BG95 40PIN DIP PCBA

Product Model: DIP40CORE-A BG95 V1.0

Engineering Department

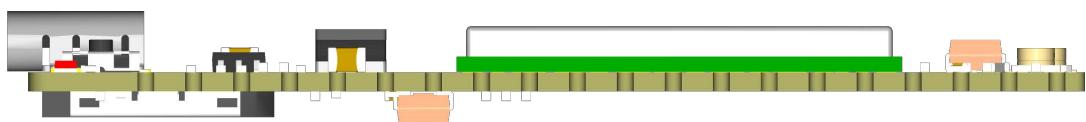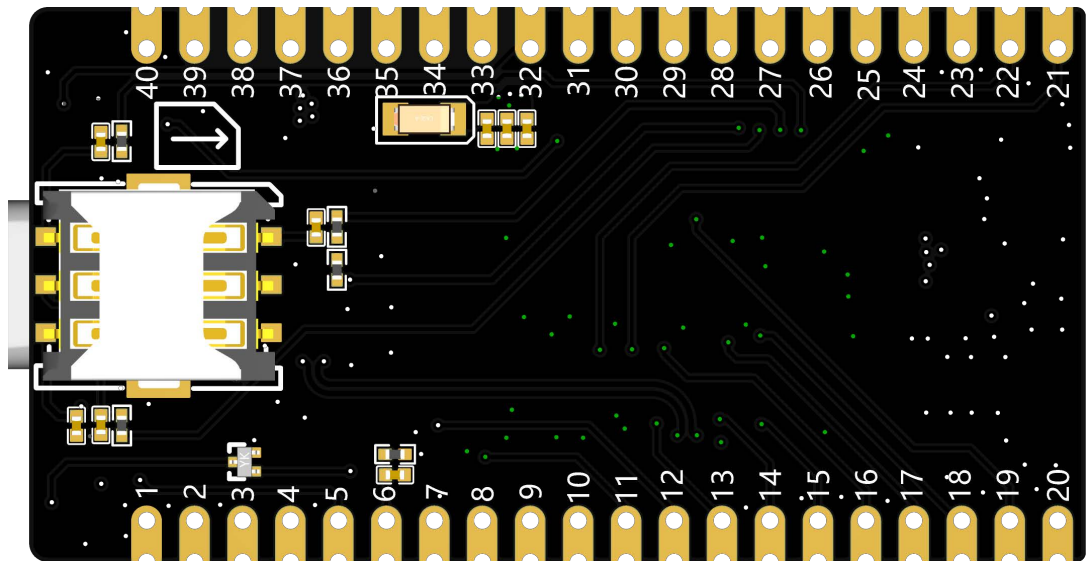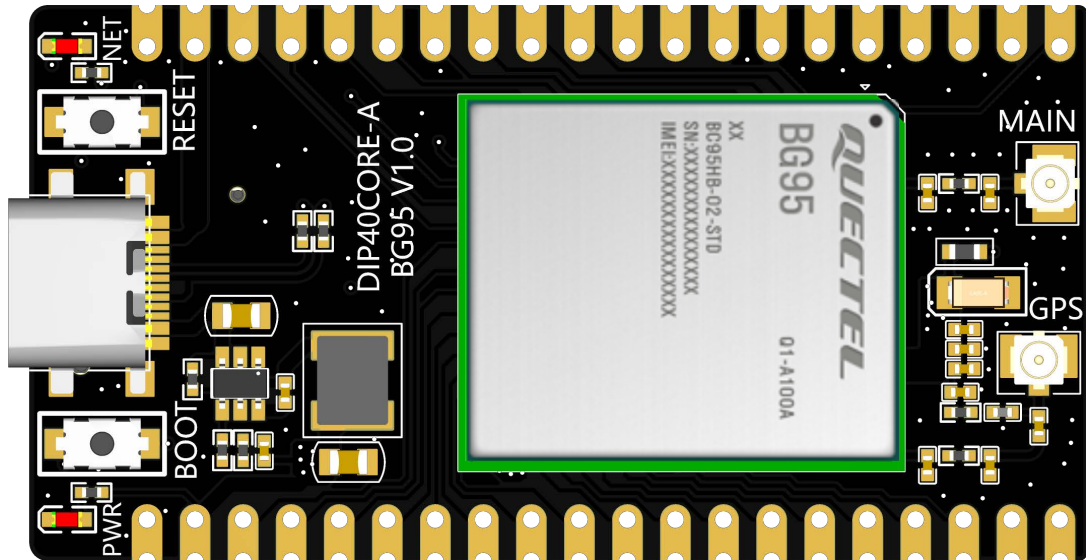| APPROVED	CHECKED	DESIGNED
Mr Xiao	Ms Zhang	Mr Lu

