



GTM

Embedded broadband connectivity for tomorrow's connected devices

- Wide portfolio of LGA and PCIe modules for 2G, 3G and LTE networks.
- All modules allow high speed data connection and highly sensitive GPS with optional PCM voice capability
- ½ size and full size PCIe modules offer optional WiFi connection and optional SIM card/μSD card holder
- Worldwide 2G/3G/4G/LTE coverage, supporting both WCDMA and CDMA network technologies

LGA

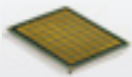


OPTION The pioneer for LGA modules

Option was the industry pioneer in 2009, introducing the concept of modules that are soldered directly on the base board. Due to its ultra-thin form factor and excellent heat dissipation characteristics an LGA module is perfect for integration in small consumer electronics devices or

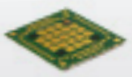
broadband M2M applications. The additional GPS and voice capabilities in the last generations give these modules a unique position in the embedded module market. The new and improved footprint in the 2nd and 3rd generation facilitates soldering.

1st generation **GTM501**



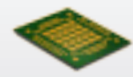
- 30 × 25 × 2.3 mm
- Based on Icera® 8040 chipset
- 10.2 Mbps DL/5.76 Mbps UL
- 2G/W-CDMA data only

2nd generation **GTM601**



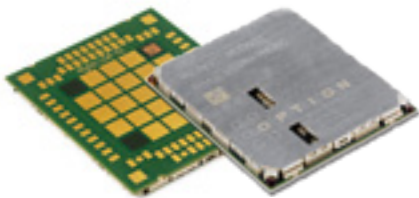
- 31.8 × 26.8 × 2 mm
- Based on MDM6200/6600™ chipset
- 14.4 Mbps DL/5.76 Mbps UL
- 2G/W-CDMA/EVDO data & voice, GPS

3rd generation **GTM801**



- 37 × 29.8 × 2 mm
- Based on MDM9215/9615™ chipset
- 100 Mbps DL/50 Mbps UL
- 2G/W-CDMA/EVDO/LTE data and voice, GPS

GTM601W / GTM609W



Physical specifications

- MCM in LGA package, based on Qualcomm MDM6200™ (GTM601W) or MDM6600™ (GTM609W)
- 31.8 × 26.8 × 2 mm, 5g
- Operating temperature: -30°C to +80°C

Electrical interface

- LGA with 70 signal contact pads & 25 ground/heat dissipation pads
- USB 2.0 Hi-Speed
- DC power supply 3.2-4.2 V (single cell battery)
- USIM/SIM connection – Class B and

Class C

- W_DISABLE, WAKE and LED_WWAN signals
- Primary, diversity and GPS antenna contact pads
- PCM digital audio interface pads

Supported frequency bands and connectivity speeds

- GSM/GPRS/EDGE: 850/900/1800/1900 MHz
- UMTS/HSDPA/HSUPA: 800-850/900/1900/2100 MHz (B1, B2, B5, B6, B8) at 14.4 Mbps DL/5.76 Mbps UL

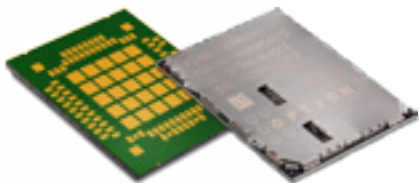
max speed

- (GTM609W only) CDMA 1xRTT/EV-DO RevA: 800/1900 MHz (BC0, BC1) at 3.1 Mbps FL/1.8 Mbps RL max speed
- gpsOne Gen8, supporting S-GPS, A-GPS, gpsOneXtra™ concurrent with Glonass

Operator support

- AT&T, Verizon, Docomo, Vodafone and Orange approval
- Member of AT&T Mobile Broadband Accelerator Program

GTM801U / GTM809U



Physical specifications

- MCM in LGA package, based on Qualcomm MDM9215™ (GTM801U) or MDM9615™ (GTM809U)
- 37 × 29.8 × 2 mm, 6g
- Operating temperature: -30°C to +65°C (3.0V to 4.2V) -40°C to +85°C (3.3V to 4.2V)

