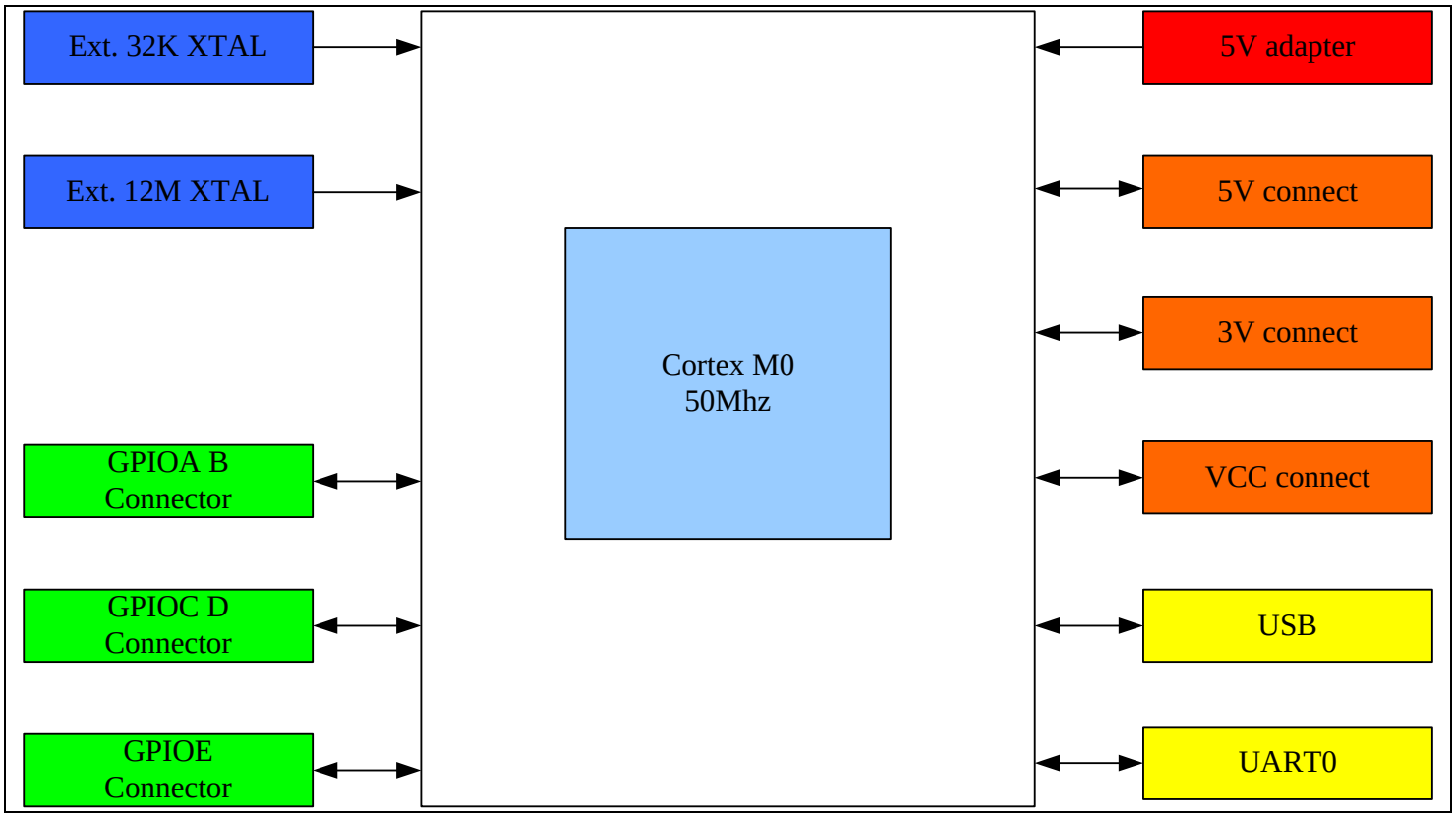
# Nu_EVB_001 Board Rev 2.0
# User's Manual

