

SC600Y&SC600T

Reference Design

Smart LTE Module Series

Rev. SC600Y&SC600T_Reference_Design_V1.1

Date: 2019-06-21

Status: Released

Our aim is to provide customers with timely and comprehensive service. For any assistance, please contact our company headquarters:

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About the Document

History

Revision	Date	Author	Description
1.0	2019-03-22	Light WANG	Initial
1.1	2019-06-21	Light WANG	Disabled the function of Pin 158 and updated its name from PMI_GPIO2 to RESERVED.

Contents

About the Document	2
Contents	3
1 Reference Design.....	4
1.1. Introduction	4
1.2. Schematics	4

1 Reference Design

1.1. Introduction

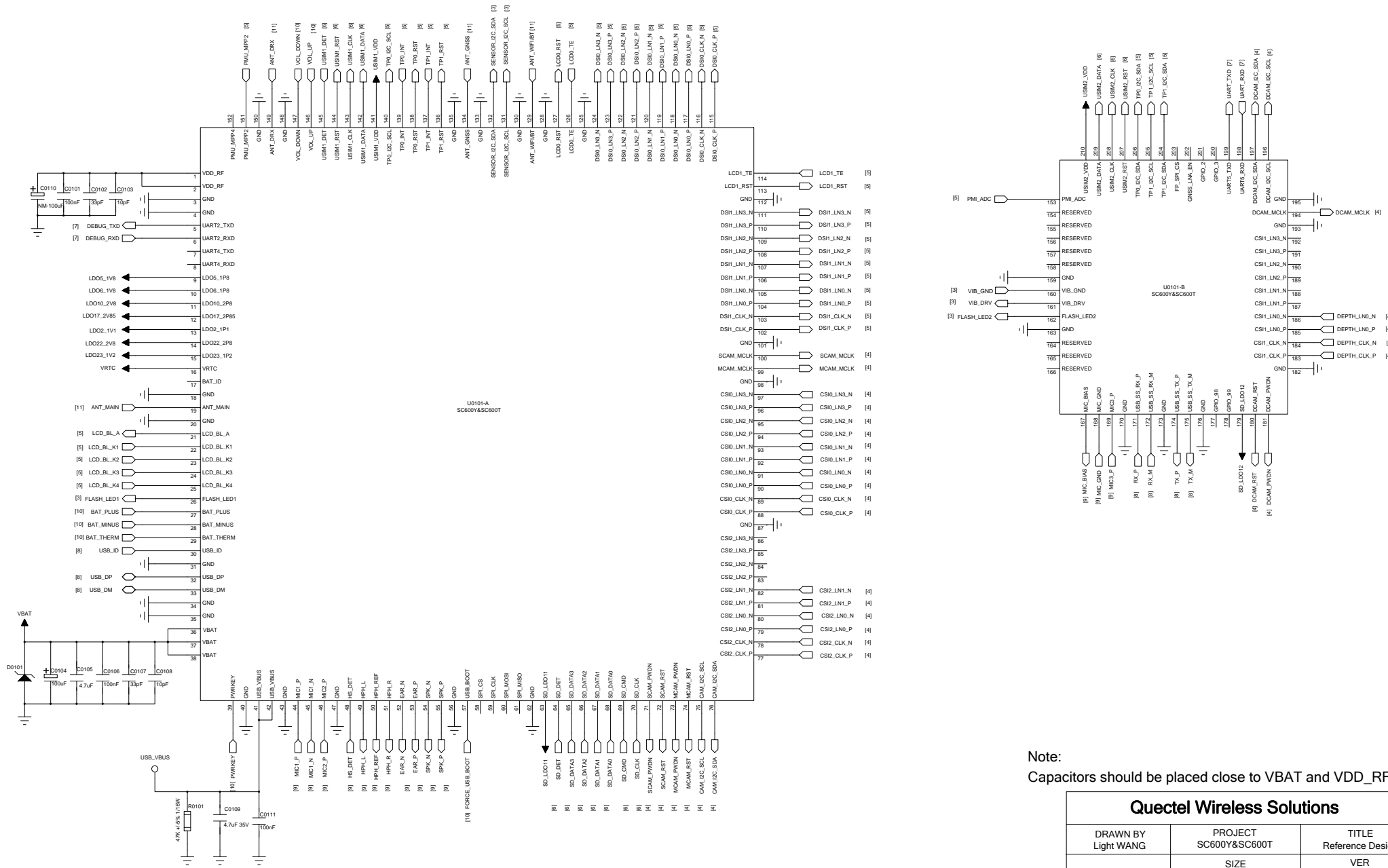
This document provides a reference design for Quectel SC600Y&SC600T modules.

SC600Y&SC600T modules are embedded with power management ICs (PMI632) to support battery charging, fuel gauge, flash LED driver and more functions.

1.2. Schematics

The schematics illustrated in the following pages are provided for your reference only.

