QuecPython EG810M-XX C1-P03 EVB Specification and User Guide

LTE Standard Module Series

Version: 1.0.0

Date: 2024-02-20

Status: Preliminary

At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

Quectel Wireless Solutions Co., Ltd.
Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Tel: +86 21 5108 6236
Email: info@quectel.com

Or our local offices. For more information, please visit:
http://www.quectel.com/support/sales.htm.

For technical support, or to report documentation errors, please visit:
http://www.quectel.com/support/technical.htm.
Or email us at: support@quectel.com.

Legal Notices

We offer information as a service to you. The provided information is based on your requirements and we make every effort to ensure its quality. You agree that you are responsible for using independent analysis and evaluation in designing intended products, and we provide schematic designs for illustrative purposes only. Before using any hardware, software or service guided by this document, please read this notice carefully. Even though we employ commercially reasonable efforts to provide the best possible experience, you hereby acknowledge and agree that this document and related services hereunder are provided to you on an “as available” basis. We may revise or restate this document from time to time at our sole discretion without any prior notice to you.

Use and Disclosure Restrictions

License Agreements

Documents and information provided by us shall be kept confidential, unless specific permission is granted. They shall not be accessed or used for any purpose except as expressly provided herein.

Copyright

Our and third-party products hereunder may contain copyrighted material. Such copyrighted material shall not be copied, reproduced, distributed, merged, published, translated, or modified without prior written consent. We and the third party have exclusive rights over copyrighted material. No license shall be granted or conveyed under any patents, copyrights, trademarks, or service mark rights. To avoid ambiguities, purchasing in any form cannot be deemed as granting a license other than the normal non-exclusive, royalty-free license to use the material. We reserve the right to take legal action for noncompliance with abovementioned requirements, unauthorized use, or other illegal or malicious use of the material.

Trademarks

Except as otherwise set forth herein, nothing in this document shall be construed as conferring any rights to use any trademark, trade name or name, abbreviation, or counterfeit product thereof owned by Quectel or any third party in advertising, publicity, or other aspects.

Third-Party Rights

This document may refer to hardware, software and/or documentation owned by one or more third parties ("third-party materials"). Use of such third-party materials shall be governed by all restrictions and obligations applicable thereto.

We make no warranty or representation, either express or implied, regarding the third-party materials, including but not limited to any implied or statutory, warranties of merchantability or fitness for a particular purpose, quiet enjoyment, system integration, information accuracy, and non-infringement of any third-party intellectual property rights with regard to the licensed technology or use thereof. Nothing herein constitutes a representation or warranty by us to either develop, enhance, modify, distribute, market, sell, offer for sale, or otherwise maintain production of any our products or any other hardware, software, device, tool, information, or product. We moreover disclaim any and all warranties arising from the course of dealing or usage of trade.

Privacy Policy

To implement module functionality, certain device data are uploaded to Quectel's or third-party's servers, including carriers, chipset suppliers or customer-designated servers. Quectel, strictly abiding by the relevant laws and regulations, shall retain, use, disclose or otherwise process relevant data for the purpose of performing the service only or as permitted by applicable laws. Before data interaction with third parties, please be informed of their privacy and data security policy.

Disclaimer

a) We acknowledge no liability for any injury or damage arising from the reliance upon the information.
b) We shall bear no liability resulting from any inaccuracies or omissions, or from the use of the information contained herein.
c) While we have made every effort to ensure that the functions and features under development are free from errors, it is possible that they could contain errors, inaccuracies, and omissions. Unless otherwise provided by valid agreement, we make no warranties of any kind, either implied or express, and exclude all liability for any loss or damage suffered in connection with the use of features and functions under development, to the maximum extent permitted by law, regardless of whether such loss or damage may have been foreseeable.
d) We are not responsible for the accessibility, safety, accuracy, availability, legality, or completeness of information, advertising, commercial offers, products, services, and materials on third-party websites and third-party resources.

Safety Information

The following safety precautions must be observed during all phases of operation, such as usage, service or repair of any terminal or mobile incorporating the module. Manufacturers of the terminal should notify users and operating personnel of the following safety information by incorporating these guidelines into all manuals of the product. Otherwise, Quectel assumes no liability for customers' failure to comply with these precautions.

	Full attention must be paid to driving at all times in order to reduce the risk of an accident. Using a mobile while driving (even with a handsfree kit) causes distraction and can lead to an accident. Please comply with laws and regulations restricting the use of wireless devices while driving.
	Switch off the terminal or mobile before boarding an aircraft. The operation of wireless appliances in an aircraft is forbidden to prevent interference with communication systems. If there is an Airplane Mode, it should be enabled prior to boarding an aircraft. Please consult the airline staff for more restrictions on the use of wireless devices on an aircraft.
	Wireless devices may cause interference on sensitive medical equipment, so please be aware of the restrictions on the use of wireless devices when in hospitals, clinics or other healthcare facilities.
	Terminals or mobiles operating over radio signal and cellular network cannot be guaranteed to connect in certain conditions, such as when the mobile bill is unpaid or the (U)SIM card is invalid. When emergency help is needed in such conditions, use emergency call if the device supports it. In order to make or receive a call, the terminal or mobile must be switched on in a service area with adequate cellular signal strength. In an emergency, the device with emergency call function cannot be used as the only contact method considering network connection cannot be guaranteed under all circumstances.
	The terminal or mobile contains a transceiver. When it is ON, it receives and transmits radio frequency signals. RF interference can occur if it is used close to TV sets, radios, computers or other electric equipment.
	In locations with explosive or potentially explosive atmospheres, obey all posted signs and turn off wireless devices such as mobile phone or other terminals. Areas with explosive or potentially explosive atmospheres include fuelling areas, below decks on boats, fuel or chemical transfer or storage facilities, and areas where the air contains chemicals or particles such as grain, dust or metal powders.

About the Document

Revision History

Version	Date	Author	Description
-	2024-02-20	Chavis CHEN	Creation of the document
1.0.0	2024-02-20	Chavis CHEN	Preliminary

Contents

Table Index

Figure Index

1 Introduction

This EVB is applicable to EG810M-CN and EC800Z-CN modules.

EG810M-CN and EC800Z-CN are ultra-small LTE Cat 1 wireless communication modules designed for M2M and IoT applications by Quectel. They support the maximum downlink rate of 10 Mbps and the maximum uplink rate of 5 Mbps with ultra-small size and ultra-high cost performance. Meanwhile, They are compatible with Quectel multi-network LTE standard modules (EC800M-CN, EC800G-CN, EC800N-CN and EC800E-CN) in the package.

EG810M-CN and EC800Z-CN have rich built-in network protocols, integrate multiple industry standard interfaces, and support a variety of drivers and software functions (such as USB serial drivers for Windows 8/8.1/10/11, Linux, Android and other operating systems), which greatly expand their applications in the fields of M2M and IoT.

2 Product Overview

2.1. Top and Bottom Views

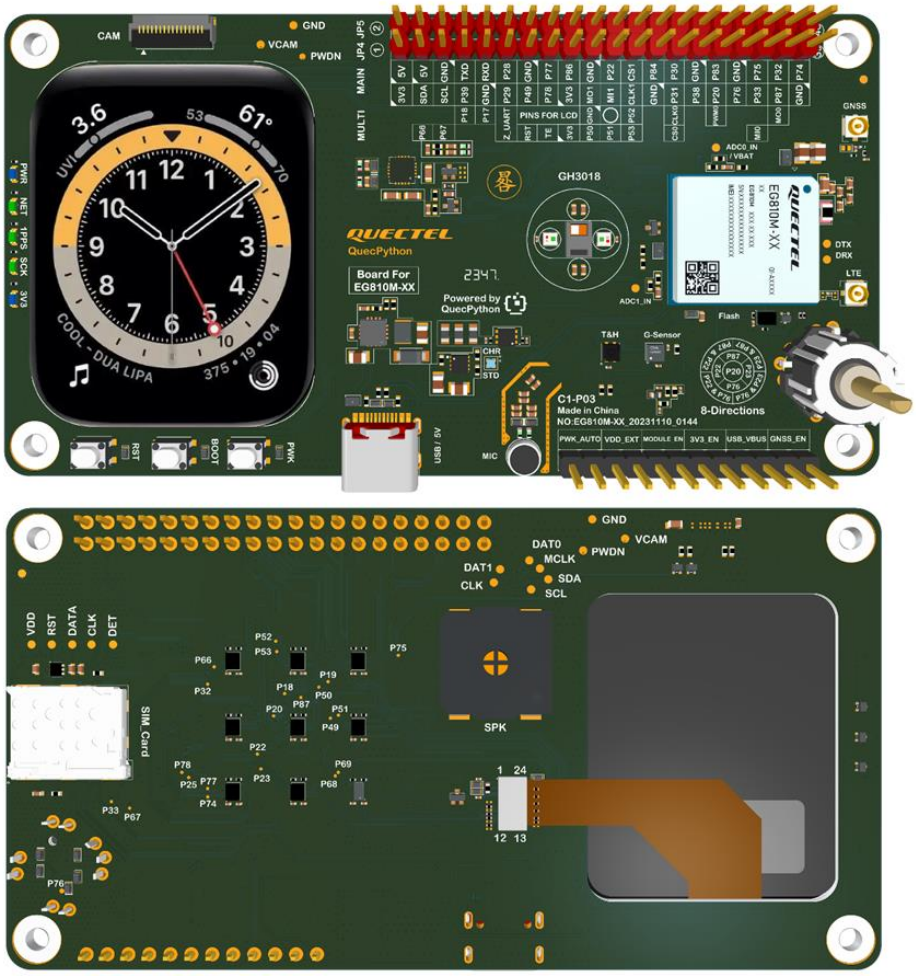


Figure 1: Top and Bottom Views

NOTE

The figure above is for reference only. Refer to the actual appearance.

