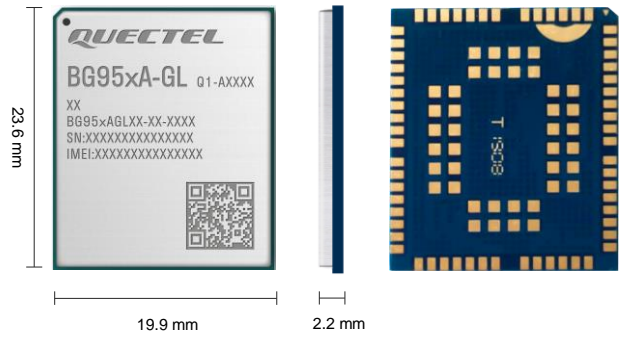




Quectel BG95xA-GL

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. Besides, it features ultra-low power consumption implemented by 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 three variants: BG950A-GL, BG951A-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
- ✓ Embedded with abundant Internet service protocols
- ✓ Support DFOTA
- ✓ Support second development of embedded applications, 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



Integrated RAM and Flash



Abundant Protocols Embedded



DFOTA



USB 2.0 Interface



Ultra-Low Power Consumption



Quectel Enhanced AT Commands

Quectel BG95xA-GL

LTE Cat M1/ NB1/ NB2/ GPRS	BG950A-GL	BG951A-GL	BG955A-GL
Region/ Operator	Global	Global	Global
Dimensions (mm)	23.6 × 19.9 × 2.2	23.6 × 19.9 × 2.2	23.6 × 19.9 × 2.2
Package	LGA	LGA	LGA
Weight (g)	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
Extended Temperature	-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 NB1/ NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25/ 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 M1: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 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 M1: 300 (DL) / 375 (UL)
		Cat NB1: 27.2 (DL) / 62.5 (UL)	Cat NB1: 27.2 (DL) / 62.5 (UL)
	Rel-14	Cat M1: 588 (DL) / 1119 (UL)	Cat M1: 588 (DL) / 1119 (UL)
		Cat NB2: 127 (DL) / 158 (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+ Australia: Telstra Canada: Telus Japan: KDDI*/ NTT DOCOMO	Europe: Vodafone/ Deutsche Telekom America: AT&T/ Verizon/T-Mobile South Korea: KT/ LGU+ Australia: Telstra Canada: Telus Japan: KDDI*/ NTT DOCOMO	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	Europe: CE America: FCC Canada: IC Australia/New Zealand: RCM
Others	RoHS	RoHS	RoHS
Interfaces			
USB	× 1 (Full speed only)	× 1 (Full speed only)	× 1 (Full speed only)
UART	× 3	× 3	× 3
ADC	× 2	× 2	× 2
(U)SIM	× 1 (Supports 1.8 V only)	× 1 (Supports 1.8 V only)	× 1 (Supports 1.8 V only)
GPIO	× 9	× 9	× 9
GRFC	× 2	× 2	× 2
NET_STATUS	× 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)
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)
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

Note:

1. *: Under development/ planning/ in progress.

2. - : Not supported.

Quectel BG95xA-GL

LTE Cat M1/ NB1/ NB2/ GPRS	BG950A-GL	BG951A-GL	BG955A-GL
Enhanced Features			
GNSS	GPS/ GLONASS	GPS/ GLONASS/ Galileo/ BDS/ QZSS LTE & GNSS Concurrency	GPS/ GLONASS
DFOTA	•	•	•
2G Fall Back	-	-	•
Software Features			
3GPP	3GPP E-UTRA Release 13/ 14	3GPP E-UTRA Release 13/ 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
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
Firmware Upgrade	UART/ DFOTA/ USB*	UART/ DFOTA/ USB*	UART/ DFOTA/ USB*
Electrical Features			
Output Power (Max.)	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: 3.3–4.3V, typ. 3.8 V
	Power Saving Mode: 1.5 μ A	Power Saving Mode: 1.5 μ A	Power Saving Mode: 1.5 μ A
	Rock Bottom: 39 μ A	Rock Bottom: 42 μ A @ GNSS mode = 1 196 μ A @ GNSS mode = 2	Rock Bottom: 42 μ A
	Sleep Mode: Cat M1: • 1.1 mA @ 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 Cat NB1: • 2.2 mA @ DRX = 1.28 s • 0.19 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s • 0.15 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	Sleep Mode: Cat M1: • 1.1 mA @ DRX = 1.28 s • 0.12 mA @ e-I-DRX = 40.96 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 Cat NB1: • 2.2 mA @ DRX = 1.28 s • 0.18 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s • 0.14 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	Sleep Mode: Cat M1: • 1.2 mA @ DRX = 1.28 s • 0.12 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s • 0.06 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s Cat NB2: • 2.5 mA @ DRX = 1.28 s • 0.19 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s • 0.14 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s
Power Consumption (Typical)	Idle Mode: Cat M1: • 15.0 mA @ DRX = 1.28 s • 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: • 16.0 mA @ DRX = 1.28 s • 15.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	Idle Mode: Cat M1: • 17.0 mA @ DRX = 1.28 s • 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: • 17.0 mA @ DRX = 1.28 s • 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s	Idle Mode: Cat M1: • 15.0 mA @ DRX = 1.28 s • 14.5 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: • 16.2 mA @ DRX = 1.28 s • 14.5 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s
	Active Mode (GNSS disabled): Cat M1: 242 mA @ 23 dbm Cat NB1: 247 mA @ 23 dbm	Active Mode (GNSS disabled): Cat M1: 242 mA @ 23 dbm Cat NB1: 247 mA @ 23 dbm	Active Mode (GNSS disabled): Cat M1: 242 mA @ 23 dbm Cat NB2: 247 mA @ 23 dbm
	GNSS Stand-Alone Mode (modem disabled): Searching @ cold start: 48.19 mA Tracking @ open sky: 55 mA	GNSS Stand-Alone Mode (modem disabled): Idle: 3.62 mA Searching @ cold start: 21.51 mA Tracking @ open sky: 16.50 mA	GNSS Stand-Alone Mode (modem disabled): Searching @ cold start: 41 mA Tracking @ open sky: 49 mA

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