

GLOBALSAT GPS Module

Hardware Data Sheet

Product No : MT-512C

User Manual Version 1.1



Globalsat Technology Corporation

16F., No. 186, Jian-Yi Road, Chung-Ho City, Taipei

Hsien 235, Taiwan

Tel: 886-2-8226-3799 Fax: 886-2-8226-3899

E-mail : service@globalsat.com.tw

Website: www.globalsat.com.tw

Issue Date	APPR	CHECK	PREPARE
2013/10/25	Ray		Mason

Product Description

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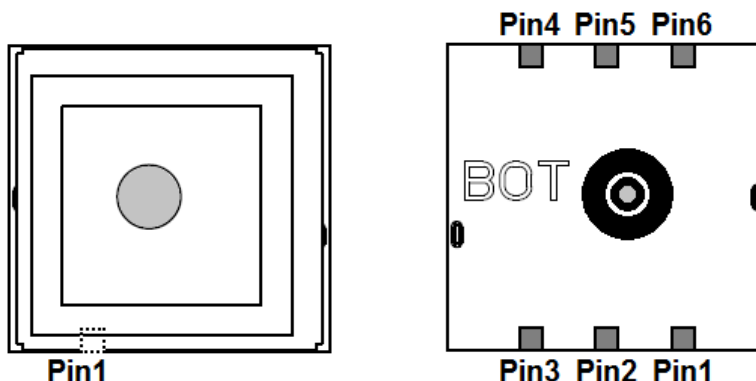
MT-512C GPS module features high sensitivity, low power and ultra small form factor. This GPS module is powered by MTK GPS solution; it can provide you with superior sensitivity and performance even in urban canyon and dense foliage environment. MT-512C supports up to 210 PRN channels. With 66 search channels and 22 simultaneous tracking channels, MT-512C acquires and tracks satellites in the shortest time even at indoor signal levels. Through MT-512C's excellent low-power consumption characteristic, while using power sensitive devices, especially portable applications. MT-512C is suitable for the following applications:

- Automotive navigation
- Fleet management
- Marine navigation

Product Features

- MediaTek high performance GPS Chipset
- Very high sensitivity (Chip Tracking Sensitivity: -165 dBm)
- Extremely fast TTFF (Time To First Fix) at low signal level
- Support UART interface, baud rate 4800/9600/38400/115200 fixed on internal setting.
- Built-in LNA
- Built-in GPS Antenna
- Compact size (12.6mm x 12.0 mm x 7.6mm) suitable for space-sensitive application
- One size component, easy to mount on another PCB board.
- Support NMEA0183 V4.0(GGA,GSA,GSV,RMC)
- Support SBAS (WASS, EGNOS, MSAS, GAGAN), QZSS

Product Pin Description



PIN Number(s)	Name	Type	Description	Note
1	VBAT	P	This is the power input for the RTC and navigation data retention. This pin builds in a back up battery.	
2	VCC	P	This is the main power supply to the GPS module.	
3	GND	P	Ground.	
4	TXD	O	This is the main transmits channel for outputting navigation and measurement data to user's navigation software or user written software.(Baud rate default 9600)	
5	RXD	I	This is the main receive channel for receiving software commands to the GPS module from user written software. (Baud rate default 9600)	
6	TIMEMARK	O	One pulse per second output.(1PPS)	

Electrical Specification

Absolute Maximums Ratings

Parameter	Min.	Typ.	Max.	Conditions	Unit
POWER Supply					
Main power supply(VCC)		3.3			V
VBAT		3.3			V
VCC power consumption	23	24	30	VCC 3.3V	mA
VBAT power consumption	6.7	6.9	7.2	VBAT 3.3V	uA
RF					
Operating Frequency		1.575			Ghz