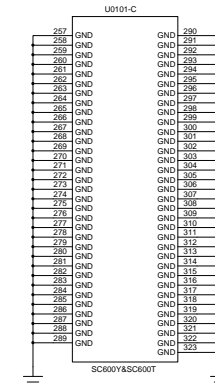
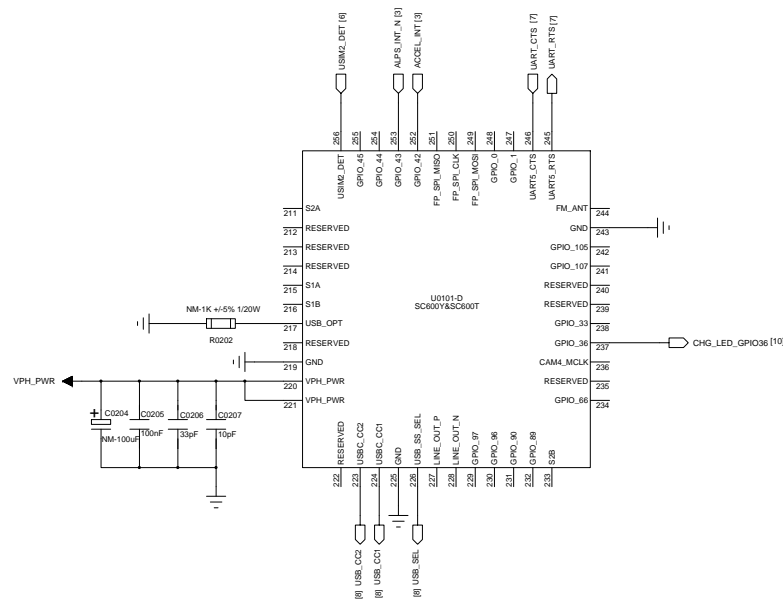
Module Interface 1



Note:
Capacitors should be placed close to VBAT and VDD_RF pins.

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	SHEET 1 OF 11	DATE 2019/6/21

Module Interface 2



Notes:

1. Keep all RESERVED and unused pins unconnected.
2. All GND pins should be connected to ground.
3. USB_OPT pin is used to select the USB type.

If Micro USB is intended to be used, the value of R0202 is recommended to be 1K ohm.

If Type-C is intended to be used, R0202 should not be mounted.

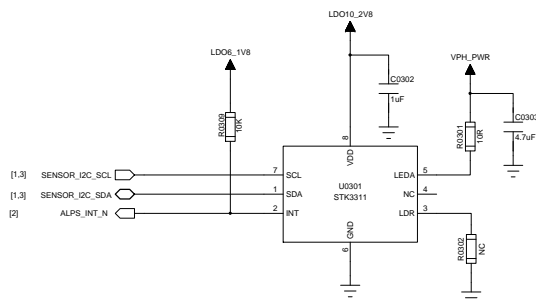
4. To ensure the accuracy of estimated battery residual capacity, it is recommended to use the VPH_PWR as the power supply for peripherals. VPH_PWR can only provide a maximum continuous current of 1A approximately, so please do not overload it.
5. If customers do not concern about the FG monitor function, it is recommended to use the battery as the power supply for peripherals.

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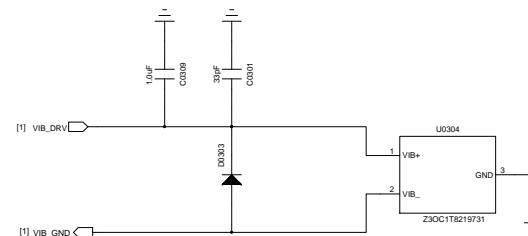
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SHEET 2 OF 11	DATE 2019/6/21	