1 Introduction

The product size is small, tthe module BG95 all function pins are drawn out, convenient for customers to integrate into the product.

2 Key Features

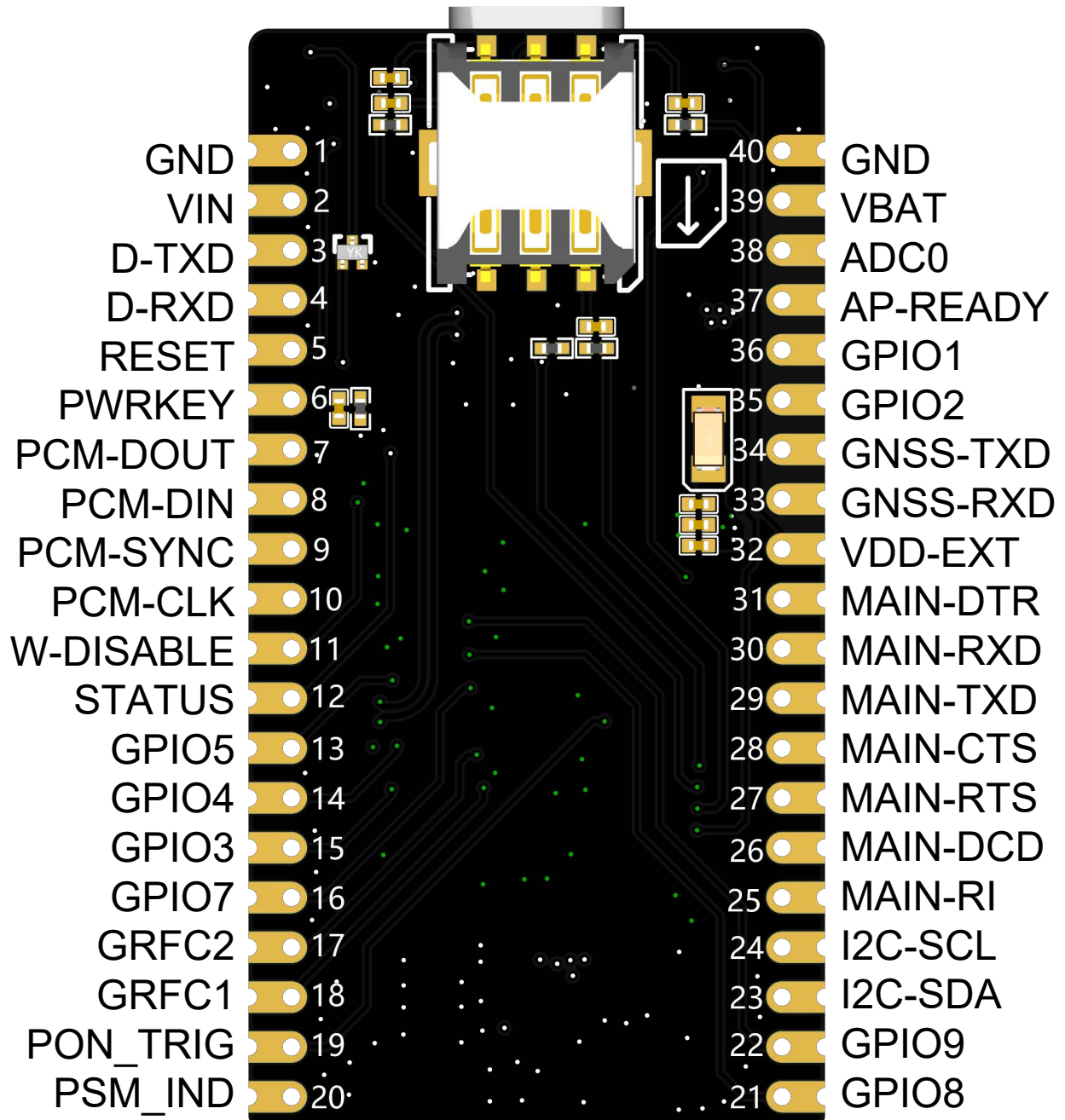The following table describes the detailed features of BG95 40PIN DIP PCBA.

