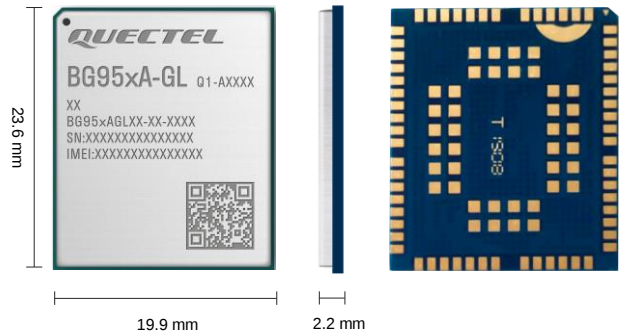




Quectel BG95xA-GL

Ultra-Compact LTE Cat M1/ NB1/ NB2/ GPRS Module



BG95xA-GL is a 5G-ready ultra-compact LPWA module compliant with 3GPP E-UTRA Release 13/ 14 specification. The module supports LTE Cat M1/ NB1/ NB2/ GPRS bands and integrated SIM (iSIM). Besides, it features ultra-low power consumption implemented by ARM Cortex-M4 MCU and integrated RAM and Flash, which help reduce current consumption to rather low levels in various modes, including PSM, eDRX etc. It is further integrated with a GNSS engine that supports GPS, GLONASS, Galileo, BDS and QZSS systems. BG95xA-GL comes in five variants: BG950A-GL, BG951A-GL, BG952A-GL, BG953A-GL and BG955A-GL.

BG95xA-GL boasts a comprehensive hardware-based security feature—Integrated Security Elements (ISE). With an ultra-compact SMT form factor of 23.6 mm × 19.9 mm × 2.2 mm and a high integration level, the module enables integrators and developers to design applications easily leveraging its low power consumption and compact structure design. The BG95xA-GL's advanced LGA package allows for fully automated manufacturing required for large-scale applications.

A rich set of Internet protocols, industry-standard interfaces and abundant functionalities extend the applicability of the module to a wide range of M2M applications, such as wireless POS, smart metering, tracking, wearable devices, and many more.



Key Features

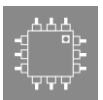
- ✓ Extremely compact LTE Cat M1/ NB1/ NB2/ GPRS module with ultra-low power consumption
- ✓ Super slim profile in LGA package
- ✓ Support integrated SIM (iSIM)
- ✓ Embedded with abundant Internet service protocols
- ✓ Support DFOTA
- ✓ Support second development of embedded applications, ARM Cortex-M4 MCU, running FreeRTOS
- ✓ A rich set of external interfaces (including RF control interfaces) that ensure convenient applications
- ✓ Fast time-to-market: reference designs, evaluation tools and timely technical support minimize time and efforts in design and development



