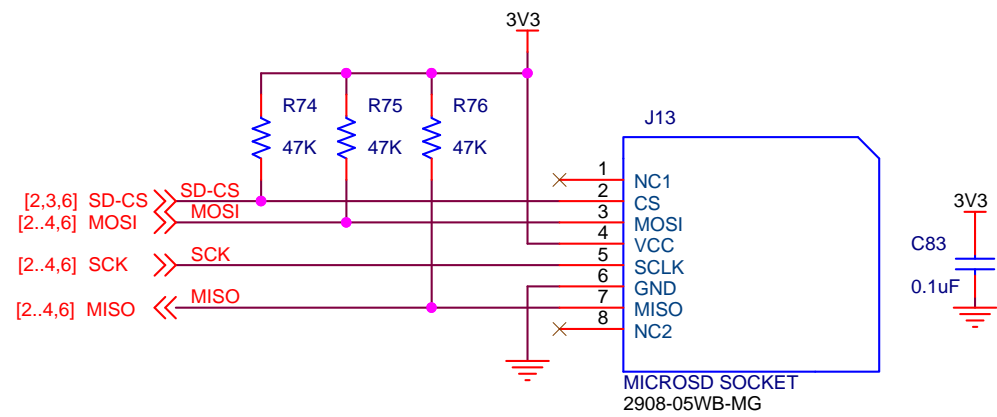
REMOVE R151 AND LOAD EITHER R150 OR R152 FOR FIXED GAIN (NO MCU CONTROL)

GAIN = HIGH PROVIDES 6dB GAIN  
GAIN = LOW PROVIDES 12Db GAIN

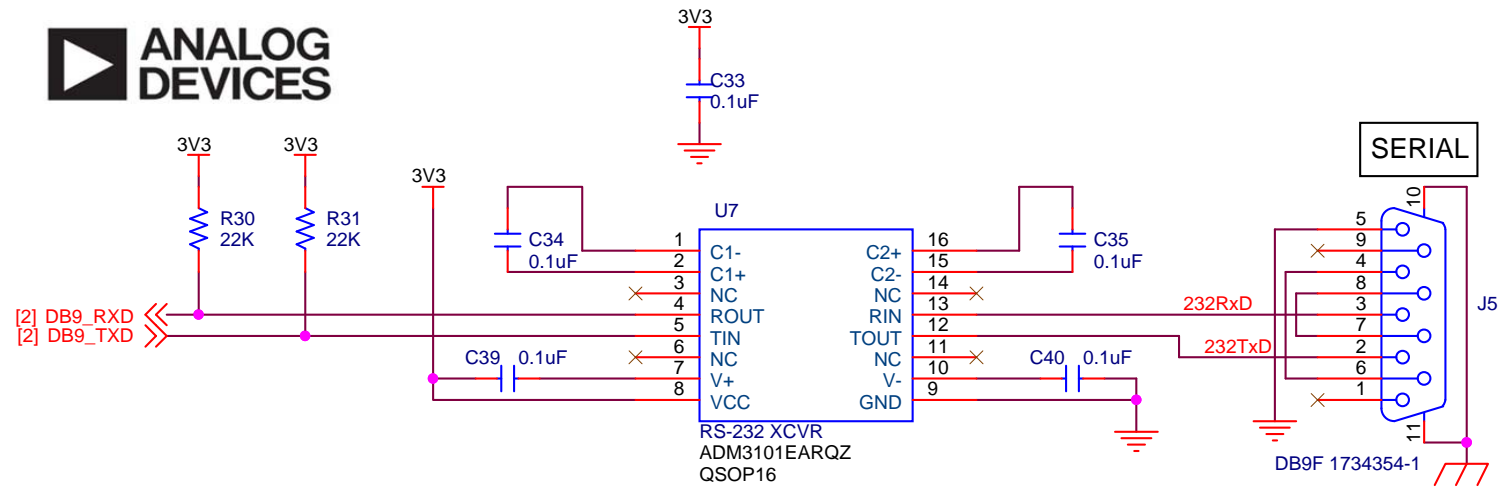
□ :not mounted



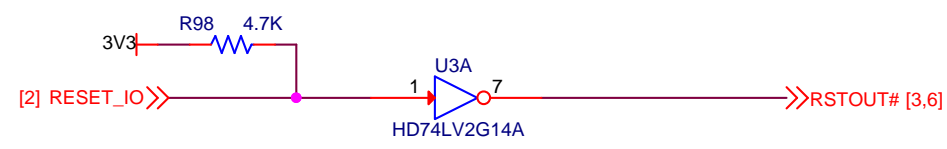
|                                    |                              |                   |
|------------------------------------|------------------------------|-------------------|
| FUTURE DESIGNS, INC.               |                              |                   |
| Title<br>RX63N RDK                 |                              |                   |
| Size<br>B                          | Document Number<br>YRDKRX63N | Rev<br>3unrelease |
| Date:<br>Tuesday, January 24, 2012 | Sheet<br>7                   | of<br>9           |



