EW001 earphone function description and working principle

Function description：

EW001 earphone uses BES2000-IZ platform supporting bluetooth 4.2 and HiFi Stereo Audio. The earphone has a Li-polymer battery with 2C charging ability which will be charged when put it in the charger-box；The earphone has the function of noise reduction with two microphone arrays ; The earphone contains IR sensor/G-sensor/HALL sensor. the IR sensor is for wearing detection function and the G-sensor is for double tapping function ,the HALL sensor is for detecting the charger-box is opened or not.

EW001 earphone is True wireless stereo earphone, it contains two earphones, left and right. The customers can use just one earphone or both two simultaneously. when first used, it should co-work with the charger box to make it broadcast out.

Working principle:

BES2000-IZ has the ARM Cortex-M4F processor, which provides best trade-off between system performance and power consumption. For large amount of data transfer, high performance Direct Memory Access (DMA) is implemented, which greatly enhances the data movement speed while reducing MCU processing load.

Cortex-M4F high performance processor with float and HW DSP instruction

I cache and D cache

High performance multi-layer AMBA bus

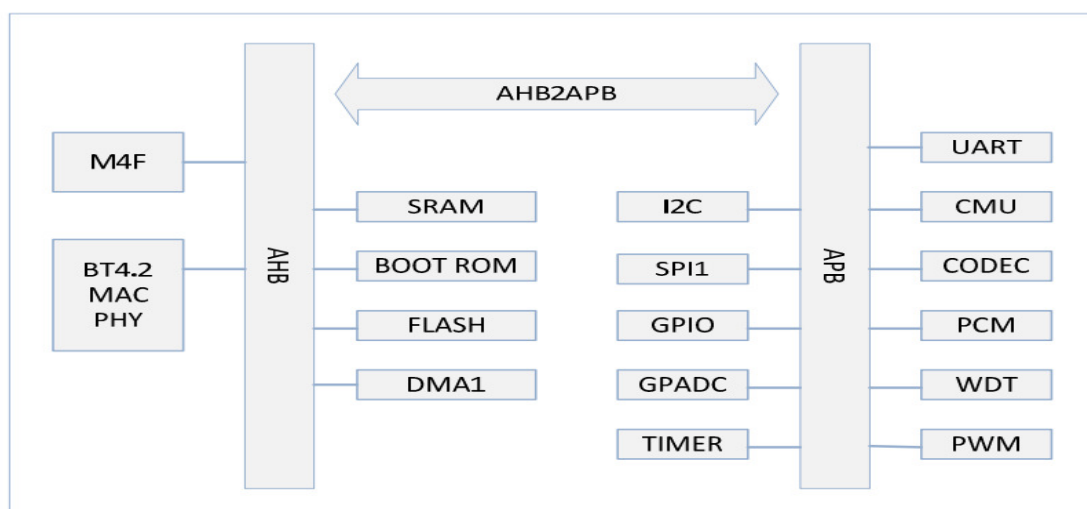Operating frequency up to 450MHz

On-chip boot ROM for factory Flash programming

Security boot support

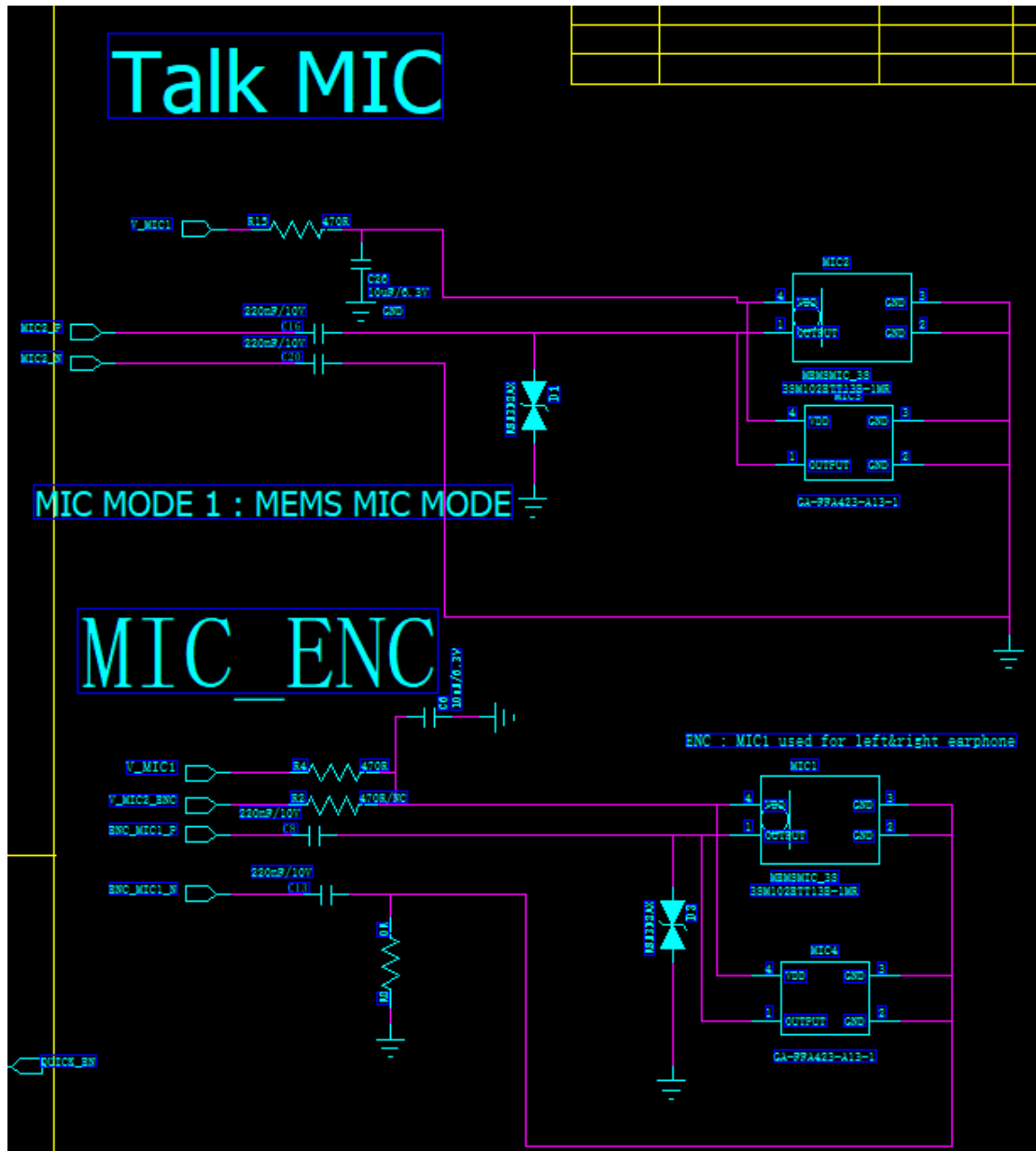Watchdog Timer for system crash recovery

General Purpose Timers

DMA for audio/voice data transfer

BES2000-IZ

Description of blocks：

Charging：

　　The earphone is powered by 4.2V Li-polymer battery which will be charged when put in the charger-box, the charger IC is SGM50561,with 10.5V OVP。 When put in the charger-box,the led will display the quantity of electricity of the earphone.

