UBX-G7020

Standard | Professional | Automotive

POSITIONING

u-blox 7 GNSS chips

Highlights

- GNSS engine for GPS/QZSS, GLONASS
- Minimal board space, <30 mm²
- Combines low power consumption and high sensitivity
- Minimal e-BOM, as few as 8 external parts
- Exceptional jamming immunity
- Pin-compatible to UBX-M8030

UBX-G7020-CT
3.0 x 3.4 x 0.36 mm

UBX-G7020-KT
5.0 x 5.0 x 0.59 mm

UBX-G7020-KA
5.0 x 5.0 x 0.59 mm

Product description

The high performance UBX-G7020 multi-GNSS chip supports GPS, GLONASS, QZSS and SBAS. It delivers exceptional sensitivity and acquisition times.

u-blox 7 features ultra low power consumption, thanks to innovative single die architecture and enhanced software algorithms. This gives the UBX-G7020 best in class power consumption for GLONASS reception.

The extended voltage supply range and 1.8 V and 3.0 V I/O compliance supports a wide variety of user applications. Sophisticated RF-architecture and interference suppression using active continuous wave detection ensure maximum performance even in GNSS-hostile environments.

The UBX-G7020 is available in your choice of miniature WL-CSP and QFN packages and features an ultra small solution footprint of only 30 mm². The built-in LNA, LDOs and DC/DC converter, and on-chip ROM mean that only the smallest possible external BOM is required. By supporting TCXOs or lower price GNSS oscillators the UBX-G7020 further ensures a minimal Total-Cost-of-Ownership.

The ultra small UBX-G7020-CT is the perfect choice for portable consumer applications with demanding size and cost constraints. With its rigorous Automotive quality and manufacturing standards (AEC-Q100, ISO/TS 16949) the UBX-G7020-KA is ideal for automotive applications.

Product selector

Model	Package	Type								Supply	Interfaces				Features					Grade		
	Package	GPS / QZSS	GLONASS	Galileo	BeiDou	Timing	Dead Reckoning	Precise Point Positioning	Raw Data	1.4 V – 3.6 V	UART	USB	SPI	DDC (I²C compliant)	Programmable (Flash)	Data logging	RTC crystal	Internal oscillator	Antenna supply and supervisor	Standard	Professional	Automotive
UBX-G7020-CT	WL-CSP50	•	•							•	•	•	•	•	S	S	S	C/T	S			
UBX-G7020-KT/KA	QFN40	•	•							•	•	•	•	•	S	S	S	C/T	S			

C/T = Crystal and TCXO supported

S = supported, may require external components

Standard
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Features

Receiver type	56-channel u-blox 7 engine GPS & QZSS L1 C/A, GLONASS L1OF, SBAS: WAAS, EGNOS, MSAS		
Navigation update rate	up to 10 Hz		
Accuracy		GPS	GLONASS
	Position	2.5 m CEP	4 m CEP
	SBAS	2.0 m CEP	
Acquisition	Cold starts:	29 s	30 s
	Hot starts:	1 s	3 s
Sensitivity	Tracking:	–162 dBm	–158 dBm
	Cold starts:	–148 dBm	–140 dBm
	Reacquisition:	–160 dBm	–156 dBm
Assistance	AssistNow Online AssistNow Offline AssistNow Autonomous OMA SUPL & 3GPP compliant		
LNA	Built-In		
Oscillator	Crystal or TCXO		
RTC input	32.768 kHz (optional). Real time clock can be derived from GPS crystal or TCXO.		
Antenna Supervision	Short and open circuit detection supported with external circuit		
DC/DC converter	Integrated		
Anti jamming	Active CW detection and removal		
Memory	Optional SQI Flash		
Data logger*	Continuous log of position, velocity & time		

* External FLASH required.

Electrical data

Supply voltage	1.4 V to 3.6 V
Digital I/O voltage level	1.65 – 3.6 V
Power Consumption	41 mW @ 1.4 V (Continuous) 9 mW @ 1.4 V Power Save mode (1 Hz)
Backup Supply	1.4 to 3.6 V

Interfaces

Serial interfaces	1 UART 1 USB 1 DDC (I^2C compliant) 1 SPI
Digital I/O	2 configurable time pulses 2 EXTINT interrupt inputs 2 GPIO for antenna supervision
Memory	SQI interface

Packages

UBX-G7020-CT:	50 Pin WL-CSP, 3.4 x 3.0 x 0.36 mm 11.9 mg
UBX-G7020-KT/KA:	40 Pin MLF/QFN, 5.0 x 5.0 x 0.59 mm 75 mg

Environmental data

Operating temp.	–40° C to 85° C
Storage temp.	–40° C to 125° C
Humidity	JEDEC MSL 1

RoHS compliant (lead-free) and green (no halogens)

Support products

u-blox 7 Evaluation Kits:

Easy-to-use kits to get familiar with u-blox 7 positioning technology, evaluate functionality, and visualize GNSS performance.

EVK-7N:	u-blox 7 GNSS Evaluation Kit, with TCXO, supports u-blox 7 chips
EVK-7C:	u-blox 7 GNSS Evaluation Kit, with Crystal, supports u-blox 7 chips

Product variants

UBX-G7020-CT	u-blox 7 GNSS chip, 50 Pin WL-CSP
UBX-G7020-KT/KA	u-blox 7 GNSS chip, 40 Pin QFN

Further information

For contact information, see www.u-blox.com/contact-us.

For more product details and ordering information, see the product data sheet.