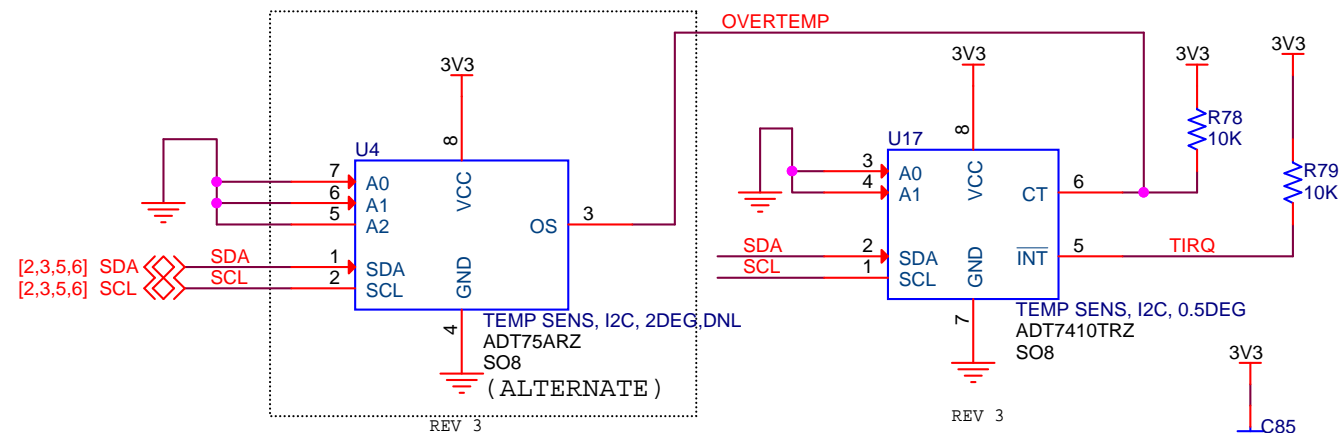
MICRO SD



Serial Port Connector (COM)