Sensor Interfaces

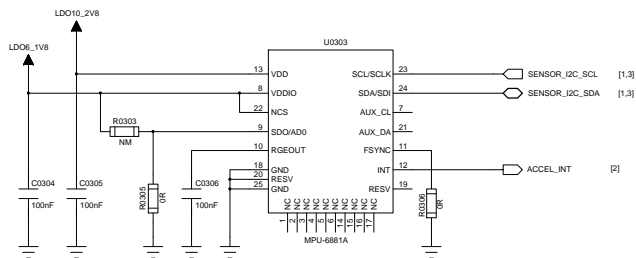
ALS/PS



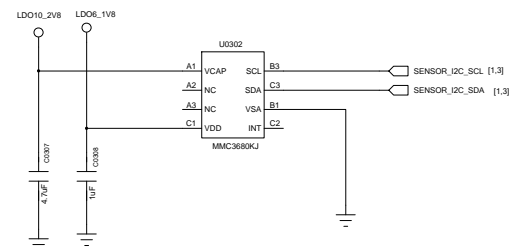
Vibration Sensor



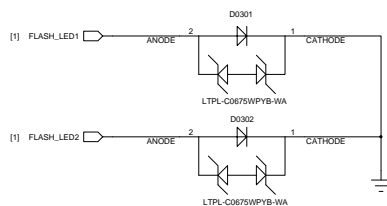
Acceleration/Gyroscopic Sensor



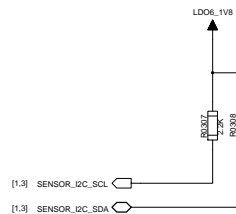
Compass



Flashlight



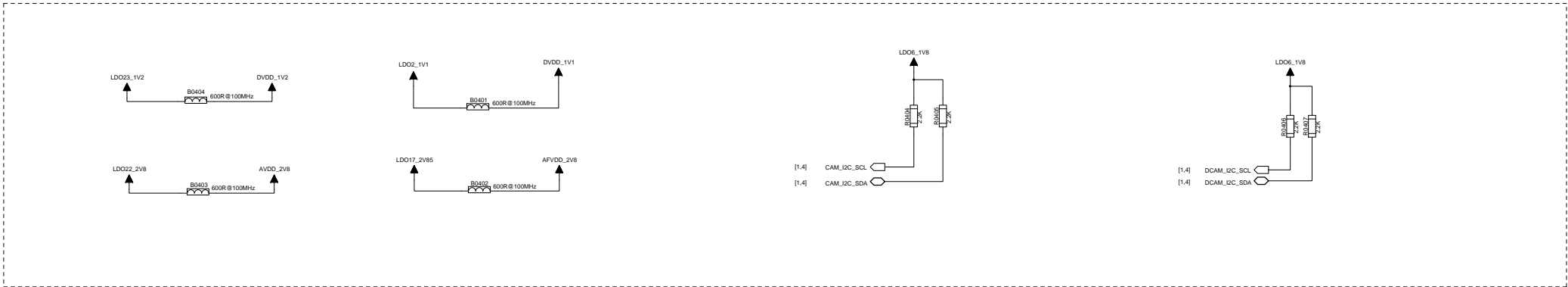
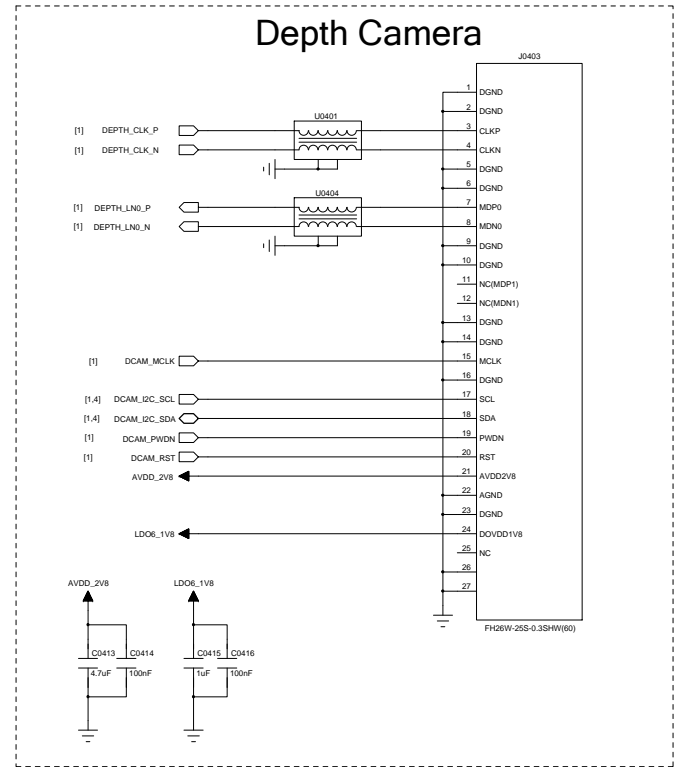
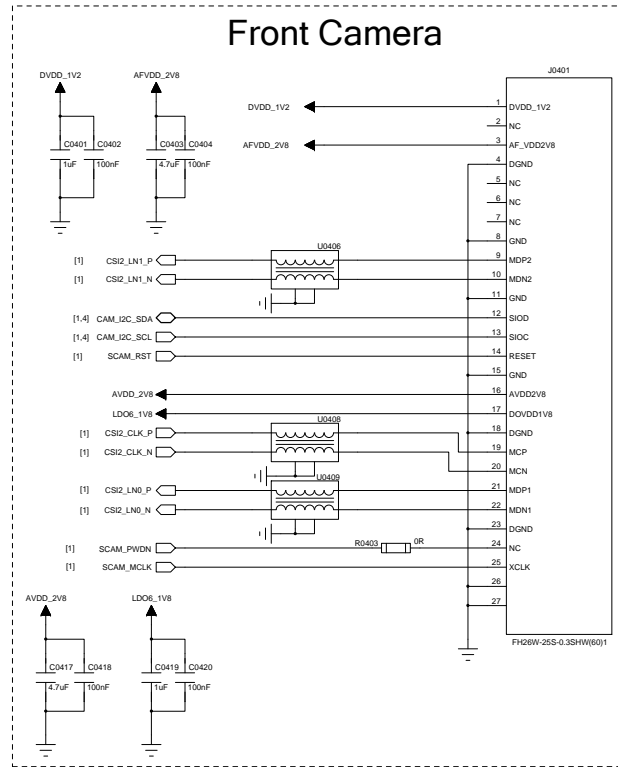
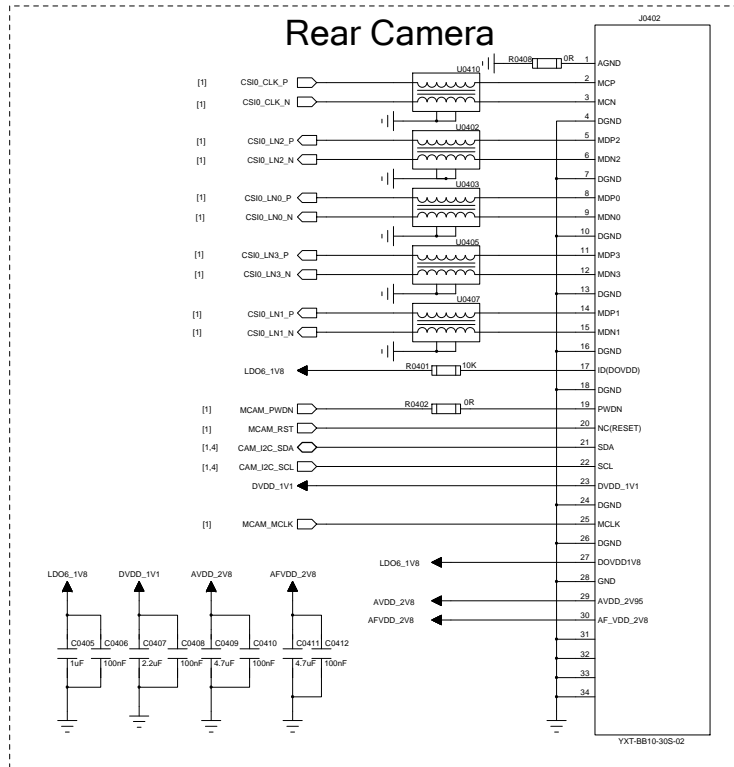
Sensor I2C



