2022/06/20

Arduino Nano 33 IOT

→ 3.3 V device — Jumper — USB — VUSB — sending 3.3 V.

(SAMD21G 32-bit microcontroller) 48MHz. Internal Real-time Clock

(Wifi & Bluetooth using ublox NINA-W102 module) 2.4 GHz Antenna.

(LSM6DS3 IMU Intertial measurement unit)

$\begin{cases} ADC5 - SCL \text{ internal pull-up} \\ ADC4 - SDA \text{ internal pullup} \end{cases}$

Modulation Capable pin : PWM : D2 D3 D5 D6 OP D10 D11 D12

Library : WifiNINA — Wifi

Arduino LSM6DS3 — Intertial measurement

Arduino RTCZero — Real time Clock

Arduino BLE — Bluetooth

Download Arduino IDE

Jason Format → Example code

Arduino code → Example

pin configuration.

Arduino Nano 33 IOT

☆ → deserialization message (Jason Format)
→ set pin output (High / Low)

☆ Read Practable / penduino / Γ Example code.

LTC 7800   control chip

+ seperate

TG BG come from the chip.

Controls

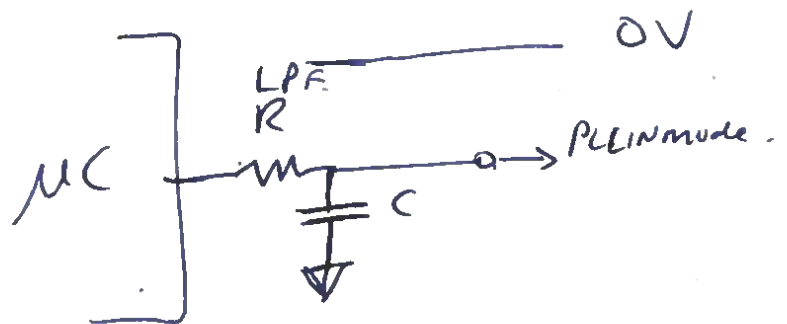R4 33k   Frequency   — Digital Potentiometer.

R3 100k PLLIN/
          Mode   3modes
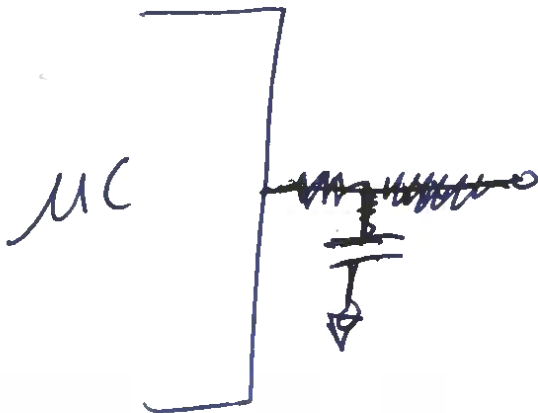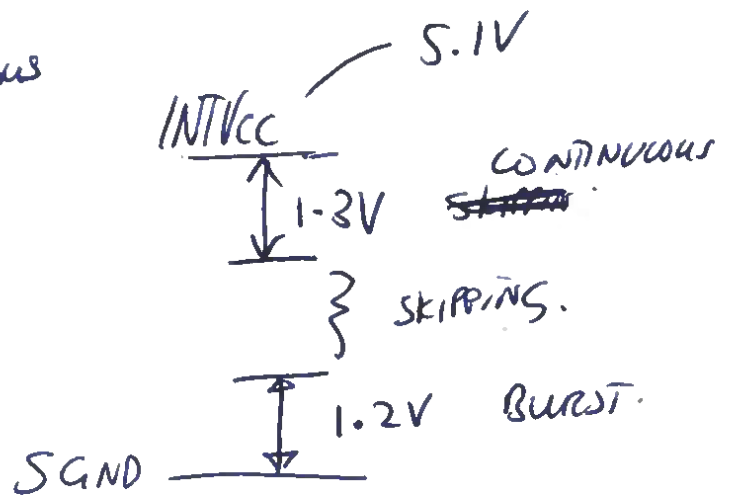
          SGND   Burst
          INTVcc continuous
          1.2V → INTVcc -1.3V

OUTPUT.

