

Product name	Description	Version
MC-1612-52Q	Multi-constellation GNSS positioning module	0.2



## 1 Introduction

LOCOSYS MC-1612-52Q is high-performance GNSS positioning module that is capable of tracking all global civil navigation systems. It supports new GPS L1C and BEIDOU B1C signals. Besides, it integrates efficient power management architecture to perform low power and high sensitivity.

The module supports hybrid ephemeris prediction to achieve faster cold start. One is self-generated ephemeris prediction (called EASY) that is no need of both network assistance and host CPU's intervention. This is valid for up to 3 days and updates automatically from time to time when GNSS module is powered on and satellites are available. The other is server-generated ephemeris prediction (called EPO) that gets from an internet server. This is valid for up to 14 days. Both ephemeris predictions are stored in the on-board flash memory and perform a cold start time less than 15 seconds.

## 2 Features

- Support GPS, GLONASS, GALILEO, BEIDOU and QZSS
- Capable of SBAS (WAAS, EGNOS, MSAS, GAGAN) and QZSS SLAS
- Low power consumption
- Fast TTFF at low signal level
- Free hybrid ephemeris prediction to achieve faster cold start
- Up to 10 Hz update rate
- $\pm 10$ ns high accuracy time pulse (PPS)
- Small form factor 16 x 12.2 x 2.4 mm
- SMD type with stamp holes; RoHS compliant

## 3 Application

- Personal positioning and navigation
- Automotive navigation
- Marine navigation

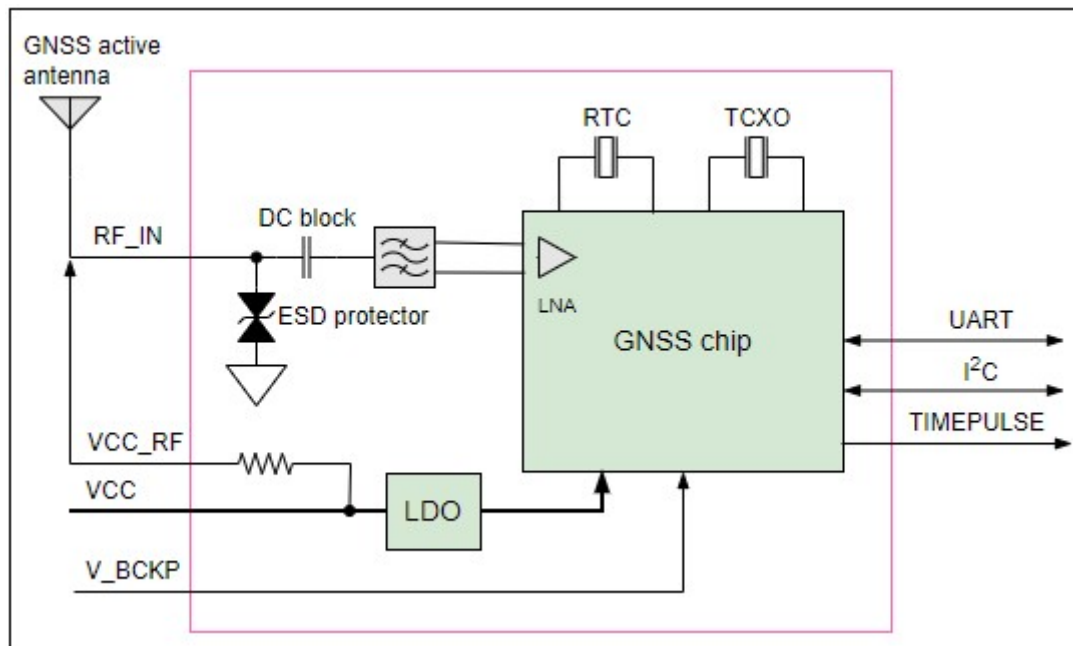


Fig. 3-1 System block diagram.