LTE Cat M1 &
Cat NB1/ NB2



LGA Package



iSIM



Abundant Protocols
Embedded



DFOTA



USB 2.0 Interface



Ultra-Low Power
Consumption



Quectel Enhanced
AT Commands



Integrated RAM and
Flash

Quectel BG95xA-GL

	BG950A-GL	BG951A-GL	BG952A-GL	BG953A-GL	BG955A-GL
Region/ Operator	Global	Global	Global	Global	Global
Dimensions (mm)	23.6 × 19.9 × 2.2	23.6 × 19.9 × 2.2	23.6 × 19.9 × 2.2	23.6 × 19.9 × 2.2	23.6 × 19.9 × 2.2
Package	LGA	LGA	LGA	LGA	LGA
Weight (g)	Approx. 2.15	Approx. 2.15	Approx. 2.15	Approx. 2.15	Approx. 2.15
Temperature Range					
Operating Temperature	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C
Extended Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
Frequency Bands					
LTE-FDD	Cat M1: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66	Cat M1: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66	Cat M1: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66	Cat M1: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66	Cat M1: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66
	Cat NB1/ NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25/ 28/ 66	Cat NB1/ NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25/ 28/ 66	Cat NB1/ NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25/ 28/ 66	Cat NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25/ 28/ 66	Cat NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25/ 28/ 66
GPRS	-	-	-	-	GSM 850/ EGSM 900/ DCS 1800/ PCS 1900
Data Rate (Max.)					
LTE (kbps)	Rel-13 Cat M1: 300 (DL)/ 375 (UL) Cat NB1: 27.2 (DL)/ 62.5 (UL)	Rel-13 Cat M1: 300 (DL)/ 375 (UL) Cat NB1: 27.2 (DL)/ 62.5 (UL)	Rel-13 Cat M1: 300 (DL)/ 375 (UL) Cat NB1: 27.2 (DL)/ 62.5 (UL)	Rel-13 Cat M1: 300 (DL)/ 375 (UL) Cat NB1: 27.2 (DL)/ 62.5 (UL)	-
	Rel-14 Cat M1: 588 (DL)/ 1119 (UL) Cat NB2: 127 (DL)/ 158 (UL)	Rel-14 Cat M1: 588 (DL)/ 1119 (UL) Cat NB2: 127 (DL)/ 158 (UL)	Rel-14 Cat M1: 588 (DL)/ 1119 (UL) Cat NB2: 127 (DL)/ 158 (UL)	Rel-14 Cat M1: 588 (DL)/ 1119 (UL) Cat NB2: 127 (DL)/ 158 (UL)	Cat M1: 588 (DL)/ 1119 (UL) Cat NB2: 127 (DL)/ 158 (UL)
GPRS (kbps)	-	-	-	-	85.6 (DL)/ 42.8 (UL)
Certifications					
Carrier	Europe: Vodafone/ Deutsche Telekom America: AT&T/ T-Mobile/ Verizon South Korea: KT/ LGU+/ KC Australia: Telstra Canada: Telus Japan: KDDI/ NTT DOCOMO	Europe: Vodafone/ Deutsche Telekom America: AT&T/ Verizon/ T-Mobile South Korea: KT/ LGU+ Australia: Telstra Japan: KDDI*/ NTT DOCOMO	America: AT&T Australia: Telstra*	TBD	TBD
Regulatory	Global: GCF Europe: CE North America: PTCRB America: FCC Canada: IC South Korea: KC Japan: JATE/ TELEC Australia/New Zealand: RCM	Global: GCF Europe: CE North America: PTCRB America: FCC Canada: IC South Korea: KC Japan: JATE/ TELEC Australia/New Zealand: RCM	Global: GCF Europe: CE North America: PTCRB America: FCC Canada: IC Australia/New Zealand: RCM	Global: GCF Europe: CE North America: PTCRB America: FCC Canada: IC Japan: JATE/ TELEC Australia/New Zealand: RCM	Europe: CE America: FCC Canada: IC Australia/New Zealand: RCM
Others	RoHS	RoHS	RoHS	RoHS	RoHS
Interfaces					
USB	× 1 (Full speed only)	× 1 (Full speed only)	× 1 (Full speed only)	× 1 (Full speed only)	× 1 (Full speed only)
UART	× 3	× 3	Max. × 2	× 3	× 3
I2C	-	-	Max. × 2	-	-
SPI	-	-	Max. × 2 (1 for master only, 1 for master/ slave)	-	-
ADC	× 2	× 2	Max. × 2	× 2	× 2
(U)SIM	× 1 (Supports 1.8 V only)	× 1 (Supports 1.8 V only)	× 1 (Supports 1.8 V only)	× 1 (Supports 1.8 V only)	× 1 (Supports 1.8 V only)
GPIO	× 9	× 9	Max. × 15	× 9	× 9
GRFC	× 2	× 2	× 2	× 2	× 2
NET_STATUS	× 1 (For network status indication)	× 1 (For network status indication)	× 1 (For network status indication)	× 1 (For network status indication)	× 1 (For network status indication)
STATUS	× 1 (For power-on/ off indication)	× 1 (For power-on/ off indication)	× 1 (For power on/ off indication)	× 1 (For power-on/ off indication)	× 1 (For power-on/ off indication)
Antenna	× 2 (For the main antenna and GNSS antenna, respectively)	× 2 (For the main antenna and GNSS antenna, respectively)	× 2 (For the main antenna and GNSS antenna, respectively)	× 2 (For the main antenna and GNSS antenna, respectively)	× 2 (For the main antenna and GNSS antenna, respectively)
SMS					
Short Message Service	Point-to-point MO and MT SMS Cell Broadcast Text and PDU Mode	Point-to-point MO and MT SMS Cell Broadcast Text and PDU Mode	Point-to-point MO and MT SMS Cell Broadcast Text and PDU Mode	Point-to-point MO and MT SMS Cell Broadcast Text and PDU Mode	Point-to-point MO and MT SMS Cell Broadcast Text and PDU Mode