2.2. Component Placement

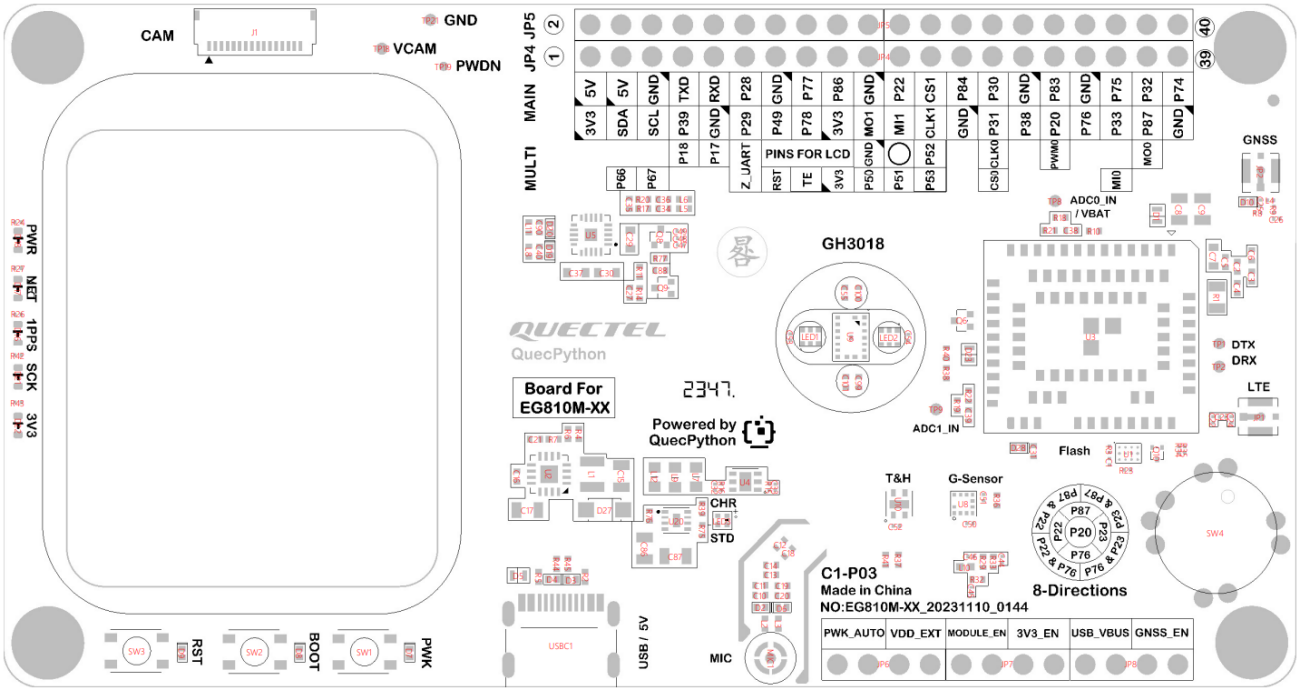


Figure 2: Top View for Component Placement

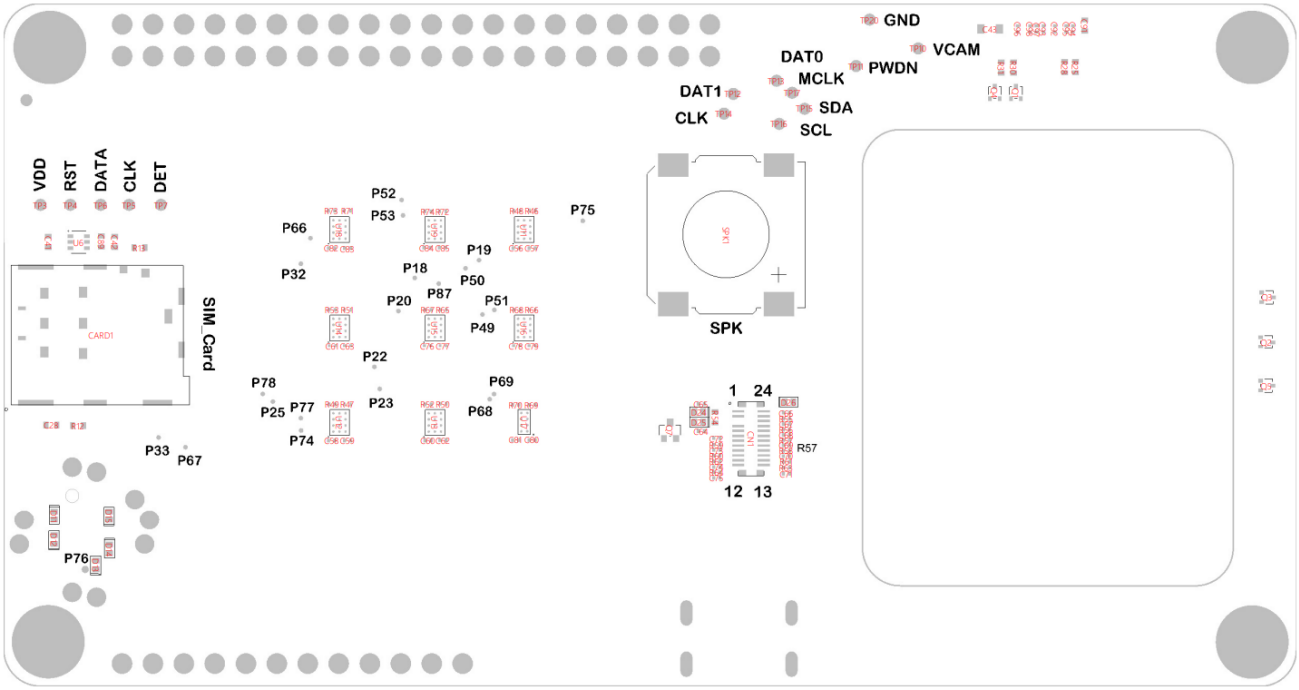


Figure 3: Bottom View for Component Placement

2.3. Major Components

Table 1: Major Components

Component	Module Type	RefDes.	Comment
Major module	EG810M-XX	U3	
Flash	W25Q32JWBYIQ	U1	
DCDC	TLV62130ARGTR	U2	
LDO1	LP5912-3.3DRVR	U4	
PA	AW8733ATQR	U5	
Level-shifting	TXS0104EYZTR	U11, U12, U13, U14, U15, U16, U17, U18, U19	
SIM card slot 1	SMN-315-ARP7	CARD1	Nano-SIM
LED indicators	-	PWR, NET, 1PPS, SCK, 3V3	
ADC	-	ADC0_IN/VBAT, ADC1_IN	

2.4. Electrical Characteristics

- Normal operating voltage range of USB power supply: 5 V/ 2 A–5.1 V /3 A.
- Voltage range of 40-pin header external power supply: 5–6 V.
- Voltage range of battery power supply: 3.4–4.2 V.

NOTE

1. When USB and 40-pin headers supply external power simultaneously, the voltage of the two must be the same. If the difference is large, the related circuits may be burned out.
2. When the 40-pin headers supply power externally, the positive end of power supply is pin 1 or pin 2, and the negative end is any GND pin, e.g., pin 3. The maximum output current should be 2 A at least.
3. When using battery to supply power, the nominal 3.7 V lithium battery is used, and the voltage range is 2.5–4.2 V. Ensure that the battery voltage is not less than 3.4 V. When using battery, connect pin 5 and pin 6 of the 12-pin headers in the lower right corner of the EVB together, and connect them to the positive end of the battery, and either GND pin is connected to the negative end of the battery.