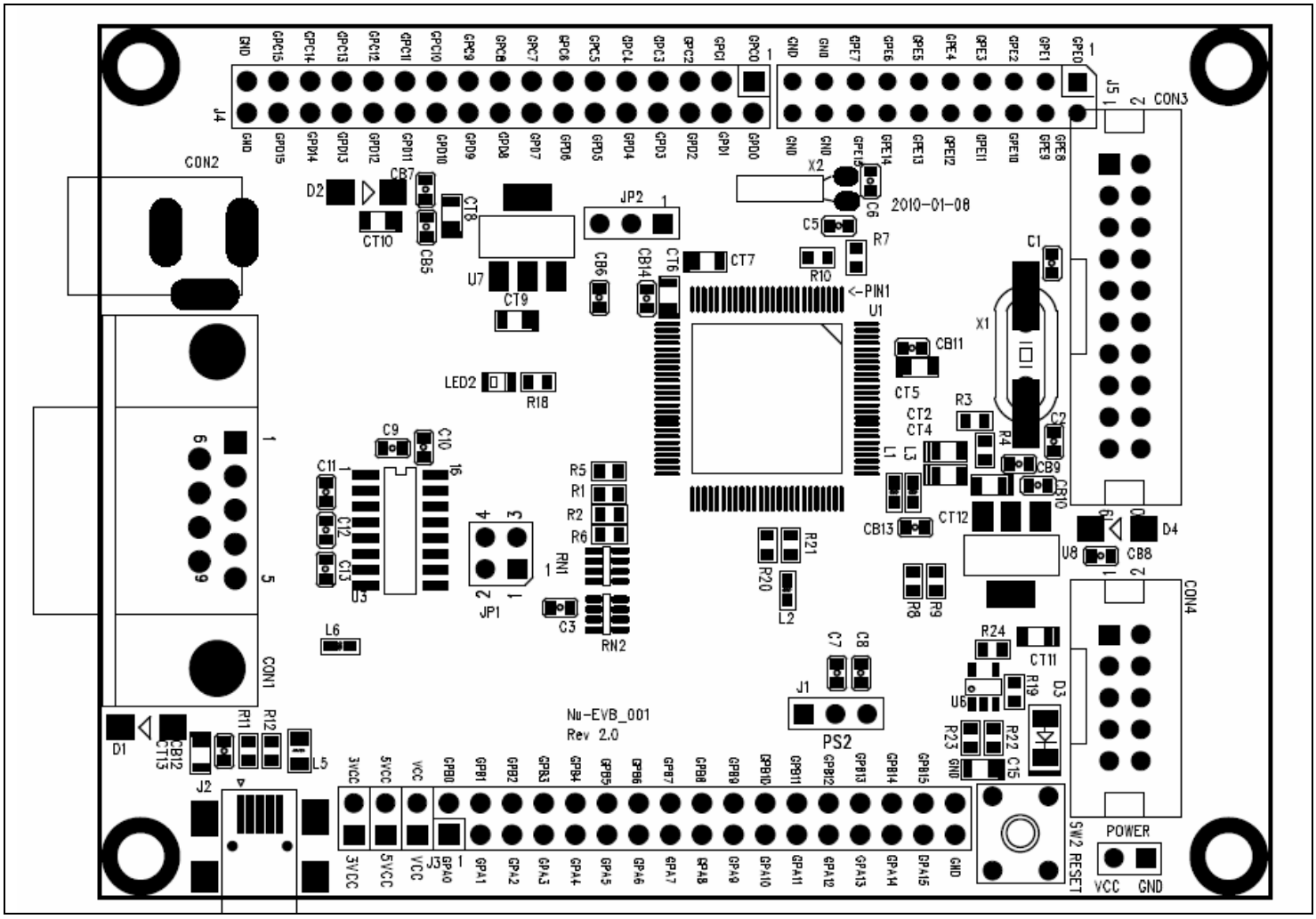
# 1. Overview

The NUC1XX series are ARM® Cortex™-M0 core embedded microcontroller for industrial control and the applications which needed Rich communication functions. The Cortex™-M0 is the newest ARM embedded processor with 32-bit performance and at a cost equivalent traditional 8-bit microcontroller.
The NUC1XX series with Cortex™-M0 core runs up to 50MHz, up to 32K/64K/128K-byte embedded flash, and 4K/8K/16K-byte embedded SRAM, it also integrates Timers, Watchdog Timer, RTC, PDMA, UART, SPI/SSP, I2C, PWM Timer, GPIO, LIN, CAN, USB 2.0 FS Device, 12-bit ADC, Analog Comparator, Low Voltage Detector and Brown-out detector.

# 2. EVB Board Block Diagram



# 3. PCB Placement



# 4. System Configuration

## POWER ON Setting

CON2 : Power Jack + 5V DC IN.
VCC: power for MCU.
5VCC: Power support 5V.
3VCC: Power support 3V.
Power: VCC power is MCU power.

| POWER model | USB | CON2 | VCC | 5VCC | 3VCC |
|---|---|---|---|---|---|
| Model 1 | OFF | Power Jack + 5V DC IN. | Select by JP1 and JP2 | 5V output | 3V output |
| Model 2 | OFF | OFF | Select by JP1 and JP2 | 5VCC input power 5V | 3V output |