Note:
1. *: Under development/planning/in progress.
2. -: Not supported.

Quectel BG95xA-GL

	BG950A-GL	BG951A-GL	BG952A-GL	BG953A-GL	BG955A-GL
Enhanced Features					
GNSS	GPS/ GLONASS	GPS/ GLONASS/ Galileo/ BDS/ QZSS LTE & GNSS Concurrency	GPS/ GLONASS	GPS/ GLONASS	GPS/ GLONASS
DFOTA	●	●	●	●	●
QuecOpen®	-	-	●	-	-
iSIM	-	-	-	●	-
2G Fall Back	-	-	-	-	●
Software Features					
3GPP	3GPP E-UTRA Release 13/ 14	3GPP E-UTRA Release 13/ 14	3GPP E-UTRA Release 13/ 14	3GPP E-UTRA Release 14	3GPP E-UTRA Release 14
AT Commands	3GPP TS 27.007 3GPP TS 27.005 Quectel Enhanced AT Commands	3GPP TS 27.007 3GPP TS 27.005 Quectel Enhanced AT Commands	3GPP TS 27.007 3GPP TS 27.005 Quectel Enhanced AT Commands	3GPP TS 27.007 3GPP TS 27.005 Quectel Enhanced AT Commands	3GPP TS 27.007 3GPP TS 27.005 Quectel Enhanced AT Commands
Protocols	TCP/ PPP/ UDP/ SSL/ MQTT(S)/ FTP(S) / HTTP(S) / LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ	TCP/ PPP/ UDP/ SSL/ MQTT(S)/ FTP(S) / HTTP(S) / LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ	TCP/ PPP/ UDP/ SSL/ MQTT(S)/ FTP(S) / HTTP(S) / LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ	TCP/ PPP/ UDP/ SSL/ MQTT(S)/ FTP(S) / HTTP(S) / LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ	TCP/ PPP/ UDP/ SSL/ MQTT(S)/ FTP(S) / HTTP(S) / LwM2M/ IPv4/ IPv6/ TLS/ DTLS/ PING/ CoAP/ NITZ
Firmware Upgrade	UART/ DFOTA/ USB*	UART/ DFOTA/ USB*	UART/ DFOTA/ USB*	UART/ DFOTA/ USB*	UART/ DFOTA/ USB*
Electrical Features					
Output Power (Max.)	23 dBm	23 dBm	23 dBm	23 dBm	23 dBm
Supply Voltage Range	VBAT_BB/ VBAT_RF: 2.2–4.35 V, typ. 3.3 V	VBAT_BB/ VBAT_RF: 2.2–4.35 V, typ. 3.3 V	VBAT_BB/ VBAT_RF: 2.2–4.35 V, typ. 3.3 V	VBAT_BB/ VBAT_RF: 2.2–4.35 V, typ. 3.3 V	VBAT_BB/ VBAT_RF: 3.3–4.3V, typ. 3.8V
Power Consumption (Typical)	Power Saving Mode: 1.5 μA	Power Saving Mode: 1.5 μA	Power Saving Mode: 1.5 μA	Power Saving Mode: 1.5 μA	Power Saving Mode: 1.5 μA
	Rock Bottom: 39 μA	Rock Bottom:	Rock Bottom: 39 μA	Rock Bottom: 39 μA	Rock Bottom: 42 μA
	Sleep Mode:	Sleep Mode:	Sleep Mode:	Sleep Mode:	Sleep Mode:
	Cat M1:	Cat M1:	Cat M1:	Cat M1:	Cat M1:
	• 1.1 mA @ DRX = 1.28 s	• 1.1 mA @ DRX = 1.28 s	• 1.1 mA @ DRX = 1.28 s	• 1.2 mA @ DRX = 1.28 s	• 1.2 mA @ DRX = 1.28 s
	• 0.12 mA @ e-I-DRX = 40.96 s; PTW =2.56 s; DRX = 1.28 s	• 0.12 mA @ e-I-DRX = 40.96 s; PTW =2.56 s; DRX = 1.28 s	• 0.12 mA @ e-I-DRX = 40.96 s; PTW =2.56 s; DRX = 1.28 s	• 0.12 mA @ e-I-DRX = 40.96 s; PTW =2.56 s; DRX = 1.28 s	• 0.12 mA @ e-I-DRX = 40.96 s; PTW =2.56 s; DRX = 1.28 s
