ambiq apollo2 DIPPCB User's Manual

- Ambiq apollo2 is ultra-low power MCU of ARM Cortex-M4. Mounted it on DIP-PCB.
- By SPOT technology, the core supply current is less than 10uA/MHz
- All MCU pins are connected 0.1inch pitched DIP terminal. (Except RTC pin. It's connected XTAL)
- Signal lines are aligned isometrically.

Picture1. PCB-A side

◆MCU features

MCU: ambiq apollo2

Core: ARM Cortex M4 (32bit)

Maximum clock frequency: 48MHz

Flash memory: 1MB

RAM: 256KB

Operating Range: 1.755V～3.630V

Package: BGA 64pin

Maximum energy consumption: 2.028mW (48MHz Common program running)

Minimum energy consumption: 9.9uW (Deep sleep)

Peripherals: GPIO/Timer/SPI/I2C/UART/ADC/PDM/I2S/Temperature

※The power consumption fluctuates by the several conditions.

◆product specification

Size: 1.3inch × 1.6inch × 0.04inch(T)

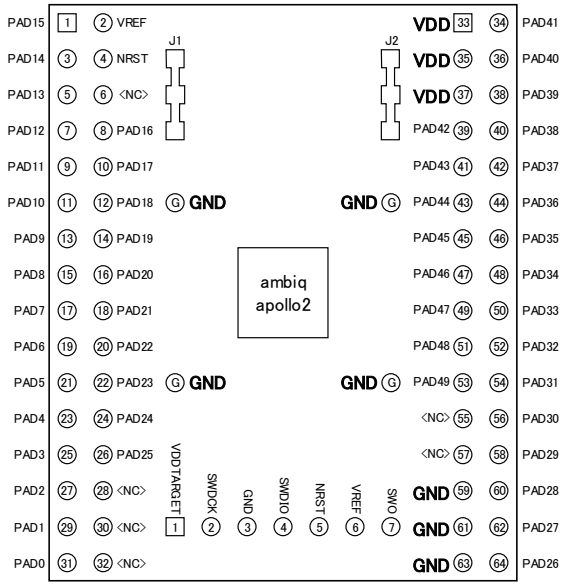
RTC: 32.768KHz mounted

Incude: Product PCB * 1

■Default pin layout

Power type pins and Ground type pins are united in each types.

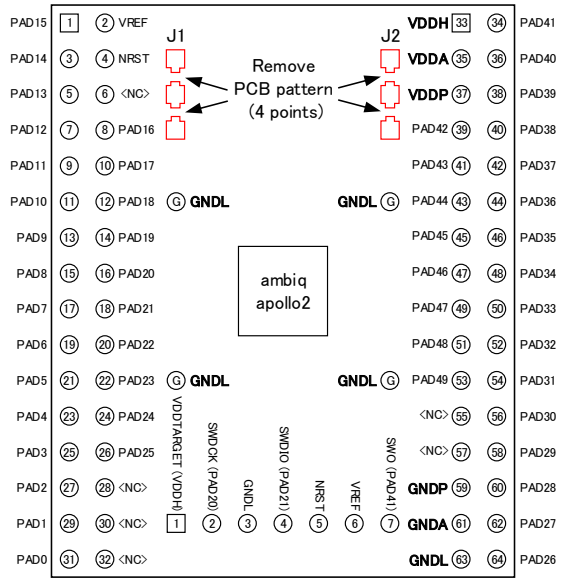
Figure2: Default pin layout



■Power/Ground independent pin layout

According to the Figure 3, remove 4 points of PCB patterns of J1 and J2, in case of selaration of each power supply system / ground system.. 4 ground pins around MCU and ground pin of SWD are connected “GNDL”, VDDTARGET of SWD is connected “VDDH“.

