BLUETOOTH MICROPHONE

200373X

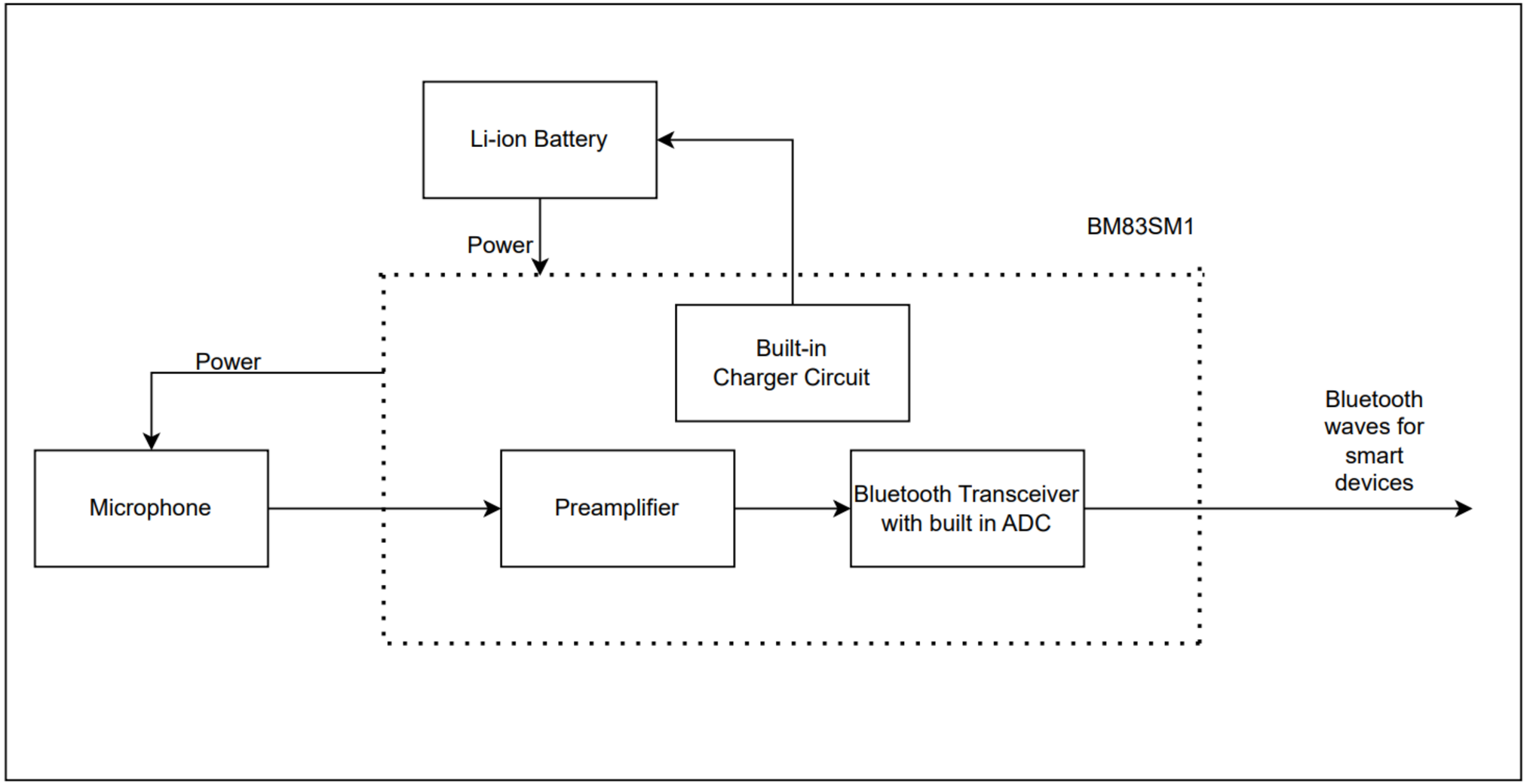
PURPOSE

This product is entirely target for mobile vloggers to increase the accuracy of their captured audio