2.5. Test Points

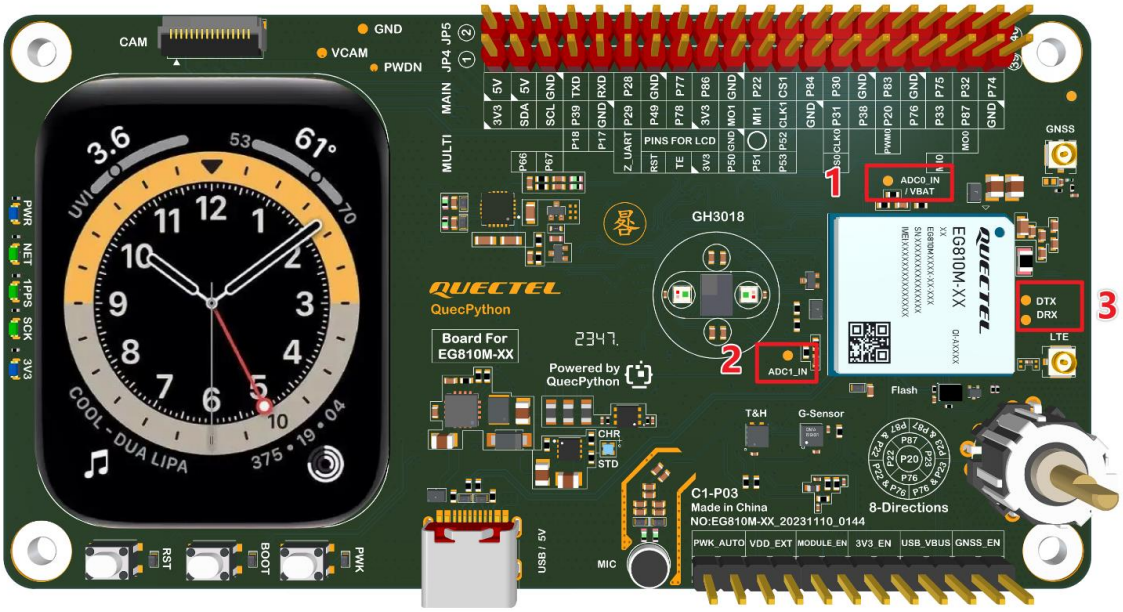


Figure 4: Test Point Pin Distribution 1

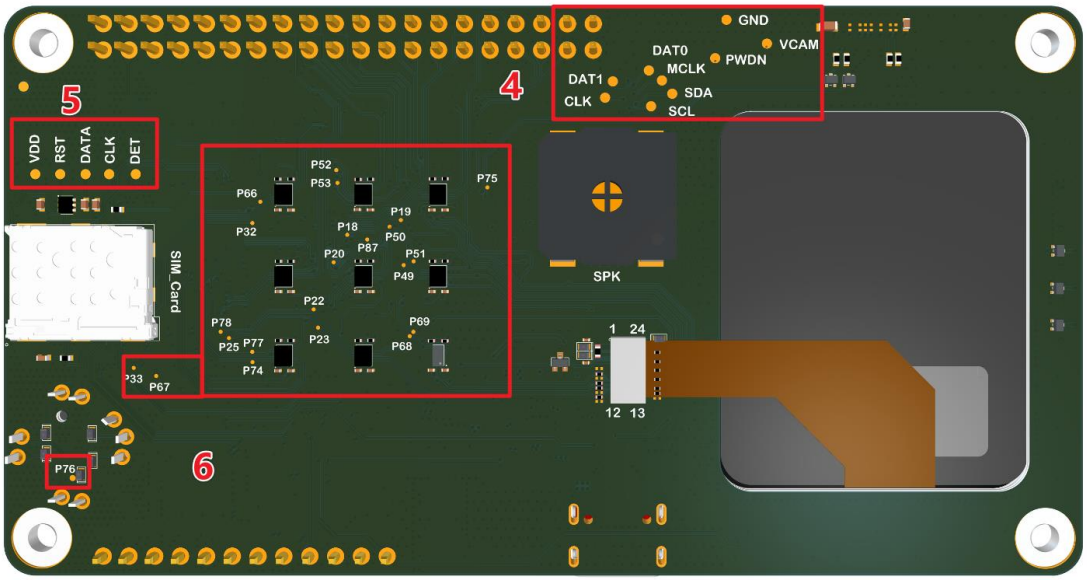


Figure 5: Test Point Pin Distribution 2

Table 2: Pin Definition of Test Points

No.	Silkscreen Name	Comment
1	ADC0_IN	ADC0_IN is conneced to VBAT of the module
2	ADC1_IN	The measured external input voltage of ADC1, which cannot exceed that of VBAT
3	DTX	DBG_TXD of the module with 1.8 V level-shifting
	DRX	DBG_RXD of the module with 1.8 V level-shifting
4	VCAM	2.8 V voltage of CAM_VDD
	GND	Ground
	MCLK	CAM_SCK
	PWDM	CAM_PWDN
	SDA	CAM_IIC_SDA
	SCL	CAM_IIC_SCL
	DAT0	CAM_DATA0
	DAT1	CAM_DATA1
	CLK	CAM_SPI_CLK
5	-	Test points for each pins of (U)SIM1 interface
6	-	Test points for module pins

2.6. Keypads

There are three touch keypads on the EVB:

- PWK: keypad for turn-on/turn-off. Press it for a long time can control its tun-on or turn-off.
- RST: keypad for restart. Press it for a short time to restart.
- BOOT: USB_BOOT. Press it before the module starts up to enter the forced download mode.

2.7. Indicators

There are five functional indicators on the EVB:

- PWR: 3.3 V power supply indicator.
- NET: Pin 16 of the module. Indicator for NET_STATUS.
- 1PPS: Pin 99 of the module. Indicator for GNSS_1PPS.
- SCK: Detection indicator for SIM1. It is on when SIM1 card is inserted.
- V_PG: 3.3 V normal output indicator.

2.8. ADC

ADC0_IN/ADC1_IN are led as test points by default. ADC0_IN is connected to VBAT of the module to measure the battery voltage when the battery is supplying power. The ADC0 input voltage is one-fourth of the VBAT input voltage. The input voltage of ADC1_IN cannot exceed that of VBAT. The ADC1 input voltage is one-fourth of the ADC1_IN input voltage.

3 Function Description of Pin Headers

The EVB provides 40 compatible pins for peripherals, and 12 function controling and enabling pins. The EVB functions are described as follows:

3.1. Function Description of 40-Pin Headers

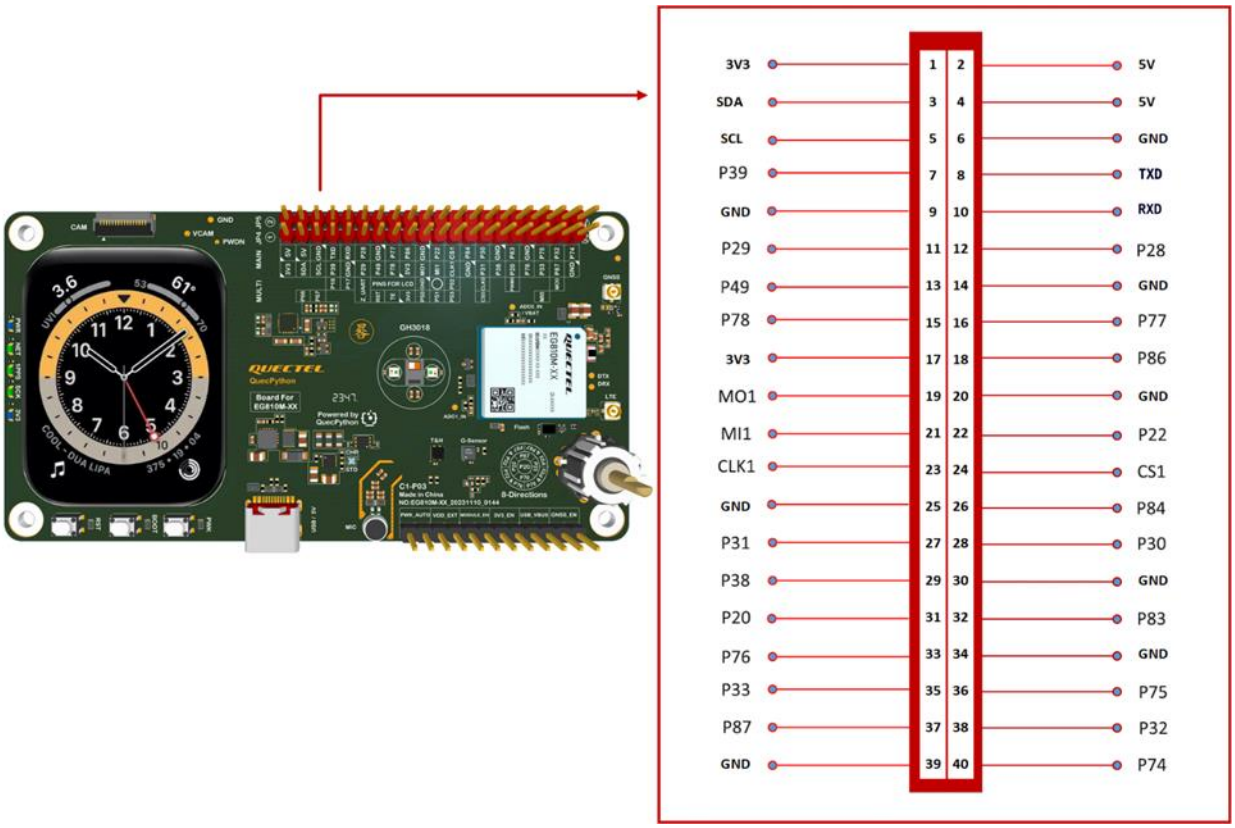


Figure 6: Pin Distribution of 40-Pin Headers

Table 3: Pin Definition of 40-Pin Headers

No.	Silkscreen	Default Function	Multiplexing Function	Description	No.	Silkscreen	Default Function	Multiplexing Function	Description
1	3V3	-	-	3.3 V output	2	5V	-	-	5 V output
3	SDA	I2C2_SDA	GPIO23	I2C2 serial data/ General-purpose input/ouput	4	5V	-	-	5 V output
5	SCL	I2C2_SCL	GPIO24	I2C2 serial clock/ General-purpose input/output	6	GND	-	-	Ground
7	P39	GPIO35	UART0_TXD	General-purpose input/ouput/ UART0 transmit	8	TXD	UART2_TXD	GPIO26	UART2 transmit/ General-purpose input/ouput
9	GND	-	-	Ground	10	RXD	UART2_RXD	GPIO25	UART2 receive/ General-purpose input/output
11	P29	GPIO33	Z_UART1_RXD	General-purpose input/output/ UART1 receive	12	P28	GPIO32	Z_UART1_TXD	General-purpose input/output/ UART1 transmt
13	P49	GPIO5	LCD_RST	General-purpose input/output/ LCD reset	14	GND	-	-	Ground
15	P78	GPIO37	LCD_TE	General-purporse input/output/ LCD tearing effect	16	P77	GPIO19	-	General-purpose input/output
17	3V3	-	-	3.3 V output	18	P86	GPIO21	-	General-purpose input/output

19	MO1	SPI1_MOSI	LCD_SPI_DOUT/ GPIO6	SPI1 master-out slave-in/ LCD SPI data output/ General-purpose input/output	20	GND	-	-	Ground
21	MI1	SPI1_MISO	LCD_SPI_RS/ GPIO7	SPI1 master-in slave-out/ LCD SPI register select/ General-purpose input/output	22	P22	GPIO30	-	General-purpose input/ouput
23	CLK1	SPI1_CLK	LCD_SPI_CLK/ GPIO9	SPI1 clock/ LCD SPI clock/ General-purpose input/output	24	CS1	SPI1_CS	LCD_SPI_CS/ GPIO8	SPI1 chip select/ LCD SPI chip select/ General-purpose input/output
25	GND	-	-	Ground	26	P84	GPIO42	-	General-purpose input/output
27	P31	GPIO2	SPI0_CS	General-purpose input/output/ SPI0 chip select	28	P30	GPIO1	SPI0_CLK	General-purpose input/output/ SPI0 clock
29	P38	GPIO34	UART0_RXD	General-purpose input/output/ UART0 receive	30	GND	-	-	Ground
31	P20	GPIO28	-	General-purpose input/output	32	P83	GPIO20	PWM0	General-purpose input/output/ PWM0 output
33	P76	GPIO18	-	General-purpose input/output	34	GND	-	-	Ground

35	P33	GPIO4	SPI0_MISO	General-purpose input/output/ SPI0 master-in slave-out	36	P75	GPIO41	-	General-purpose input/output
37	P87	GPIO22	-	General-purpose input/output	38	P32	GPIO3	SPI0_MOSI	General-purpose input/output/ SPI0 master-out slave-in
39	GND	-	-	Ground	40	P74	GPIO40	-	General-purpose input/output

NOTE

1. “Z” indicates EC800Z-CN module.
2. “LCD” indicates dedicated pins for display screen.

3.2. Function Description of 12-Pin Headers

The 12-pins are the function enabling and controling pins of the EVB. Refer to the following table to achieve the corresponding function.

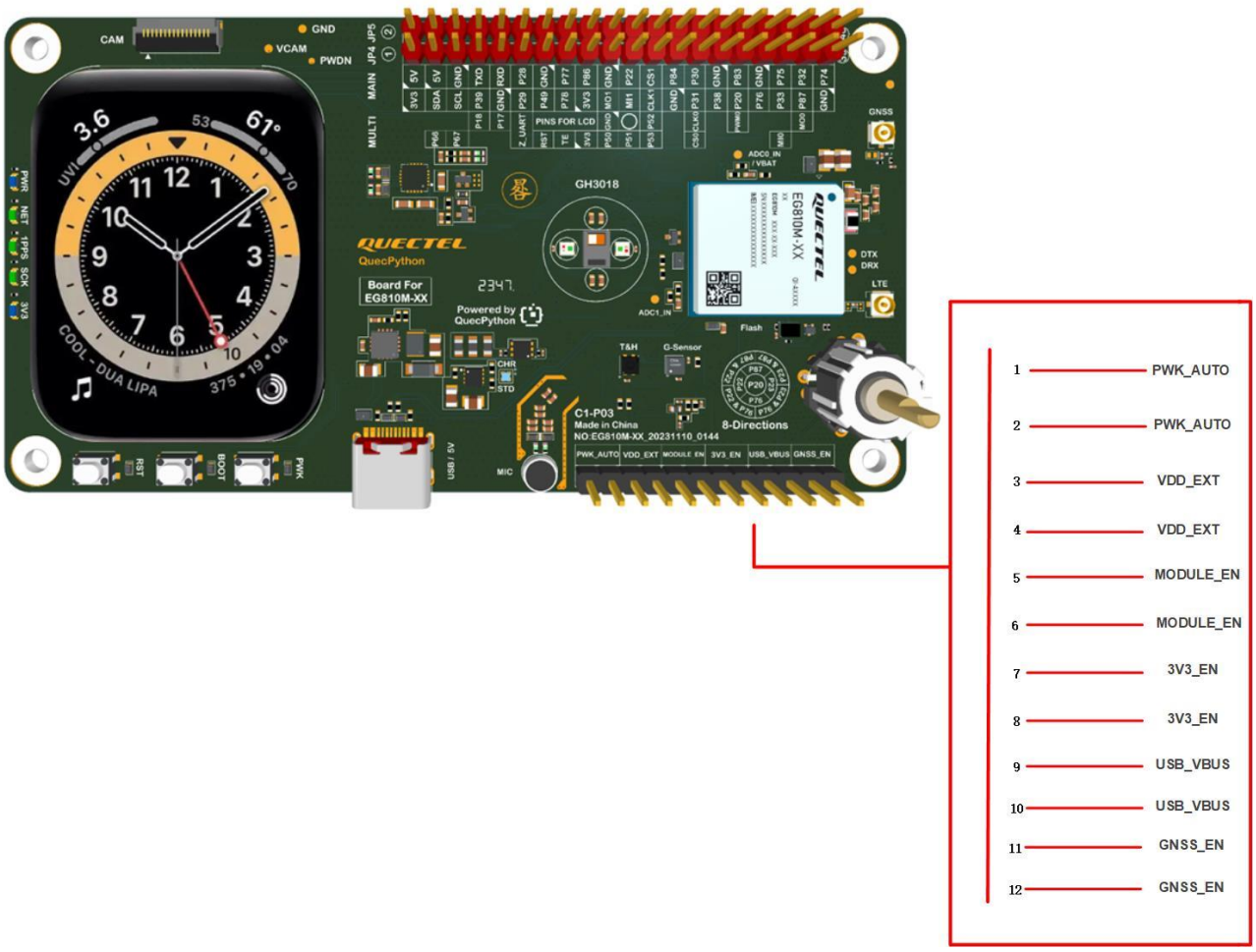


Figure 7: Pin Distribution of 12-Pin Headers

Table 4: Pin Definition of 12-Pin Headers

Pin No.	Function	Silkscreen
1	POWERKEY	PWK_AUTO
2	GND	
3	1.8 V	VDD_EXT
4	VDD_EXT	
5	VBAT	MODULE_EN
6	VBAT_M	
7	3.3 V	3V3_EN
8	LDO_3V3	
9	USB_VBUS	USB_VBUS
10	VBUS	
11	GNSS_EN	GNSS_EN
12	3.3 V	

- Pin 1 & pin 2: turn on automatically.
- Pin 3 & pin 4: pin 3 and pin 4 are used to supply power to the peripheral circuits of the module after being connected. To measure the power consumption of the module, disconnect pin 3 and pin 4.
- Pin 5 & pin 6: when pin 5 and pin 6 are connected, the USB power supply is supplied to the module through the DCDC. Disconnect pin 5 and pin 6, an external power supply can connect pin 5 to supply power to the module and measure the power consumption.
- Pin 7 & pin 8: enable the LDO on the EVB to supply 3.3 V power externally.
- Pin 9 & pin 10: enable USB_VBUS detection.
- Pin 11 & pin 12: enable GNSS active power supply.