26MHz crystal：

The crystal is TXC 8Y26000002。

Noise reduce：

The earphone uses MEMS micphone,GA-FFA423-A13-1.
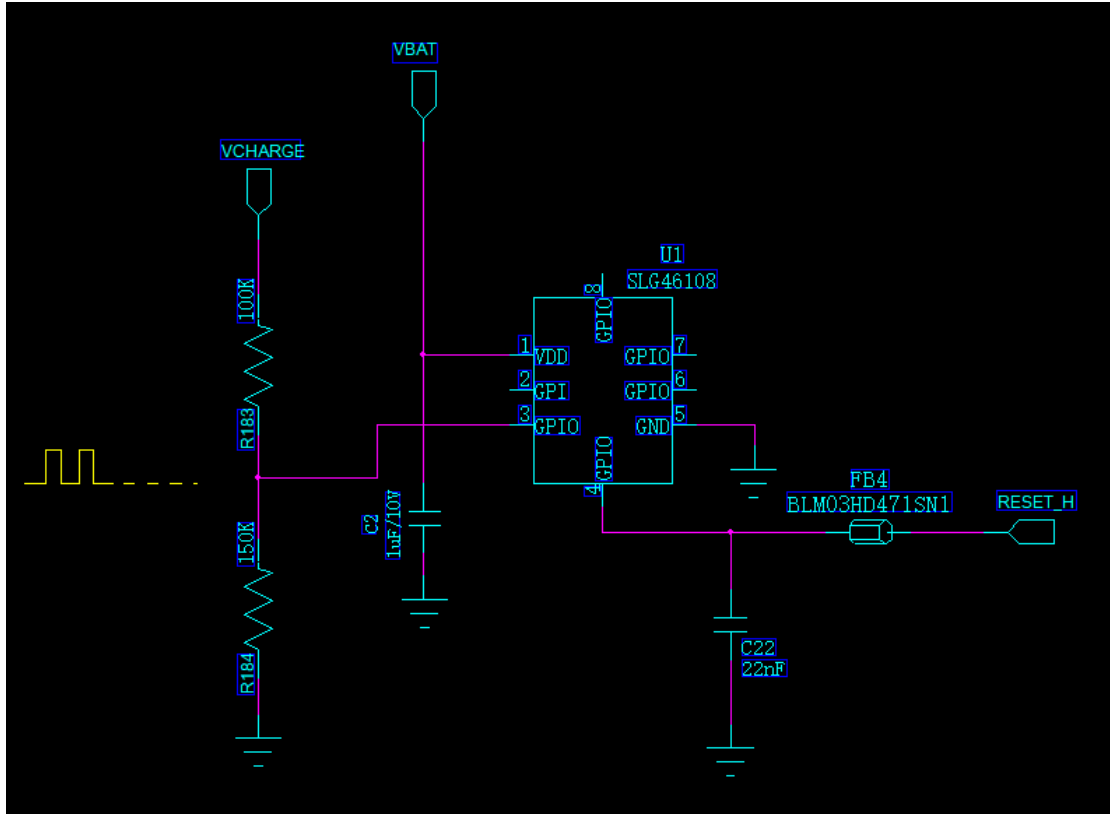

RF：

The earphone uses 2.4GHz BT antenna,ACA-2012-A1-CC-S.
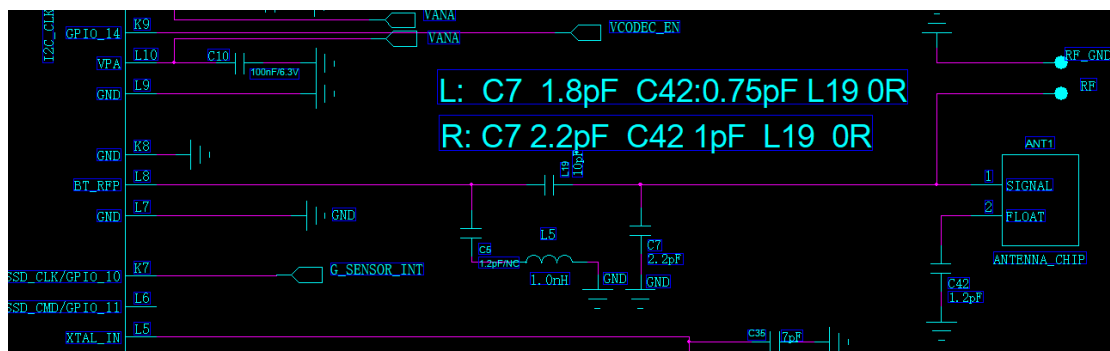
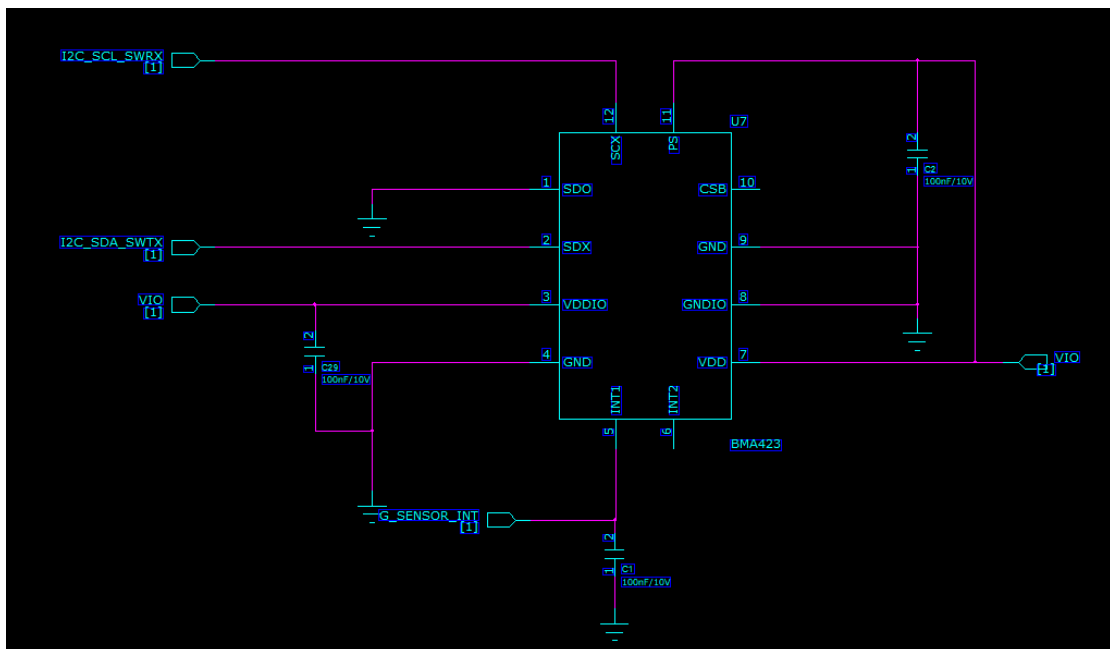## Reset function：