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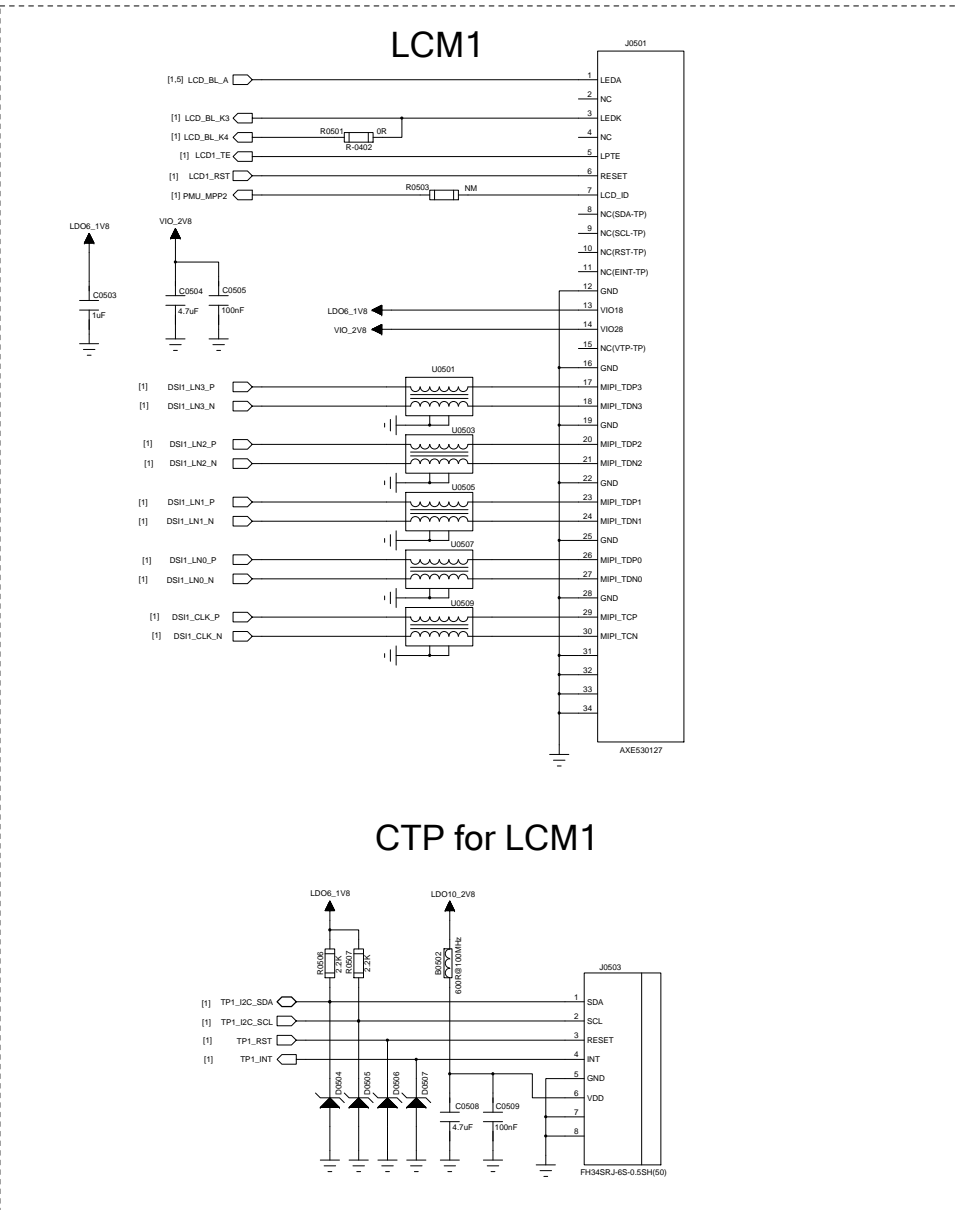
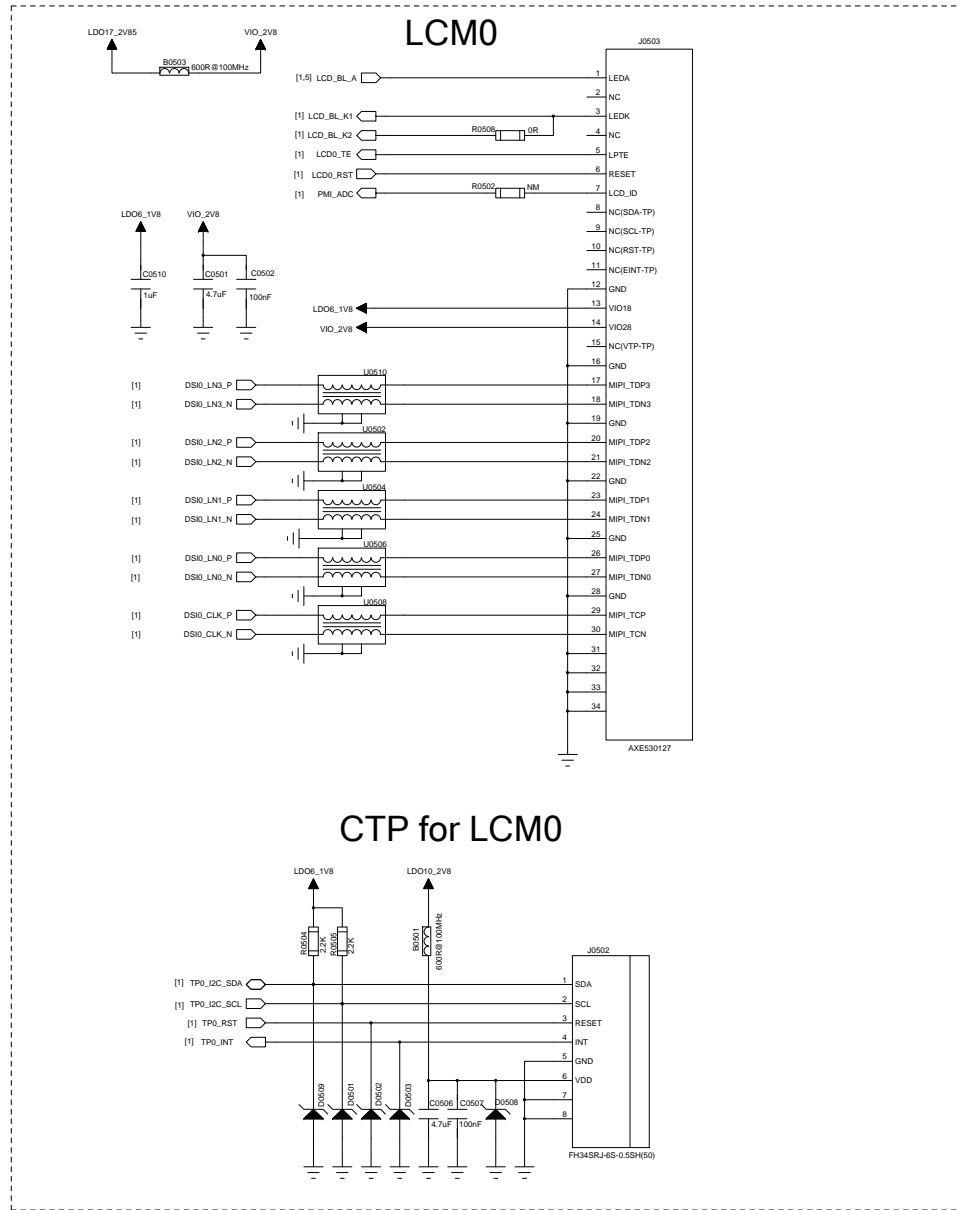
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SHEET 3 OF 11	DATE 2019/6/21	