NOTE

Note that the jumper cap of VBUS_EN needs to be removed.

4 Onboard Resource

The EVB is designed to provide solutions and convenient functions to you to develop 4G smart watches. The EVB carries a variety of sensors and leads all open GPIOs for developers to use.

4.1. LCD Touch Screen

The EVB carries an LCD touch screen with a resolution of 240 × 280, to facilitate the development of screens.

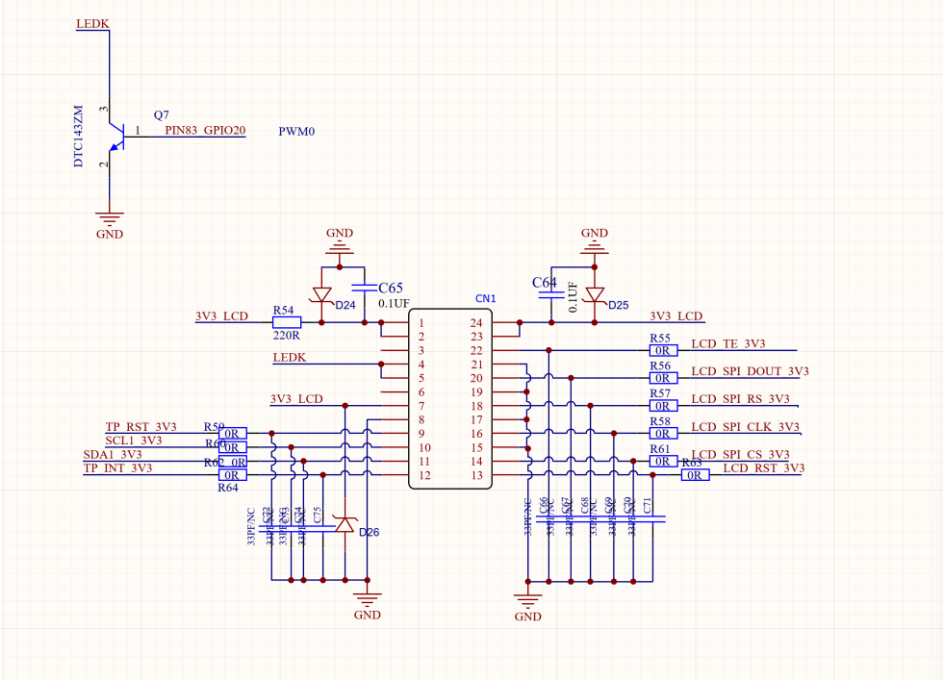


Figure 7: Reference Circuit for LCD Interface

Table 5: Corresponding Relationship Between LCD Interface Pins and Module Pins

LCD Interface Pin No.	Module Pin No.	Function	Comment
13	49	LCD_RST	3.3 V level-shifting
20	50	LCD_SPI_DOUT	3.3 V level-shifting
18	51	LCD_SPI_RS	3.3 V level-shifting
14	52	LCD_SPI_CS	3.3 V level-shifting
16	53	LCD_SPI_CLK	3.3 V level-shifting
22	78	LCD_TE	3.3 V level-shifting
4	83	PWM0	1.8 V level-shifting
10	68	IIC1_SCL	3.3 V level-shifting
11	69	IIC1_SDA	3.3 V level-shifting
9	23	TP_RST	3.3 V level-shifting
12	25	TP_INT	3.3 V level-shifting
Others	-	V3.3/GND	Power supply/GND

Pin 83 can be multiplexed into PWM0 in EG810M-XX modules, and the voltage value of LEDK can be controlled by changing the duty cycle of the output waveform through PWM, so as to change the brightness of the LCD screen backlight.

If PWM is not used to adjust the brightness of the LCD backlight, you can use the following ways to adjust it:

- Turn on LCD backlight: Pin 83 is at a high level.
- Turn off LCD backlight: Pin 83 is at a low level.

NOTE

When using the LCD function, the pin occupied by this function among those 40-pin headers cannot be reused.

4.2. Camera

The EVB supports customized SPI cameras with a maximum of 30 W pixels.

The model supports: GC32A and BF3901.

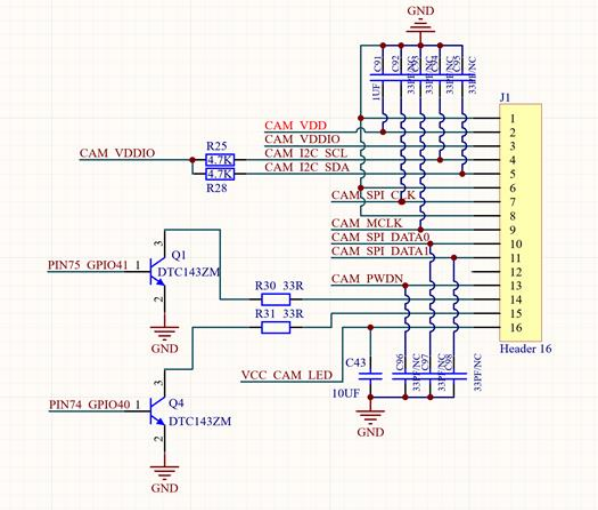


Figure 8: Reference Circuit for Camera Interface

Table 6: Pin Description of Camera Interface

Module Pin No.	Function	Comment
-	Part of camera pins	-
75	GPIO41	1.8 V level-shifting
74	GPIO40	1.8 V level-shifting
-	VCAM/GND	Power supply

Pin 75 and pin 74 of the module (GPIO40 and GPIO41) can control two LED lights of the camera to supplement light. When the pin is at a high level, LED lights are turned on. When the pin is at a low level, LED lights are turned off.

NOTE

When using camera function, the pin occupied by this function among those 40-pin headers cannot be reused.

4.3. Nor Flash

The EVB uses one SPI with an external 4 MB SPI Nor Flash for developers to develop storage capabilities.

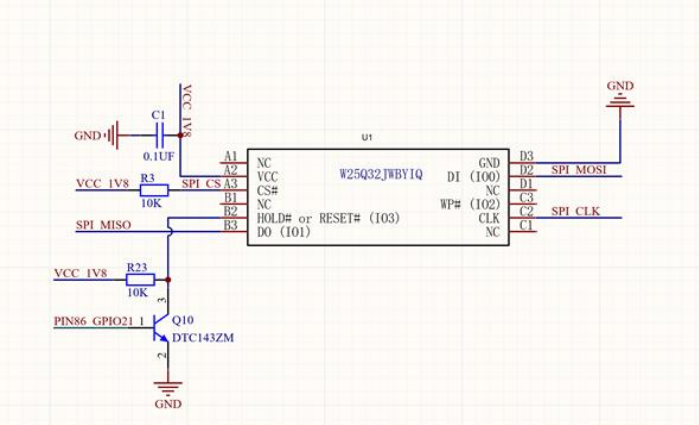


Figure 9: Reference Circuit for W25Q32JWBYIO NorFlash

Table 7: Pin Description of W25Q32JWBYIO NorFlash

Module Pin No.	Function	Comment
30	SPI_CLK	1.8 V level-shifting
31	SPI_CS	1.8 V level-shifting
32	SPI_MOSI	1.8 V level-shifting
33	SPI_MISO	1.8 V level-shifting
86	GPIO21	1.8 V level-shifting
-	VCC_1V8/GND	Power supply

Pin 86 (GPIO21) can control the HOLD pin of SPI Flash, and the HOLD pin is at a high level by default. When GPIO21 is pulled up, the HOLD pin is pulled down, and VCC_1V8 is disconnected (disconnect the pull-up of SPI_CS), at this time, all pins of Flash are in high impedance state. Flash power consumption can be excluded to measure low power consumption.

Accordingly, if GPIO21 is not at a high level, Flash can be read and written normally.

Note the multipexing function of pin 86 (GPIO21) when using this function.

4.4. SPK & MIC

The EVB carries a PA, and its gain is optional: 12 dB, 16 dB, 24 dB and 27.5 dB. It supports one line pulse control.