INTVCC

C_{16} R1

SGND.

INTVcc   — 5.1V

          ↕ 1.3V   CONTINUOUS

          } SKIPPING.

          ↕ 1.2V   BURST.

SGND

μC

μC   LPF
      R   0V

      C   → PLLINmode.

                        Vcc ~ INTVcc

                        ↓
                        ―
                        9
                        ~ 2.5V
                        SKIPPINGmode.

50%

FREQ

R3 24kΩ

50k...

RV1

= 0.47 μF.
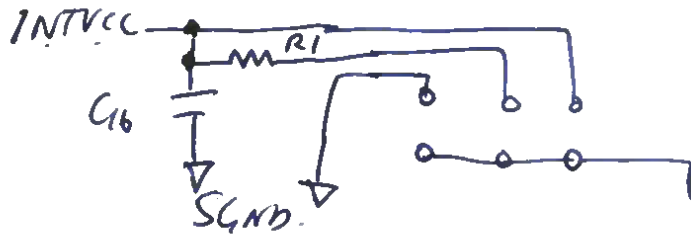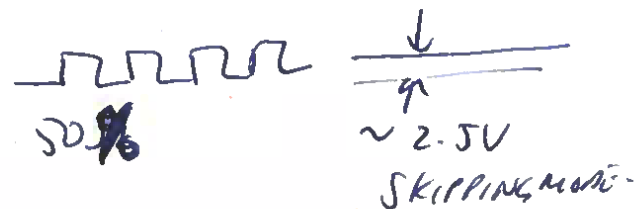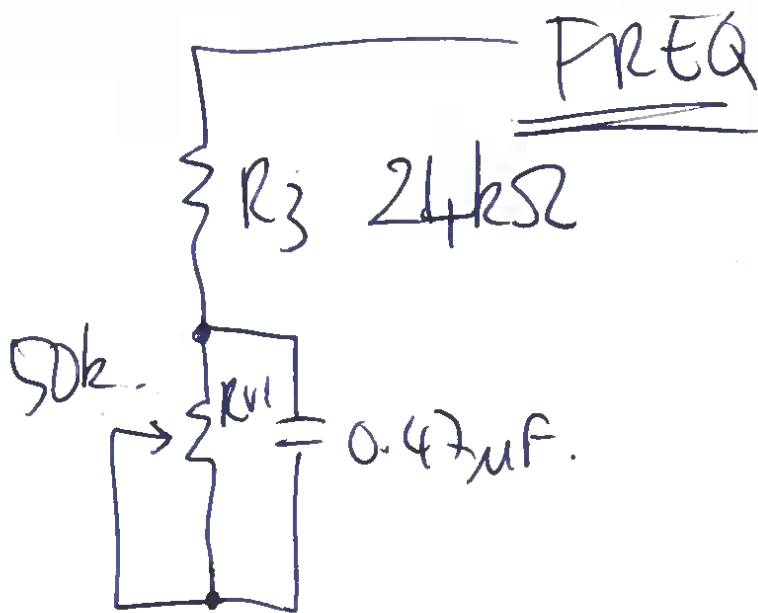
R3 < ?

RV1 ?

replace RV1 with 50kΩ digital potentiometer, ~~diff~~ controlled by µC.

— change to digital potentiometer 2.2kΩ

RV3, RV4   setpoint   MAX16054AZ.