When put in the charger-box ,VCHARGE exports PWM sequences to reset IC SLG46108,SLG46108 put
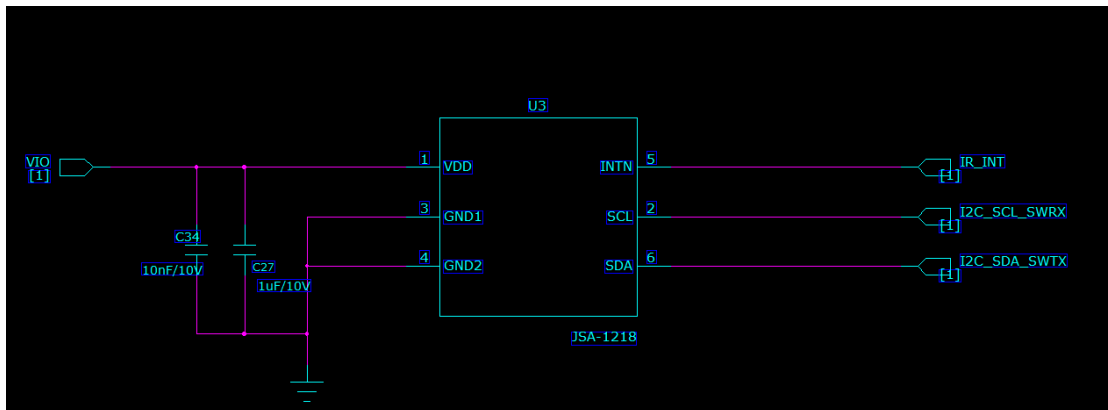 out high level reset signal to MCU。