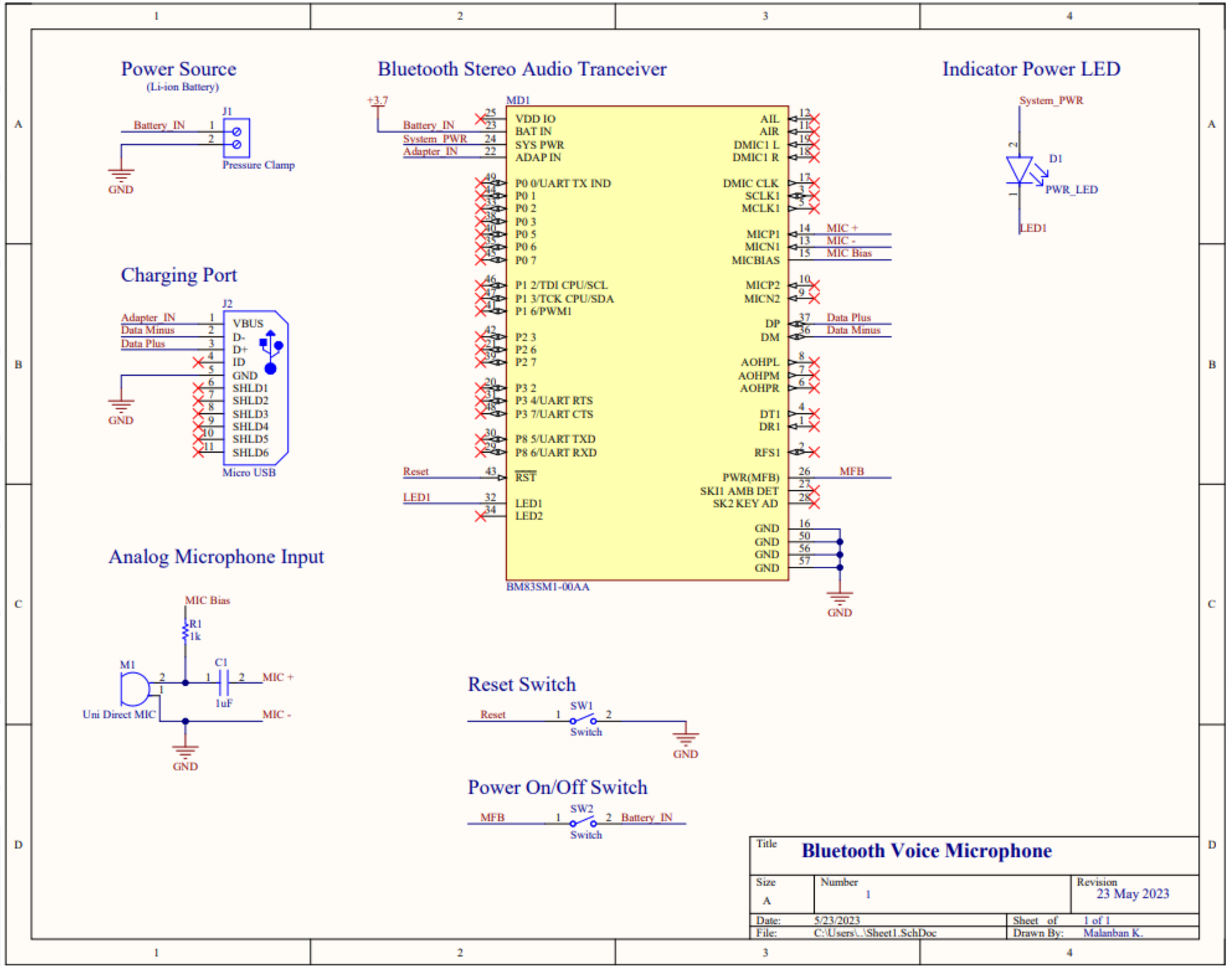
- Features
  - Wireless connectivity
  - Noise cancellation
  - Rechargeable
  - Adjustable DSP