| Model 3 | OFF | OFF | JP1 and JP2 use 2-3 on | OFF | 3VCC input power 3V |
| Model 4 | OFF | OFF | 2.8V-5.5V input power, JP1 and JP2 off | OFF | OFF |
| Model 5 | Connect to PC USB port | OFF | Select by JP1 and JP2 | 5V output | 3V output |

## JP1 ,JP2 : Device voltage select

1-2 Use 5V device
2-3 Use 3.3V device

LED2 : Power LED

SW2 : Reset button

## Debug Setting

CON3 : ULINK Connector
CON4 : Nuvoton ICE Connector
CON1 : UART 0
JP1 1-2 ,3-4 short

# 5. Multi function select

## JP1 Setting

| JP1 setting | Function | Output port |
|---|---|---|
| 1-2 ON | UART 0 RXD | CON1 |
| 3-4 ON | UART 0 TXD | CON1 |

## GPIO Output port

### GPIO A

| J3 | Define | | |
|---|---|---|---|
| 1 | GPIOA0 | ADC0 | |
| 3 | GPIOA1 | ADC1 | |
| 5 | GPIOA2 | ADC2 | |
| 7 | GPIOA3 | ADC3 | |
| 9 | GPIOA4 | ADC4 | |
| 11 | GPIOA5 | ADC5 | |
| 13 | GPIOA6 | ADC6 | |
| 15 | GPIOA7 | ADC7 | SPI_SS21 |
| 17 | GPIOA8 | I2C0SDA | |
| 19 | GPIOA9 | I2C0SCL | |
| 21 | GPIOA10 | I2C1SDA | |
| 23 | GPIOA11 | I2C1SCL | |
| 25 | GPIOA12 | PWM0 | |
| 27 | GPIOA13 | PWM1 | |
| 29 | GPIOA14 | PWM2 | |
| 31 | GPIOA15 | PWM3 | |
| 33 | GND | | |