Size information		56mm×29.4mm×1.0mm
Supported Bands	CAT M1	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85
	CAT NB2	LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85
	EGPRS	GSM850/EGSM900/DCS1800/PCS1900
GNSS		GPS, GLONASS, BDS, Galileo and QZSS 1 Hz data update rate by default
Internet Protocol Features		Supports PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT/LwM2M/CoAP/IPv6 protocols Supports PAP and CHAP for PPP connections
SMS		1.Text and PDU mode 2.Point to point MO and MT 3.SMS cell broadcast 4.SMS storage: ME by default
PCM Interface		Supports one digital audio interface: PCM interface for VoLTE or GSM CS voice
(U)SIM Interface		Support 1.8 V USIM/SIM card only
USB Interface		Compliant wit Support operations at low-speed and full-speed Used for AT command communication, data transmission, GNSS NMEA output, software debugging and firmware upgrade Support USB serial drivers for Windows 7/8/8.1/10/11, Linux 2.6–5.18, Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x
UART Interface	Main UART	Used for data transmission and AT command communication 115200 bps baud rate by default The default frame format is 8N1 (8 data bits, no parity, 1 stop bit) Support RTS and CTS hardware flow control
	Debug UART	Used for software debugging and log output Support 115200 bps baud rate
	GNSS UART	Used for GNSS data and NMEA sentences output 115200 bps baud rate by default
AT Commands		3GPP TS 27.007 and 3GPP TS 27.005 AT commands, as well as Quectel enhanced AT commands
ROHS		All hardware components are fully compliant with EU RoHS directive

3 Appearance Display

4.1 Pin Assignment

The following figure shows the pin assignment of BG95 40PIN DIP PCBA.

GND	1	40 GND
VIN	2	39 VBAT
D-TXD	3	38 ADC0
D-RXD	4	37 AP-READY
RESET	5	36 GPIO1
PWRKEY	6	35 GPIO2
PCM-DOUT	7	34 GNSS-TXD
PCM-DIN	8	33 GNSS-RXD
PCM-SYNC	9	32 VDD-EXT
PCM-CLK	10	31 MAIN-DTR
W-DISABLE	11	30 MAIN-RXD
STATUS	12	29 MAIN-TXD
GPIO5	13	28 MAIN-CTS
GPIO4	14	27 MAIN-RTS
GPIO3	15	26 MAIN-DCD
GPIO7	16	25 MAIN-RI
GRFC2	17	24 I2C-SCL
GRFC1	18	23 I2C-SDA
PON_TRIG	19	22 GPIO9
PSM_IND	20	21 GPIO8

4.2 Pin Assignment

The following tables show the pin definition and description of BG95 40PIN DIP PCBA.