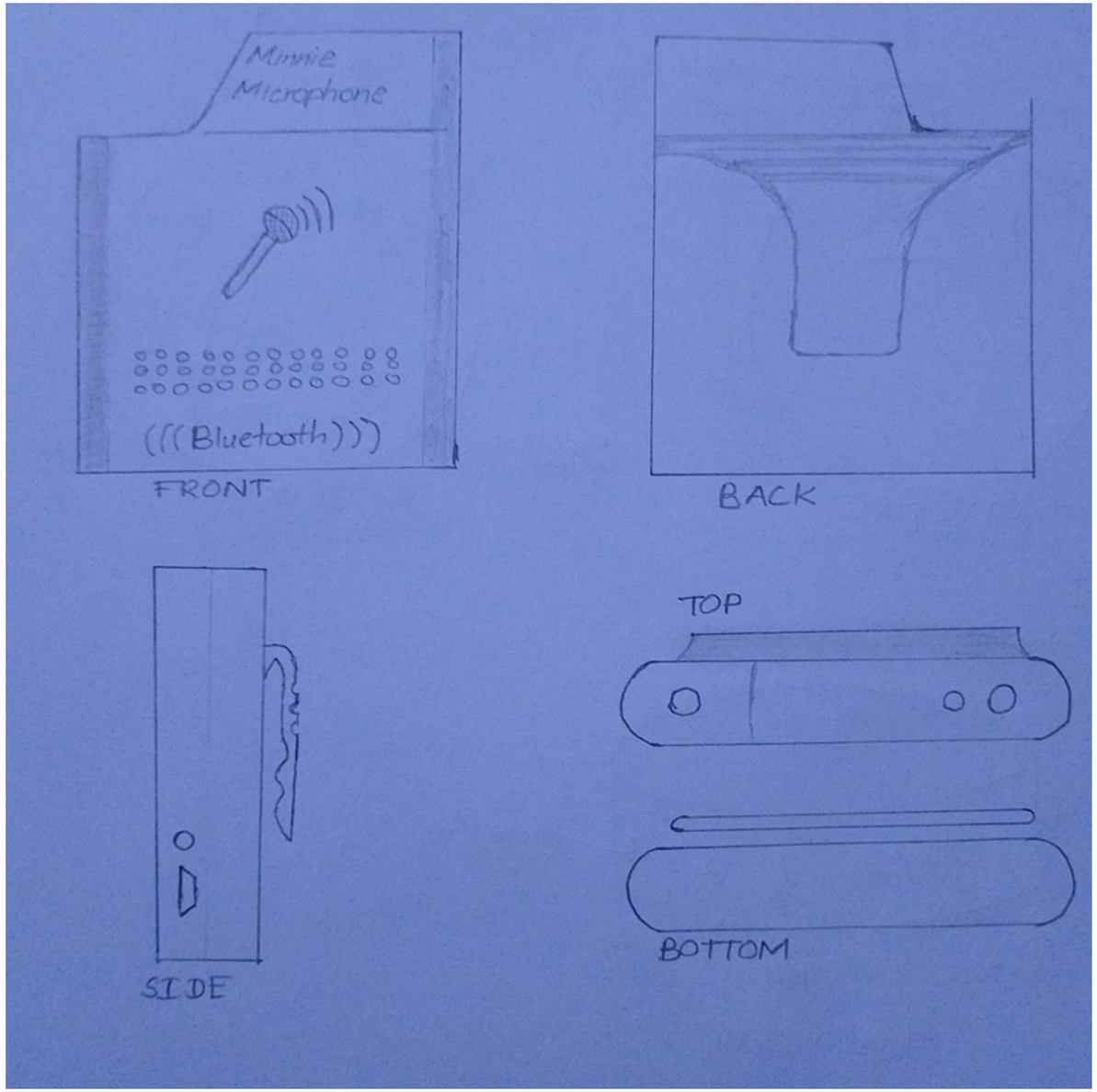
To achieve these all features, I have choosen BM83 bluetooth module