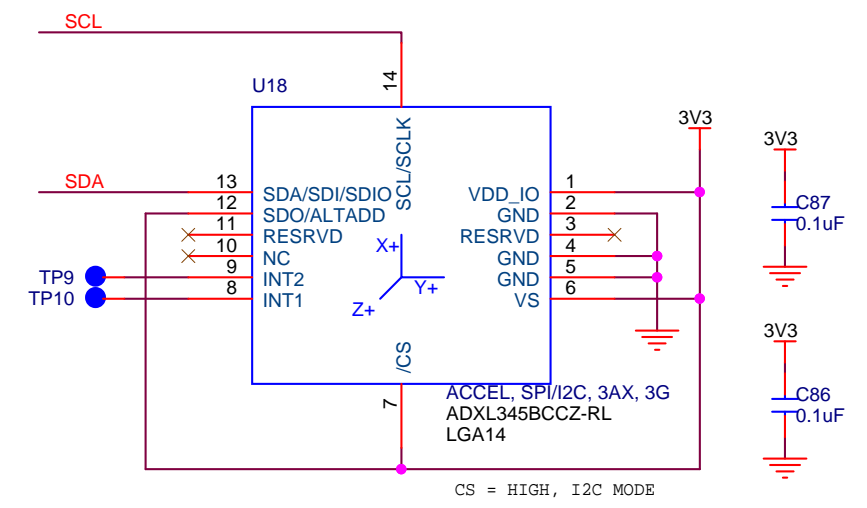


PERIPHERAL RESET BUFFER



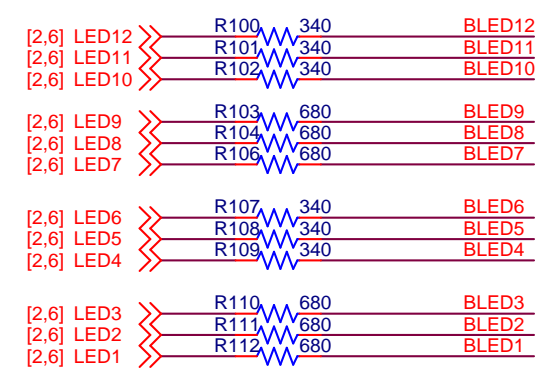
TEMP SENSOR

I2C ADDR = 0x90  
 ADT75 = (1001aaar), aaa = A2:A1:A0, r=R/Wn  
 ADT7410 = (10010aar), aa = A1:A0, r=R/Wn

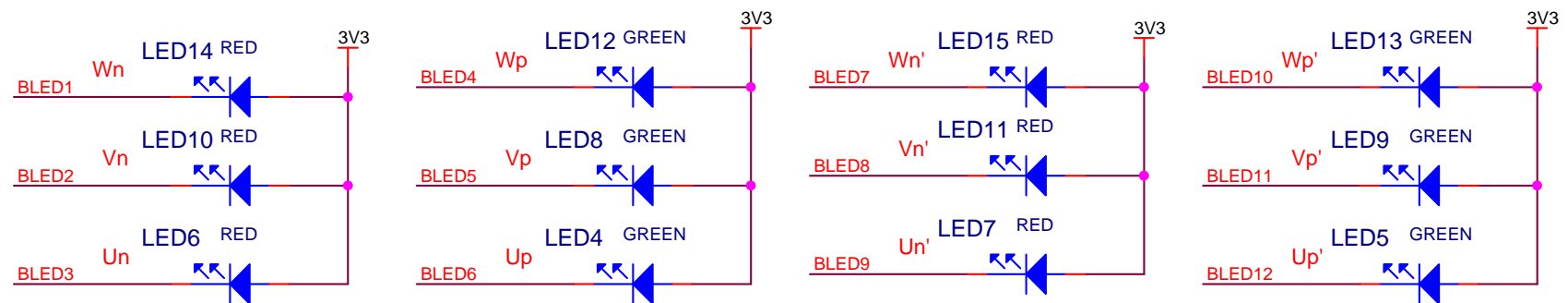


ACCELEROMETER

I2C ADDR = 0x3A  
 (0011101r), r=R/Wn



LED RESISTORS



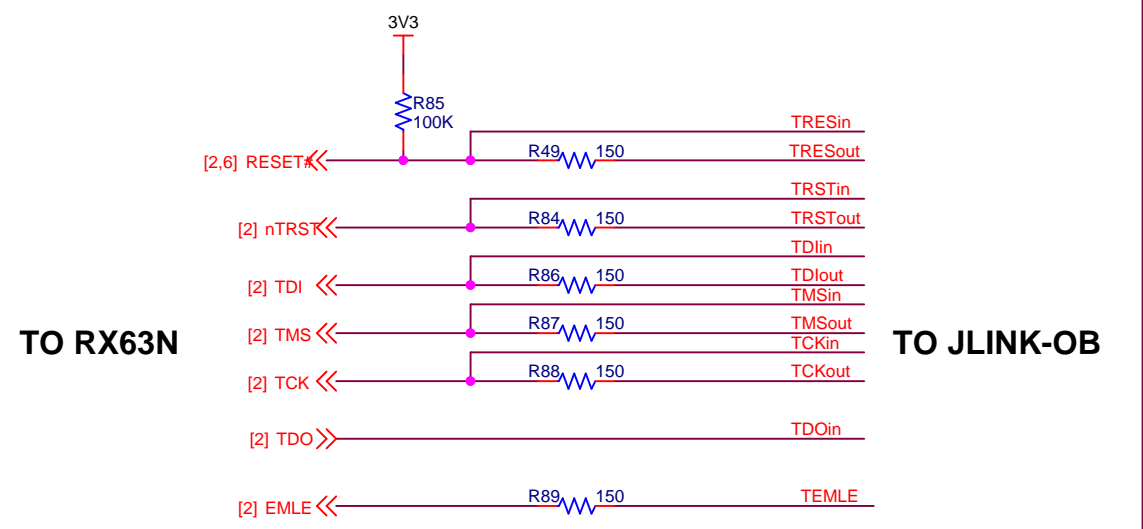
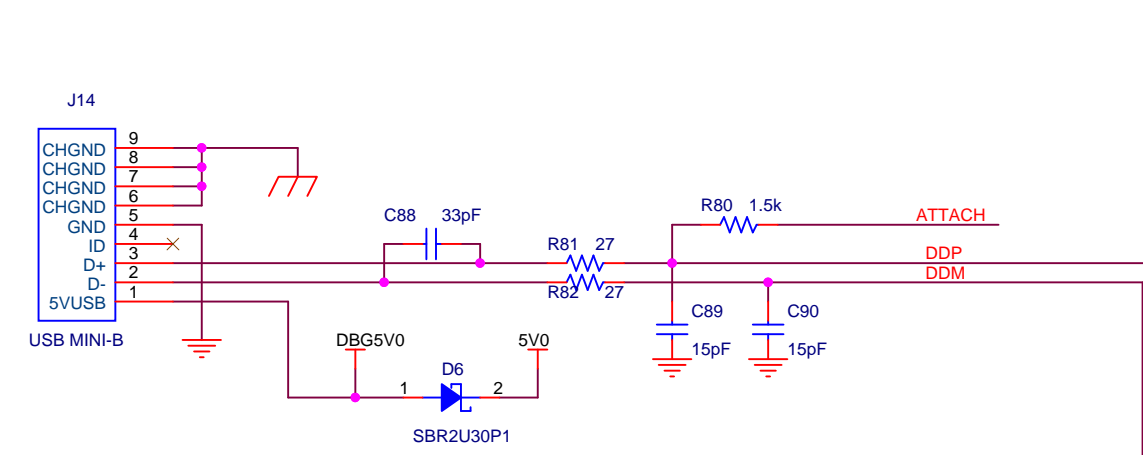
LED ARRAY

