SC60 R1.0&R2.0

Reference Design

Smart LTE Module Series

Rev. SC60_R1.0&R2.0_Reference_Design_Rev.A

Date: 2018-02-13

Status: Released

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About the Document

History

Revision	Date	Author	Description
A	2018-02-13	Danny WU/ Oscar LIU	Initial

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1 Reference Design

1.1. Introduction

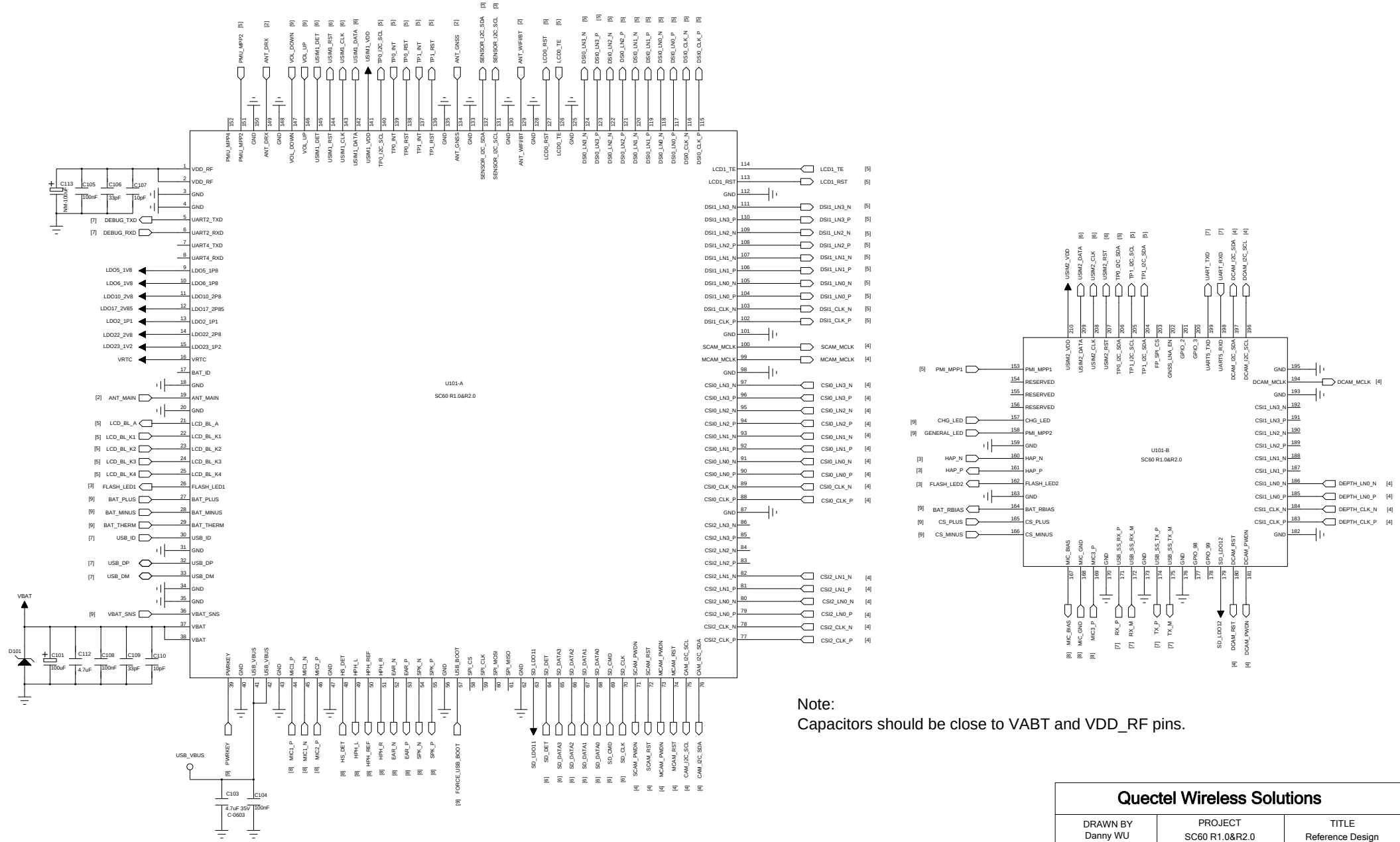
This document provides a reference design for Quectel SC60 module of R1.0 and R2.0 versions.

SC60 R1.0 and R2.0 versions are embedded with a power management IC (PMI8952) to support charger, fuel gauge, WLED driver, flash LED driver and more functions. For more information, please refer to *Quectel_SC60_R1.0&R2.0_Hardware_Design*.

1.2. Schematics

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

Module Interface 1



Note:
Capacitors should be close to VABT and VDD_RF pins.

