

# CAM-M8Q

## u-blox M8 concurrent GNSS antenna module

### Highlights

- Concurrent reception of GPS, QZSS, GLONASS, BeiDou
- Industry leading  $-167$  dBm navigation sensitivity
- Embedded GNSS antenna
- Extremely small form factor and low power consumption
- Exceptional jamming immunity
- Form-factor compatible with UC530 and UC530M
- LCC package for reliable and cost effective manufacturing



CAM-M8Q:  
9.6 x 14.0 x 1.95 mm

### Product description

The u-blox CAM-M8Q chip antenna module has the exceptional performance of the u-blox M8 multi-GNSS (GPS/QZSS, GLONASS and BeiDou) engine in an industry proven form factor. The CAM-M8Q delivers high sensitivity and minimal acquisition times in an ultra compact form factor.

Incorporating the CAM-M8Q into customer designs is simple and straightforward, thanks to the embedded GNSS antenna, low power consumption, small footprint of 9.6 x 14 x 1.95 mm, and sophisticated interference suppression that ensures maximum performance even in GNSS-hostile environments.

The chip antenna in the CAM-M8Q performs well against larger patch antennas. Special PCB layout design rules should be complied due to customer PCB is used as part of antenna. The omnidirectional radiation pattern increases flexibility for

device installation. Optionally, CAM-M8Q can be connected to an external GNSS antenna. The SMD design keeps manufacturing costs to a minimum.

The CAM-M8Q targets industrial and consumer applications that require concurrent GPS and GLONASS or BeiDou reception. The CAM-M8Q is form-factor compatible to UC530 and UC530M modules, allowing the upgrade of existing designs with minimal effort.

CAM-M8Q modules use GNSS chips qualified according to AEC-Q100 and are manufactured in ISO/TS 16949 certified sites. Qualification tests are performed as stipulated in the ISO16750 standard: "Road vehicles – Environmental conditions and testing for electrical and electronic equipment". CAM-M8Q complies with green / halogen-free standards.

### Product selector

Model	Type							Supply		Interfaces				Features											
	GPS / QZSS	GLONASS	Galileo	BeiDou	Timing	Dead Reckoning	Precise Point Positioning	2.7 V – 3.6 V	3.0 V – 4.2 V	Lowest power (DC/DC)	UART	USB	SPI	DDC (I <sup>2</sup> C compliant)	Programmable (Flash)	Data logging	Additional LNA	Additional SAW filter	RTC crystal	Internal oscillator	Antenna supply	Antenna short circuit detection / protection	Antenna open circuit detection pin	Timepulse output	External interrupt / Wakeup
CAM-M8Q	•	•		•				•	•		•		Sel	•			++	++	•	T				•	•
UC530M	•	•							•	•	•				•	•	++	++	•	T				•	•

Sel = Select for either SPI or UART/DDC by HW configuration pin (DSEL)  
++ = optimized for performance

T = TCXO

## 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	
Max nav. update rate	Single GNSS	up to 18 Hz
	Concurrent GNSS	up to 10 Hz
Position accuracy <sup>1</sup>	2.0 m CEP	
Acquisition <sup>1</sup>	Cold start:	26 s
	Aided start:	2 s
	Hot start:	1.5 s
Sensitivity <sup>1</sup>	Tracking & Navigation:	-167 dBm
	Reacquisition:	-160 dBm
	Cold start:	-148 dBm
	Hot start:	-156 dBm
Assistance	AssistNow GNSS Online AssistNow GNSS Offline (up to 35 days) <sup>2</sup> AssistNow Autonomous (up to 6 days) OMA SUPL & 3GPP compliant	
Oscillator	TCXO	
RTC crystal	Built-In	
Anti jamming	Active CW detection and removal, onboard SAW band pass filter	
Memory	Onboard ROM	
Odometer	Travelled distance	

<sup>1</sup> Default mode: GPS/SBAS/QZSS+GLONASS

<sup>2</sup> Requires host integration

## Electrical data

Supply voltage	2.7 V to 3.6 V
Digital I/O voltage level	2.7 – 3.6 V
Power consumption	31 mA @ 3.0 V (continuous)
Backup Supply	1.4 V to 3.6 V

## Interfaces

Serial interfaces	1 UART 1 SPI (Optional) 1 DDC (I <sup>2</sup> C compliant)
Digital I/O	Configurable timepulse 1 EXTINT input for WAKEUP
Timepulse	Configurable 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM

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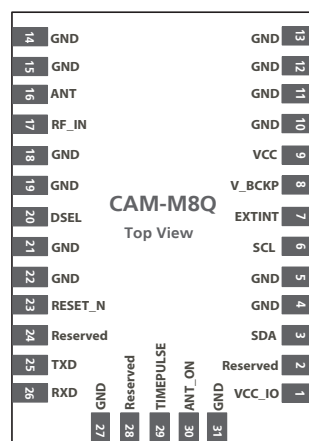
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## Package

28 pin LCC (Leadless Chip Carrier): 9.6 x 14.0 x 1.95 mm, 0.5 g

Pinout



## Environmental data, quality & reliability

Operating temp. -40° C to 85° C

Storage temp. -40° C to 85° C

RoHS compliant (lead-free)

Green (halogen free)

Qualification according to ISO16750

Manufactured in ISO/TS 16949 certified production site

Uses u-blox M8 chips qualified according to AEC-Q100

## 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-M8CAM: u-blox M8 concurrent GNSS evaluation kit, supports CAM-M8Q

## Ordering information

CAM-M8Q-0 u-blox concurrent GNSS LCC antenna module, TCXO, SAW, LNA, ROM, green, 9.6 x 14.0 mm, 500 pcs/reel

Available as samples and tape on reel

## Contact us

For contact information, see [www.u-blox.com/contact-us](http://www.u-blox.com/contact-us).