Camera Interfaces

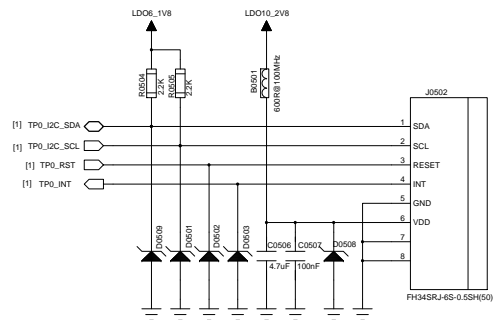


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SHEET	4 OF 11	DATE 2019/6/21

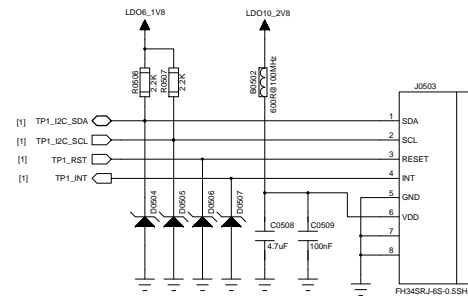
LCM and CTP Interfaces



CTP for LCM0



CTP for LCM1

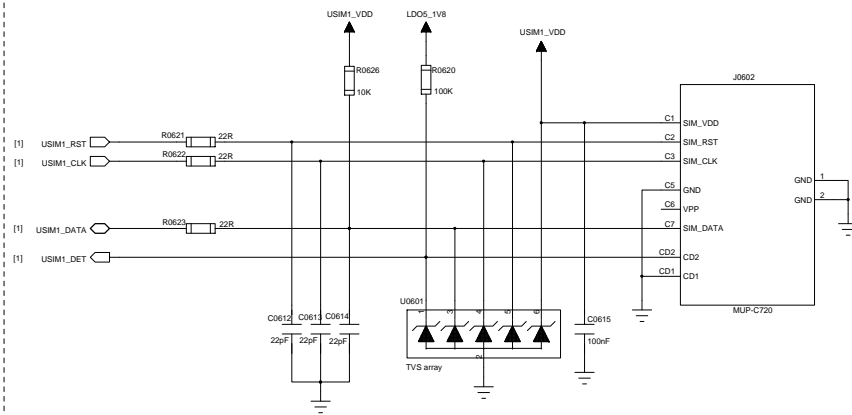


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SHEET 5 OF 11	DATE 2019/6/21	