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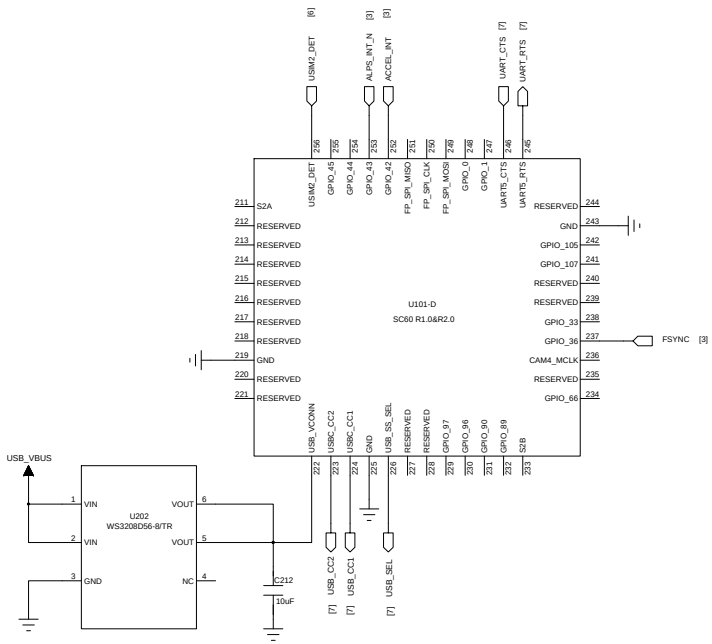
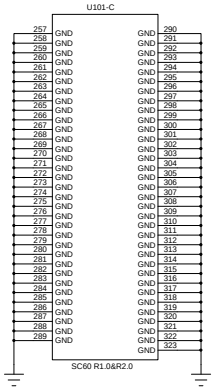
Module Interface 2 and Antenna Interfaces



Note:

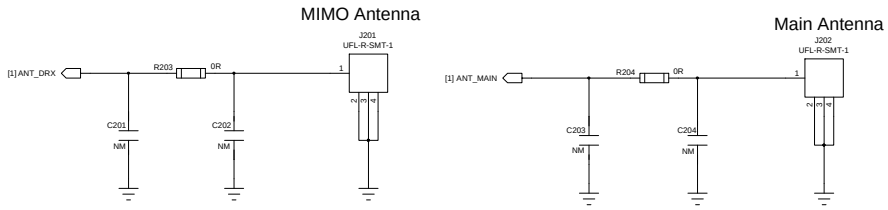
If active cables are not supported, U202 and capacitor C212 are not recommended to be mounted.



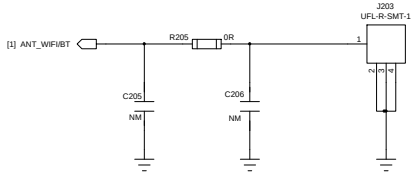
Notes:

1. Keep all RESERVED and unused pins unconnected.
2. All GND pins should be connected to ground.

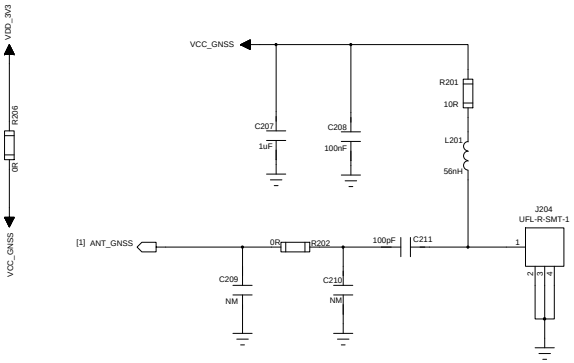
UMTS/LTE Antennas



Wi-Fi/BT Antenna



GNSS Antenna



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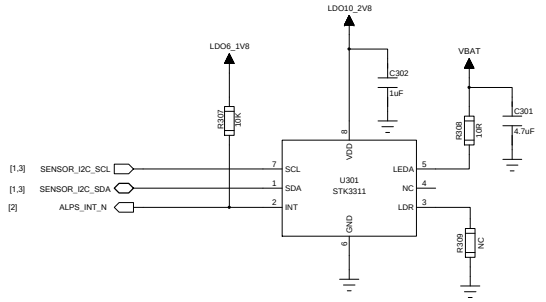
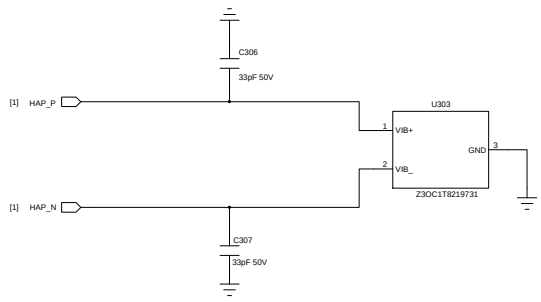
Sensor Interfaces

