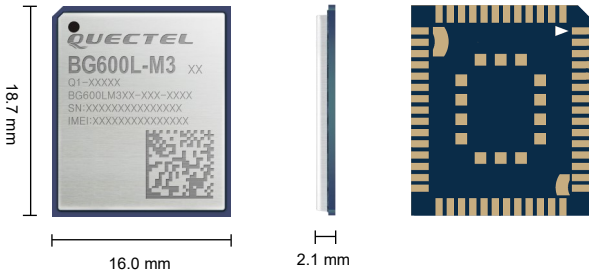
Quectel BG600L-M3

LTE Cat M1/Cat NB2/EGPRS Module



BG600L-M3 is a multi-mode LPWA module supporting LTE Cat M1/Cat NB2/EGPRS and integrated GNSS. It is 3GPP Rel. 14 compliant and offers maximum data rates of 588 kbps downlink and 1119 kbps uplink under LTE Cat M1. It features ultra-low power consumption by leveraging the integrated RAM/flash as well as the ARM Cortex A7 processor supporting ThreadX, achieving up to 70% reduction in PSM leakage and 85% reduction in eDRX current consumption compared to its predecessor.

BG600L-M3 boasts a comprehensive set of hardware-based security features and enables trusted applications to run directly on the Cortex A7 TrustZone engine. Additionally, BG600L-M3 is compatible with Quectel GSM/GPRS/GNSS module MC60, providing customers a convenient solution for network migration.

With a cost-effective SMT form factor of 18.7 mm × 16.0 mm × 2.1 mm and high integration level, BG600L-M3 enables integrators and developers to easily design their applications and take advantage from the module's low power consumption and mechanical intensity. Its advanced package allows fully automated manufacturing for high-volume applications. A rich set of Internet protocols, industry-standard interfaces (USB/UART/PCM/STATUS) and abundant functions (e.g. USB drivers for Windows 7/8/8.1/10, Linux and Android, etc.) extend the applicability of the module to a wide range of M2M applications such as tracking, wireless POS, smart metering and wearable devices.

Key Features

- LTE Cat M1/Cat NB2/EGPRS module with ultra-low power consumption
- Easy migration from Quectel GSM/GPRS/GNSS module MC60
- Support VoLTE* for LTE Cat M1 and CS voice* for GSM
- Integrated RAM and flash in the baseband chipset
- Comprehensive set of hardware-based security features
- Fast time-to-market: reference designs, evaluation tools and timely technical support minimize design-in time and development efforts
- Compact SMT form factor ideal for size-constrained applications with tight space
- Robust mounting and interfaces

LTE Cat M1/ Cat NB2 | EGPRS | LGA Package

Embedded Abundant Protocols | DFOTA | USB 2.0 Interface

Ultra-low Power Consumption | Quectel Enhanced AT Commands | Integrated RAM/ Flash in Chipset

Rev.: V1.2 | Status: Released

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Variant for the Global

BG600L-M3

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:

850/900/1800/1900 MHz

Data

Cat M1:

Max. 588 kbps (DL)/ 1119 kbps (UL)

Cat NB2:

Max. 127 kbps (DL)/ 158.5 kbps (UL)

Cat NB1:

Max. 32 kbps (DL)/ 70 kbps (UL)

EDGE:

Max. 296 kbps (DL)/ 236.8 kbps (UL)

GPRS:

Max. 107 kbps (DL)/ 85.6 kbps (UL)

Voice*

VoLTE for LTE Cat M1

CS Voice for GSM

SMS

Point-to-point MO and MT

SMS Cell Broadcast

Text and PDU Mode

Interfaces

(U)SIM × 1 (1.8 V only)

USB 2.0 × 1

UART × 3

ADC × 1

PWRKEY × 1

RESET_N × 1

PCM* × 1 (For VoLTE Only)

I2C* × 1 (For VoLTE Only)

GPIO × 6

GRFC × 2

NET_STATUS × 1 (Network Status Indication)

STATUS × 1 (Power ON/OFF Status Indication)

Antenna × 2 (For LTE & GNSS Antennas)

Enhanced Features

GNSS:

GPS/GLONASS/BeiDou/Galileo/QZSS

Firmware Upgrade:

via USB interface

DFOTA:

Delta Firmware Upgrade Over-the-Air

Processor:

ARM A7 Processor

QuecOpen®:

Simplifies the Development of Embedded Applications

QuecLocator®:

Support Cell ID Positioning

Electrical Characteristics

Output Power:

Max. Power: 21 dBm @ LTE Bands

Power Consumption @ LTE Cat M1 (Typical):

Power Saving Mode: 4.0 μA

Sleep Mode: 1.61 mA @ DRX = 1.28 s

0.72 mA @ e-I-DRX = 81.92 s

Idle Mode: 17.9 mA @ DRX = 1.28 s

17.2 mA @ e-I-DRX = 81.92 s

Active Mode: 204 mA @ 21 dBm (GNSS OFF)

Power Consumption @ LTE Cat NB1 (Typical):

Power Saving Mode: 4.0 μA

Sleep State: 1.34 mA @ DRX = 1.28 s

0.75 mA @ e-I-DRX = 81.92 s

Idle State: 14.3 mA @ DRX = 1.28 s

13.8 mA @ e-I-DRX = 81.92 s

Active Mode: 166 mA @ 21 dBm (GNSS OFF)

Software Features

USB Serial Driver:

Windows 7/8/8.1/10,

Linux 2.6–5.4*,

Android 4.x–10.x*

GNSS/RIL Driver*:

Android 4.x–10.x

Protocols:

PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/ PING/MQTT/CoAP/IPv6

General Features

LGA Package

3GPP E-UTRA Release 14

Supply Voltage: 3.3V–4.3 V, Typ. 3.8V

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

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

Dimensions: 18.7 mm × 16.0 mm × 2.1 mm

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

Approvals

Carrier:

Vodafone*/Deutsche Telekom*/Telefónica* (Europe)

Verizon*/AT&T*/T-Mobile*/Sprint* (America)

Regulatory:

CCC* (China)

GCF (Global)

CE (Europe)

PTCRB (North America)

FCC (America)

IC* (Canada)

RCM* (Australia/New Zealand)

Others:

RoHS

* Under Development/Planning or Ongoing

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