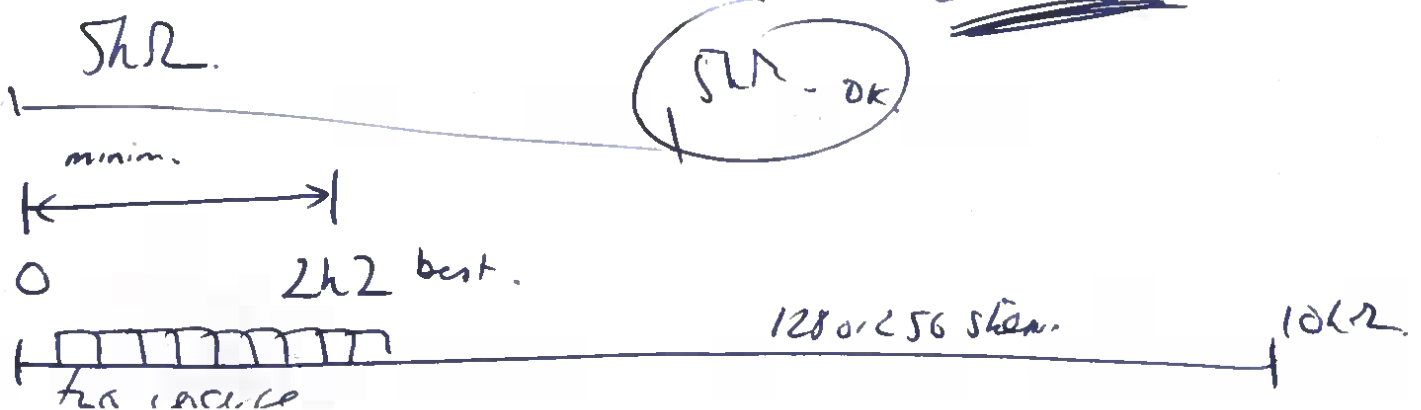keep 2x indicator lights D3, D4 } control direct from Microcontroller.

remove B35-1000 SW1 (Switch)

remove DB   MAX16054ALT+ - (switch — on/off controller)

keep SPDT SN74LVC1G3157DBVR.

check but might be 5kΩ?

1kΩ, 10kΩ potentiometer.

5kΩ.

(5kΩ - OK)

minim.

0   2k2 best.