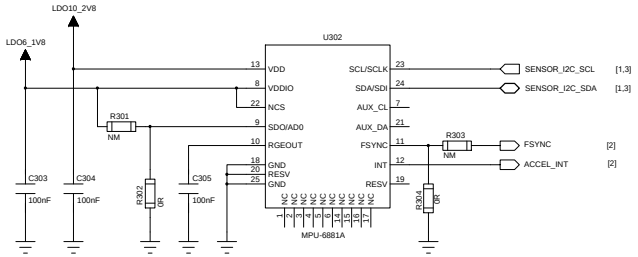
ALS/PS



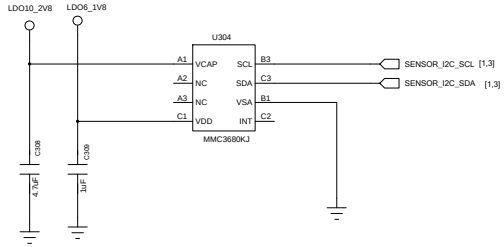
Vibration Sensor



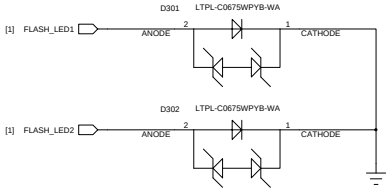
Acceleration/Gyroscopic Sensor



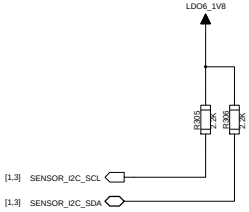
Compass



Flashlight



Sensor I2C



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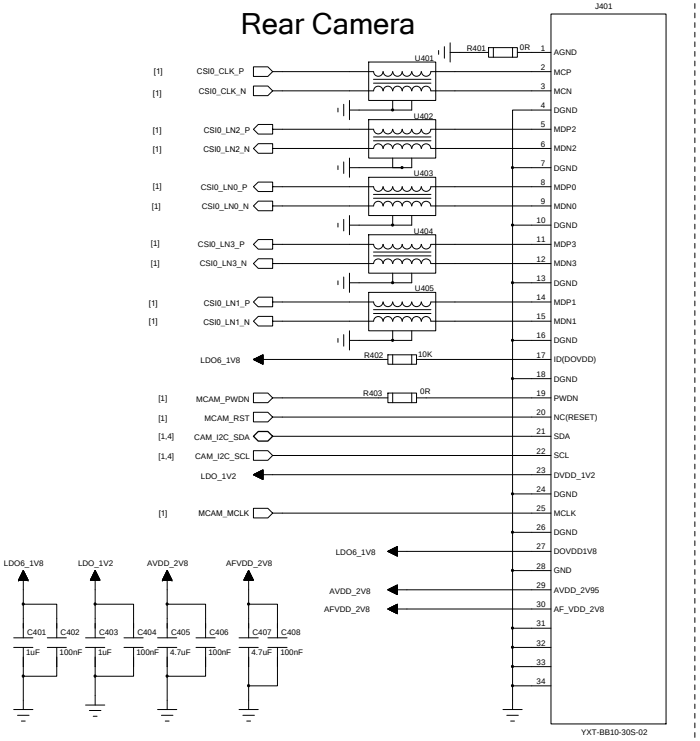
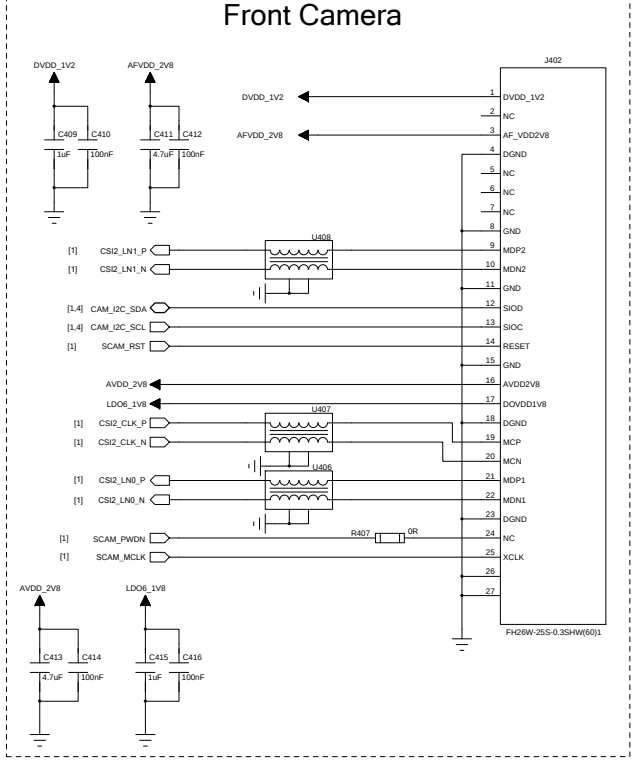
Camera Interfaces