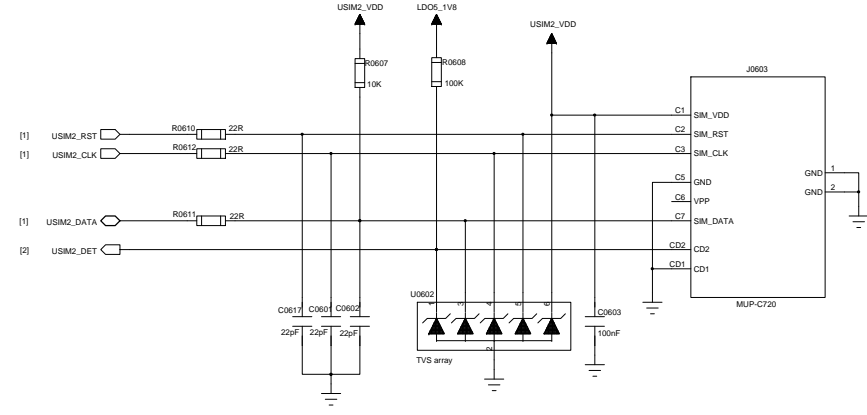
(U)SIM and SD Card Interfaces

Main (U)SIM



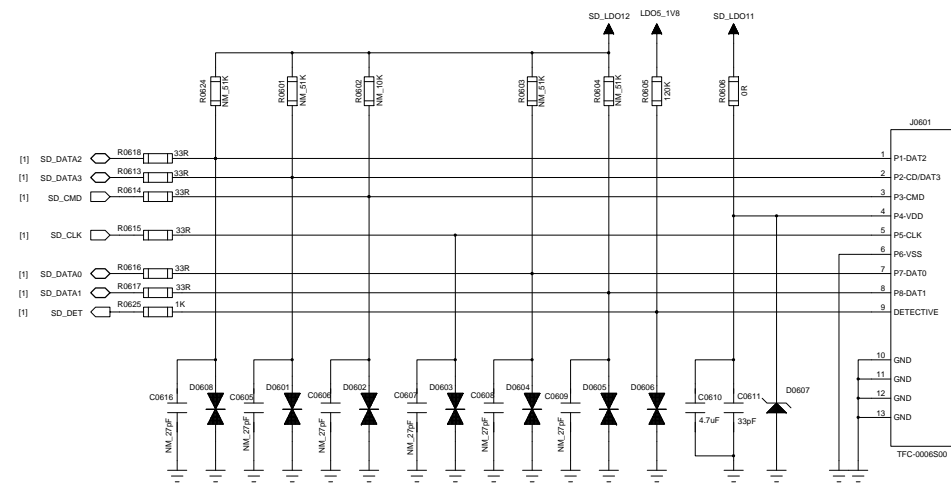
Note:
R0621~R0623 are applied to suppress EMI spurious transmission and enhance ESD protection.

Sub (U)SIM



Note:
R0610~R0612 are applied to suppress EMI spurious transmission and enhance ESD protection.

SD Card



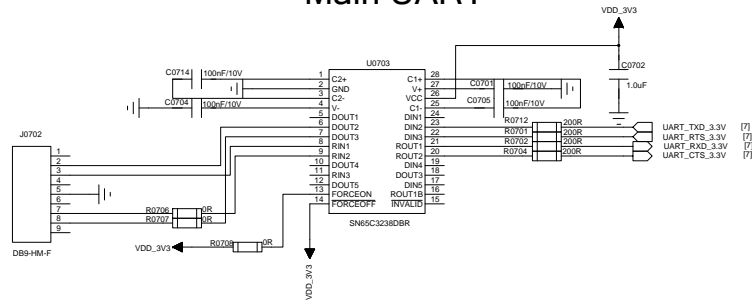
Note:
R0613~R0618 are applied to suppress EMI spurious transmission and enhance ESD protection.

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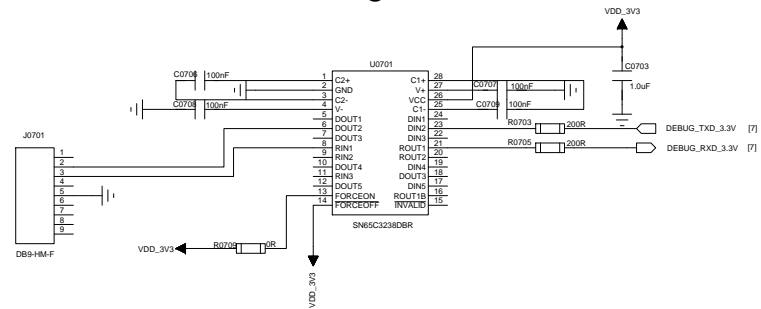
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SHEET 6 OF 11		DATE 2019/6/21

UART Interfaces

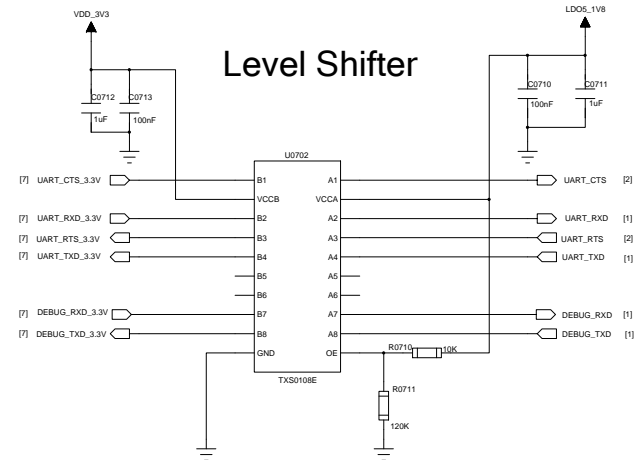
Main UART



Debug UART



Level Shifter

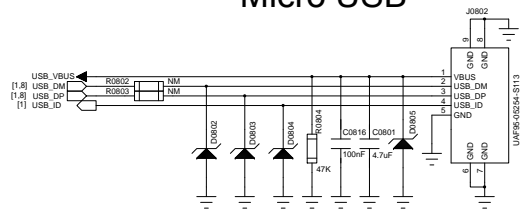


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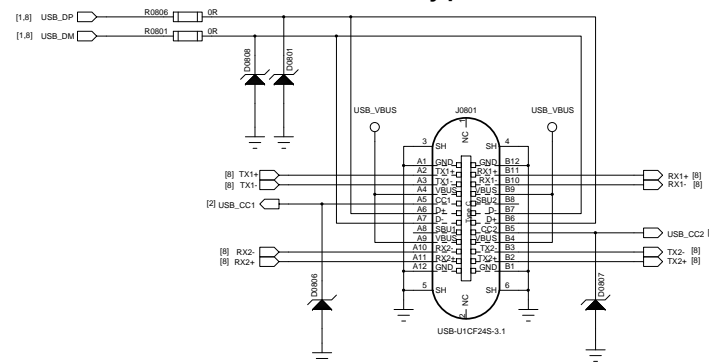
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SHEET 7 OF 11	DATE 2019/6/21	