### GPIO B

| J3 | DEFINE | | |
|---|---|---|---|
| 2 | GPIOB0 | RX0 | |
| 4 | GPIOB1 | TX0 | |
| 6 | GPIOB2 | RTS0 | |
| 8 | GPIOB3 | CTS0 | |
| 10 | GPIOB4 | RX1 | |
| 12 | GPIOB5 | Tx1 | |

| | | | |
|---|---|---|---|
| 14 | GPIOB6 | RTS1 | |
| 16 | GPIOB7 | CTS1 | |
| 18 | GPIOB8 | TM0 | STADC |
| 20 | GPIOB9 | TM1 | SPI_SS11 |
| 22 | GPIOB10 | TM2 | SPI_SS01 |
| 24 | GPIOB11 | TM3 | |
| 26 | GPIOB12 | CPO0 | |
| 28 | GPIOB13 | CPO1 | |
| 30 | GPIOB14 | INT0 | SPI_SS31 |
| 32 | GPIOB15 | INT1 | |
| 34 | GND | | |

## GPIO C

| J4 | DEFINE | |
|---|---|---|
| 1 | GPIOC0 | SPI_SS00 |
| 3 | GPIOC1 | SPICLK0 |
| 5 | GPIOC2 | SDI00 |
| 7 | GPIOC3 | SDO00 |
| 9 | GPIOC4 | SDI01 |
| 11 | GPIOC5 | SDO01 |
| 13 | GPIOC6 | CPP0 |
| 15 | GPIOC7 | CPN0 |
| 17 | GPIOC8 | SPI_SS10 |
| 19 | GPIOC9 | SPICLK1 |
| 21 | GPIOC10 | SDI10 |
| 23 | GPIOC11 | SDO10 |
| 25 | GPIOC12 | SDI11 |
| 27 | GPIOC13 | SDO11 |
| 29 | GPIOC14 | CPP1 |
| 31 | GPIOC15 | CPN1 |
| 33 | GND | |

## GPIO D

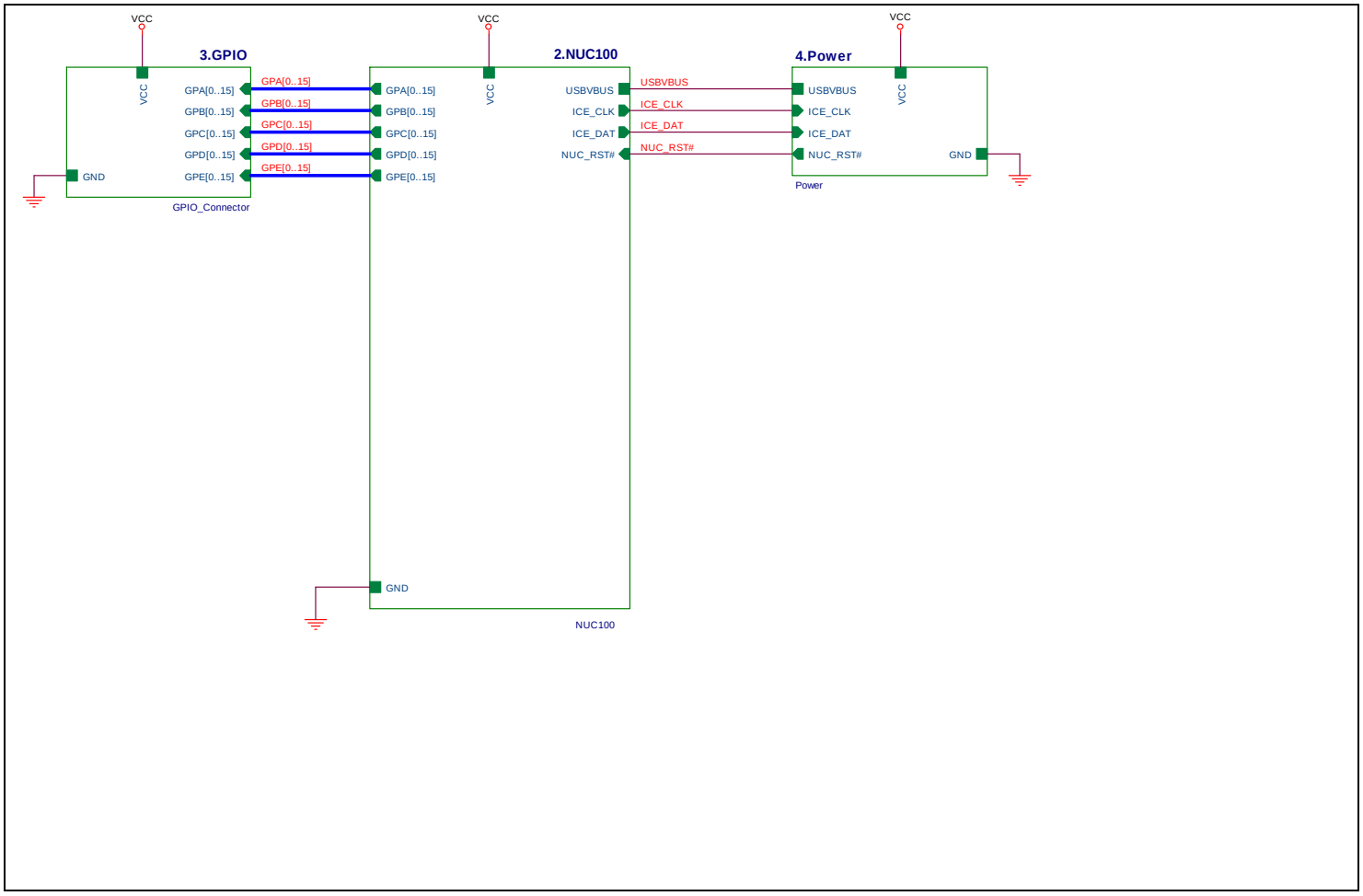
| J4 | DEFINE | |
|---|---|---|
| 2 | GPIOD0 | SPI_SS20 |
| 4 | GPIOD1 | SPICLK2 |
| 6 | GPIOD2 | SDI20 |