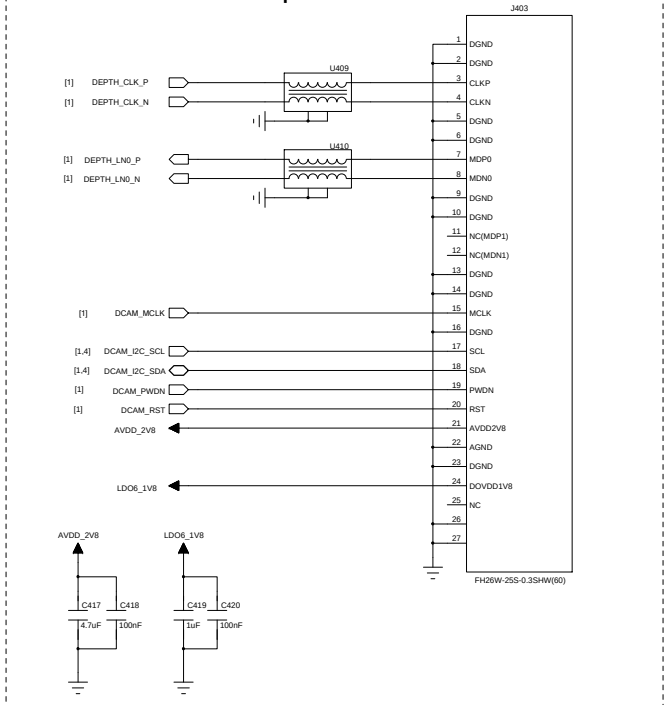
Rear Camera

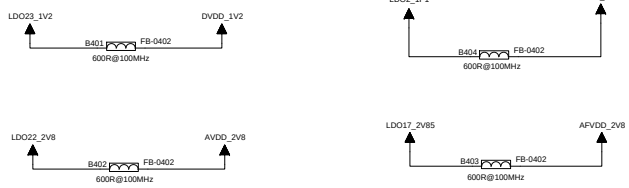


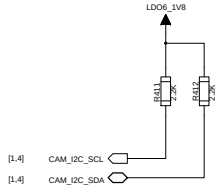
Front Camera

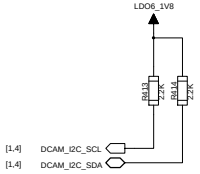


Depth Camera









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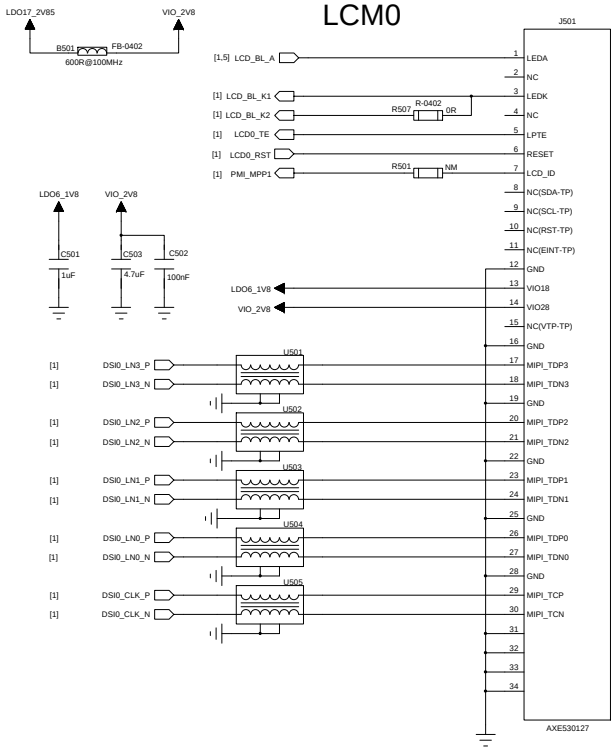
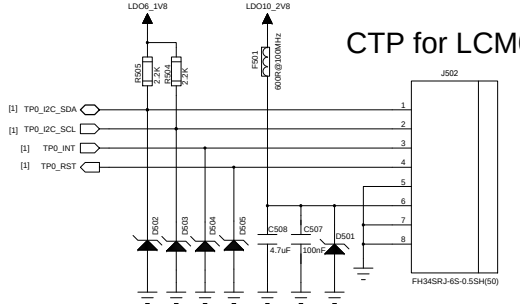
LCM and CTP Interfaces

