# Shaheen SoC verification and testing

Energy Efficient Embedded System -(EEES UNIBO)

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**PULP Platform**

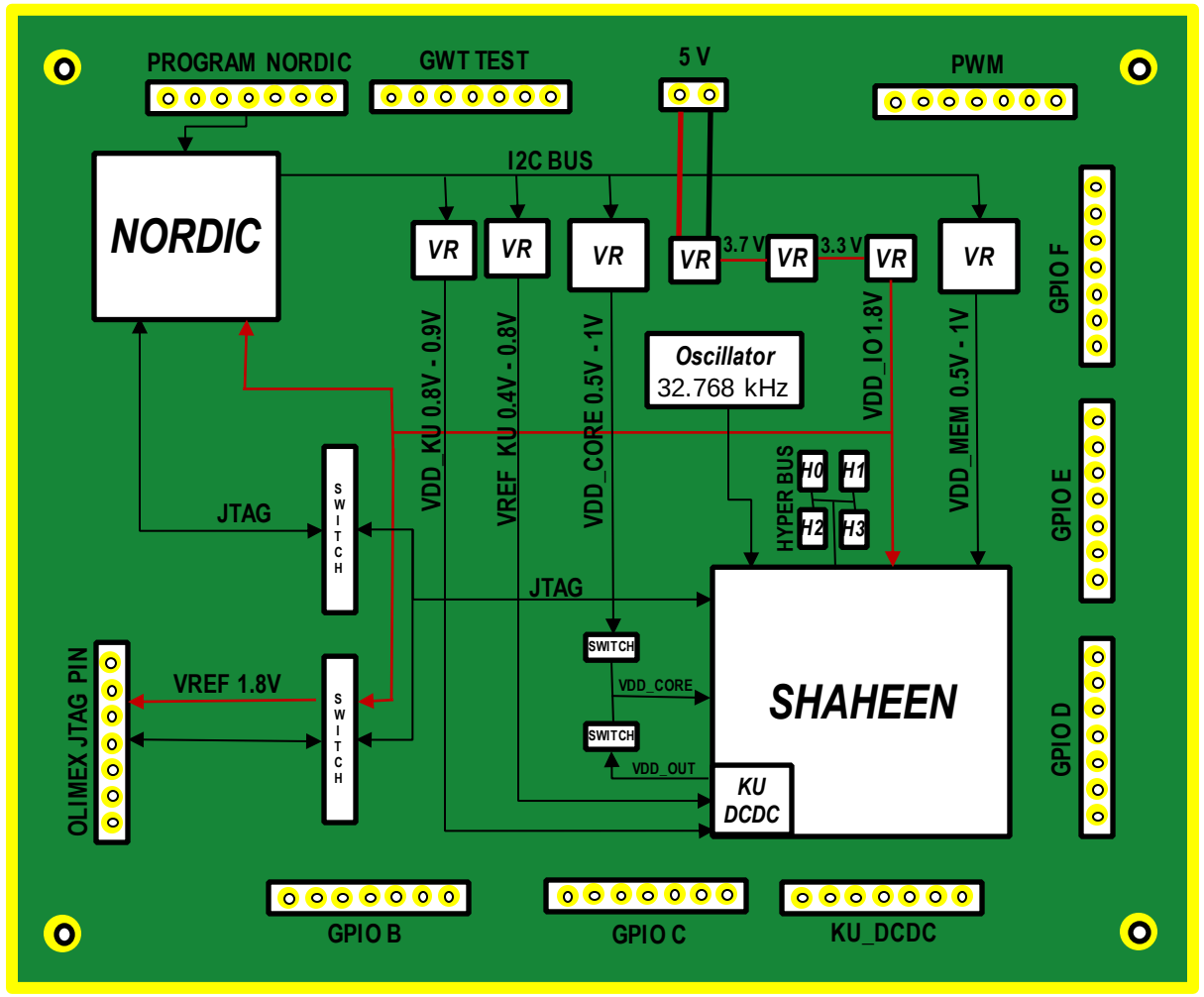
Open Source Hardware, the way it should be!