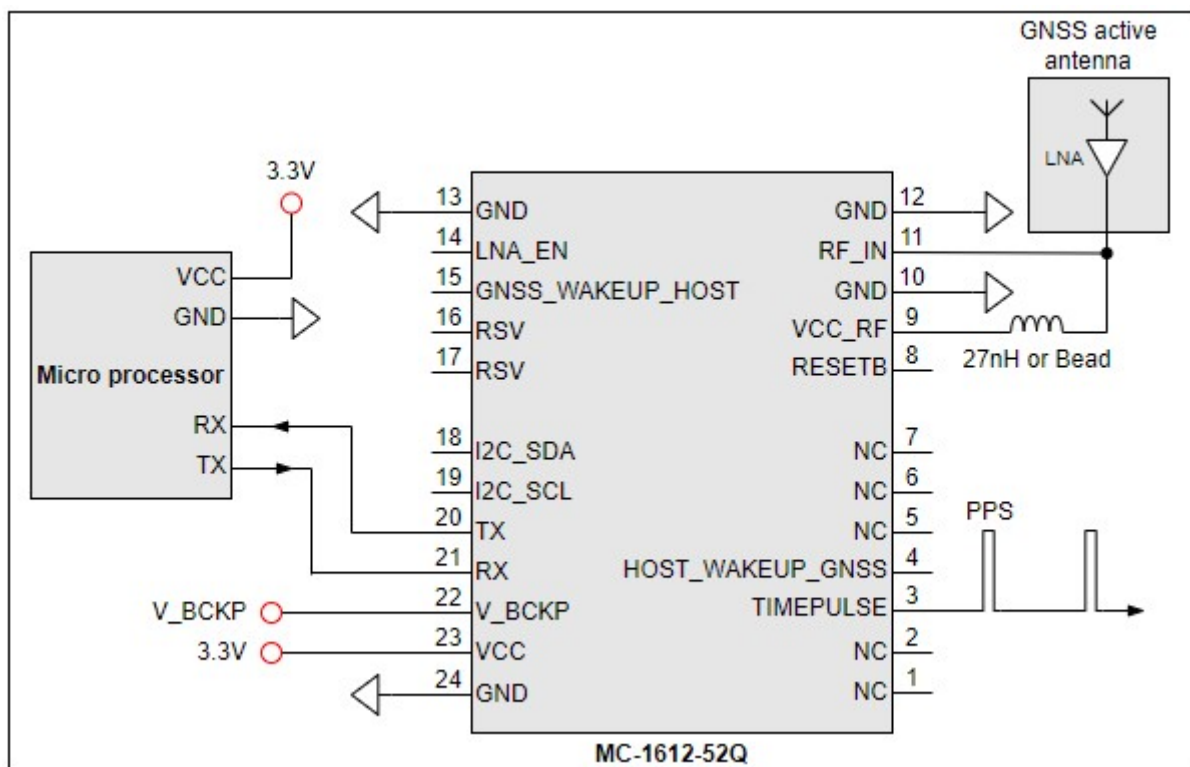


Fig. 3-2 Typical application circuit that uses an active antenna.

#### 4 GNSS receiver

Frequency	GPS/QZSS: L1 C/A, L1C GLONASS: L1OF GALILEO: E1 BEIDOU: B1I, B1C	
Channels	Support 47 channels	
Update rate	1Hz default, up to 10Hz	
Sensitivity	Tracking	-165dBm (with external LNA)
	Cold start	-149dBm (with external LNA)
Acquisition Time	Hot start (Open Sky)	1s (typical)
	Cold Start (Open Sky)	28s (typical) without AGPS
		< 15s (typical) with AGPS (ephemeris prediction)
Position Accuracy	Autonomous: 1.5m (CEP) <sup>(1)</sup>	
Max. Altitude	< 18,000 m	
Max. Velocity	< 500 m/s	
Protocol Support	NMEA 0183 ver. 4.1	115200 bps <sup>(2)</sup> , 8 data bits, no parity, 1 stop bits (default)
		1Hz: GGA, GLL, GSA, GSV, RMC, VTG, GST

<Note>

1. Open sky, dual band, demonstrated with a good external LNA.
2. Both baud rate and output message rate are configurable to be factory default.