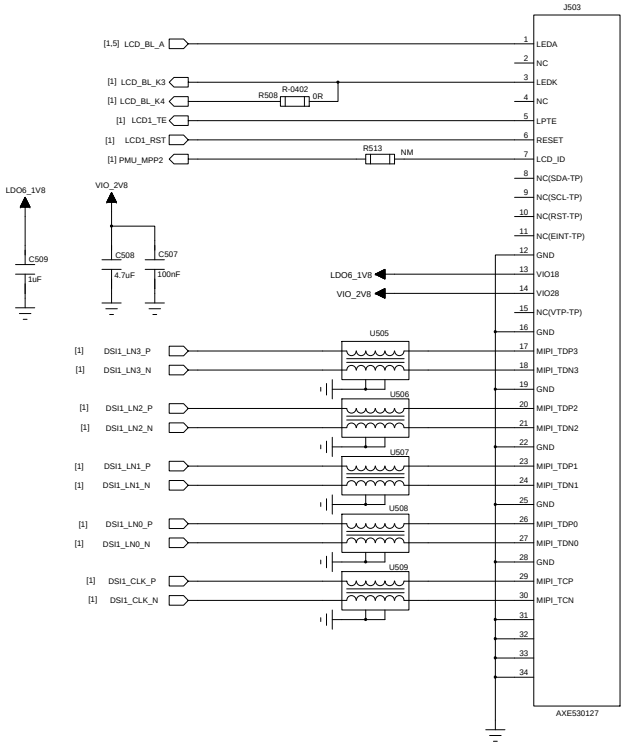
LCM0



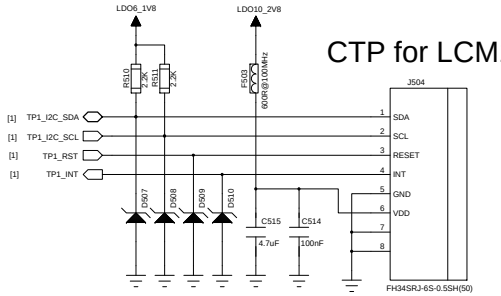
CTP for LCM0



LCM1



CTP for LCM1



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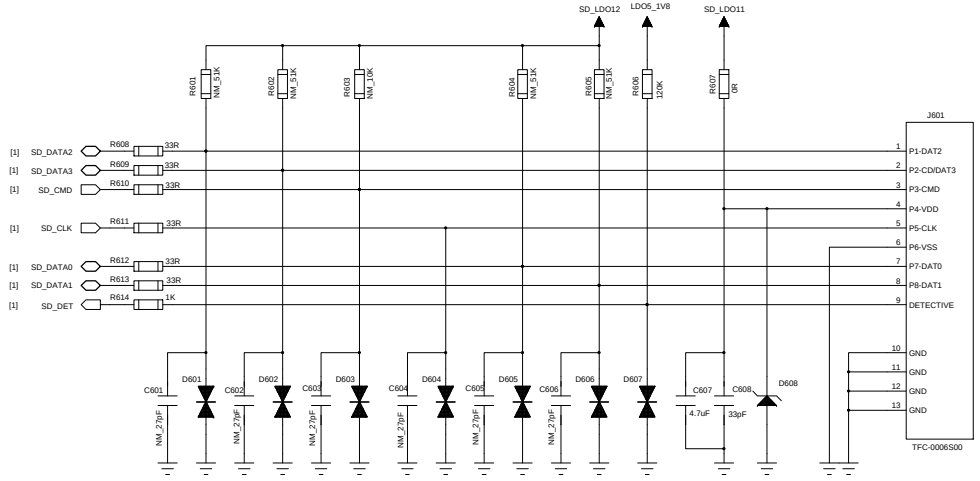
(U)SIM and SD Card Interfaces

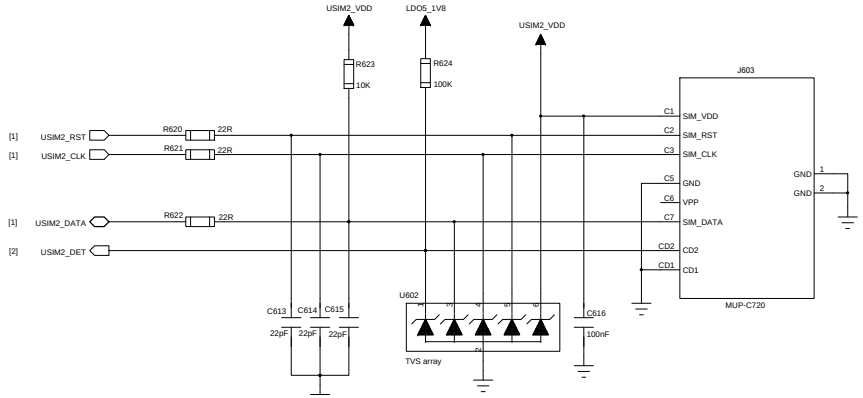
SD Card



Note:

R608~R613 are applied to suppress the EMI spurious transmission and enhance the ESD protection.

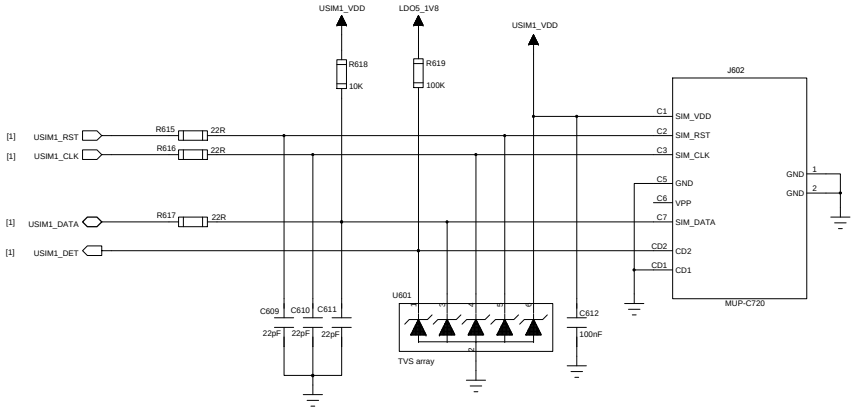
Sub (U)SIM



Note:

R620~R622 are applied to suppress the EMI spurious transmission and enhance the ESD protection.