Electrical interface

- LGA with 89 signal contact pads & 25 ground/heat dissipation pads
- USB 2.0 HS and HSIC
- DC power supply 3.0-4.2V
- Dual USIM/SIM connection – class B and class C for one connection, embedded MFF SIM for other connection
- W_DISABLE, WAKE and LED_WWAN signals
- Primary and diversity/MIMO antenna and GPS antenna contact pads

- Antenna tuning and WiFi coexistence pads
- PCM/Slimbus for audio
- GTM801 footprint allows to mount GTM601W as well

Supported frequency bands and connectivity speeds

- GSM/GPRS/EDGE: 850/900/1800/1900 MHz
- UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+ : 800-850/1900/2100/AWS MHz (B1/B2/B4/B5/B6) at 42 Mbps DL/5.76 Mbps UL max speed
- (GTM809U only) also 900 MHz (B8)
- FDD-LTE: 700/850/1900/AWS MHz (B2/B4/B5/B17) at 100 Mbps DL/50 Mbps UL
- (GTM809U only) also 700/1900 MHz (B13/B25)
- (GTM809U only) CDMA 1xRTT/CDMA 1xAdv/EV-DO RevA/EV-DO RevB :

- 800/1900/2100 MHz (BC0, BC1, BC6, BC10) at 9.3 Mbps FL/5.4 Mbps RL max speed
- gpsOne Gen8A, supporting S-GPS, A-GPS, gpsOneXtra™ concurrent with Glonass

Other planned variants

(2013 – preliminary specification)

- GTM801E (Europe/Australia/Asia): FDD-LTE 800/900/1800/2100/2600MHz (B1, B3, B7, B8, B20) TDD-LTE 2600MHz (B38)
- GTM801J(Japan): FDD-LTE 800/1500/1800/2100 MHz (B1, B3, B19, B21)
- GTM801C (China) : FDD-LTE 900/2100 (B1, B8) and TDD-LTE 1900/2000/2400/2600 MHz (B34, B38, B39, B40, B41)



PCI Express M.2 type 3042

Due to its reduced thickness, shorter form factor and more advanced interfacing possibilities (compared to a PCI Express Minicard), the new PCI Express M.2 module is quickly becoming a standard connector-based module format for tablet and notebook devices.

By soldering our LGA modules on a carrier board, Option can very quickly support these new standards.

The carrier board design is available to our customers for free so it can be produced and stuffed together with the rest of the device, maintaining all benefits of the wide range of approvals of the LGA module. The carrier boards are compatible for the GTM60x and GTM80x so the same design can be used for both LGA modules.



- 42 × 30 × 2.9 mm (with GTM 60x)
- 45 × 30 × 2.9 mm (with GTM 80x)
- (length not compliant with specifications)

PCI Express MiniCard

GTM681W / GTM689W

This is the original Gobi™ 3000 design that was made by Qualcomm. Option is a Gobi licensee and offers this module to its customers, customized and bundled with optional software and/or service offerings.



Physical specifications

- PCI Express MiniCard form factor, version 1.2, type F2 (full size, single sided), based on Qualcomm MDM6200™ (GTM681W) or MDM6600™ (GTM689W)
- 51 × 30 × 3.1 mm, 7g
- Operating temperature: -30° C to +70° C

Electrical interfaces

- 52-pin edge connector with:
 - USB 2.0 Hi-Speed
 - DC power supply: 3.2-3.6 V (CDMA/

- W-CDMA and 3.0-3.6 V (GSM)
- USIM/SIM connection – Class B and Class C
- W_DISABLE, WAKE and LED_WWAN signals
- Primary and Diversity/GPS antenna, U.FL coax connector (primary on bottom)

Supported frequency bands and connectivity speeds

- GSM/GPRS/EDGE: 850/900/1800/1900 MHz
- GPRS: 85.6 Kbps DL/42.8 Kbps UL (class 10)