pin assignment of BG95 40PIN DIP PCBA	pin assignment of BG95 module	Pin Name	Description	DC Characteristics	Comment
1		GND	Ground		
2		VIN	Power supply for the PCBA	Vmax = 12 V Vmin = 4.8 V Vnorm = 5 V	Cannot be used simultaneously with VBAT pins
3	23	D-TXD	Debug UART transmit	VOLmax = 0.45 V VOHmin = 1.35 V	1.8 V power domain. If unused, keep this pin open.
4	22	D-RXD	Debug UART receive	VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
5	17	RESET	Reset the module	Vnorm = 1.5 V VILmax = 0.45 V	
6	15	PWRKEY	Turn on/off the module	Vnorm = 1.5 V VILmax = 0.45 V	PWRKEY should never be pulled down to GND permanently
7	7	PCM-DOUT	PCM data output	VOLmax = 0.45 V VOHmin = 1.35 V	1.8 V power domain. If unused, keep this pin open.
8	6	PCM-DIN	PCM data input	VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
9	5	PCM-SYNC	PCM data frame sync	VOLmax = 0.45 V VOHmin = 1.35 V	1.8 V power domain. If unused, keep this pin open.
10	4	PCM-CLK	PCM clock	VOLmax = 0.45 V VOHmin = 1.35 V	1.8 V power domain. If unused, keep this pin open.
11	18	W-DISABLE	Airplane mode control	VILmin = -0.3 V VILmax = 0.6 VVIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. Pulled up by default.When it is in low voltage level, the module can enter airplane mode. If unused, keep this pin open.

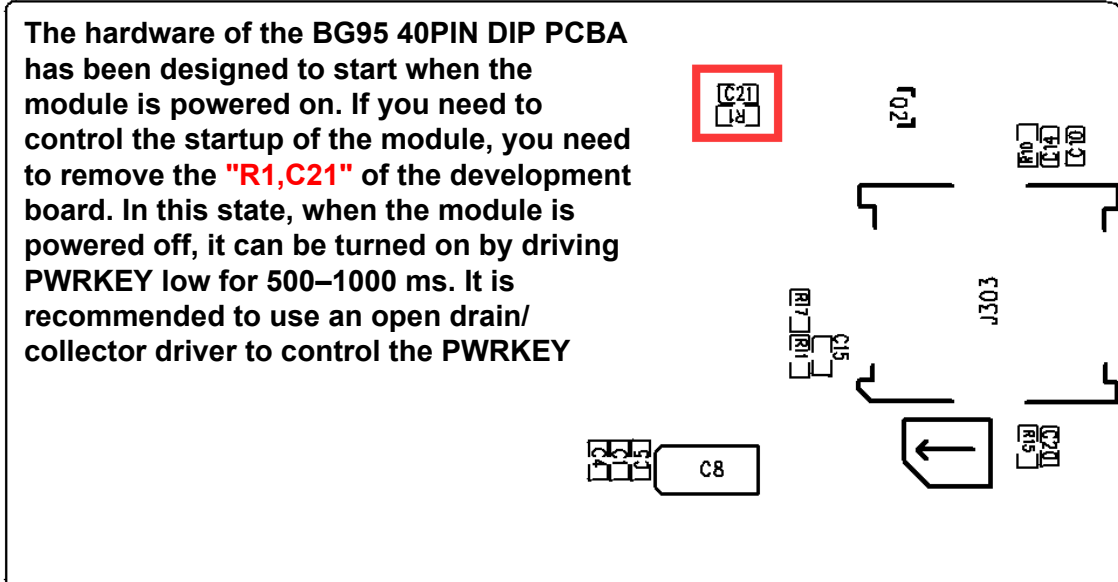| pin assignment of BG95 40PIN DIP PCBA	pin assignment of BG95 module	Pin Name	Description	DC Characteristics	Comment
12	20	STATUS	Module operation status indication	VOHmin = 1.35 V VOLmax = 0.45 V	1.8 V power domain. If unused, keep this pin open.
13	66	GPIO5	General-purpose input/output	VOLmax = 0.45 V VOHmin = 1.35 V VILmin = −0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
14	65	GPIO4	General-purpose input/output	VOLmax = 0.45 V VOHmin = 1.35 V VILmin = −0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
15	64	GPIO3	General-purpose input/output	VOLmax = 0.45 V VOHmin = 1.35 V VILmin = −0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
16	86	GPIO7	General-purpose input/output	VOLmax = 0.45 V VOHmin = 1.35 V VILmin = −0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
17	84	GRFC2	Generic RF controller	VOLmax = 0.45 V VOHmin = 1.35 V	BOOT_CONFIG. Do not pull it up before startup. 1.8 V power domain. If unused, keep this pin open.
18	83	GRFC1	Generic RF controller	VOLmax = 0.45 V VOHmin = 1.35 V	1.8 V power domain. If unused, keep this pin open.
19	96	PON_TRIG	Wake up the module from PSM		1.8 V power domain. Rising-edge triggered. Pulled-down by default. If unused, keep this pin open.