128 or 256 steps.   10kΩ

CAPSELECT

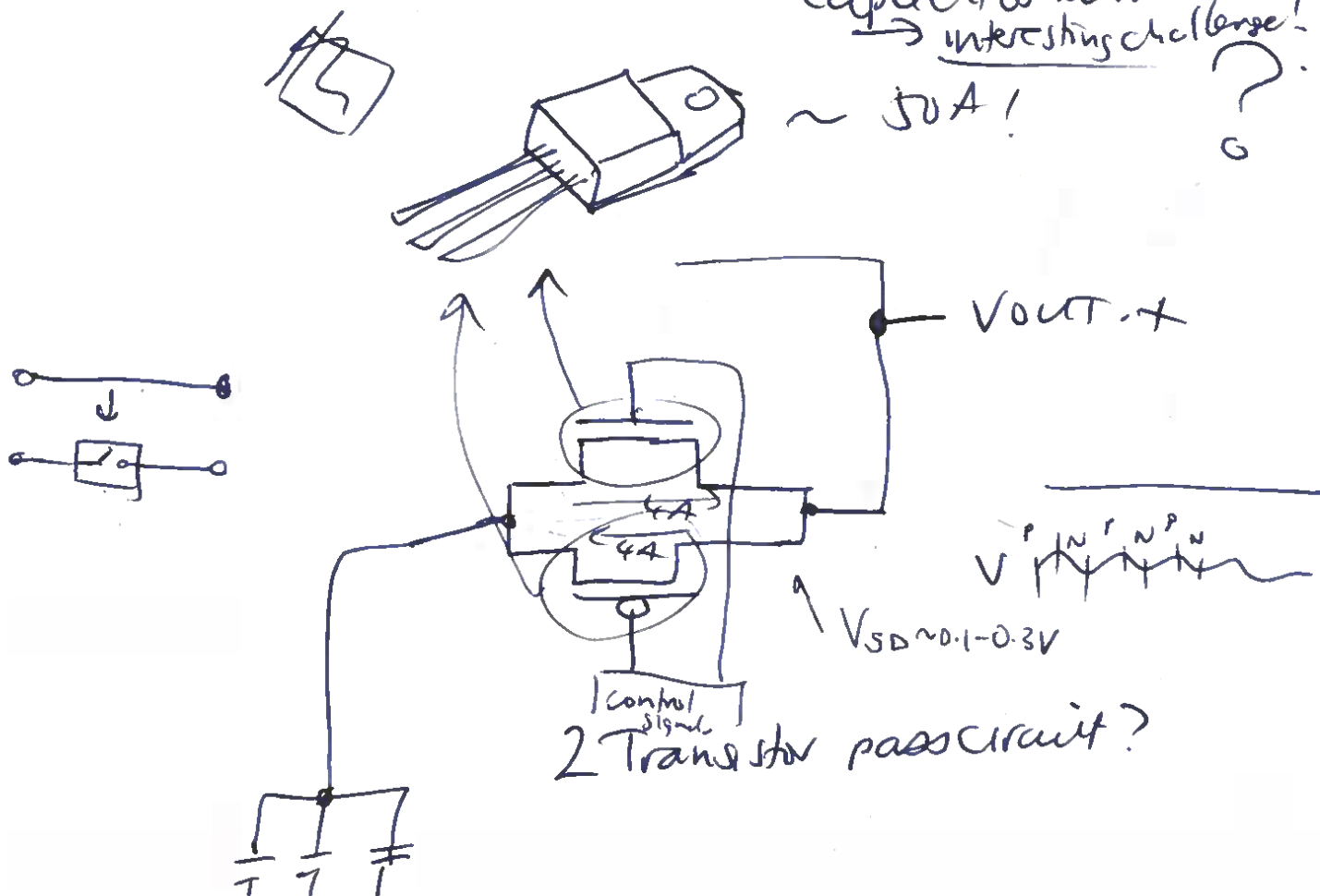use either analogue switch or transistors to select.

5V 4A → 20W

high current!

MAXIM 4655 - 4658 series.

peak currents are 300 - 400mA   10× too low!

