UBX-M8030

u-blox M8 concurrent GNSS chips

Standard | Professional | Automotive

Highlights

- Concurrent reception of GPS/QZSS, GLONASS, BeiDou
- Industry leading −167 dBm navigation sensitivity
- Superior position accuracy in urban canyons
- Minimal board space, < 30 mm²
- Minimal e-BOM, as few as eight external parts
- Exceptional jamming immunity
- Galileo ready
- Pin-compatible to UBX-G7020-KT/KA

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 standalone positioning chips from u-blox, featuring the high performance u-blox M8 position engine, deliver exceptional sensitivity and acquisition times. The chips utilize concurrent reception of GPS (QZSS) and GLONASS or BeiDou, or concurrent reception of GLONASS and BeiDou satellite signals. Reception from two constellations simultaneously allows extraordinary positioning accuracy in urban canyons, even with weak 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. Even with weak signals, the power consumption remains low. In situations suited to single constellation reception, the total power consumption can be as low as 12 mW in Power Save Mode.

Sophisticated RF-Architecture and interference suppression using active CW jamming detection ensure maximum performance even in GNSS hostile environments.

The extended voltage supply range and 1.8 V and 3.0 V I/O compliance support a wide variety of user applications.

UBX-M8030 chips are 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 BOM.

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.

Rigorous automotive quality and manufacturing standards, extended testing and low failure rate make the UBX-M8030-KA 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-M8030-CT	WL-CSP47	•	•	R	•					•	•	•	•	•	S	S	S	C/T	S	■		
UBX-M8030-KT/KA	QFN40	•	•	R	•					•	•	•	•	•	S	S	S	C/T	S		■	■

S = supported, may require external components

C/T = Crystal and TCXO supported

R = Galileo ready with future flash firmware

Production Information

u-blox

Features

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

Time to first fix[1]

Cold start:	26 s
Aided start:	2 s
Hot start:	1 s

Sensitivity[1]

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

Max nav. update rate

Single GNSS	up to 18 Hz
Concurrent GNSS	up to 10 Hz
Horizontal Pos. Accuracy[1]	2.0 m CEP
Multi -GNSS Assistance:	AssistNow Online AssistNow Offline (up to 35 days) AssistNow Autonomous (up to 6 days)
Oscillator:	Supports GNSS crystal or TCXO
LNA:	Built-in
RTC input:	32.768 kHz (optional), RTC can be derived from GNSS Crystal or TCXO
Antenna supervision:	Short and open circuit detection supported with external circuit.
DC/DC converter:	Built-in, external component required
Anti Jamming:	Active CW detection and removal
SQI Flash (optional) for:	FW update AssistNow Offline AssistNow Autonomous
Odometer:	Travelled distance
Data-logger[2]:	For position, velocity, and time

1 For default mode: GPS/SBAS/QZSS+GLONASS with TCXO
2 External Flash required

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	17.5 mA @ 3.0 V (single GNSS, continuous mode) 24.5 mA @ 3.0 V (concurrent GNSS, continuous mode) 8.0 mA @ 1.4 V (PSM, 1 Hz update) 4.5 mA @ 3.0 V (PSM, 1 Hz update)
Backup Supply	1.4 V to 3.6 V

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 AEC-Q100

Manufactured in ISO/TS 16949 certified production sites

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

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

Product variants

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

Further information

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

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