BLOCK DIAGRAM



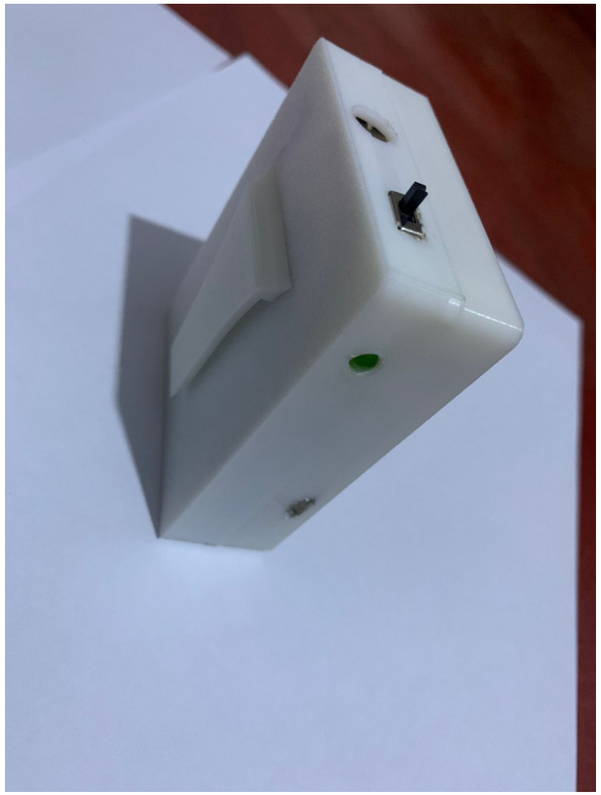
SCHEMATICS


Power Source
(Li-ion Battery)
J1
Battery_IN
Pressure Clamp
GND
Charging Port
J2
Adapter_IN
Data Minus
Data Plus
VBUS
D-
D+
ID
GND
SHLD1
SHLD2
SHLD3
SHLD4
SHLD5
SHLD6
Micro USB
Analog Microphone Input
MIC Bias
R1
1k
M1
C1
1uF
MIC +
MIC -
Uni Direct MIC
Bluetooth Stereo Audio Tranceiver
MD1
+3.7
Battery_IN
System_PWR
Adapter_IN
VDD IO
BAT IN
SYS PWR
ADAP IN
P0 0/UART TX IND
P0 1
P0 2
P0 3
P0 5
P0 6
P0 7
P1 2/TDI CPU/SCL
P1 3/TCK CPU/SDA
P1 6/PWM1
P2 3
P2 6
P2 7
P3 2
P3 4/UART RTS
P3 7/UART CTS
P8 5/UART TXD
P8 6/UART RXD
Reset
RST
LED1
LED2
AIL
AIR
DMIC1 L
DMIC1 R
DMIC CLK
SCLK1
MCLK1
MICP1
MICN1
MICBIAS
MICP2
MICN2
DP
DM
AOHPL
AOHPM
AOHPR
DT1
DR1
RFS1
PWR(MFB)
SKI1 AMB DET
SK2 KEY AD
GND
MIC +
MIC -
MIC Bias
Data Plus
Data Minus
MFB
BM83SM1-00AA
Indicator Power LED
System_PWR
D1
PWR_LED
LED1
Reset Switch
Reset
SW1
Switch
GND
Power On/Off Switch
MFB
SW2
Battery_IN
Title
Bluetooth Voice Microphone
Size
A
Number
1
Revision
23 May 2023
Date:
5/23/2023
Sheet of
1 of 1
File:
C:\Users\..\Sheet1.SchDoc
Drawn By:
Malanban K.