⟹ POWER MOSFET switch

power handling?
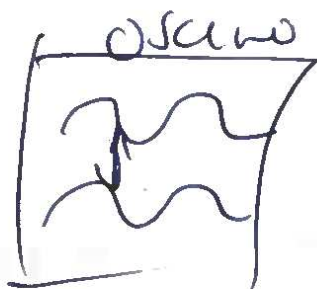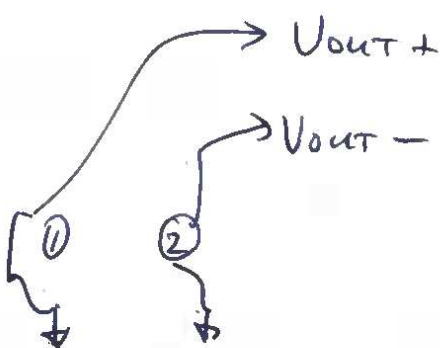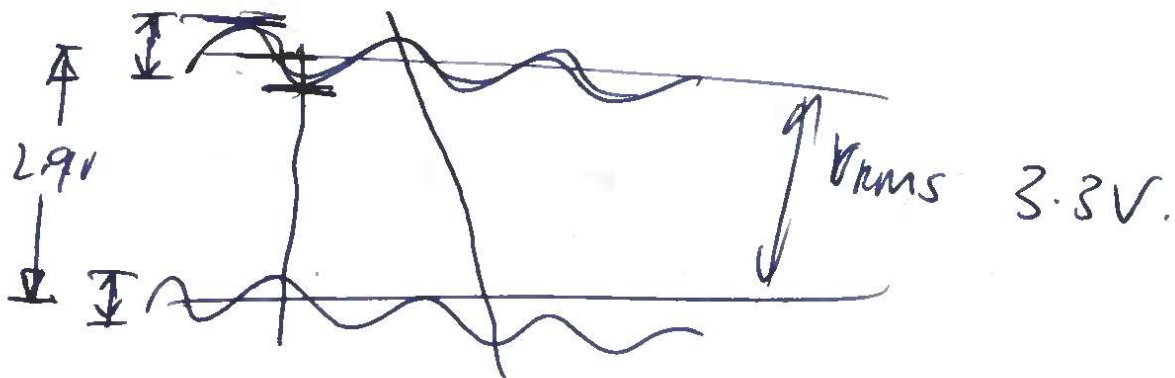
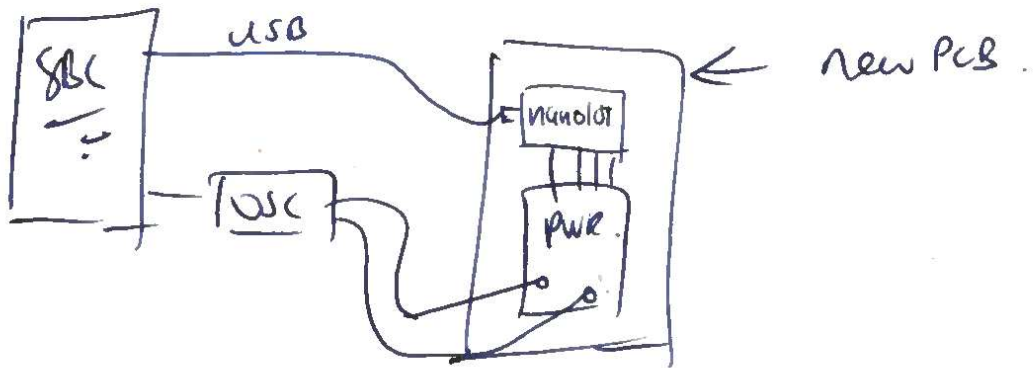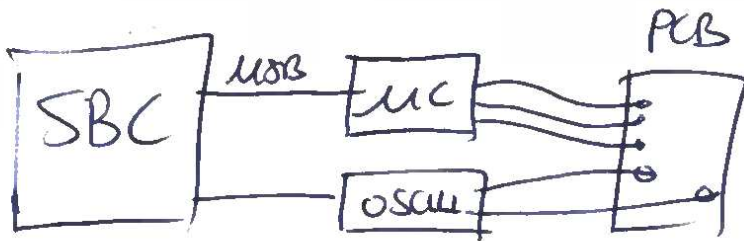switchable capacitor bank → interesting challenge!

~ 50A !

?

Vout +
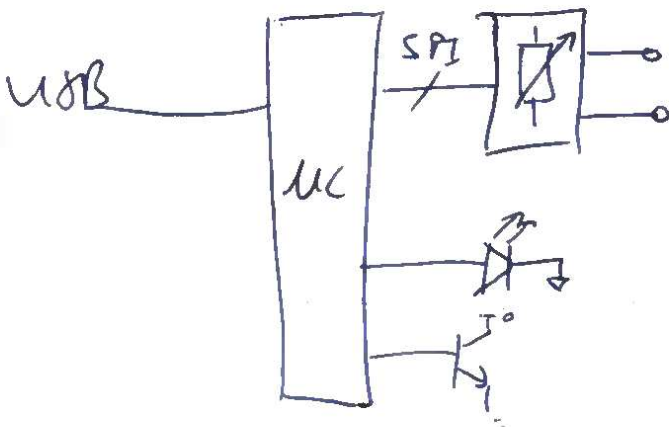
$V_{SD} \sim 0.1 - 0.3V$

control signal

2 Transistor pass circuit?

—o VOUT+ (3.6V)

—o VOUT— (0.7V)

V_{PP} V

RLOAD VRMS 3.3V

2.9V

V_{RMS} 3.3V.

