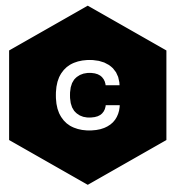


# TOBY-L2 series



## Multi-mode LTE Cat 4 modules with HSPA+ and/or 2G fallback

### Simple integration with the ELLA-W131 Wi-Fi module

- Compact TOBY LGA form factor for easy manufacturing
- Easy migration between u-blox 2G, 3G and 4G modules
- Automotive grade available, qualified according to ISO 16750
- Deliver critical firmware updates over the air
- TOBY-L201 switches automatically between AT&T and Verizon



Standard

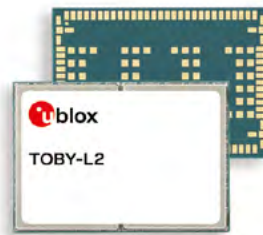


Professional



Automotive

24.8 × 35.6 × 2.6 mm



### Product description

TOBY-L2 series modules support multi-band LTE-FDD, along with DC-HSPA+ and EGPRS in a very small LGA package.

With 3GPP Rel. 9 and LTE Cat 4, which provides data throughput up to 150 Mbit/s, the modules are ideal for both industrial and consumer applications requiring the highest data-rates.

They are the perfect choice for vehicle infotainment systems, ruggedized mobile terminals, set top boxes, notebooks, tablets, as well as high-speed M2M applications such as digital signage, mobile health, remote security and video systems where backwards compatibility with 3G and 2G networks is desired.

The modules support Circuit-Switched-Fall-Back voice. They guarantee HSPA+ connectivity, also in areas that do not yet have LTE coverage.

The temperature range from -40 °C to +85 °C guarantees operation in harsh environments and in very compact designs. The TOBY-L201 works on AT&T and Verizon networks and can switch between the operators, based on the SIM card used or via an AT command.

The compact LGA package enables straightforward automated manufacturing. Easy migration from u-blox UMTS, CDMA, and GSM modules maximizes the investments of customers, simplify logistics, and implies a very short time-to-market.

TOBY-L2 modules are manufactured in ISO/TS 16949 certified sites, with the highest production standards and the highest quality and reliability. Each module is fully tested and inspected during production. Modules are qualified according to ISO 16750 – for systems installed in vehicles.

USB drivers and RIL software for Android are free of charge.

	TOBY-L200	TOBY-L201	TOBY-L210	TOBY-L220	TOBY-L280
<b>Grade</b>					
Automotive	•		•		•
Professional	•	•	•	•	•
Standard					
<b>Regions</b>					
	North America	North America	EMEA/APAC	Japan	S. America/APAC
<b>Access Technology</b>					
GSM/GPRS bands	Q		Q		Q
UMTS/HSPA [MHz]	850, 900, 1700, 1900, 2100	850, 1900	850, 900, 1900, 2100	850, 900, 2100	850, 900, 1900, 2100
LTE FDD bands	2, 4, 5, 7, 17	2, 4, 5, 13, 17	1, 3, 5, 7, 8, 20	1, 3, 5, 8, 19	1, 3, 5, 7, 8, 28
Data rate	Cat 4	Cat 4	Cat 4	Cat 4	Cat 4
<b>Interfaces</b>					
UART	1	1	1	1	1
USB	1	1	1	1	1
DDC (I <sup>2</sup> C)	1		1	1	1
SDIO (Master)	1	1	1	1	1
GPIO	14	14	14	14	14
<b>Audio</b>					
Digital audio	1		1	1	1
<b>Features</b>					
Network indication	•	•	•	•	•
Antenna detection	•	•	•	•	•
Embedded TCP/UDP	•	•	•	•	•
Embedded FTP/HTTP	•	•	•	•	•
Embedded TLS 1.2	•	•	•	•	•
FW update via serial	•	•	•	•	•
FOTA	•	•	•	•	•
Rx diversity	•	•	•	•	•
Dual stack IPv4/IPv6	•	•	•	•	•
MIMO 2x2	•	•	•	•	•

Q = Quad-band

Cat 4 = LTE Cat 4 (150 Mb/s download, 50 Mb/s upload)

