

TOBY-L2 series

Standard Professional Automotive

CELLULAR

LTE/DC-HSPA+/GPRS modules

Highlights

- Powerful LTE module in LGA package, for easy manufacturing
- Highest throughput of up to 150 Mb/s with LTE Cat. 4
- Voice over LTE (VoLTE)
- Variants for America, Europe, Asia-Pacific, and Japan
- Industrial temperature range –40 to +85 °C
- Easy migration from u-blox W-CDMA, CDMA, GSM modules
- Manufactured in ISO/TS 16949 certified production sites



TOBY-L2 series:
24.8 x 35.6 x 2.6 mm

Product description

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

With 3GPP Rel. 9 and LTE Cat 4, which provides data throughput up to 150 Mb/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.

Voice over LTE and Circuit-Switched-Fall-Back are supported.

The modules support DC-HSPA+ guaranteed connectivity, also in areas that do not yet have LTE coverage.

The temperature range of –40 to +85 guarantees operation in harsh environments and in very compact designs.

The compact LGA package enables straightforward automated manufacturing. Easy migration from u-blox GSM/GPRS, HSPA and CDMA modules maximizes the investments of customers, simplify logistics, and have 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 ISO16750 – for systems installed in vehicles.

TOBY-L2 modules come in variants for America, Europe/Africa, Asia-Pacific, and Japan.

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

Product selector

Model	Region	Access Technology						Interfaces				Audio	Features										Grade					
		3GPP Release Baseline		LTE FDD Category		LTE Bands	UMTS Bands	GSM Bands	MIMO	UART	USB 2.0	DDC	SDIO (Master)	GPIO	Analog audio	Digital audio	Antenna Supervisor	Jamming Detection	Embedded TCP/UDP	Embedded HTTP, FTP, SSL	AssistNow software	CellLocate®	FOTA	eCall / ERA GLONASS	Dual stack IPv4 / IPv6	Standard	Professional	Automotive
TOBY-L200	North America	9	4	2,4,5,7,17	850/900/AWS/1900/2100	Q	2x2			1	1	1	1	14	1		•	•	•	•	•	•	•	•	•			
TOBY-L201	North America	9	4	2,4,5,13,17	850/1900		2x2			1	1	1	1	14	1		•	•	•	•	•	•	•	•				
TOBY-L210	Europe / APAC	9	4	1,3,5,7,8,20	850/900/1900/2100	Q	2x2			1	1	1	1	14	1		•	•	•	•	•	•	•	•				
TOBY-L220	Japan	9	4	1,3,5,8,19	850/900/2100		2x2			1	1	1	1	14	1		•	•	•	•	•	•	•	•				
TOBY-L280	S. America / APAC	9	4	1,3,5,7,8,28	850/900/1900/2100	Q	2x2			1	1	1	1	14	1		•	•	•	•	•	•	•	•				

Q = Quad-band

Features

LTE	Cat. 4 (150 Mb/s DL, 50 Mb/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 (EU/Asia/Africa) TOBY-L220: 1, 3, 5, 8, 19 (Japan) TOBY-L280: 1, 3, 5, 7, 8, 28 (APAC) All channel bandwidths: 1.4 - 20 MHz MIMO 2x2 Rx diversity
UMTS/DC-HSPA+	Bands (in MHz): TOBY-L200: 850/900/AWS/1900/2100 TOBY-L201: 850/1900 TOBY-L210: 850/900/1900/2100 TOBY-L220: 850/900/2100 TOBY-L280: 850/900/1900/2100 42 Mb/s downlink, 5.76 Mb/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	VoLTE ¹ and CSFB Codec: HR/FR/EFMR/AMR/AMR-WB Echo cancelation & noise reduction

¹ Available in FW version 03S

Software features

Protocols	Dual stack IPv4 / IPv6 Embedded TCP/IP, UDP/IP ² HTTP/FTP/SSL (Secure Socket Layer) ²
Network	Jamming detection
GPS interfaces ²	Direct access to u-blox GNSS via TOBY AssistNow software for fastest GPS Time-To-First-Fix CellLocate® & Hybrid Positioning
WiFi interface	To ELLA-W1 module
Firmware upgrade	Via UART and USB Via FOTA ²

² Available in FW version 02S

Interfaces

Serial	1 UART 1 USB 2.0 (high-speed, 480 Mb/s) 1 SDIO (Master)
GPIO	Up to 14 GPIOs, configurable
(U)SIM	Supports 1.8 V and 3 V, SIM toolkit
Audio	1 digital

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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 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, IC, CE / R&TTE, AT&T, Anatel
TOBY-L201	PTCRB, GCF, FCC, IC, AT&T, Verizon
TOBY-L210	PTCRB, GCF, FCC, IC, CE / R&TTE, NCC, KCC (Korea), Giteki (Japan), RCM (Australia), Softbank
TOBY-L280	PTCRB, GCF, NCC, CE / R&TTE, RCM (Australia), Anatel (Brazil), Telstra (planned)

Support products

EVK-L2x	Evaluation Kits for TOBY-L2 series
RIL software	Available for Android
USB driver	Available for Embedded Windows 6.x, 7, 2013 and Windows 7, 8, 8.1

Product variants

TOBY-L200	LTE/DC-HSPA+/GSM modules for North America Cat. 4; LTE Bands 2, 4, 5, 7, 17
TOBY-L201	LTE/DC-HSPA+ modules for North America Cat. 4; LTE Bands 2, 4, 5, 13, 17
TOBY-L210	LTE/DC-HSPA+/GSM modules for Europe, Asia Cat. 4; LTE Bands 1, 3, 5, 7, 8, 20
TOBY-L220	LTE/DC-HSPA+ modules for Japan Cat. 4; LTE Bands 1, 3, 5, 8, 19
TOBY-L280	LTE/DC-HSPA+/GSM modules for APAC, South America Cat. 4; LTE Bands 1, 3, 5, 7, 8, 28

Further information

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

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