

UBX-G5010, G5000/G0010

u-blox 5 single chips and chipsets

Product description

The UBX-G5010 and UBX-G5000/UBX-G0010 are the single chip and chipset versions of the high performance u-blox 5 positioning engine. Featuring the fastest acquisition on the market, these chips were also developed with cost-effectiveness in mind. The minimal BOM requires as few as 19 passive components, the chips include an integrated LDO and LNA, there is no need for an external Flash EPROM and TCXOs as well as lower cost crystals are supported. The chips are designed to allow 2-layer PCB integration, and their small footprint enables cost-effective use of board area.

The advanced jamming suppression mechanism and innovative RF architecture ensures maximum GPS and GALILEO performance even in hostile environments such as urban canyons and other areas with weak signal coverage. The UBX-G5010 is the ideal solution for cost sensitive applications that don't require firmware updates, while the UBX-G5000 and UBX-G0010 allow Flash EPROM for firmware updates.



UBX-G5010
8 x 8 x 0.85 mm



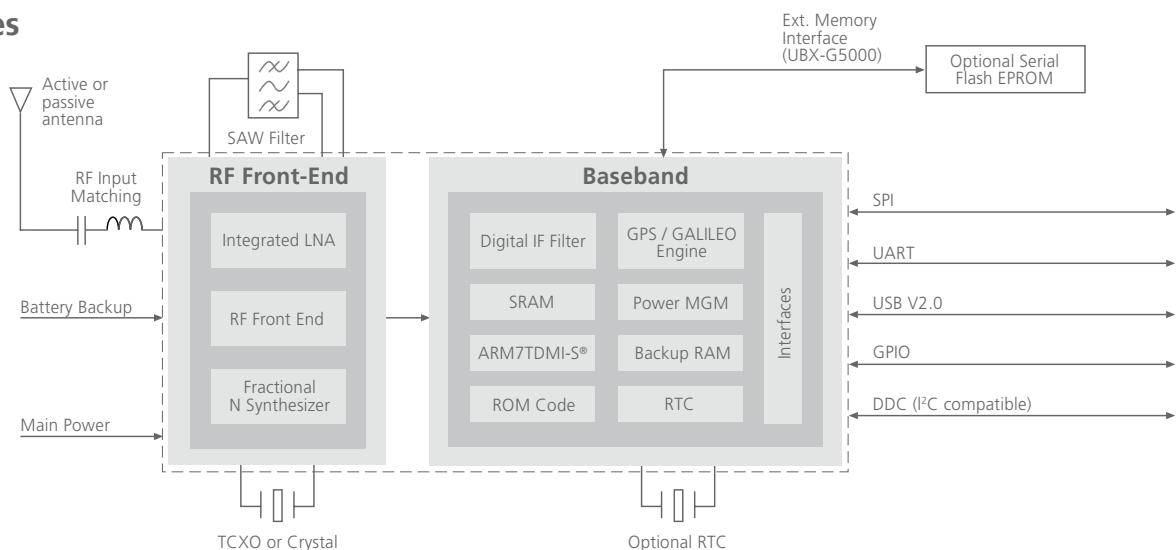
UBX-G5000
9 x 9 x 0.91 mm

UBX-G0010
4 x 4 x 0.85 mm

Highlights

- 50-channel u-blox 5 engine with over 1 million effective correlators
- < 1 second Time-To-First-Fix for Hot and Aided Starts
- -160 dBm SuperSense® tracking sensitivity
- Accelerated startup at weak signals with KickStart feature
- Supports AssistNow Online and AssistNow Offline A-GPS services; OMA SUPL compliant
- High immunity to jamming
- Hybrid GPS, GALILEO and SBAS (WAAS, EGNOS, MSAS, GAGAN) engine
- 4 Hz position update rate
- RoHS compliant (lead-free) and green (no halogens)

Features



Receiver performance data

Receiver type	50-channel u-blox5 engine GPS L1 C/A code GALILEO L1 open service (with upgrade) SBAS: WAAS, EGNOS, MSAS, GAGAN		
Max. update rate	< 4 Hz ROM / 2 Hz Flash		
Accuracy ¹	Position	2.5 m CEP	
	SBAS	2.0 m CEP	
Acquisition ¹		TCXO	Crystal
	Cold starts:	29 s	32 s
	Warm starts:	29 s	32 s
	Aided starts ² :	<1 s	<1 s
	Hot starts:	<1 s	<1 s
Sensitivity ³		TCXO	Crystal
	Acquisition:	-160 dBm	-160 dBm
	Tracking:	-160 dBm	-160 dBm
	Cold starts:	-144 dBm	-143 dBm
A-GPS	Supports AssistNow Online and AssistNow Offline, OMA SUPL compliant		
Operational limits	Velocity:	500 m/s (972 knots)	
	Altitude:	50,000 m	

¹ All SV @ -130 dBm

² Dependent on aiding data connection speed and latency

³ Demonstrated with a good active antenna

Packages

Single package	UBX-G5010:	56 Pin MLF(QFN)
	8 x 8 x 0.85 mm	
Chipset	UBX-G0010:	24 Pin MLF(QFN)
	4 x 4 x 0.85 mm	
	UBX-G5000:	100 Pin CVBGA
	9 x 9 x 0.91 mm	

Environmental data

Operating temp.	-40°C to 85°C
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Ordering information

Standard type

UBX-G5010-ST	u-blox5 single chip GPS receiver, 56 Pin MLF(QFN)
UBX-G5000-BT	u-blox5 baseband processor, 100 pin CVBGA
UBX-G0010-QT	u-blox5 RF front-end IC, 24 pin MLF(QFN)

Automotive Type

UBX-G5010-SA	u-blox5 single chip GPS receiver, 56 Pin MLF(QFN)
UBX-G5000-BA	u-blox5 baseband processor, 100 pin CVBGA
UBX-G0010-QA	u-blox5 RF front-end IC, 24 pin MLF(QFN)

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Interfaces

External memory interfaces	Data width: 16 bits Address space: 3 x 4 M Bytes (CVBGA only)
Serial interfaces	1 UART (UBX-G5010) 2 UARTs (UBX-G5000) 1 USBV2.0 full speed 12 Mbit/s 1 DDC (I ² C compliant) 1 SPI (planned)
Digital I/O	Configurable time pulse 2 EXTINT interrupt inputs 10 configuration pins (UBX-G5010) 12 configuration pins (UBX-G5000)

Electrical data

Supply Voltages	Single voltage supply: 1.8V or 2.5 – 3.6V Dual voltage supply: 1.4V / 1.8V or 1.4V / 2.5 – 3.6V or 1.8V / 2.5 – 3.6V
Digital I/O Voltage Level	1.65 – 3.6V
Power Consumption	64 mW (tracking & navigating)
Backup Supply	Voltage range: 1.4 to 3.6V
Antenna Supervision	Short and open circuit detection supported with external circuit
Antenna Type	Active and passive

RF data

LNA	Built-In (no external LNA required)
Overall noise figure	2.5 dB (LNA + RF + digital part combined)
Architecture	Low IF: 3 MHz I and Q
RTC input	32.768 kHz (optional)
External ref. clock	19.2, 26.0 (Crystal) 16.8, 19.2, 26.0, 33.6, 38.4 (TCXO)

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