Main (U)SIM



Note:

R615~R617 are applied to suppress the EMI spurious transmission and enhance the ESD protection.

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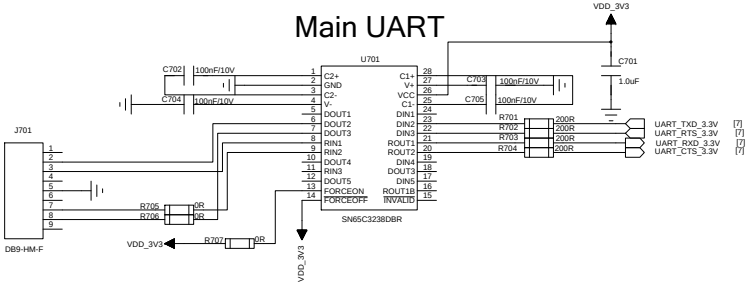
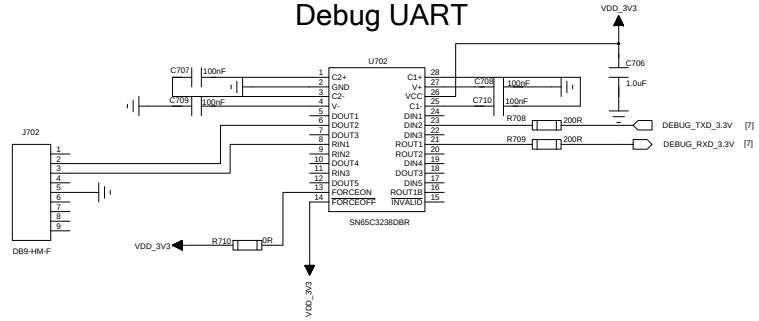
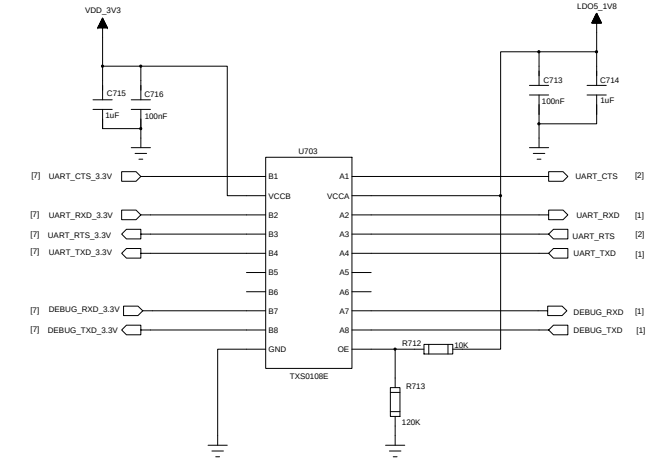
USB and UART Interfaces