pin assignment of BG95 40PIN DIP PCBA	pin assignment of BG95 module	Pin Name	Description	DC Characteristics	Comment
20	1	PSM-IND	Power saving mode indication	VOHmin = 1.35 V VOLmax = 0.45 V	1.8 V power domain. If unused, keep this pin open.
21	87	GPIO8	General-purpose input/output	VOLmax = 0.45 V VOHmin = 1.35 V VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
22	88	GPIO9	General-purpose input/output	VOLmax = 0.45 V VOHmin = 1.35 V VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
23	41	I2C-SDA	I2C serial data (for external codec)		External pull-up resistor is required. 1.8 V only. If unused, keep this pin open.
24	40	I2C-SCL	I2C serial clock (for external codec)		External pull-up resistor is required. 1.8 V only. If unused, keep this pin open.
25	39	MAIN-RI	Main UART ring indication	VOLmax = 0.45 V VOHmin = 1.35 V	1.8 V power domain. If unused, keep this pin open.
26	38	MAIN-DCD	Main UART data carrier detect	VOLmax = 0.45 V VOHmin = 1.35 V	1.8 V power domain. If unused, keep this pin open.
27	37	MAIN-RTS	Main UART request to send	VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
28	36	MAIN-CTS	Main UART clear to send	VOLmax = 0.45 V VOHmin = 1.35 V	1.8 V power domain. If unused, keep this pin open.
29	35	MAIN-TXD	Main UART transmit	VOLmax = 0.45 V VOHmin = 1.35 V	1.8 V power domain. If unused, keep this pin open.