	• 0.07 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s	• 0.07 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s	• 0.07 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s	• 0.07 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s	• 0.07 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s
	Cat NB1:	Cat NB1:	Cat NB1:	Cat NB2:	Cat NB2:
	• 2.2 mA @ DRX = 1.28 s	• 2.2 mA @ DRX = 1.28 s	• 2.2 mA @ DRX = 1.28 s	• 3.5 mA @ DRX = 1.28 s	• 3.5 mA @ DRX = 1.28 s
	• 0.19 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s	• 0.19 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s	• 0.19 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s	• 0.19 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s	• 0.19 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s
Power Consumption (Typical)	• 0.16 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 0.08 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s	• 0.16 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 0.16 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 0.16 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s
	Idle Mode:	Idle Mode:	Idle Mode:	Idle Mode:	Idle Mode:
	Cat M1:	Cat M1:	Cat M1:	Cat M1:	Cat M1:
	• 15.0 mA @ DRX = 1.28 s	• 15.0 mA @ DRX = 1.28 s	• 15.0 mA @ DRX = 1.28 s	• 15.0 mA @ DRX = 1.28 s	• 15.0 mA @ DRX = 1.28 s
	• 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s
	Cat NB1:	Cat NB1:	Cat NB1:	Cat NB1:	Cat NB1:
	• 16.0 mA @ DRX = 1.28 s	• 16.0 mA @ DRX = 1.28 s	• 16.0 mA @ DRX = 1.28 s	• 16.0 mA @ DRX = 1.28 s	• 16.0 mA @ DRX = 1.28 s
	• 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	• 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s
	Active Mode (GNSS disabled):	Active Mode (GNSS disabled):	Active Mode (GNSS disabled):	Active Mode (GNSS disabled):	Active Mode (GNSS disabled):
	Cat M1: 201 mA @ 23 dbm	Cat M1: 201 mA @ 23 dbm	Cat M1: 201 mA @ 23 dbm	Cat M1: 201 mA @ 23 dbm	Cat M1: 201 mA @ 23 dbm
Power Consumption (Typical)	Cat NB1: 195 mA @ 23 dbm	Cat NB1: 195 mA @ 23 dbm	Cat NB1: 195 mA @ 23 dbm	Cat NB2: 195 mA @ 23 dbm	Cat NB2: 195 mA @ 23 dbm
		GNSS Stand-Alone Mode (modem disabled):			
		Idle: 3.62 mA			
		Searching @ cold start: 21.51 mA			
		Tracking @ open sky: 16.50 mA			

Note:
1. *: Under development/planning/in progress.
2. ●: Supported.
3. -: Not supported