- EDGE: 236.8 Kbps DL/118.4 Kbps UL (class 10)
- UMTS/HSDPA/HSUPA: 800-850/900/1900/2100 MHz and AWS band (1700/2100 MHz) (B1, B2, B4, B5, B6, B8) at 14.4 Mbps DL/5.76 Mbps UL max speed
- (GTM689W only) CDMA 1xRTT/EV-DO Rev0/EV-DO RevA at 3.1 Mbps FL/1.8 Mbps RL max speed
- gpsOne Gen8, supporting S-GPS, A-GPS, gpsOneXtra™

GTM661W(FS) / GTM669W(FS) / GTM671W(FS) / GTM679W(FS)

By adding an optional WiFi component on the 3G PCIe MiniCard, only one PCIe minicard slot is needed to integrate both WiFi and 3G connectivity to your device, hence lowering overall device cost. This module is available in ½ size form factor or full size form factor. For the full-size module, an optional SIM card holder and micro SD card holder can be mounted which allows an all-in-one connectivity solution on a single PCIe card.



Physical specifications

- PCI Express Mini Card form factor, version 1.2 type H1 (half size) / type F1 (full size)
- 26.8/51 × 30 × 4.2 mm, 5.5/8g
- Operating temperature: -10° C to +55° C certified (-30° C to +70° C extended range)

Electrical interfaces

- 52-pin edge connector with
 - USB 2.0 Hi-Speed
 - DC power supply 3.3 V +/- 9%
 - USIM/SIM connection – Class B and Class C
 - W_DISABLE, WAKE and LED_WWAN signals

- PCM voice signal pins
- WiFi signal pins (PCI interface), LED_WLAN and COEX signals (GTM67x only)
- Primary and Diversity/GPS antenna, U.FL coax connector
- Primary and Diversity WiFi antenna, U.FL coax connector (GTM67x only)
- Optional SIM card holder (antenna side) and µSD card holder (back side) (GTM6xxWFS only)

Supported frequency bands and connectivity speed

- GSM/GPRS/EDGE: 850/900/1800/1900 MHz

- GPRS: 85.6 Kbps DL/85.6 Kbps UL (class 12)
- EDGE: 236.8 Kbps DL/236.8 Kbps UL (class 12)
- UMTS/HSDPA/HSUPA: 800-850/900/1900/2100 (B1, B2, B5, B6, B8) at 14.4 Mbps DL/5.76 Mbps UL max speed
- (GTM669x and GTM679x only) CDMA 1xRTT/EV-DO Rev0/EV-DO RevA at 3.1 Mbps FL/1.8 Mbps RL max speed
- (GTM67x only) WiFi IEEE 802.11b/g/n in 2.4GHz band with access point capability
- gpsOne Gen8, supporting S-GPS, A-GPS, gpsOneXtra™ concurrent with Glonass

GTM881x / GTM889x

By soldering one of our GTM801x/809x module variants on a PCIe Minicard carrier board, Option can offer an LTE module in PCIe MiniCard form factor in the most time efficient way. The carrier board design is available to our customers for free so it can be produced and stuffed together with the rest of the device, benefitting from all approvals of the GTM801x/809x modules.



Physical specifications

- PCI Express MiniCard form factor, version 1.2, type F2 (full size, single-sided)
- 50.95 × 30 × 3.0 mm, 7g
- Operating temperature: -20 to +65 °C

Interfaces

- 52-pin edge connector with
 - USB 2.0 Hi-Speed
 - DC power supply: 3.0V – 4.2V
 - USIM/SIM connection – Class B and Class C
 - W_DISABLE, RESET, WAKE and LED_WWAN signals

- 4 tuneable antenna control and 3 coexistence signals
- Primary and diversity/MIMO antenna
- GPS antenna

Supported frequency bands and connectivity speeds (for GTM881U/ GTM889U)