Main UART

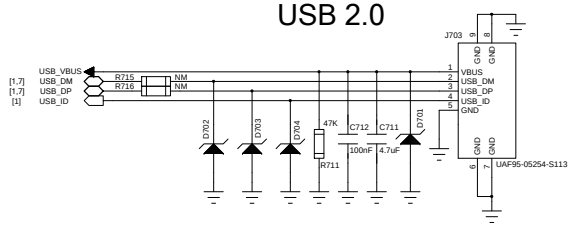


Debug UART

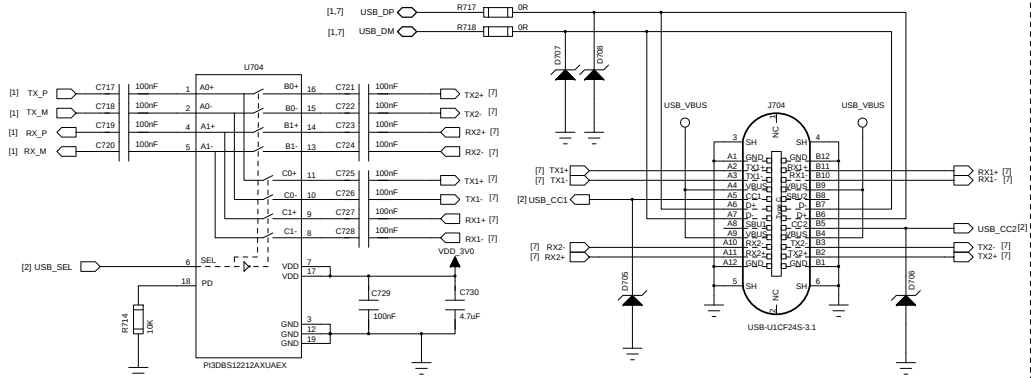


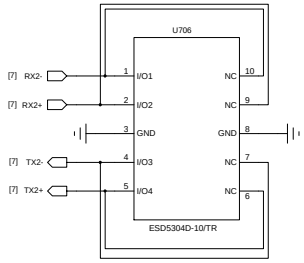


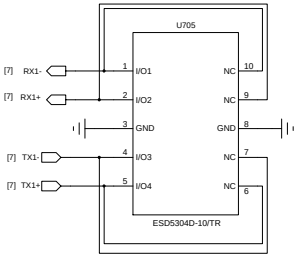
USB 2.0



USB 3.0







Notes:

1. If USB 2.0 is supported, R715/R716=0R, R717/R718=NM.
2. If USB 3.0 is supported, R715/R716=NM, R717/R718=0R.
3. It is recommended to add TVS to USB interface.
4. The junction capacitance value of TVS on USB_DP/DM lines should be less than 2pF.
5. The junction capacitance value of TVS on USB_TX/RX lines should be less than 0.5pF.

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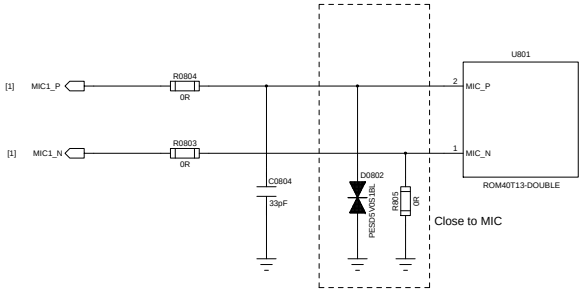
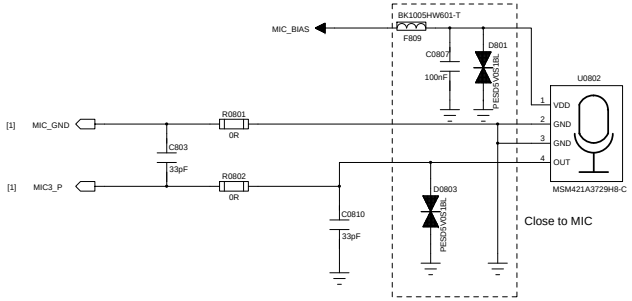
Audio Interfaces

ECM-type Microphone



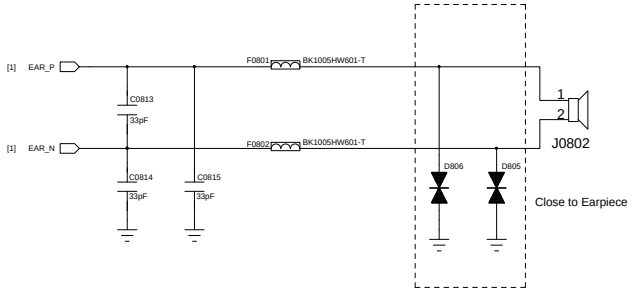
MEMS-type Microphone



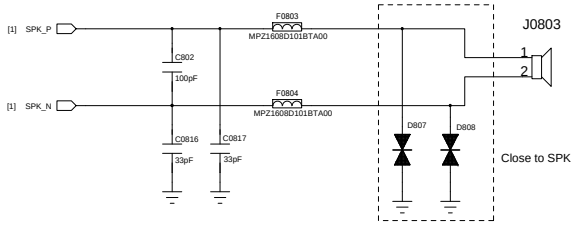
Notes:

1. The microphone reference design is just for verify that both types of microphones are available.
2. For customer's design, MEMS-type Microphone is recommended.
3. For more details, please refer to *Quectel_SC60_R1.0&R2.0_Hardware_Design.*

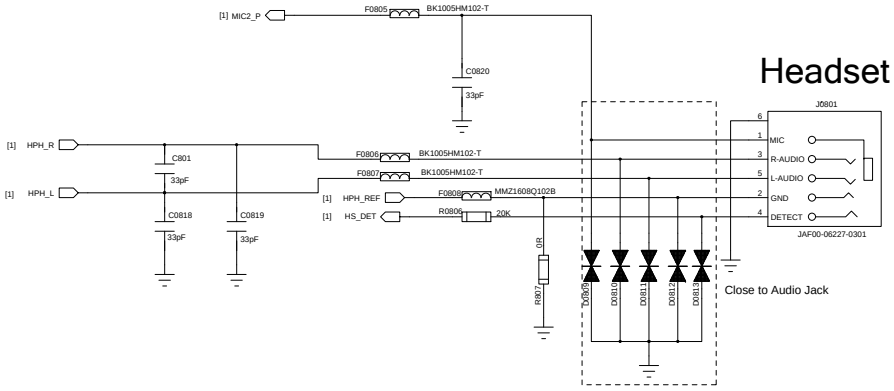
Earpiece



Loudspeaker



Headset



Notes:

TVS diodes 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 diodes 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. Headset interface has a negative swing and requires a bidirectional TVS.