DC Electrical characteristics

Parameter	Symbol	Min.	Typ.	Max.	Conditions	Units
I/O Low Level Output Voltage	V_{OL}			0.42		V
I/O High Level Output Voltage	V_{OH}	2.38				V
I/O Low Level Input Voltage	V_{IL}	-0.3		0.7		V
I/O High Level Input Voltage	V_{IH}	2.1		3.1		V
TXD Output Voltage	V_{TO}	2.52	2.8	3.08		V
RXD Input Voltage	V_{RI}			3.6		V
High Level Output Current	I_{OH}		2			mA
Low Level Output Current	I_{OL}		2			mA

Environmental Characteristics

Parameter	Min	Typ	Max	Unit
Humidity Range	5		95	% non-condensing
Operation Temperature	-40	25	85	°C
Storage Temperature	-40		85	°C

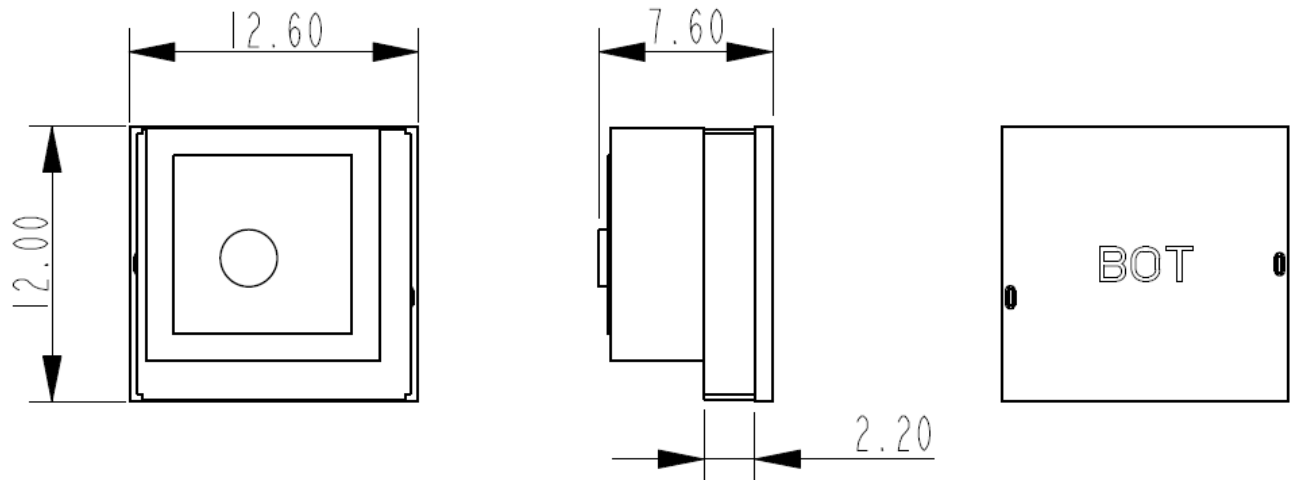
Receiver Performance

Sensitivity	Chipset Tracking :	-165dBm
	Chipset Autonomous acquisition :	-148 dBm
Time-To-First-Fix	Cold Start – Autonomous	< 35s
	Warm Start – Autonomous	< 35s
	Hot Start – Autonomous	< 1s
Horizontal Position Accuracy	Autonomous	< 3m (2D RMS)
	SBAS	<2.0m
Velocity Accuracy	Speed	< 0.01 m/s
	Heading	< 0.01 degrees
Reacquisition	0.1 second, average	
NMEA Update Rate	1 Hz(GGA,GSA,GSV,RMC)	
Maximum Altitude	< 18,000 meter	
Maximum Velocity	< 515 meter/ second	
Maximum Acceleration	< 4G	

<NOTE>

MT-512C's sensitivity depended different mechanical design.