The EVB carries a small-sized SPK of 8 Ω/ 0.8 W and a MIC with a high sensitivity electret capacitor. Developers can develop related functions without external MIC and SPK.

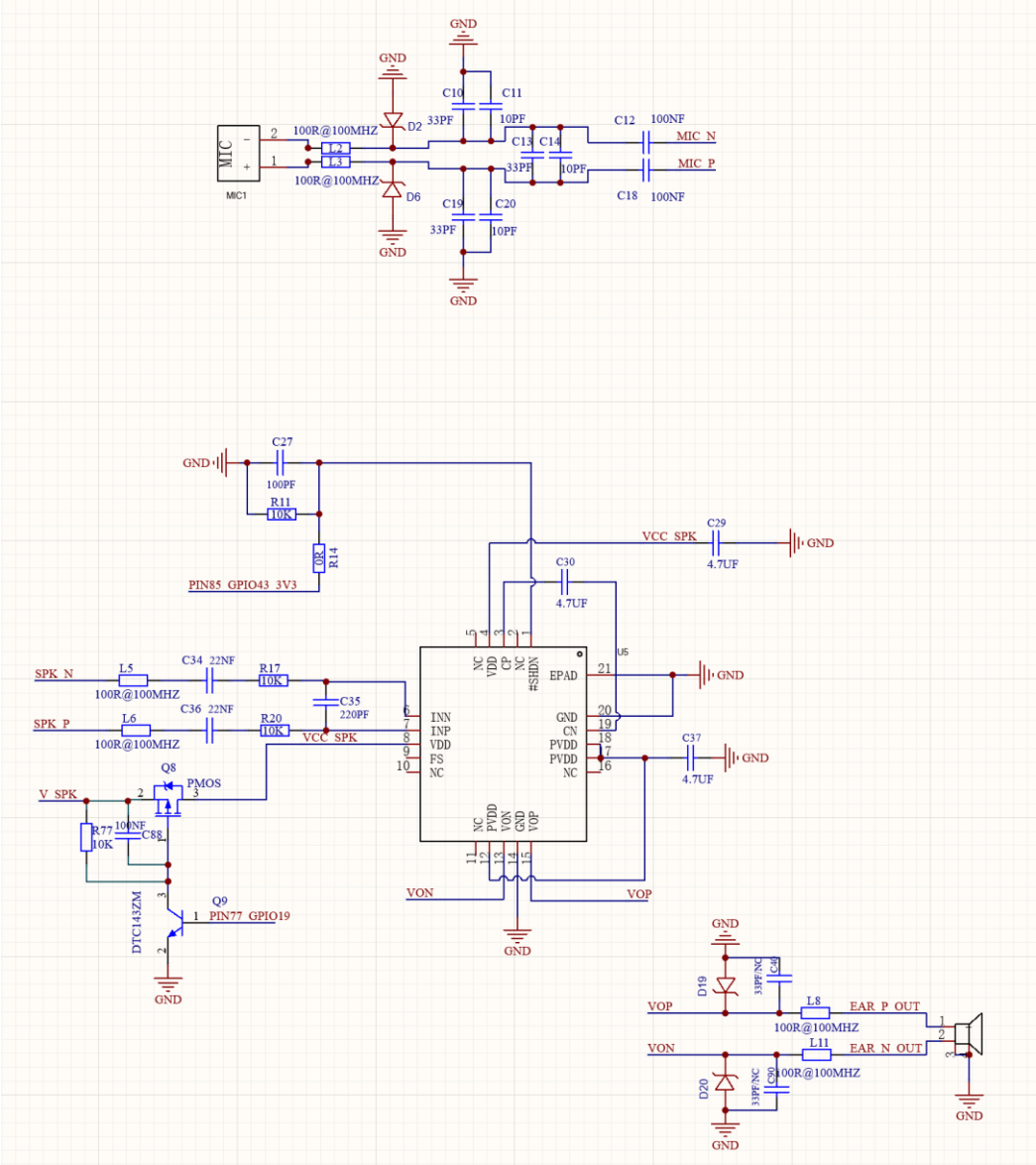


Figure 10: Reference Circuit for Microphone and Loudspeaker

Table 8: Pin Description of Audio Circuit

Module Pin No.	Function	Comment
-	SPK pin	-
-	MIC pin	-
77	GPIO19	1.8 V level-shifting
85	GPIO43	3.3 V level-shifting
-	V_SPK/GND	Power supply

The PA is powered up and down by pin 77 (GPIO19) of the module. GPIO19 powers up the PA at a high level, and GPIO19 powers down the PA at a low level.

The SHDN pin of PA is controlled by pin 85 (GPIO43) of the module, and the working mode is selected by the one-line pulse mode. The number of the rising edge of the one-line pulse signal determines the working mode of the chip. When the GPIO43 signal is directly pulled up, that is, a rising edge, the chip starts to work, Av = 4V/V; When GPIO43 is in the pulse signal order of “high → low → high”, that is, two rising edges, the chip enters the anti-crack mode and Av = 6V/V; When GPIO43 sends three rising edges, Av = 16V/V, and there is no anti-crack sound; When GPIO43 sends four rising edges, Av = 24V/V, and the anti-crack function is turned on. The one-line pulse is controlled in a cyclic manner, if GPIO43 sends five rising edges, it will enter the first working state; When GPIO43 sends six rising edges, it will enter the second working state, and so on.

NOTE

When using audio function, the pin occupied by this function among those 40-pin headers cannot be reused.

4.5. Heart Rate/Blood Oxygen Sensor

The EVB provides a 24-bit high-precision ADC heart rate/blood oxygen sensor for smartwatch developers, coupled with two high-performance, integrated-packaged LED light sets to maximize the performance.

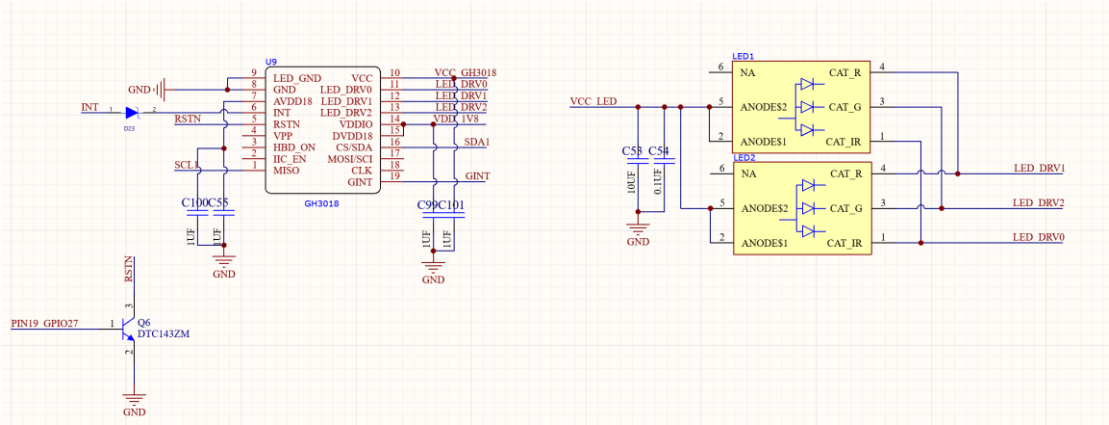


Figure 11: Reference Circuit for Heart Rate/Blood Oxygen Sensor

Table 9: Pin Description of Heart Rate/Blood Oxygen Sensor

Module Pin No.	Function	Comment
21	INT	-
19	GPIO27	-
68	IIC1_SCL	1.8 V level-shifting
69	IIC1_SDA	1.8 V level-shifting
-	VCC_GH3018/GND	Power supply

This solution uses IIC communication. The address for IIC write is 0x28 and for IIC read is 0x29.

When using this function normally, keep pin 19 (GPIO27) at a low level, and if you need to reset GH3018, keep pin 19 (GPIO27) at a high level.

Pin 21 of the module is connected to the INT pin of GH3018. When the object is moving, the G-Sensor will work, and the GINT pin will be pulled down to wake up GH3018. At this time, GH3018 will start to work. After the corresponding data are measured, the INT pin of GH3018 is at a low level, which can wake up the module from sleeping mode to transmit the measured heart rate/blood oxygen or exercising data.

NOTE

1. When powering down GH3018, ensure that VDDIO (VDD_EXT) is powered down first, and VCC (3V3_EN) is powered down later, or VDDIO and VCC are powered down at the same time.
2. When using heart rate/blood sensor function, the pin occupied by this function among those 40-pin headers cannot be reused.

4.6. G-Sensor

The EVB is equipped with a triaxial force acceleration sensor that can be used in conjunction with the GH3018 heart rate/blood oxygen sensor.