□ :not mounted

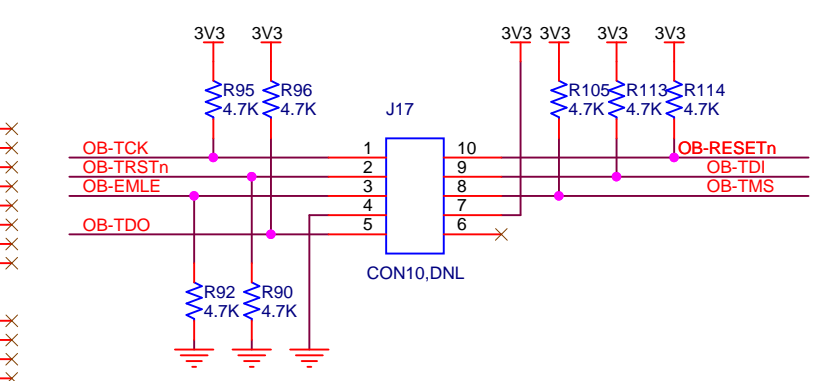
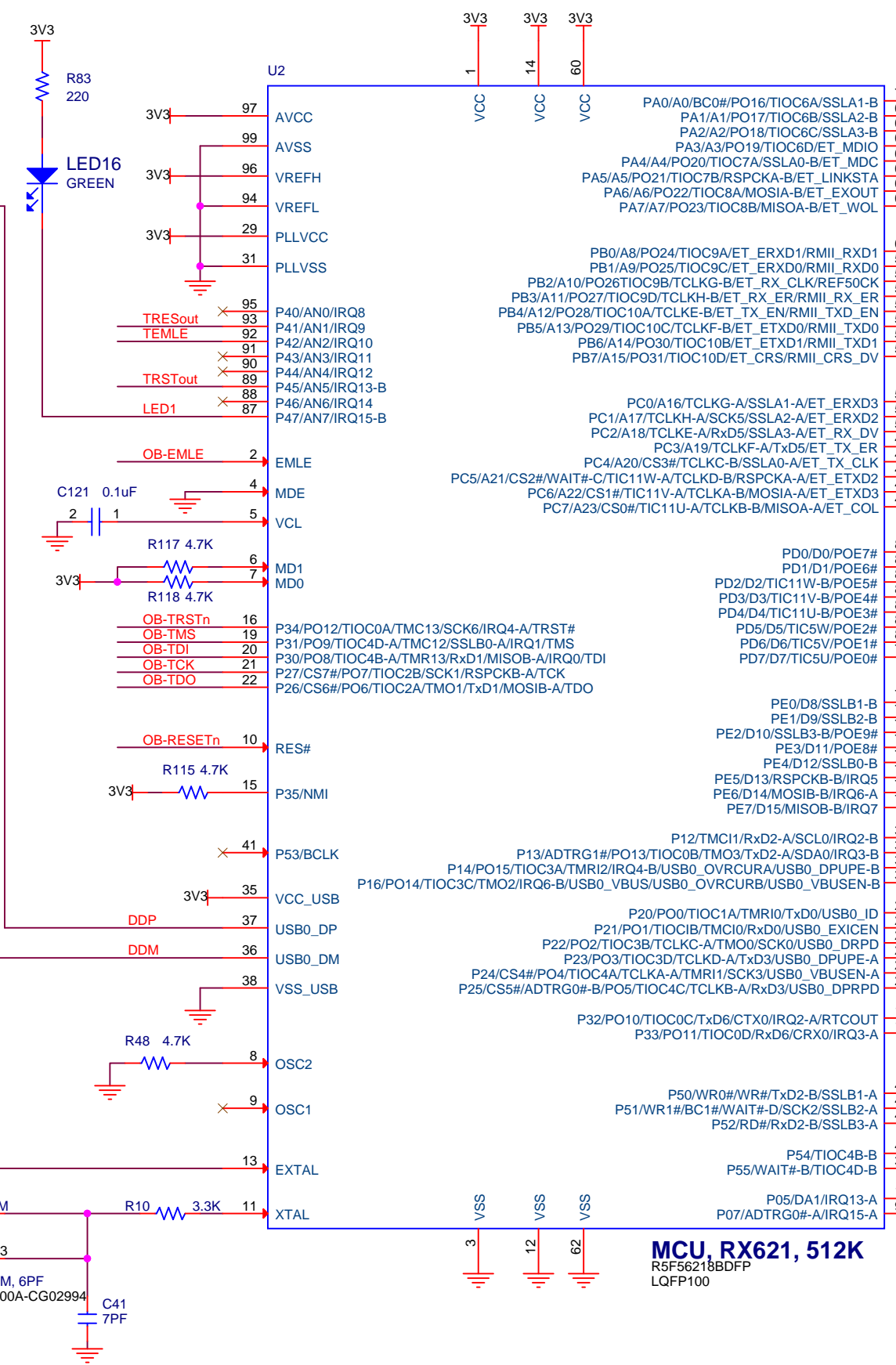