USB Interface

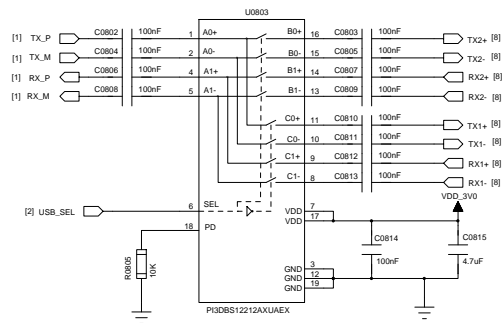
Micro USB



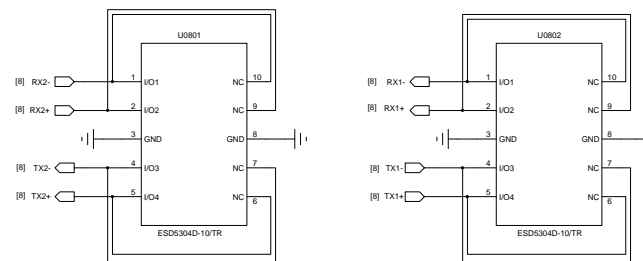
Type-C



USB Switch



TVS



Notes:

1. To ensure signal integrity:

If Micro USB is intended to be used, place 0 ohm R0802/R0803 and leave R0801/R0806 unmounted.

If Type-C is intended to be used, place 0 ohm R0801/R0806 and leave R0802/R0803 unmounted.

2. It is recommended to add TVS components to USB interface.

3. The junction capacitance value of TVS components on USB_DP/DM lines should be less than 2pF.

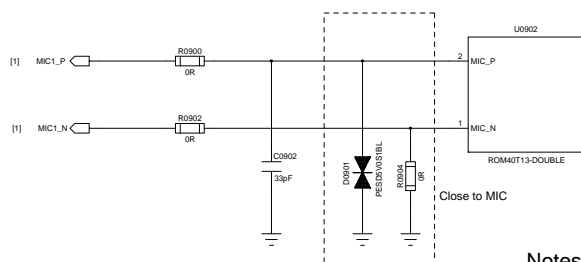
4. The junction capacitance value of TVS components on USB_TX/RX lines should be less than 0.5pF.

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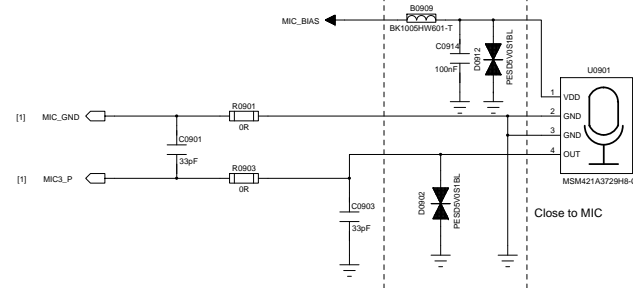
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SHEET 8 OF 11	DATE 2019/6/21	

Audio Interfaces

ECM-type Microphone



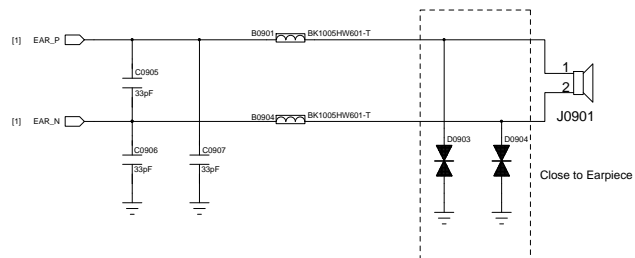
MEMS-type Microphone



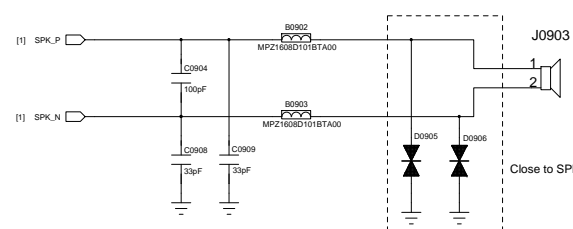
Notes:

1. SC600Y/SC600T supports ECM-type and MEMS-type microphones, for ensuring better interference immunity, the later is highly recommended.
2. For details, please refer to *Quectel_SC600Y&SC600T_Hardware_Design*.

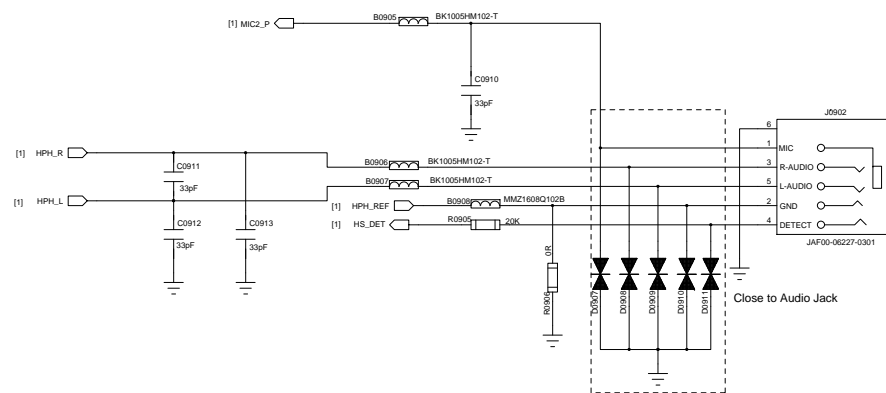
Earpiece



Loudspeaker



Headset



Notes:

TVS components for speaker and earpiece interface pins:

1. The maximum breakdown voltage should be less than 6V.
2. The maximum clamping voltage should be less than 12.5V.

TVS components for microphones and headset interface pins:

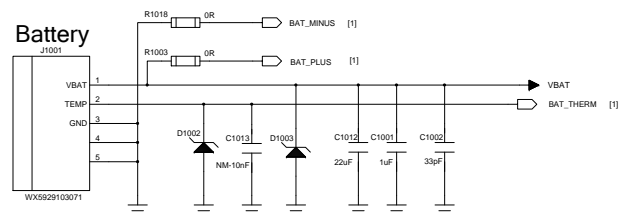
1. The maximum breakdown voltage should be less than 3.6V.
2. The maximum clamping voltage should be less than 6V.
3. The headset interface has a negative swing and requires a bidirectional TVS.