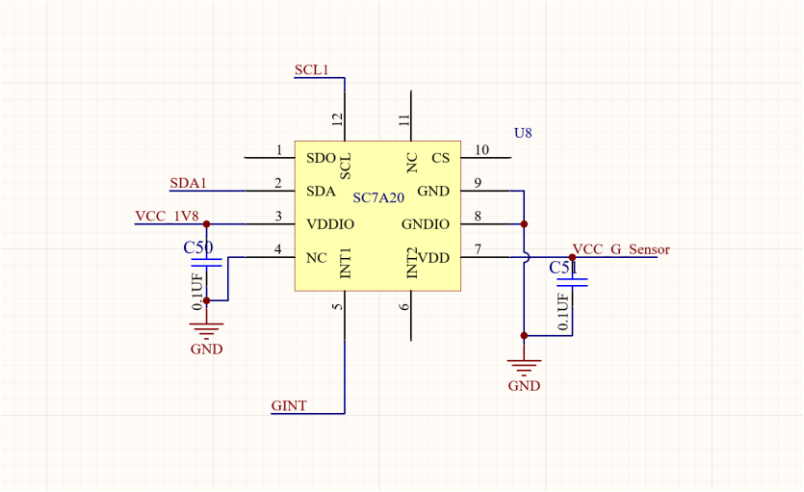


Figure 12: Reference Circuit for Triaxial Force AccelarationSensor

Table 10: Pin Description of Triaxial Force Accelaration Sensor

Module Pin No.	Function	Comment
-	GINT	-
68	IIC1_SCL	1.8 V level-shifting
69	IIC1_SDA	1.8 V level-shifting
-	VCC_G_Sensor/GND	Power supply

The GINT pin is used to wake up the connected GH3018.

4.7. Temperature and Humidity Sensor

The EVB carries a temperature and humidity sensor with temperature accuracy (±0.15 °C) and humidity accuracy (Typ: ± 2.0% RH).

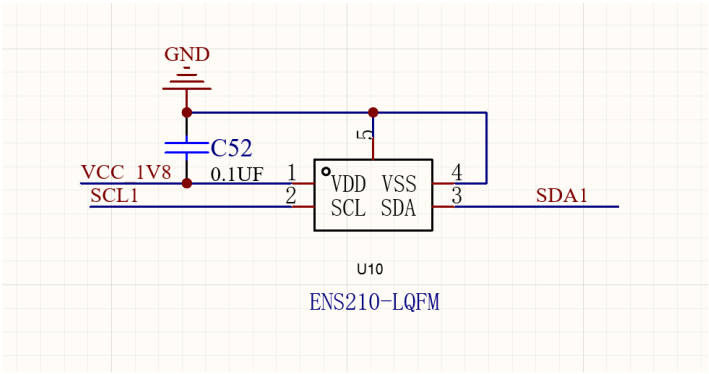


Figure 13: Reference Circuit for Temperature and Humidity Sensor

Table 11: Pin Description of Temperature and Humidty Sensor

Module Pin No.	Function	Comment
68	IIC1_SCL	1.8 V level-shifting
69	IIC1_SDA	1.8 V level-shifting
-	VCC_1V8/GND	Power supply

4.8. Charging Function

When pin 5 and pin 6 of the 12-pin headers are connected to each other and the positive end of a fully charged battery with a voltage of 4.2 V is mounted in either pin header, the battery can be charged through the Type-C interface.

And the current battery power can be obtained by reading the voltage value of ADC0. The ADC0 input voltage is one-fourth of the VBAT input voltage.

4.9. 8-way Rocker

To facilitate the control of direction and selection of the LCD display content, the EVB is equipped with an 8-way rocker.

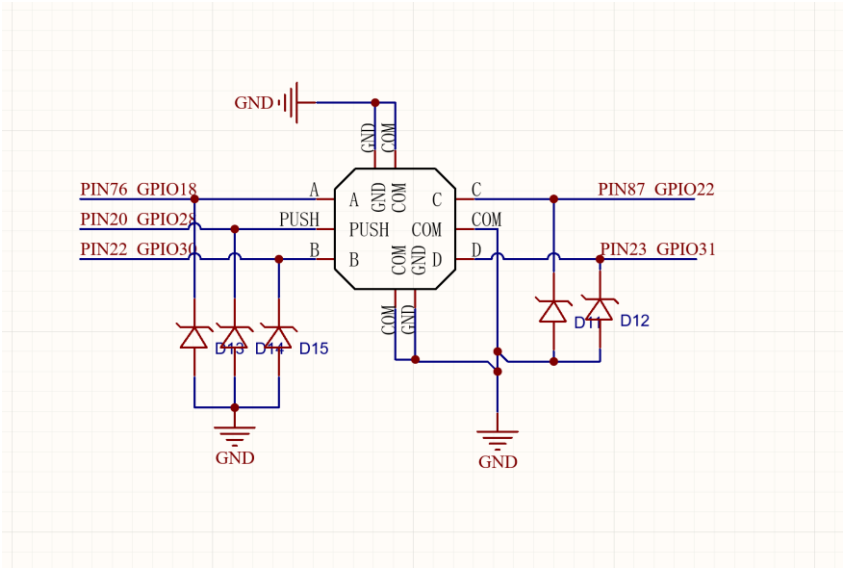


Figure 14: Reference Circuit of 8-way Rocker

Table 12: Pin Description of 8-way Rocker

Pin No.	Function	Comment
20	GPIO28	1.8 V level-shifting
22	GPIO30	1.8 V level-shifting
23	GPIO31	1.8 V level-shifting
76	GPIO18	1.8 V level-shifting
87	GPIO22	1.8 V level-shifting

Table 13: Default Rules for Using 8-way Rocker

Module Pin No.	P87	P76	P22	P23	P20
87	Up	×	Upper left	Lower left	×
76	×	Down	Upper right	Lower right	×
22	Upper left	Lower left	Left	×	×
23	Upper right	Lower right	×	Right	×
20	×	×	×	×	Confirm

NOTE

When using 8-way rocker function, the pin occupied by this function among those 40-pin headers cannot be reused.

5 Mechanical Information

This chapter describes the mechanical dimensions of the EVB.

Figure 15: EVB Dimensions

6 RF Connector Recommendation

The board is equipped with an RF connector (socket) for easy antenna connection. Dimensions of antenna connectors are shown in the following figure.

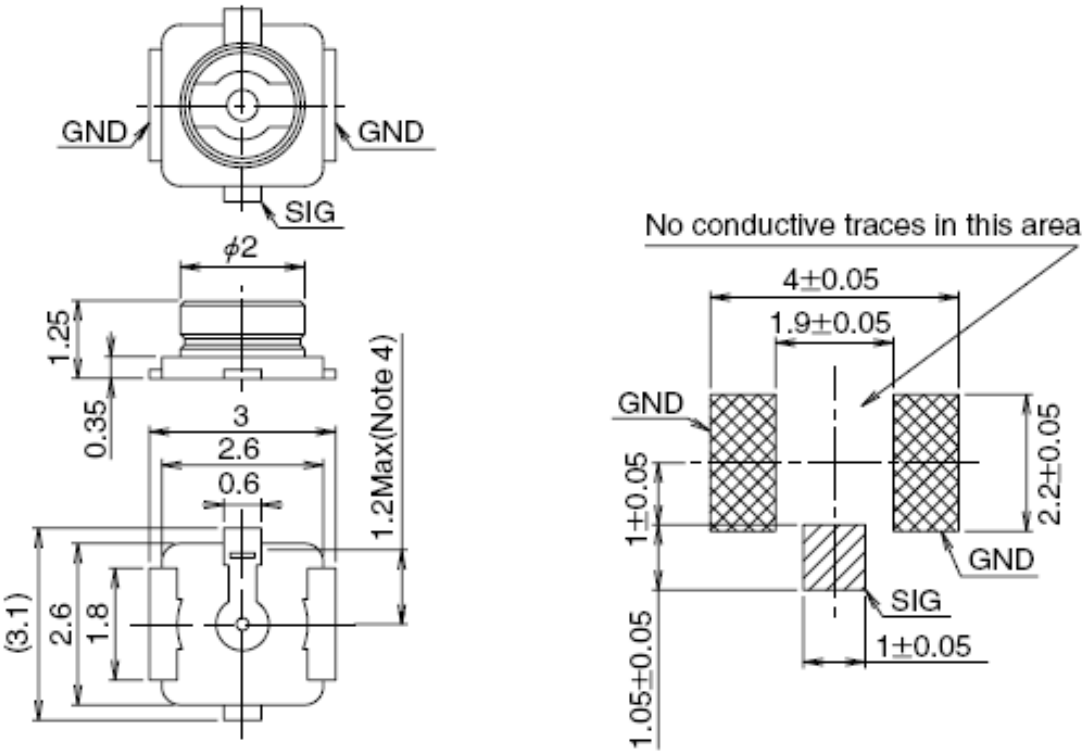


Figure 16: Dimensions of the Receptacle (Unit: mm)

U.FL-LP series mated plugs listed in the following figure can be used to match the U.FL-R-SMT connector.