# TOBY-L2 series



## Features

LTE	Cat 4 (150 Mbit/s DL, 50 Mbit/s UL) 3GPP Release 9 FDD Bands: – TOBY-L200: 2, 4, 5, 7, 17 (N. America) – TOBY-L201: 2, 4, 5, 13, 17 (N. America) – TOBY-L210: 1, 3, 5, 7, 8, 20 (EMEA/APAC) – TOBY-L220: 1, 3, 5, 8, 19 (Japan) – TOBY-L280: 1, 3, 5, 7, 8, 28 (S. America/APAC) All channel bandwidths: 1.4 - 20 MHz MIMO 2x2 Rx diversity
UMTS/DC-HSPA+	Bands (in MHz): – TOBY-L200: 850/900/1700/1900/2100 – TOBY-L201: 850/1900 – TOBY-L210: 850/900/1900/2100 – TOBY-L220: 850/900/2100 – TOBY-L280: 850/900/1900/2100 42 Mbit/s downlink, 5.76 Mbit/s uplink
GSM	Bands (in MHz): – TOBY-L200: 850/900/1800/1900 – TOBY-L210: 850/900/1800/1900 – TOBY-L280: 850/900/1800/1900 GPRS & EDGE Class 12
SMS	MT/MO PDU / Text mode SMS over IMS and via SMS-C
Voice	CSFB Codec: HR/FR/EFR/AMR/AMR-WB Echo cancelation & noise reduction

## Software features

Protocols	Dual stack IPv4 / IPv6 Embedded TCP/IP, UDP/IP HTTP/FTP/SSL (Secure Socket Layer) eSIM and Bearer Independent Protocol
Wi-Fi interface	To ELLA-W1 module
Firmware upgrade	Via UART and USB Via FOTA

## Interfaces

Serial	1 UART 1 USB 2.0 (high-speed, 480 Mbit/s) 1 DDC (I <sup>2</sup> C) 1 SDIO (Master)
GPIO	Up to 14 GPIOs, configurable
(U)SIM	Supports 1.8 V and 3.0 V, SIM toolkit
Audio	1 digital

## Further information

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

For more product details and ordering information, see the [product data sheet](#).

## Package

152-pin LGA (Land Grid Array): 24.8 x 35.6 x 2.6 mm, 4.8 g

## Electrical data

Power supply	3.8 V nominal, range 3.4 V to 4.35 V
Consumption current	Connected mode LTE max power: 610 mA Idle mode: 1.1 mA

## Environmental data, quality & reliability

Operating temperature –40 °C to +85 °C (extended range)

RoHS compliant (lead-free)

Qualification according to ISO 16750

Manufactured in ISO/TS 16949 certified production sites

## Certifications and approvals

TOBY-L200	PTCRB, GCF, FCC, ISED (formerly known as IC), RED (formerly known as R&TTE), AT&T, Anatel, Rogers (Canada)
TOBY-L201	PTCRB, GCF, FCC, ISED (formerly known as IC), AT&T, Verizon
TOBY-L210	PTCRB, GCF, FCC, ISED (formerly known as IC), RED (formerly known as R&TTE), RCM (Australia), NCC, KCC (Korea), Giteki (Japan), Softbank (Japan)
TOBY-L220	Giteki (Japan), NTT DoCoMo (Japan)
TOBY-L280	PTCRB, GCF, FCC, ISED (formerly known as IC), RED (formerly known as R&TTE), RCM (Australia), NCC, Anatel (Brazil)

## Support products

EVK-L2x	Evaluation Kits for TOBY-L2 series
RIL software	Available for Android
USB driver	Available for Embedded Windows 6.0, 7, 2013 and Windows 7, 8, 8.1, 10

## Product variants

TOBY-L200	LTE Cat 4 / DC-HSPA+ / EGPRS modules for North America; LTE bands 2, 4, 5, 7, 17
TOBY-L201	LTE Cat 4 / DC-HSPA+ modules for North America; LTE Bands 2, 4, 5, 13, 17 Ability to switch between operators
TOBY-L210	LTE Cat 4 / DC-HSPA+ / EGPRS modules for EMEA/APAC; LTE bands 1, 3, 5, 7, 8, 20
TOBY-L220	LTE Cat 4 / DC-HSPA+ modules for Japan; LTE bands 1, 3, 5, 8, 19
TOBY-L280	LTE Cat 4 / DC-HSPA+ / EGPRS modules for South America and APAC; LTE bands 1, 3, 5, 7, 8, 28

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