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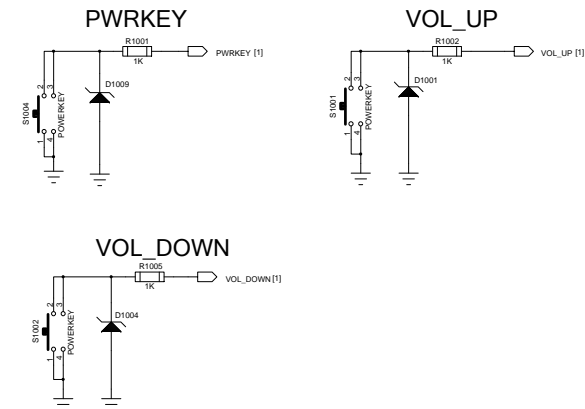
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SHEET 9 OF 11	DATE 2019/6/21	

Power Supply

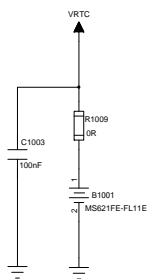
Battery Application



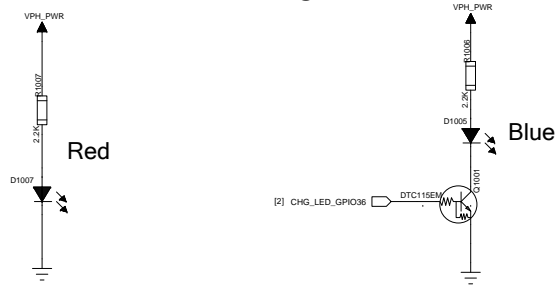
Keypad



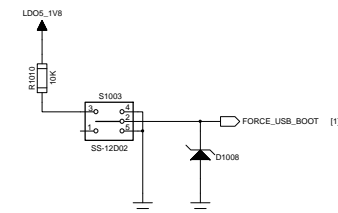
Backup Battery



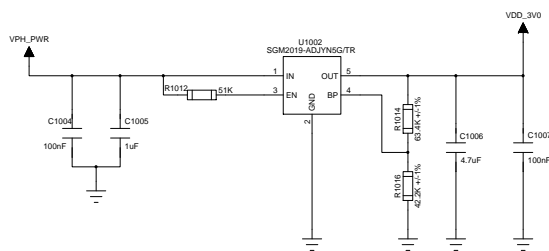
Indicator Lights



Force Download

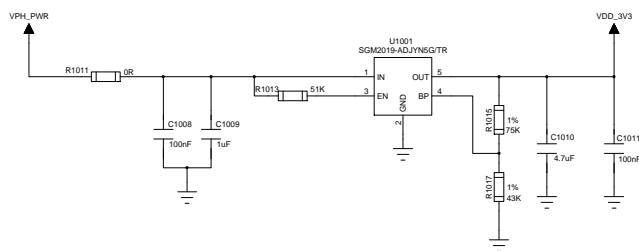


Power Supply for USB Switch



$$V_{out} = \frac{(R907 + R908)}{R908} * 1.207 = 3.0V$$

3V3 Power Supply



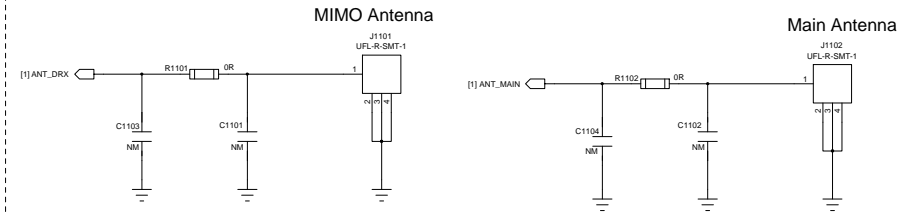
$$V_{out} = \frac{(R0911 + R0912)}{R0912} * 1.207 = 3.3V$$

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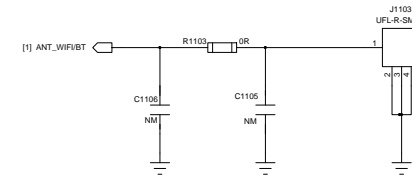
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SHEET 10 OF 11		DATE 2019/6/21

Antenna Interfaces

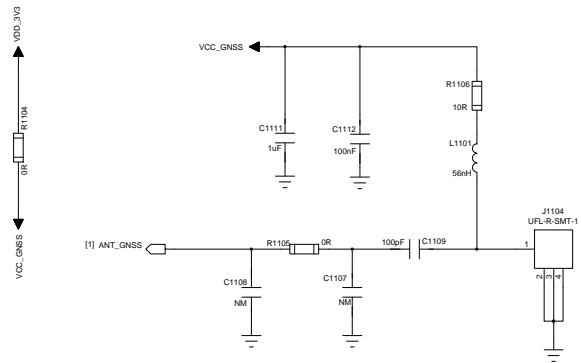
UMTS/LTE Antennas



Wi-Fi/BT Antenna



GNSS Antenna



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SHEET	11 OF 11	DATE 2019/6/21