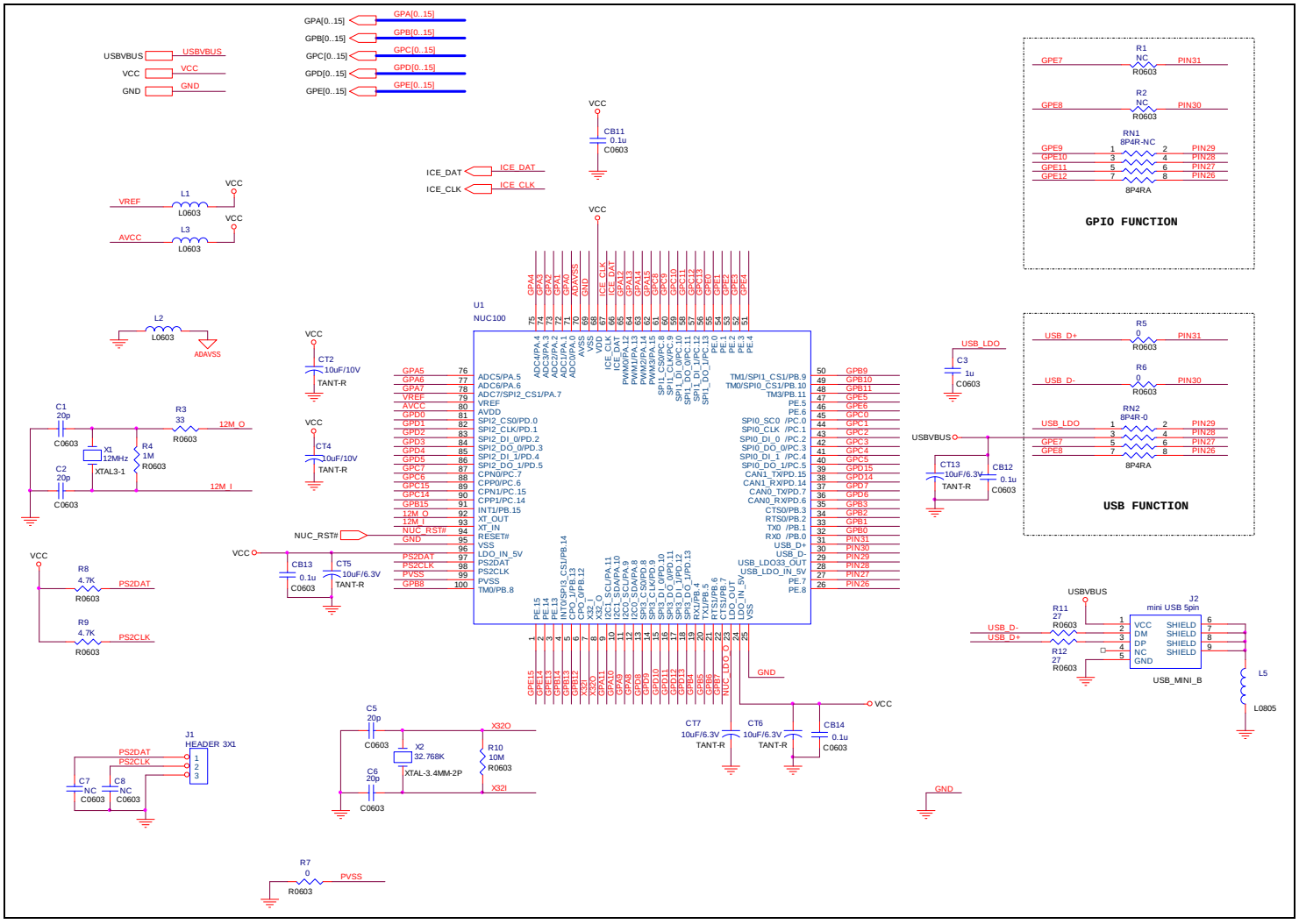
| | | |
|---|---|---|
| 8 | GPIOD3 | SDO20 |
| 10 | GPIOD4 | SDI21 |
| 12 | GPIOD5 | SDO21 |
| 14 | GPIOD6 | CAN0_RX |
| 16 | GPIOD7 | CAN0_TX |
| 18 | GPIOD8 | SPI_SS30 |
| 20 | GPIOD9 | SPICLK3 |
| 22 | GPIOD10 | SDI30 |
| 24 | GPIOD11 | SDO30 |
| 26 | GPIOD12 | SDI31 |
| 28 | GPIOD13 | SDO31 |
| 30 | GPIOD14 | CAN1_RX |
| 32 | GPIOD15 | CAN1_TX |
| 34 | GND | |

