

Quectel MC60E

Ultra-small LCC Quad-band GSM/GPRS/GNSS Module With BT4.0 Function



MC60E is a quad-band full-featured GSM/GPRS/GNSS module using LCC castellation package. It is fully pin-to-pin compatible with Quectel MC60 module, and supports both BT4.0 and BT3.0 specifications. BT4.0 supports BLE (Bluetooth Low Energy) technology, which features ultra-low peak, average and idle mode power consumption, thus making MC60E especially ideal for applications requiring energy-efficient Bluetooth wireless connectivity. The module also supports Dual SIM Single Standby.

MC60E integrates both GPRS and GNSS engines in one compact and low profile SMT package. It supports EPO™ technology which provides predicted Extended Prediction Orbit to speed up TTFF without need of extra server. Based on EPO data, QuecFastFix Online function further reduces TTFF in cold start. EASY™ technology enables a very fast first fix when there is no enough satellite information. AlwaysLocate™ and GLP (GNSS Low Power) power saving modes ensure great positioning accuracy while with ultra-low power consumption. The built-in LNA provides the module with improved RF sensitivity and exceptional acquisition/tracking performances even in weak signal areas.

The compact form factor, great positioning performance, low power consumption and dual (U)SIM card interfaces make MC60E a best choice for a wide range of M2M applications, such as bicycle-sharing system, vehicle tracker, wearable device (smartwatch), pet tracker, asset tracker, driving recorder, etc.



Key Benefits

- ✓ Ultra compact size: 18.7mm × 16.0mm × 2.1mm
- ✓ Support Bluetooth 4.0 (GATT/PXP/FMP profiles) and Bluetooth 3.0 (SPP/HFP-AG profiles) specifications
- ✓ Easier soldering process with LCC package
- ✓ Low power consumption: 1.2mA @DRX=5
- ✓ Support voice, data, SMS and QuecFOTA™ functions
- ✓ Embedded abundant Internet service protocols
- ✓ Built-in LNA for higher sensitivity: -149dBm @Acquisition
-167dBm @Tracking
- ✓ Multi-GNSS system: GPS, GLONASS, Galileo and QZSS
- ✓ GNSS receiver channels: 99 acquisition/33 tracking/210 PRN channels
- ✓ Support advanced technologies: EASY™/LOCUS™/EPO™/AlwaysLocate™/GLP/SDK/QuecFastFix Online
- ✓ Great anti-jamming performance due to multi-tone active interface canceller
- ✓ Support 1PPS function



Quad-band



GPRS Multi-slot
Class 12



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



Highly Compact Size



LCC Package



Embedded Internet
Services Protocols



Dual SIM
Single Standby



Digital Audio



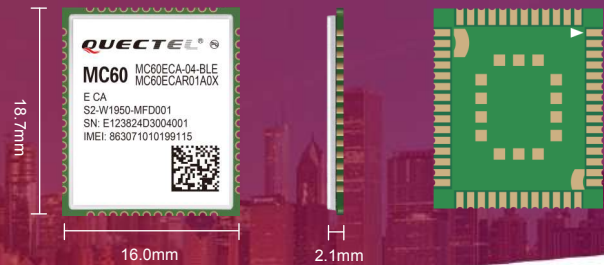
Bluetooth 4.0 &
Bluetooth 3.0



Multi-GNSS System

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Frequency Band

Quad-band:

850/900/1800/1900MHz

Data

GPRS Class 12:

Max 85.6kbps (Downlink)

Max 85.6kbps (Uplink)

PBCC

Coding Schemes:

CS 1, 2, 3, 4

USSD

Non-transparent Mode

SMS

Point-to-point MO and MT

SMS Cell Broadcast

Text and PDU Mode

Voice

Speech Codec Modes:

Half Rate (HR)

Full Rate (FR)

Enhanced Full Rate (EFR)

Adaptive Multi-Rate (AMR)

Echo Arithmetic:

Echo Cancellation

Echo Suppression

Noise Reduction

GNSS Features

GPS L1 Band Receiver (1575.42MHz):

Channel: 33 (Tracking)/ 99 (Acquisition)/
210 (PRN)

GLONASS L1 Band Receiver (1601.71MHz):

C/A Code

SBAS: WAAS, EGNOS, MSAS, GAGAN

Horizontal Position Accuracy:

Autonomous: <2.5m CEP

Velocity Accuracy:

Without Aid: <0.1m/s

Acceleration Accuracy:

Without Aid: <0.1m/s²

Advanced Technologies:

EASY™/LOCUS™/AlwaysLocate™/GLP/SDK/AIC/

EPO™/QuecFastFix Online

Reacquisition Time: <1s

TTFF @-130dBm with QuecFastFix Online:

Cold Start: <4.5s

TTFF @-130dBm with EASY™:

Cold Start: <15s

Warm Start: <5s

Hot Start: <1s

TTFF @-130dBm without EASY™:

Cold Start: <35s

Warm Start: <30s

Hot Start: <1s

Sensitivity:

Acquisition: -149dBm

Tracking: -167dBm

Reacquisition: -161dBm

Dynamic Performance:

Maximum Altitude: 18000m

Maximum Velocity: 515m/s

Maximum Acceleration: 4G

Interfaces

(U)SIM Card Interface: × 2 (3.0V/1.8V)

SD × 1

UART:

× 3 (UART Port × 1, Debug Port × 1, GNSS UART
Port × 1)

Analog Audio Channel:

2 Output Channels and 1 Input Channel

Bluetooth:

BT4.0 (BLE Profile: GATT/PXP/FMP)

BT3.0 (Profile: SPP/HFP-AG)

ADC × 1

GPIO × 1

PCM × 1 (LGA Pad)

RTC × 1

Antenna Pad:

× 3 (GSM Antenna Pad × 1, GNSS Antenna Pad

× 1, Bluetooth Antenna Pad × 1)

Enhanced Features

eCall

CMUX

Dual UART

DSSS

STK

Audio Play

QuecLocator

OpenCPU

FOTA

BT4.0 & BT3.0

QuecFile

(U)SIM Card Detection

GNSS

Jamming Detection

Firmware Update

Electrical Characteristics

Output Power:

Class 4 (2W @850/900MHz)

Class 1 (1W @1800/1900MHz)

Power Consumption:

1.2mA @DRX=5

Supply Voltage:

3.3V~4.6V, 4.0V Typ.

Software Features

BT4.0 & BT3.0

GNSS: GPS/GLONASS/Galileo/QZSS

Protocols: TCP/UDP/FTP/HTTP/PPP/SSL

General Features

GPRS Multi-slot Class: Class 12

GPRS Mobile Station: Class B

Great Anti-jamming Performance due to

Multi-tone Active Interface Canceller

Support 1PPS Function

Built-in LNA for Higher Sensitivity

Extended Temperature: -40°C ~ +85°C

Dimensions: 18.7mm × 16.0mm × 2.1mm

LCC Package

Approx. 1.3g

GSM 07.07, 07.05 and other Enhanced

AT Commands