# Requirements

- Ubuntu 20.4 Focal Fossa
- Openocd 11
- GDB
- Power Supply – DC 5V 2°
- Olimex

# Shaheen PCB Block Diagram

- ***Input Voltage Regulator chain***
  - ***5V to 3.7V***
    - TLV70237
  - ***3.7V to 3.3V***
    - TPS79333
  - ***3.3V to 1.8V (VDD_IO)***
    - TPS73218
- ***4 Programmable Voltage Regulator***
  - ***VDD_CORE (0.5V – 1V)***
    - TPS62361BYZHR – ***Default 0.96V***
  - ***VDD_MEM (0.5V – 1V)***
    - TPS62361BYZHR – ***Default 0.96V***
  - ***VDD_KU_DCDC (0.8V – 0.9V)***
    - FAN53528DUC40X - ***Default 0.9V***
  - ***VDD_KU_DCDC (0.4V – 0.8V)***
    - FAN53528DUC40X – ***Default 0.6V***
- ***4x 8MB Hyper Ram (32MB) at 1.8V***
  - 4x S27KS0641DPBHI020
- ***Oscillator 32.768kHz***
  - SiT1533AC-H5-DCC-32.768E



# Board Configuration for Bringup

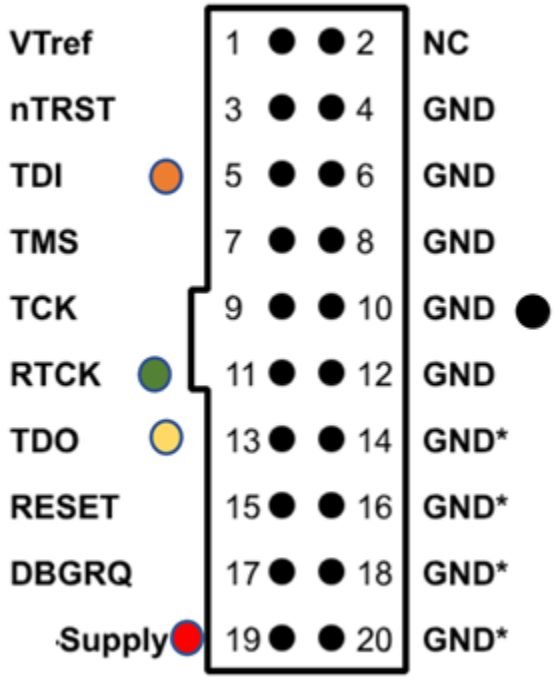
- Shaheen Power Switches
  - SW9 : VDD CORE (Default 0.96V) - ON
  - SW12: VDD MEM (Default 0.96V) - ON
  - SW6 : VDD DCDC (Default 0.89V) - OFF
  - SW11 : VREF DCDC (Default 0.58V) – OFF
  - SW 10 : KUDCDC – OFF

  ***NB**: When OFF the power source can be injected through the power input pins on the right.

  When ON , theese pins can be used to measure the power from the power supply
- Nordic Power Switch
  - SW5: Nordic Power - OFF
- JTAG Switches
  - SW3 : JTAG FROM OLIMEX - ALL ON
  - SW2: JTAG FROM NORDIC – ALL OFF
  - P5 : this header can be used for debugging purposes
- Reset
  - SW7: reset source OFF (ON – reset generated by NORDIC, OFF – reset from push button SW8)
- FLL
  - SW4: SoC Clock ON (ON – Clock comes from FLL, OFF – Clock comes from Crystal)

# Nordic jlink programmer connection

- Jlink programmer
- https://shop.segger.com/debug-trace-probes/debug-probes/j-link/j-link-base-classic
- The 20pin ribbon cable have to be connected to the P4 connector on the board


# Thank you!