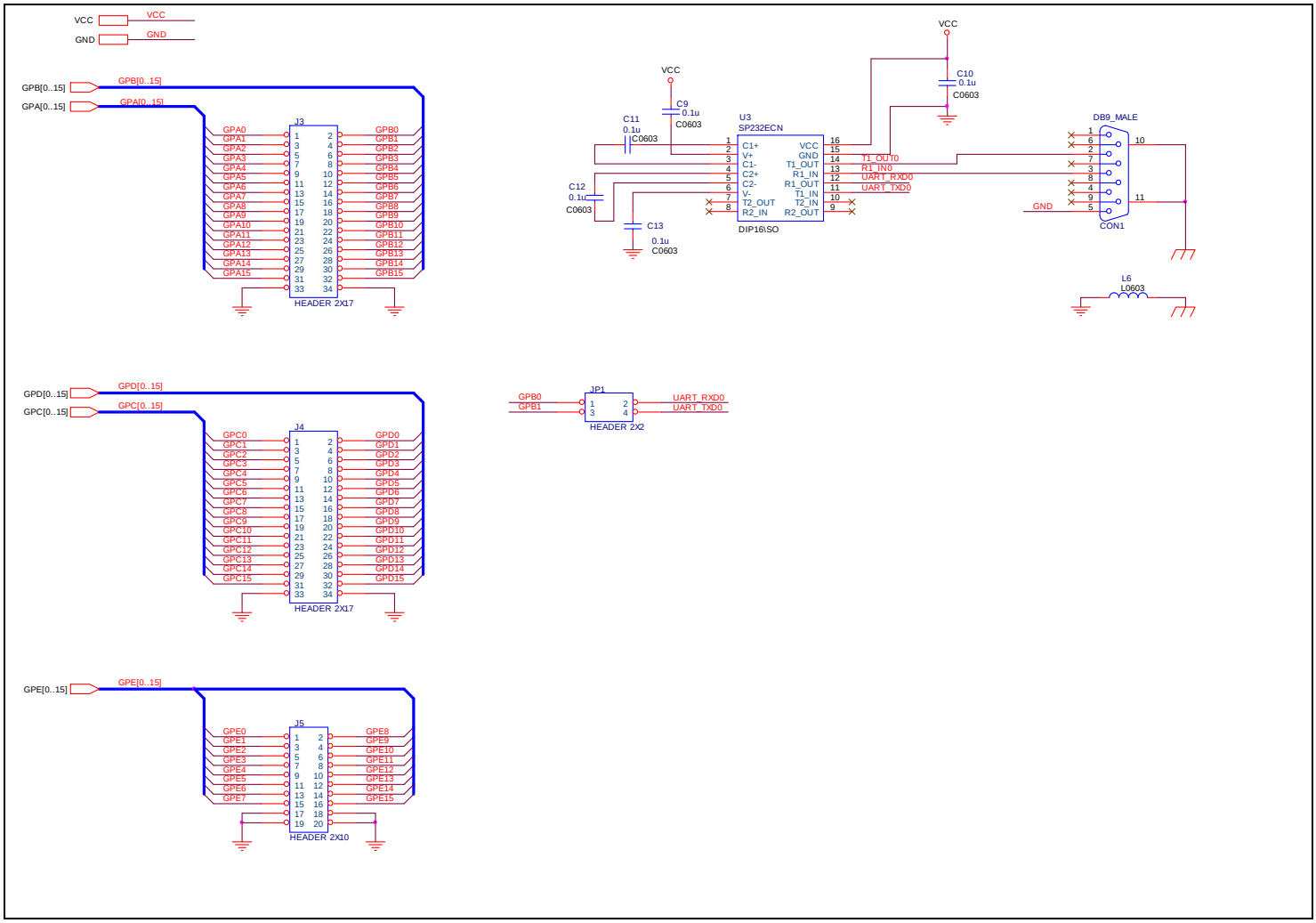
## GPIO E

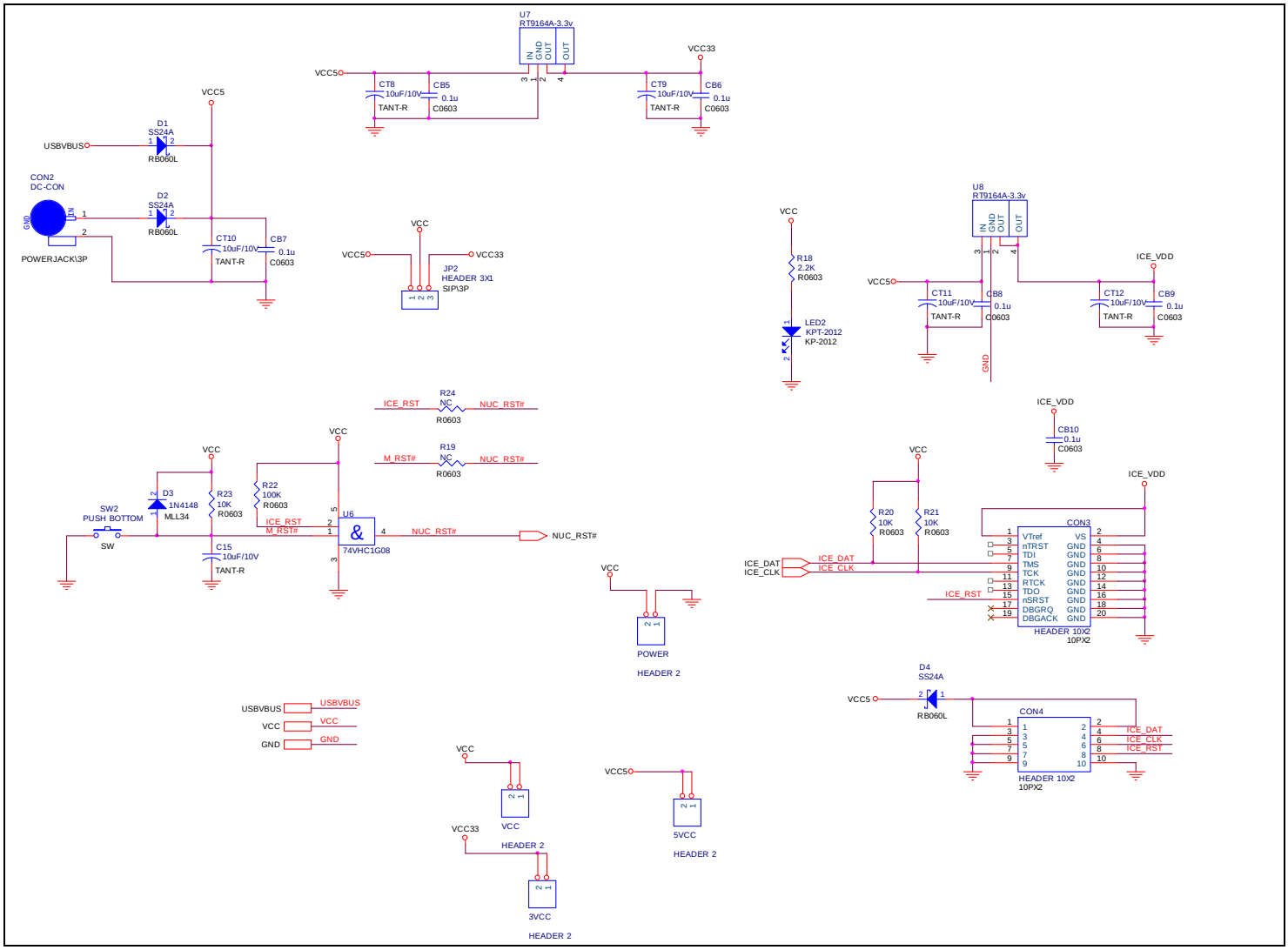
| J5 | DEFINE |
|---|---|
| 1 | GPIOE0 |
| 3 | GPIOE1 |
| 5 | GPIOE2 |
| 7 | GPIOE3 |
| 9 | GPIOE4 |
| 11 | GPIOE5 |
| 13 | GPIOE6 |
| 15 | GPIOE7 |
| 17 | GND |
| 19 | GND |
| 2 | GPIOE8 |
| 4 | GPIOE9 |
| 6 | GPIOE10 |
| 8 | GPIOE11 |
| 10 | GPIOE12 |
| 12 | GPIOE13 |
| 14 | GPIOE14 |
| 16 | GPIOE15 |
| 18 | GND |
| 20 | GND |

# 6. Schematic









# 7. Revision history

| version | date | page | description |
|---|---|---|---|
| 2.0 | Mar 22, 2009 | - | Rename "Nu_EVB_001" |
| 1.4 | Jan 8,2009 | - | Remove SW1, PS2, BUZZER function |
| 1.3 | Nov 21, 2009 | - | Update MCU package |
| 1.0 | Nov 11, 2009 | -- | Initial Issued |