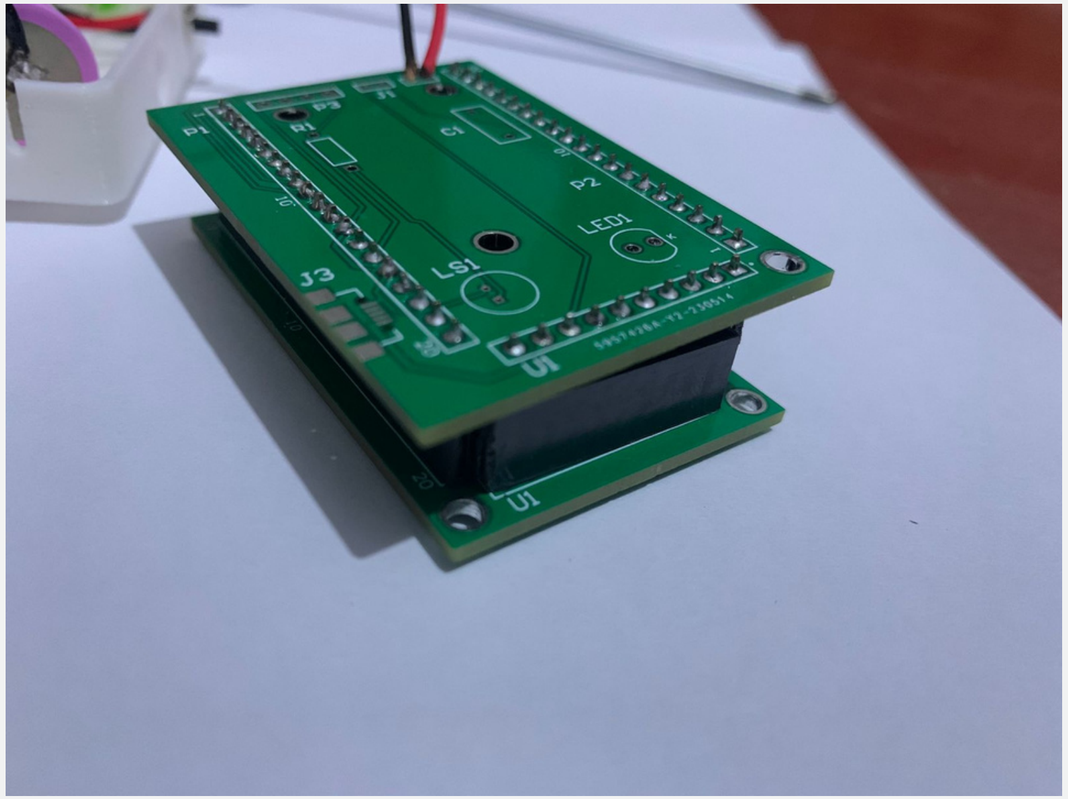


HAND SKETCH after user feedback

Product Outlook



DESIGN SPECIFICATIONS



To reduce the size of the device two PCBs are stacked upon each other

CHOOSED COMPONENTS

BM83SM1
Bluetooth Transceiver

NOISE CANCELLATION MICROPHONE

LI-ION BATTERY 3.7V

MICRO-USB ADAPTER

LED & SWITCH

WHY BM83

HIGH-QUALITY AUDIO

high-fidelity wireless audio with support for 24-bit/96 kHz audio formats

ADVANCED AUDIO PROCESSING

voice processing such as Wide-Band (WB) speech, Acoustic Echo Cancellation (AEC) and Noise Reduction (NR).

WIRELESS CONNECTIVITY

Bluetooth 5.0 certified dual-mode audio module that offers high-quality wireless audio.

