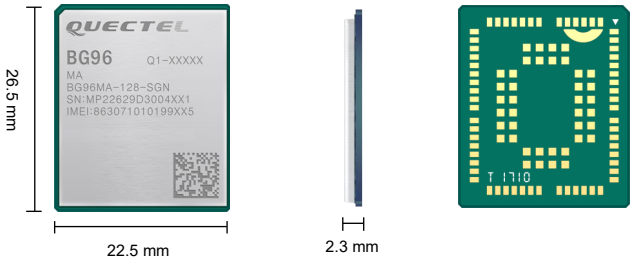
Quectel BG96

LTE Cat M1 & Cat NB1 & EGPRS Module



BG96 is an LTE Cat M1/Cat NB1/EGPRS module offering maximum data rates of 375 kbps downlink and uplink. It features global frequency bands, ultra-low power consumption, and is compatible with Quectel LTE Standard module EG91/EG95, LPWA module BC95-G/BG95, UMTS/HSPA module UG95/UG96 and GSM/GPRS module M95.

With a cost-effective SMT form factor of 26.5 mm × 22.5 mm × 2.3 mm and high integration level, BG96 enables integrators and developers to easily design their applications and take advantage from the module's low power consumption and mechanical intensity. Its advanced LGA package allows fully automated manufacturing for high-volume applications.

A rich set of Internet protocols, industry-standard interfaces (USB/UART/I2C/Status Indicator) and abundant functionalities (USB drivers for Windows 7/8/8.1/10, Linux and Android) extend the applicability of the module to a wide range of M2M applications such as wireless POS, smart metering, tracking, etc.

Key Benefits

- LTE Cat M1/Cat NB1/EGPRS module with ultra-low power consumption
- Compact SMT form factor ideal for size-constrained applications with tight space
- Easy migration from Quectel GSM/GPRS, UMTS/HSPA and LTE modules
- Super slim profile in LGA package
- Fast time-to-market: reference designs, evaluation tools and timely technical support minimize design-in time and development efforts
- Robust mounting and interfaces

LTE Cat M1 & Cat NB1

EGPRS

LGA Package

Embedded Abundant Protocols

DFOTA

USB 2.0 High Speed Interface

USB Drivers

Quectel Enhanced AT Commands

Compact Size

Rev.: V1.8 | Status: Released

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LTE Cat M1 & Cat NB1 & EGPRS Module

Variant for the Global

BG96

Cat M1/Cat NB1:

LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25①/B26*/B28

LTE TDD: B39 (For Cat M1 Only)

EGPRS:

850/900/1800/1900 MHz

Data

Cat M1: Max. 375 kbps (DL), Max. 375 kbps (UL)

Cat NB1: Max. 32 kbps (DL), Max. 70 kbps (UL)

EDGE: Max. 296 kbps (DL), Max. 236.8 kbps (UL)

GPRS: Max. 107 kbps (DL), Max. 85.6 kbps (UL)

Voice

VoLTE (For Cat M1 Only. Support Realtek ALC 5616 /NAU8814 Codec by Default Firmware)

SMS

Point-to-point MO and MT

SMS Cell Broadcast

Text and PDU Mode

Interfaces

USB 2.0 × 1 (With High Speed up to 480 Mbps)

UART × 3

PCM × 1

ADC × 2 (15 bits)

GPIO × 2 (I2C and UART3 Can be Re-configured as Extra 4 GPIOs)

(U)SIM × 1

NETLIGHT × 1 (For Network Status Indication)

STATUS × 1 (For Power ON/OFF Indication)

Main and GNSS Antenna Interfaces

Enhanced Features

GNSS (Optional):

GPS, GLONASS, BeiDou/Compass, Galileo, QZSS

Firmware Upgrade:

via USB interface

DFOTA:

Delta Firmware upgrade Over the Air

Processor:

ARM A7 Processor, with 3 MB Flash and 3 MB RAM Available for Users

QuecLocator®*:

Support Cell ID Positioning

Electrical Characteristics

Output Power:

Max. Power: 23 dBm

Consumption @ LTE Cat M1 (Typical):

Power Saving Mode: 10 μA

Idle State: 15 mA @ DRX = 1.28 s

15 mA @ e-I-DRX = 40.96 s

Sleep State: 1.5 mA @ DRX = 1.28 s

1.2 mA @ e-I-DRX = 40.96 s

LTE Connected Mode (Avg.):

128 mA @ 0 dBm

140 mA @ 10 dBm

205 mA @ 23 dBm

Consumption @ LTE Cat NB1 (Typical):

Power Saving Mode: 10 μA

Idle State: 15 mA @ DRX = 1.28 s

15 mA @ e-I-DRX = 40.96 s

Sleep State: 1.96 mA @DRX = 1.28 s

1.1 mA @e-I-DRX = 40.96 s

LTE Connected Mode (Avg.):

96 mA @ 0 dBm

110 mA @ 10 dBm

223 mA @ 23 dBm

Sensitivity:

-107 dBm @ Cat M1, 1.4 MHz Bandwidth, CE Mode A

-113 dBm @ Cat NB1, CE Level 0

Software Features

USB Serial Driver:

Windows 7/8/8.1/10,

Linux 2.6/3.x/4.1–4.14,

Android 4.x–9.x

GNSS/RIL Driver: Android 4.x–9.x

NDIS Driver: Windows 7/8/8.1/10

GobiNet Driver: Linux 2.6–5.4

QMI_WWAN Driver: Linux 3.4–5.4

Protocols:

PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT

General Features

3GPP E-UTRA Release 13

Operation Temperature Range: -35 °C to +75 °C

Extended Temperature Range: -40 °C to +85 °C

Dimensions: 26.5 mm × 22.5 mm × 2.3 mm

Approx. 3.1 g

LGA Package

Supply Voltage: 3.3–4.3 V, 3.8 V Typ.

3GPP TS27.007, 3GPP TS 27.005 and Quectel Enhanced AT Commands

Approvals

Carrier:

Vodafone (Global)

Deutsche Telekom/Telefónica (Europe)

Verizon/AT&T/T-Mobile/Sprint/U.S. Cellular (North America)

Rogers/Telus (Canada)

SKT/LGU+ (South Korea)

NTT DOCOMO/SoftBank/KDDI (Japan)

Telstra (Australia)

Regulatory:

GCF (Global)

CE (Europe)

FCC/PTCRB (North America)

IC (Canada)

Anatel (Brazil)

IFETEL (Mexico)

CCC (China)

KC (South Korea)

NCC (Taiwan, China)

JATE/TELEC (Japan)

RCM (Australia)

NBTC (Thailand)

IMDA (Singapore)

Others:

RoHS

① LTE B25 Supported on BG96 with R1.2 Hardware Version.

* Under Development

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