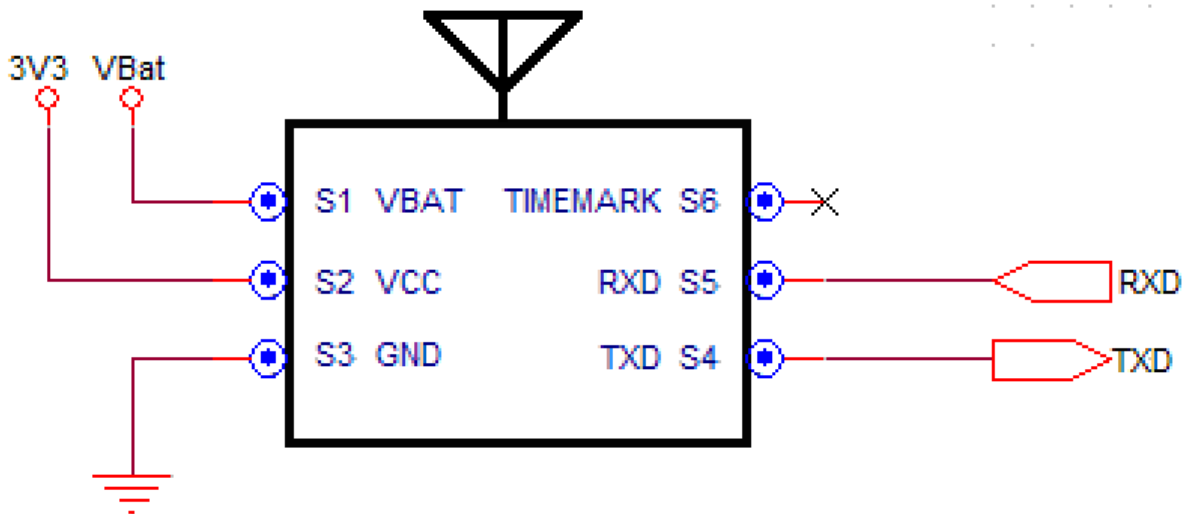
Physical Characteristic



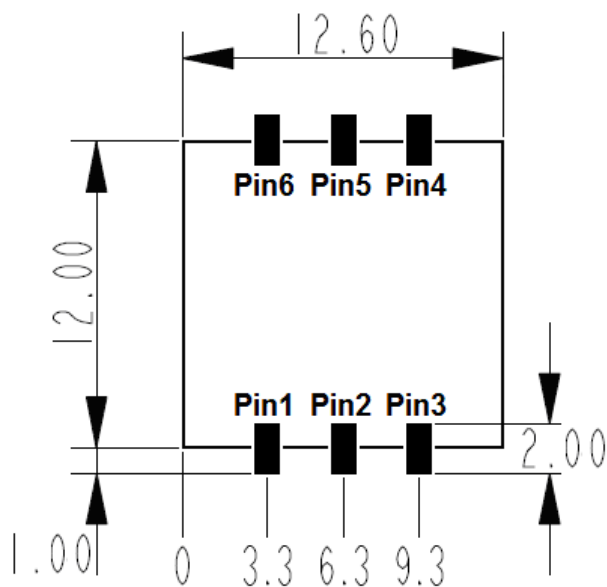
Type	6-pin GPS Module with 10x10x4(mm) Antenna
Dimensions	12.6 mm * 12.0 mm * 7.6 mm ±0.2mm

Application

Application circuit



Recommended Layout PAD



Unit: mm
Tolerance: 0.1mm



RoHS / Lead Free Compliance

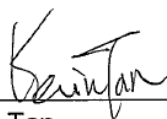
Dear Sales:

This letter is intended to answer questions you may come across regarding the compliance of Globalsat WorldCom Corporation products with the following European Directive 2011/65/EU (RoHS) :

- Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) .

This Directive aim is to avoid or limit the use of hazardous material compliant and meet the Standard by July.16,2011 of less than "0.1% by weight per homogeneous material for lead,hexavalent chromium,mercury, PBB and PBDE and 0.01% by weight and per homogeneous material for cadmium".

Globalsat has incorporated the requirement of 2011/65/EU into the product / technology development roadmaps and is committed to make lead free / RoHS fully compliant product available for shipment by July.16,2011.



Kevin Tan
Quality Assurance Manager



Prince Cheng
Chief Executive Officer (CEO)

Reversion history

Reversion	Date	Name	Status / Comments
V1.0	20120807	Mason	Initial Version
V1.1	20131025	Mason	Fixed antenna thickness to 4mm