TWO MODES OF OPERATION

EMBEDDED

– No external MCU involved
– BM83 acts as an MCU to control all peripherals

HOST

Interfaces with an external MCU over UART for application specific system control

Audio Codec

- SBC and AAC
- 20-bit Audio Stereo DAC with Signal-to-Noise Ratio (SNR) 95 dB
- 16-bit Audio Stereo Analog-to-Digital Converter (ADC) with SNR 90 dB
- 16-bit/24-bit I2S Digital Audio: – 8 kHz, 16 kHz, 44.1 kHz and 48 kHz sampling frequency for SBC and AAC

- *SBC and AAC are the two common codecs that you'll find support for on most Bluetooth earphones. They're also called lossy codecs because they significantly compress the data, with the goal being stability and speed over audio quality*

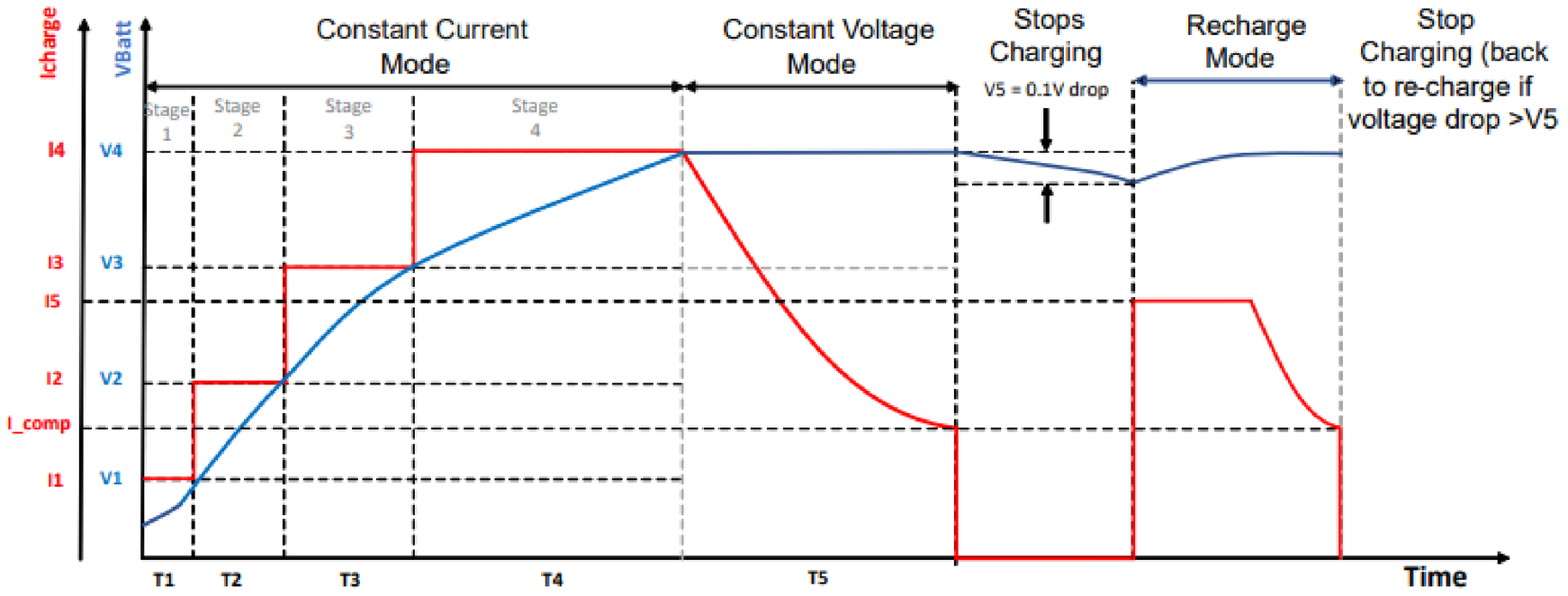
Battery Charging

The battery charger supports various modes with the features listed below:

- Charging control using current sensor
- User-programmable current regulation
- High accuracy voltage regulation
- Constant current and constant voltage modes
- Stop charging and re-charging modes

The following figure illustrates the charging curve of a battery.

Figure 6-2. Battery Charging Curve



THANK YOU