- GSM/GPRS/EDGE: 850/900/1800/1900 MHz
- UMTS/HSDPA/HSUPA/HSPA+ /DC-HSPA+:
- 800-850/1900/2100/AWS MHz (B1/ B2/B4/B5/B6) at 42 Mbps DL/5.76 Mbps UL max speed

- (GTM889U only) also 900 MHz (B8)
- FDD-LTE:
- 700/850/1900/AWS MHz (B2/B4/ B5/B17) at 100 Mbps DL/50 Mbps UL
- (GTM889U only) also 700/1900 MHz (B13/B25)
- (GTM889U only) CDMA 1xAdv/EV-DO RevA/EV-DO RevB : 800/1900/2100 MHz (BC0, BC1, BC6, BC10) at 9.3 Mbps FL/5.4 Mbps RL max speed



Software

From embedded firmware to a full-featured connection manager, Option supports the entire software chain for embedded modules. Being a Qualcomm and Gobi licensee, Option has full access to the firmware that is running on the Qualcomm baseband processor. This allows Option to make customizations for its customers to support certain features or operator

requirements. Drivers are available for the most popular operating systems. For some platforms such as Android™ and Windows® Mobile, a RIL (Radio Interface Layer) can be provided. For other platforms Option can deliver the SDK or a customizable connection manager.

	Windows® XP 32 bits (SP3)/64 bits (SP2)	Windows® Vista 32/64 bits (SP2)	Windows® 7 32/64 bits (SP1)	Windows® 8 32/64 bits	Linux® (kernel version 2.6.26 or higher)	Android™ (2.3/3.2/4.0)	Google Chrome™	Windows® CE 5.2	Windows® Mobile 6.5	Windows® Embedded Compact 7
uCAN Connect 3.0 (data)	✓	✓	✓	✓	✓					
GTM Connect (data, for GTM68x)	✓	✓	✓	✓						
RIL (WCDMA data)						✓			✓	✓
RIL (CDMA data)						✓			✓	✓
RIL (GSM voice)						✓			✓	✓
RIL (CDMA voice)									✓	✓
HAL (GPS)						✓				
HAL (voice)						✓				
SDK (WCDMA data)	✓	✓	✓	✓	✓		✓			
SDK (GSM voice)	✓	✓	✓	✓	✓		✓			
Sensor/location driver			✓	✓						
Mobile broadband driver			✓							
GPS intermediate driver									✓	✓
Legacy driver	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Services

Option offers two categories of services:

- For new customer devices, Option can perform full device PCB design from scratch, perform the necessary certifications and assist with the manufacturing/testing/RF calibration of the device. For more detailed information about full-custom device development, please contact services@option.com.
- For existing Option modules, Option offers 3 groups of *embedded module*

*services**: additional module certifications, assistance with the details of module integration and help with your device certification. These services facilitate wireless 3G integration in a wide range of mobile broadband enabled devices such as the traditional laptops and tablets, but also portable navigation devices, industrial handhelds, smartphones and cameras. Some of these services are standard and offered free of charge when purchasing modules from Option, other services can be offered against a certain fee.

* Standard services are available free of charge to all customers, extra services are free of charge for large customers only, premium services are always chargeable. As part of the continual product improvement process, OPTION reserves the right to alter the specifications of this product.
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Option nv - Gaston Geenslaan 14 - 3001 Leuven Belgium - T +32 16 317 411 - F +32 16 207 164 - www.option.com

1. Additional module certifications



Standard certifications typically include GCF/PTCRB, countries covered by CE/FCC and some of the major operators in EU and US. Extra certifications in other countries or with other operators can be done on request.

2. Module integration assistance



Standard services include the detailed integration manual, drivers and email support. Extra services that Option can offer are pre-integration design review and post-integration measurements. Premium services are antenna design, firmware/software customizations and advanced test services.

3. Device certification assistance



Standard services provide you with the necessary module certification documents and documentation on the device certification process. Extra services assist you with the certification process for your device. Premium services are needed for pre-certification testing or acquiring device regulatory/operator approvals on your behalf.