Figure 3. Divided power/ground pin layout



Each power pins correspond to ground pins as below

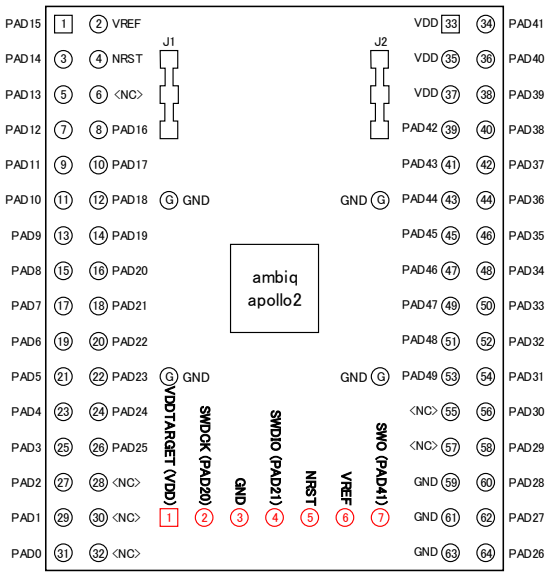
■Table1.power pin and ground pin correspondence

項	Power	Ground	
1	VDDH	GNDL	digital circuit
2	VDDA	GNDA	analog circuit
3	VDDP	GNDP	power supply for pad

■SWD pin layout

Connect SWD pins to ICE, below Figure 4.

Figure 4: SWD pin layout



■Table2.SWD pin

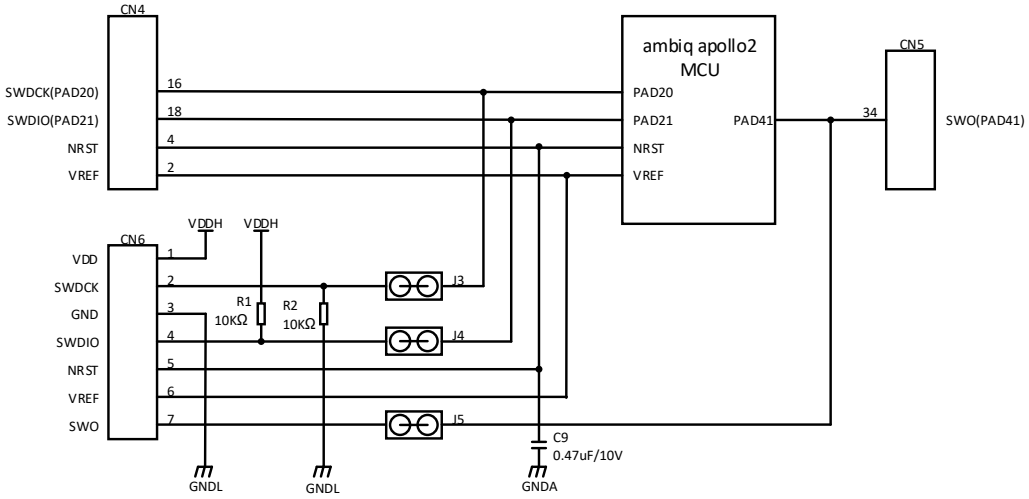
Pin No.	Signal Name.	Description	Remarks
1	VDDTARGET	Target MCU power	Connected “VDDH”, when power line is divided.
2	SWDCK	SWD clock	Using PAD20
3	GND	Ground	Connected “GNDL”, when ground line is divided.
4	SWDIO	SWD Data I/O	Using PAD 21
5	NRST	Target MCU reset	—
6	VREF	VREF for Analog	—
7	SWO	SWD Debug message output	Using PAD41

*1.When use PAD20 as other function and assign SWDCK to other pad, remove J3 pattern.

*2.When use PAD21 as other function and assign SWDIO to other pad, remove J4 pattern.

*3.When use PAD41 as other function and assign SWO to other pad, remove J5 pattern.

Figure 5. Schematic around CN6



■PAD function

About every pad function, see data sheet.(Apollo2_MCU_Data_Sheet_rev1p0p1.pdf – after page 222 of 548 in ambiq site.)

■About the product

Please handle with care or the part on the board may come off by shocks due to fragile 1.0mm thin.

This product is not considered to be incorporated to ; The equipments and facilities involving serious problems on human lives.

The equipments and facilities demanding high reliability and safety such as medical equipments, aerospace, transportation, nuclear power, etc.

We shall not have any liability to the injury or death or property damage using this product in the equipments and facilities as noted above.

In the case of deta missing or deta losing, we compensation.