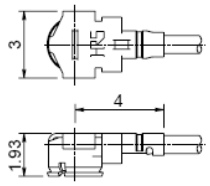
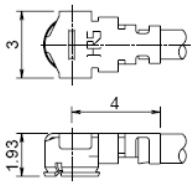
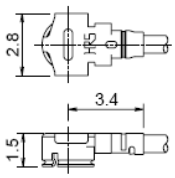
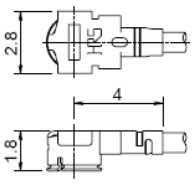
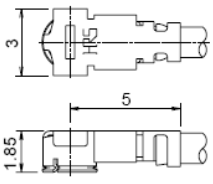
Part No.	U.FL-LP-040	U.FL-LP-066	U.FL-LP(V)-040	U.FL-LP-062	U.FL-LP-088
					
Mated Height	2.5mm Max. (2.4mm Nom.)	2.5mm Max. (2.4mm Nom.)	2.0mm Max. (1.9mm Nom.)	2.4mm Max. (2.3mm Nom.)	2.4mm Max. (2.3mm Nom.)
Applicable cable	Dia. 0.81mm Coaxial cable	Dia. 1.13mm and Dia. 1.32mm Coaxial cable	Dia. 0.81mm Coaxial cable	Dia. 1mm Coaxial cable	Dia. 1.37mm Coaxial cable
Weight (mg)	53.7	59.1	34.8	45.5	71.7
RoHS	YES				

Figure 17: Specifications of Mated Plugs (Unit: mm)

The following figure describes the space factor of mated connectors.

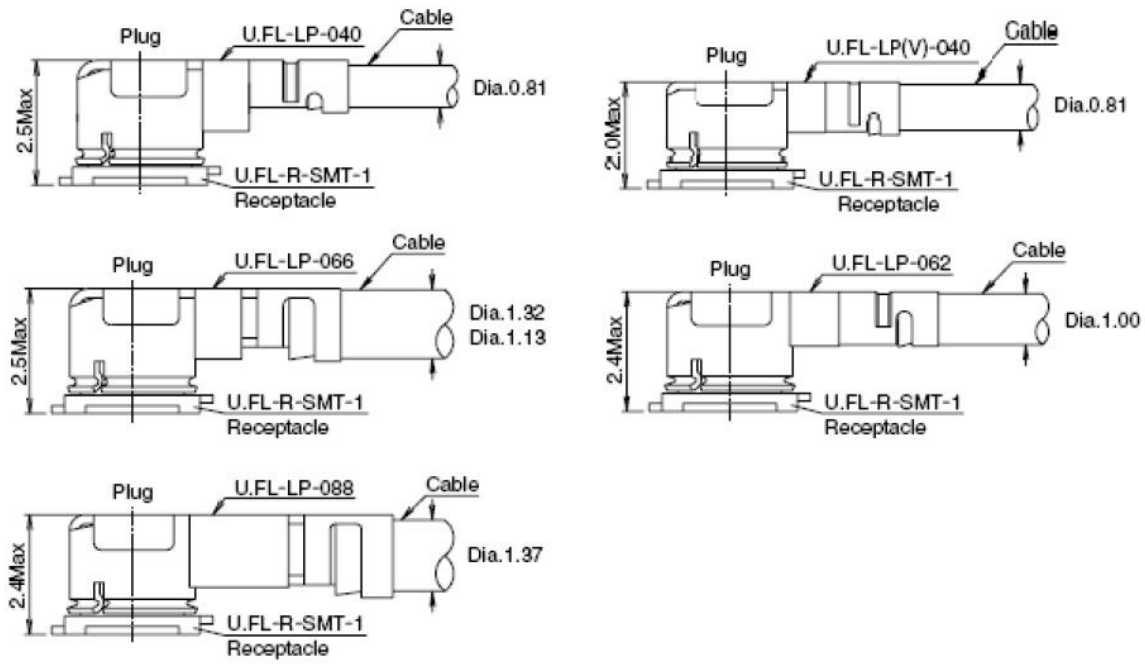


Figure 18: Space Factor of Mated Connectors (Unit: mm)

7 Reliability and Electrical Characteristics

This chapter mainly describes the electrical characteristics of EVB interfaces,including: power supply characteristics.

7.1. Power Supply Characteristics

The USB input voltage of the EVB is 5.0–5.1 V, and then it is converted from DCDC to 3.8 V power supply for the module. The power supply requirements are shown in the following tables:

Table 14: Range of Input Power Supply

Parameters	Description	Min.	Typ.	Max.	Unit
V_I	USB power supply	5.0	5.0	5.1	V
V_I	External power supply of 40-pin headers	5.0	5.0	6.0	V
V_I	Battery power supply	3.4	3.7	4.2	V

Table 15: I/O Requirements

Parameters	Description	Min.	Max.	Unit
V_{IH}	High-level input voltage	0.7 × VCC	VCC + 0.3	V
VI_L	Low-level input voltage	-0.3	0.3 × VCC	V
V_{OH}	High-level output voltage	VCC - 0.5	VCC	V
V_{OL}	Low-level output voltage	0	0.4	V

NOTE

The typical value of VCC is 3.3 V.

8 Notification

8.1. Turn-on

The turn-on scenario is illustrated in the following figure.

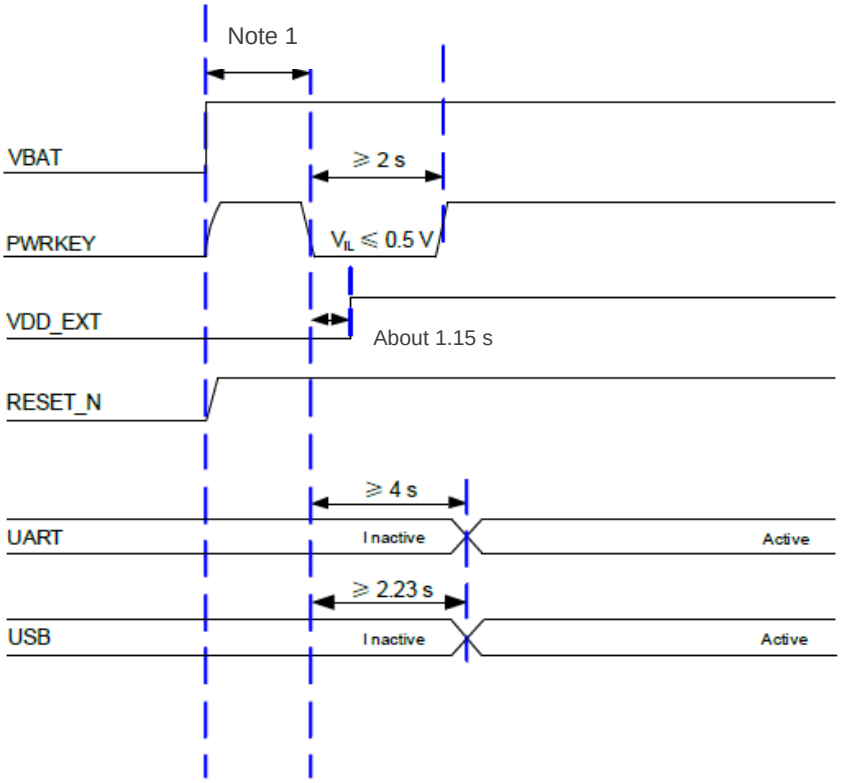


Figure 19: Timing of Turn-on with PWRKEY

NOTE

Make sure that VBAT is stable before pulling down PWRKEY pin. It is recommended that the time difference between powering up VBAT and pulling down PWRKEY pin is not less than 30 ms. If the module needs to turn on automatically but does not need turn-off function, short circuit the two pins corresponding to the PWK_AUTO silkscreen among the pin headers.

9 Appendix

9.1. EVB Schematics

Click the following link to download the schematics of EVB:
(https://images.quectel.com/python/2023/11/QuecPython_EG810M-XX_C1-P03_%E6%99%B7_%E5%BC%80%E5%8F%91%E6%9D%BF%E5%8E%9F%E7%90%86%E5%9B%BE_V1.0.pdf).

9.2. EVB Silkscreen

Click the following link to download the silk-screen figure of EVB:
(https://images.quectel.com/python/2023/11/QuecPython_EG810M-XX_C1-P03_%E6%99%B7_%E5%BC%80%E5%8F%91%E6%9D%BF%E4%B8%9D%E5%8D%B0_V1.0.pdf).