|                      |                           |              |
|----------------------|---------------------------|--------------|
| FUTURE DESIGNS, INC. |                           |              |
| Title                | RX63N RDK                 |              |
| Size B               | Document Number           | Rev          |
|                      | YRDKRX63N                 | 3unrelease   |
| Date:                | Tuesday, January 24, 2012 | Sheet 8 of 9 |

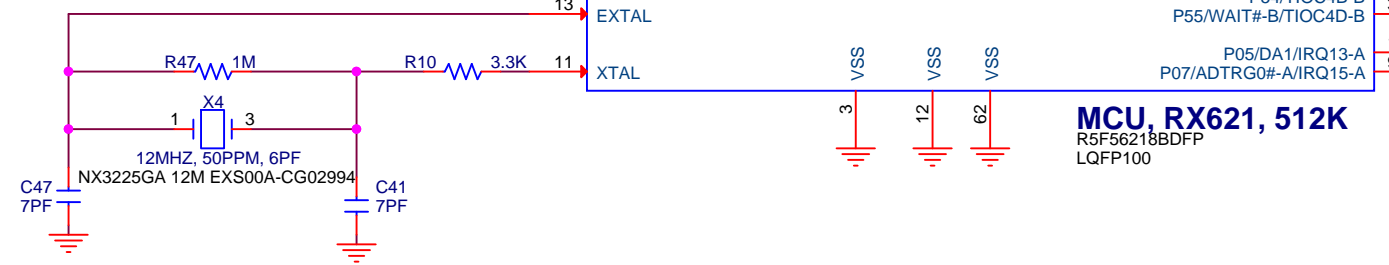
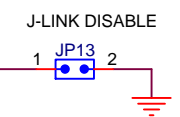




**NOTES:**  
 1) PROBABLY DO NOT NEED PULLUP ON RESET# SINCE THERE IS ONE ON THE MCU, PAGE 2



**JLINK-OB PROGRAMMING**



**SEGGER J-LINK OB DEBUGGER FOR RX**

