

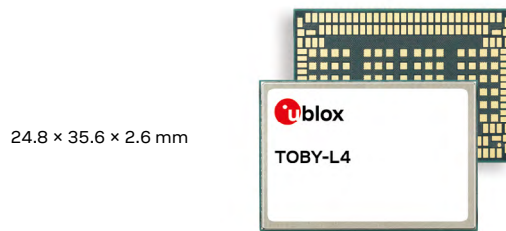
# TOBY-L4 slim modem series



## LTE Advanced (Cat 6) modules with HSPA+ and 2G fallback

### Best in class data rate with LTE Cat 6 and Carrier Aggregation support

- 300 Mbit/s DL peak data rate
- Global coverage with 4 variants
- AECQ certified cellular chipset
- Automotive grade, qualified according to ISO 16750
- Temperature range -40 °C to + 85 °C, with eCall setup up to +95 °C



24.8 × 35.6 × 2.6 mm

### Product description

The TOBY-L4 slim modem series supports LTE-TDD, LTE-FDD, UMTS and GSM connectivity in a compact LGA package. These slim modem TOBY-L4 variants have been designed to be connected with an external application (typically running Linux or Android OS) via AT commands in order to provide the highest data rate and best user experience.

With 3GPP Rel. 10 and LTE Cat 6 supporting carrier aggregation, which provides data throughput up to 300 Mbit/s, the modules 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.

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

The TOBY-L4 series supports a temperature range of -40 °C to +85 °C and enables the establishment of eCall at +95 °C for at least 2 minutes.

TOBY-L4 modules are manufactured in an ISO/TS 16949 certified site, 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.

	TOBY-L4006-51	TOBY-L4106-51	TOBY-L4206-51	TOBY-L4906-51
<b>Grade</b>				
Automotive	•	•	•	•
Professional				
Standard				
<b>Regions</b>				
	N. America	EMEA	APAC/Brazil	China
<b>Access Technology</b>				
GSM/GPRS bands	D2	D1	Q	D1
UMTS/HSPA [MHz]	850, 1700, 1900	900, 2100	850, 900, 2100	900, 2100
LTE FDD bands	2, 4, 5, 7, 12, 13, 29	1, 3, 7, 8, 20	1, 3, 5, 7, 8, 9, 19, 28	1, 3
LTE TDD bands	38			39, 40, 41
Data rate	Cat 6	Cat 6	Cat 6	Cat 6
<b>Positioning</b>				
GNSS via modem §	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AssistNow Software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CellLocate®	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Interfaces</b>				
USB	1	1	1	1
DDC (I <sup>2</sup> C)	1	1	1	1
RGMII/RMII	1	1	1	1
GPIO	9	9	9	9
<b>Audio</b>				
Analog audio	1	1	1	1
Digital audio	1	1	1	1
<b>Features</b>				
Antenna detection	•	•	•	•
Jamming detection	•	•	•	•
FW update via USB	•	•	•	•
FOTA	•	•	•	•
Rx diversity	•	•	•	•
Dual stack IPv4/IPv6	•	•	•	•
MIMO 2x2	•	•	•	•

D1 = Dual-band 900/1800 MHz

D2 = Dual-band 850/1900 MHz

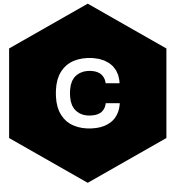
Q = Quad-band

□ = Available in future FW

Cat 6 = 300 Mb/s download, 50 Mb/s upload

§ = external GNSS can be controlled via the modem

# TOBY-L4 slim modem series



## Features

LTE Advanced	Cat 6 (300 Mbit/s DL, 50 Mbit/s UL) 3GPP Release 10 FDD and TDD bands: – TOBY-L4006: 2, 4, 5, 7, 12, 13, 29 (N. America) – TOBY-L4106: 1, 3, 7, 8, 20, 38 (EMEA) – TOBY-L4206: 1, 3, 5, 7, 8, 9, 19, 28 (APAC/Brazil) – TOBY-L4906: 1, 3, 39, 40, 41 (China) Carrier aggregation All channel bandwidths: 1.4 - 20 MHz MIMO 2x2, Rx diversity
UMTS/DC-HSPA+	Bands: – TOBY-L4006: 2, 4, 5 (N. America) – TOBY-L4106: 1, 8 (EMEA) – TOBY-L4206: 1, 5, 8 (APAC/Brazil) – TOBY-L4906: 1, 8 (China) 42 Mbit/s downlink, 5.76 Mbit/s uplink
GSM	Bands: – TOBY-L4006: 2, 5 (N. America) – TOBY-L4106: 3, 8 (EMEA) – TOBY-L4206: 2, 3, 5, 8 (APAC/Brazil) – TOBY-L4906: 3, 8 (China) GPRS & EDGE Class 33
SMS	MT/MO PDU / Text mode SMS over IMS and via SMS-C
Voice	VoLTE <sup>1</sup> and CSFB Codec: HR/FR/EFR/AMR/AMR-WB Echo cancelation & noise reduction

## Software features

3GPP AT commands + u-blox extensions	
Protocols	Dual stack IPv4 / IPv6 eSIM and Bearer Independent Protocol
Network	Jamming detection eCall / ERA Glonass
GNSS Interfaces	SW pre-integration of GNSS and Wi-Fi <sup>1</sup> AssistNow software for fastest Time-To-First-Fix <sup>1</sup> CellLocate® & Hybrid Positioning <sup>1</sup>
Firmware upgrade	Via USB Via FOTA

## Interfaces

Serial	1 USB 1 RGMII / RMII 1 DDC (I <sup>2</sup> C)
GPIO <sup>2</sup>	Up to 9 GPIOs, configurable
Audio	1 digital and 1 analog
(U)SIM	2 SIM supporting 1.8 V and 3.0 V, SIM toolkit

<sup>1</sup> Available in future firmware

## Package

248-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 3.3 V to 4.4 V

## Environmental data, quality & reliability

Operating temperature –40 °C to +85 °C (extended range)  
eCall at +95 °C for at least 2 minutes

RoHS compliant (lead-free)

Automotive qualification

Manufactured in ISO/TS 16949 certified production sites

## Planned certifications and approvals

TOBY-L4006-51A	FCC, ISED (formerly known as IC), PTCRB, GCF, AT&T
TOBY-L4106-51A	RED (formerly known as R&TTE), GCF
TOBY-L4206-51A	PTCRB, GCF, Anatel <sup>2</sup>
TOBY-L4906-51A	CCC

Contact your nearest u-blox office for a full list of certifications.  
2 = Planned

## Support products

EVK-L4x	Evaluation kits for TOBY-L4 series
Linux modem manager	
Android RIL	
USB drivers for Windows 7, 8, 10	

## Product variants

TOBY-L4006-51	LTE Cat 6 FDD / DC-HSPA+ / GSM modules for North America; LTE bands 2, 4, 5, 7, 12, 13, 29
TOBY-L4106-51	LTE Cat 6 FDD and TDD / DC-HSPA+ / GSM modules for Europe, Asia; LTE bands 1, 3, 7, 8, 20, 38
TOBY-L4206-51	LTE Cat 6 FDD / DC-HSPA+ / GSM modules for APAC; LTE bands 1, 3, 5, 7, 8, 9, 19, 28
TOBY-L4906-51	LTE Cat 6 FDD and TDD / DC-HSPA+ / GSM modules for China; LTE bands 1, 3, 39, 40, 41

## 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](#).

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