→ VOUT +

→ VOUT —

OSCILLO

① ②

PCB

SBC USB MC

OSCILL

SBC USB

nanolot

OSC

PWR

← new PCB.

USB

MC SPI

USB

0.015

$12 \, mV : \frac{0.12}{0.015} = \frac{12}{15} = 20 = \frac{40}{5} = 8A?$

PLLINMODE

INTVCC

5k

PLLmodep.

SIGGND.

INTVCC

R
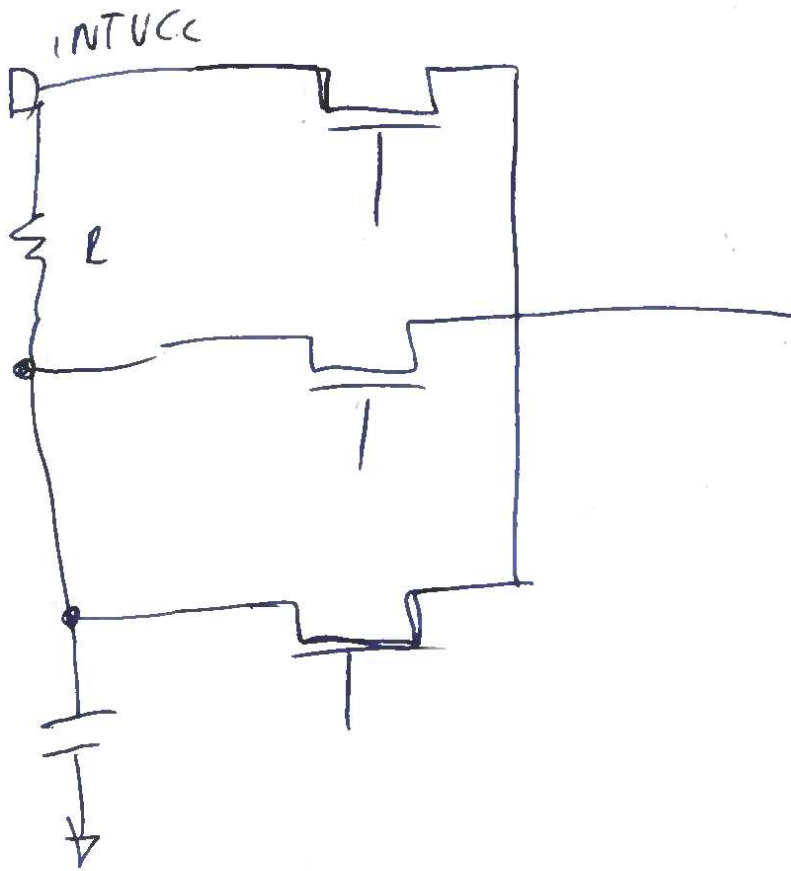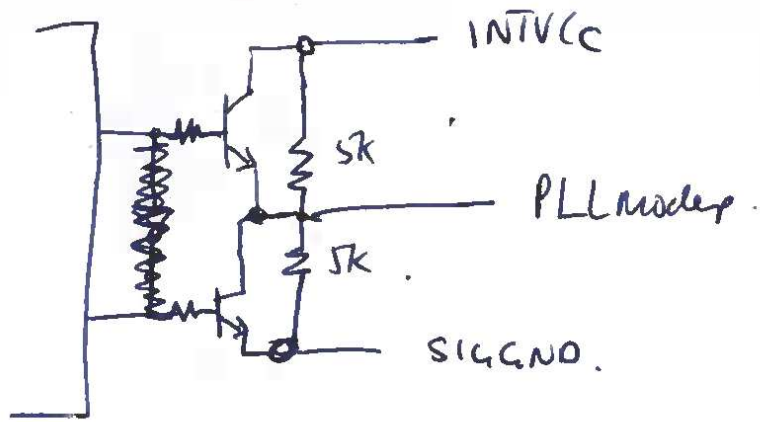
Ask Alasdair .

Iain Gold — PCB manufacture in house

or order externally?

(except no orders in July ?)