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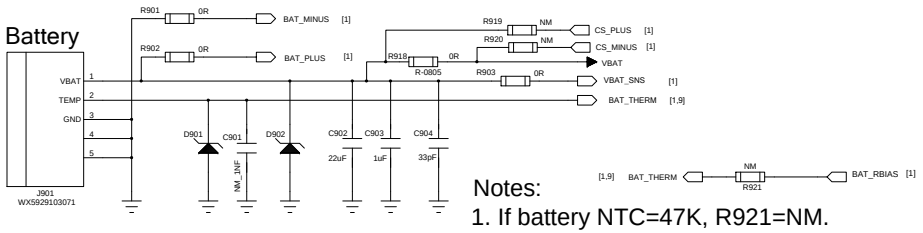
Power Supply

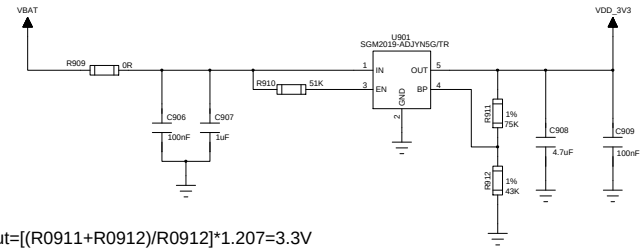
Battery Application



Notes:

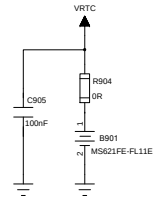
1. If battery NTC=47K, R921=NM.
2. If battery NTC=10K, R921=12K.

Power for 3V3

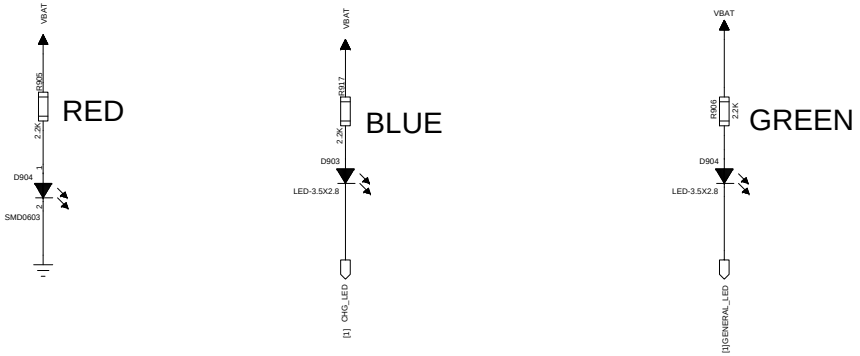


Vout=[(R0911+R0912)/R0912]*1.207=3.3V

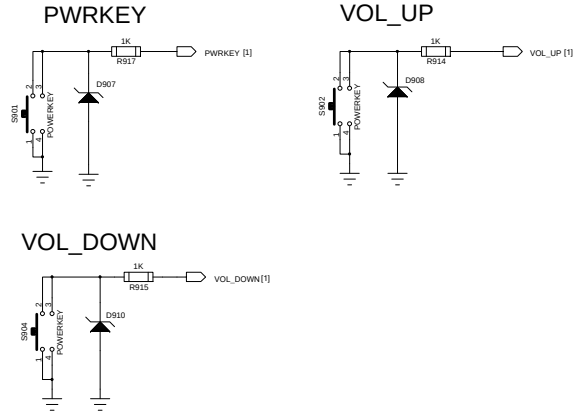
Backup Battery



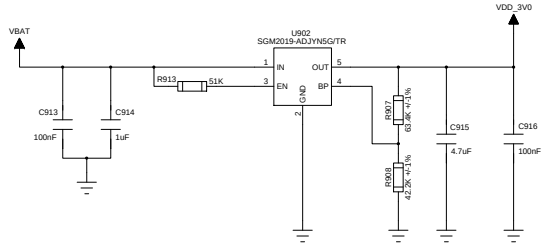
Indicator Lights



Keypad

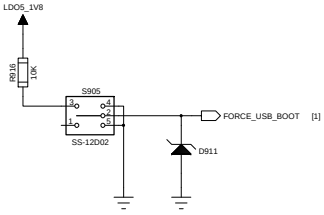


Power Supply for USB Switch



Vout=[(R907+R908)/R908]*1.207=3.0V

FORCE_USB_BOOT



Quectel Wireless Solutions		
DRAWN BY Danny WU	PROJECT SC60 R1.0&R2.0	TITLE Reference Design
CHECKED BY Oscar LIU	SIZE A2	VER A
	SHEET 9 OF 9	DATE 2018/2/13