UBX-M8030

u-blox M8 concurrent GNSS chips

Highlights

- Concurrent reception of GPS, QZSS, GLONASS, BeiDou
- Galileo ready
- Minimal board space, <30 mm²
- Combines low power consumption and high sensitivity
- Minimal e-BOM, as few as 8 external parts
- Exceptional jamming immunity

UBX-M8030-CT
2.99 x 3.21 x 0.36 mm

UBX-M8030-KT
5.00 x 5.00 x 0.59 mm

UBX-M8030-KA
5.00 x 5.00 x 0.59 mm

Product description

The UBX-M8030 is the newest generation of standalone positioning chips from u-blox. The high performance u-blox M8 position engine delivers exceptional sensitivity and acquisition times, utilizing concurrent reception of GPS (QZSS) and GLONASS or BeiDou, or concurrent reception of GLONASS and BeiDou satellite signals.

u-blox M8 chips feature low power consumption in concurrent reception mode, thanks to an innovative single-die architecture combined with sophisticated software algorithms. In situations where single constellation reception is acceptable, the total power consumption can be as low as 12 mW in Power Save Mode.

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

UBX-M8030 is available in miniature WL-CSP and QFN packages. Featuring built-in LNA, LDOs and DC/DC converter, and a small external BOM, the UBX-M8030 enables ultra-small solutions with a footprint of only 30 mm². Supporting TCXOs or lower price GNSS oscillators further ensures a minimal bill of materials.

Migrating existing u-blox 7 designs to u-blox M8 is simple, since the UBX-M8030 QFN chips' hardware is completely backward compatible with u-blox 7 QFN chips. This enables fast migration and significantly reduces time-to-market.

The ultra small UBX-M8030-CT is the perfect choice for portable consumer applications with demanding size and cost constraints.

Product selector

Model	Package	Type							Supply	Interfaces				Features						
	Package	GPS / QZSS	GLONASS	Galileo	BeiDou	Timing	Dead Reckoning	Precise Point Positioning	1.4 V – 3.6 V	UART	USB	SPI	DDC (I²C compliant)	Programmable (Flash)	Data logging	RTC crystal	Internal oscillator	Antenna supply and supervisor	Timepulse output	External interrupt / Wakeup
UBX-M8030-CT	WL-CSP47	•	•	F	•				•	•	•	•	•	S	S	S	C/T	S	•	•
UBX-M8030-KT/KA	QFN40	•	•	F	•				•	•	•	•	•	S	S	S	C/T	S	•	•

C/T = Crystal and TCXO supported
F = Galileo ready with future firmware

S = supported, may require external components

Receiver performance data

Receiver type:	72-channel u-blox M8 engine GPS L1 C/A, GLONASS L10F, QZSS L1 C/A, BeiDou B1, SBAS L1 C/A: WAAS, EGNOS, MSAS Galileo-ready E1B/C (external FLASH required)

Time to first fix
Cold start:	26 s
Aided starts:	2 s
Hot starts:	1 s

Sensitivity
Tracking & Nav.:	−167 dBm
Reacquisition:	−160 dBm
Cold start:	−148 dBm
Hot start:	−156 dBm

Max nav. update rate
Single GNSS:	10 Hz
Concurrent GNSS:	5 Hz

Velocity accuracy	0.1 m/s
Heading accuracy	0.3 degrees

Horizontal Pos. Accuracy
Autonomous[1]:	2.5 m CEP
SBAS[1]:	2.0 m CEP
GPS/GLONASS:	4.0 m CEP

Accuracy of time pulse signal
RMS:	30 ns
99%:	60 ns

Frequency of time pulse signal	0.25 Hz - 10 MHz

Operational limits
Dymanics:	< 4 g
Altitude:	50,000 m
Velocity:	500 m/s

* Unless noted, figures are for default mode: GPS/GLONASS with TXCO
[1] GPS-only mode

Interfaces

Serial interfaces	1 UART 1 USB V2.0 compatible 1 DDC (I²C compliant) 1 SPI
Digital I/O	2 configurable time pulses 2 EXTINT interrupt inputs 2 PIO for antenna supervision
Memory	SQI interface for optional FLASH

Packages

UBX-M8030-CT:	47 Pin WL-CSP, 2.99 x 3.21 x 0.36 mm
UBX-M8030-KT/KA:	40 Pin QFN, 5.00 x 5.00 x 0.59 mm

Environmental data, quality & reliability

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)

Qualification according to ISO 16750

Manufactured in ISO/TS 16949 certified production sites

Electrical data

Supply voltage	1.4 V to 3.6 V
Digital I/O voltage level	1.65 V to 3.6 V
Power consumption[2]	18 mA @ 3.3 V (single GNSS, continuous mode) 25 mA @ 3.3 V (concurrent GNSS, continuous mode) 7.5 mA @ 1.4 V (power save mode)
Backup Supply	1.4 V to 3.6 V

[2] Objective specification, see website for the latest information

Support products

u-blox M8 Evaluation Kits:

Easy-to-use kits to get familiar with u-blox M8 positioning technology, evaluate functionality, and visualize GNSS performance.

EVK-M8N:	u-blox M8 GNSS Evaluation Kit, which supports TCXO-based u-blox M8 designs
EVK-M8C:	u-blox M8 GNSS Evaluation Kit, which supports Crystal-based u-blox M8 designs

Ordering information

UBX-M8030-CT	u-blox M8 GNSS chip, 47 Pin WL-CSP
UBX-M8030-KT	u-blox M8 GNSS chip, 40 Pin QFN
UBX-M8030-KA	u-blox M8 GNSS chip, 40 Pin QFN, automotive grade

Contact us

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