Gsensor：

Gsensor is BMA423,using IIC to communicate with MCU for double tapping function。
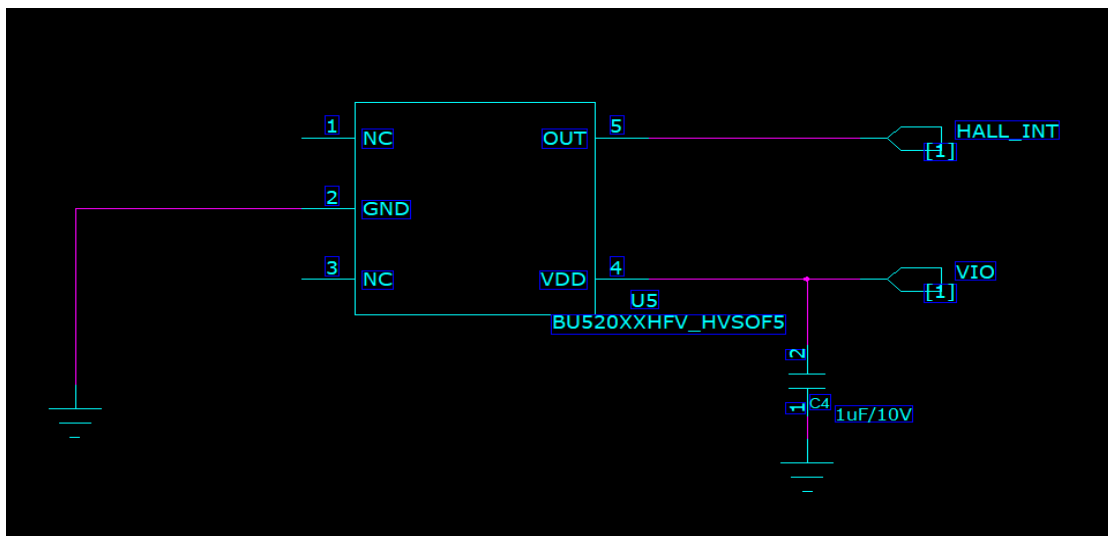
IR sensor：

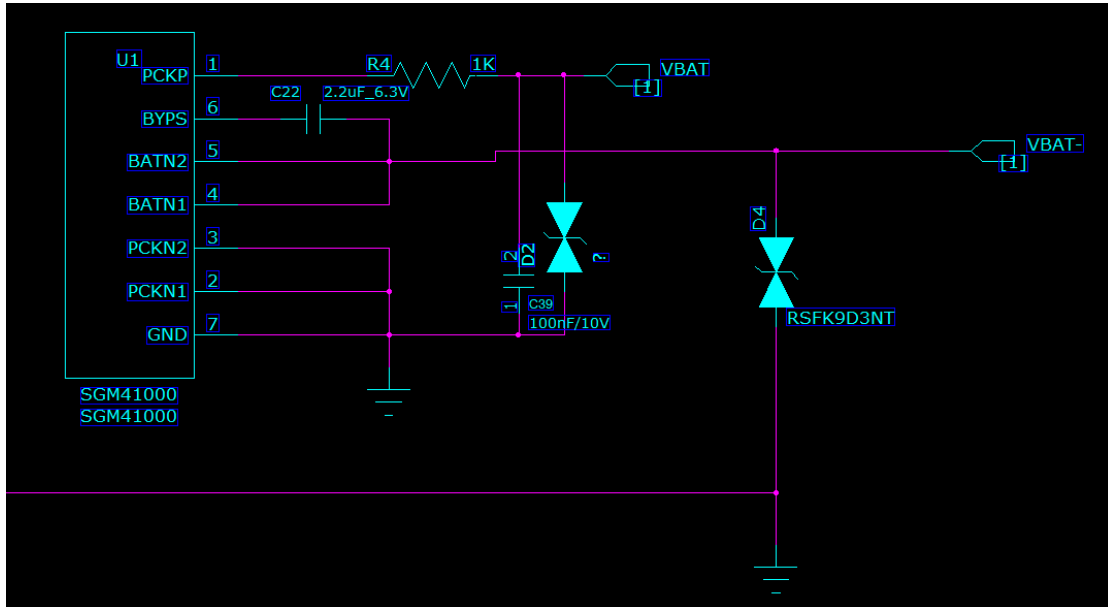IR sensor is JSA-1218, using IIC to communicate with MCU for wearing detection.

HALL IC：

The HALL IC BU52012HFV,using interruption for detecting the charger-box is opened or not.

Battery peotection：

The Battery peotection IC is SGM41000,which used to pretect the battery.

RF Specification Information:

For BT:	
Frequency Range:	2402MHz to 2480MHz
Bluetooth Version:	V4.2 Dual mode
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channels:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Receiver Category:	2
Antenna Type:	Chip Antenna
Antenna Gain:	1.72dBi
For BLE:	
Frequency Range:	2402MHz to 2480MHz
Bluetooth Version:	V4.2 Dual mode
Modulation Type:	GFSK
Number of Channels:	40
Receiver Category:	2
Antenna Type:	Chip Antenna
Antenna Gain:	1.72dBi