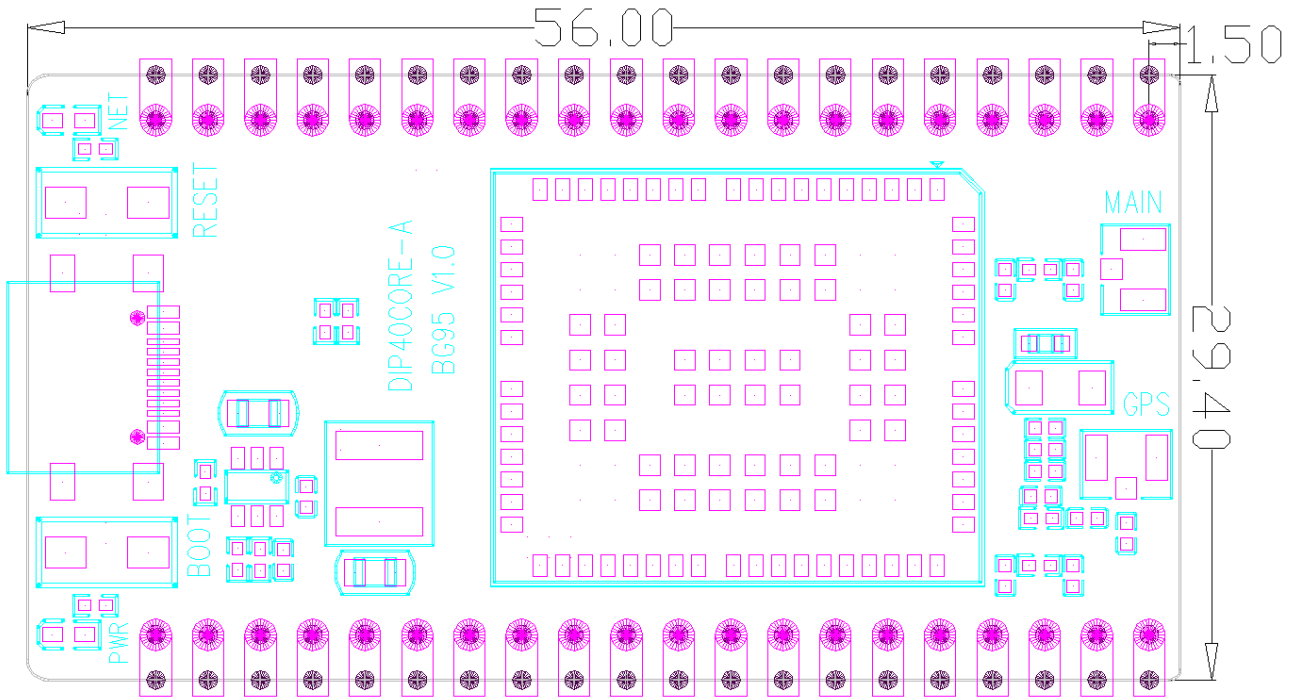| pin assignment of BG95 40PIN DIP PCBA	pin assignment of BG95 module	Pin Name	Description	DC Characteristics	Comment
30	34	MAIN-RXD	Main UART receive	VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
31	30	MAIN-DTR	Main UART data terminal ready	VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
32	29	VDD-EXT	1.8V output power supply for external circuits	Vnorm = 1.8 V IOmax = 50 mA	If unused, keep this pin open
33	28	GNSS-RXD	GNSS UART receive	VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
34	27	GNSS-TXD	GNSS UART transmit	VOLmax = 0.45 V VOHmin = 1.35 V	BOOT_CONFIG. Do not pull it up before startup. 1.8 V power domain. If unused, keep this pin open.
35	26	GPIO2	General-purpose input/output	VOLmax = 0.45 V VOHmin = 1.35 V VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
36	25	GPIO1	General-purpose input/output	VOLmax = 0.45 V VOHmin = 1.35 V VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
37	19	AP-READY	Application processor sleep state detection	VILmin = -0.3 V VILmax = 0.6 V VIHmin = 1.2 V VIHmax = 2.0 V	1.8 V power domain. If unused, keep this pin open.
38	24	ADC0	General-purpose ADC interface	Voltage range: 0.1 - 1.8 V	If unused, keep these pins open.
39		VBAT	Power supply for the module	Vmax = 4.3 V Vmin = 3.3 V Vnorm = 3.8 V	Cannot be used simultaneously with VIN pins
40		GND	Ground		

NOTES

1. VBAT and VIN cannot be used simultaneously.

2. When TYPE-C is also connected, the VIN and VBAT cannot be connected to the power supply.

3. PWRKEY output voltage is 1.5 V because of the voltage drop inside the Qualcomm chipset. Due to platform limitations, the chipset has integrated the reset function into PWRKEY. Therefore, PWRKEY should never be pulled down to GND permanently.

4. RESET_N is connected directly to PWRKEY inside the module.

5. When PSM is enabled, the function of PSM_IND pin will be activated after the module is rebooted.When PSM_IND is in high voltage level, the module is in normal operation state, when it is in low voltage level, the module is in PSM. This function is under development currently.

6. GNSS_TXD (pin 34) and GRFC2 (pin 17) are BOOT_CONFIG pins. They should not be pulled up before startup.

7.

The hardware of the BG95 40PIN DIP PCBA has been designed to start when the module is powered on. If you need to control the startup of the module, you need to remove the "R1,C21" of the development board. In this state, when the module is powered off, it can be turned on by driving PWRKEY low for 500–1000 ms. It is recommended to use an open drain/ collector driver to control the PWRKEY

Position chart at BOTTOM

5 Mechanical dimensions

6 Revision Histo

Rev	Date	Contents	Designed	Remarks
01	Apr/06/2023	Preliminary	Mr Lu	