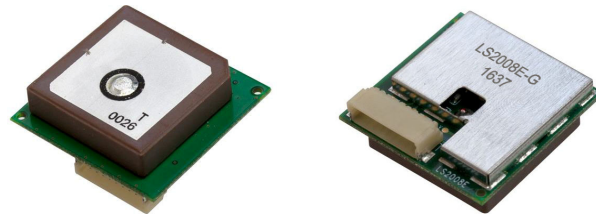


Product name	Description	Version
LS2008E-G	Standalone GNSS smart antenna module	1.0



1 Introduction

LS2008E-G is a complete standalone GNSS smart antenna module, including an embedded patch antenna and GPS receiver circuits. The module can simultaneously acquire and track multiple satellite constellations that include GPS, GLONASS, BeiDou, GALILEO, QZSS. It features low power and small form factor. Besides, it can provide you with superior sensitivity and performance even in urban canyon and dense foliage environment.

It is easy to install without both RF connector and coaxial cable that are needed in a separated GNSS active antenna. In other words, reduce the cost and size. Also, speed up the time to market by eliminating R&D efforts on RF matching and stability between separated GNSS antenna and module. Its far-reaching capability meets the sensitivity requirements of car navigation as well as other location-based applications.

2 Features

- ALLYSTAR high sensitivity solution
- Support GPS, GLONASS, BeiDou, GALILEO and QZSS
- Support up to 72-channel
- Fast TTFF at low signal level
- Built-in DC/DC converter to save power
- Built-in an independent power on/off switch
- Support 1PPS output
- Indoor and outdoor multi-path detection and compensation

3 Application

- Personal positioning and navigation
- Automotive navigation, model aircraft navigation
- Marine navigation

4 Overview

4.1 Block Diagram

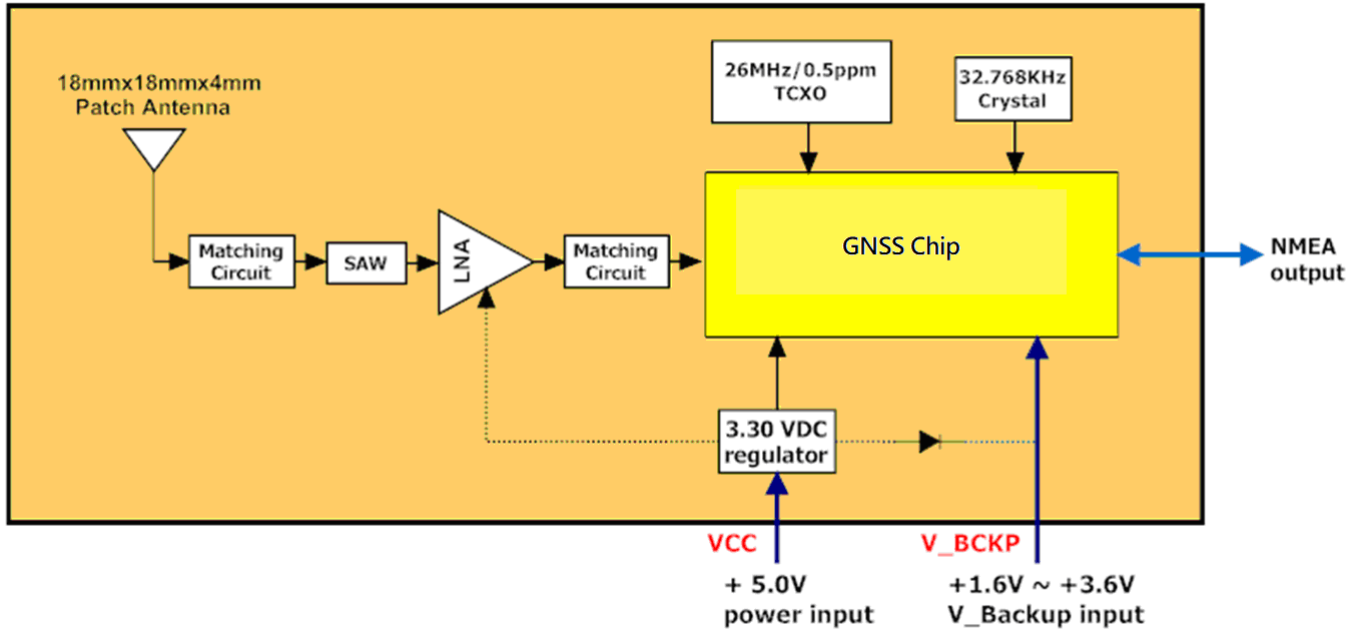


Fig 4-1 System block diagram of LS2008E-G

4.2 GNSS Performance

Chip	ALLYSTAR GNSS chip	
Frequency	GPS, QZSS: L1 1575.42MHz, C/A code GLONASS: L1 1598.0625MHz ~ 1605.375MHz, C/A code	
Channels	Up to 72 channels	
Update rate	1Hz default	
Acquisition Time	Hot start (Open Sky)	< 2s (typical)
	Cold Start (Open Sky)	29 s (typical)
Position Accuracy	Autonomous	< 2.5m CEP
Max. Altitude	< 18,000 m	
Max. Velocity	< 515 m/s	
Protocol Support	NMEA 0183 ver. 4.0	9600 ¹ bps, 8 data bits, no parity, 1 stop bits (default)
		1Hz: GGA, GLL, GSA, GSV, RMC, and VTG

Note 1. Both baud rate and output message rate are configurable to be factory default.

4.3 Pin assignment and descriptions

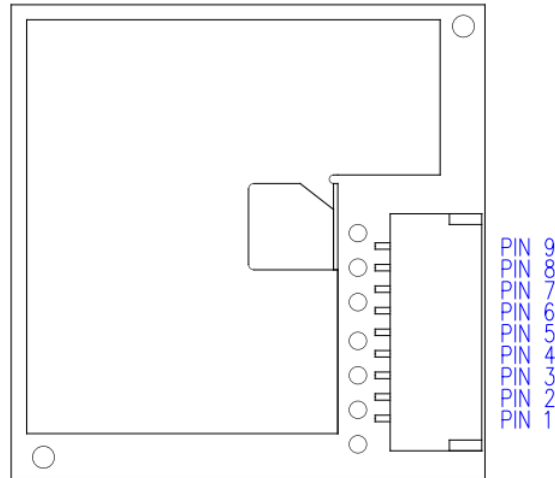


Fig 4-2 Pin assignment of LS2008E-G

Pin#	Name	Type	Description
1	NC		Not connect
2	1PPS	O	Pulse per second (default 100 ms pulse/sec when 3D fix is available)
3	TX	O	Serial data output
4	RX	I	Serial data input
5	NC		Not connect
6	SHUTDOWN	I	Power shutdown Input. Active low to shutdown device. If this pin is not used, leave it floating.
7	V_BCKP	P	Backup battery supply voltage
8	GND	P	Ground
9	VCC	P	DC supply voltage

5 DC & Temperature characteristics

5.1 Absolute maximum ratings

Parameter	Symbol	Ratings	Units
DC Supply Voltage	VCC	5.5	V
Input Backup Battery Voltage	V_BCKP	3.6	V
Operating Temperature Range	Topr	-25 ~ 85	°C
Storage Temperature Range	Tstg	-25 ~ 85	°C

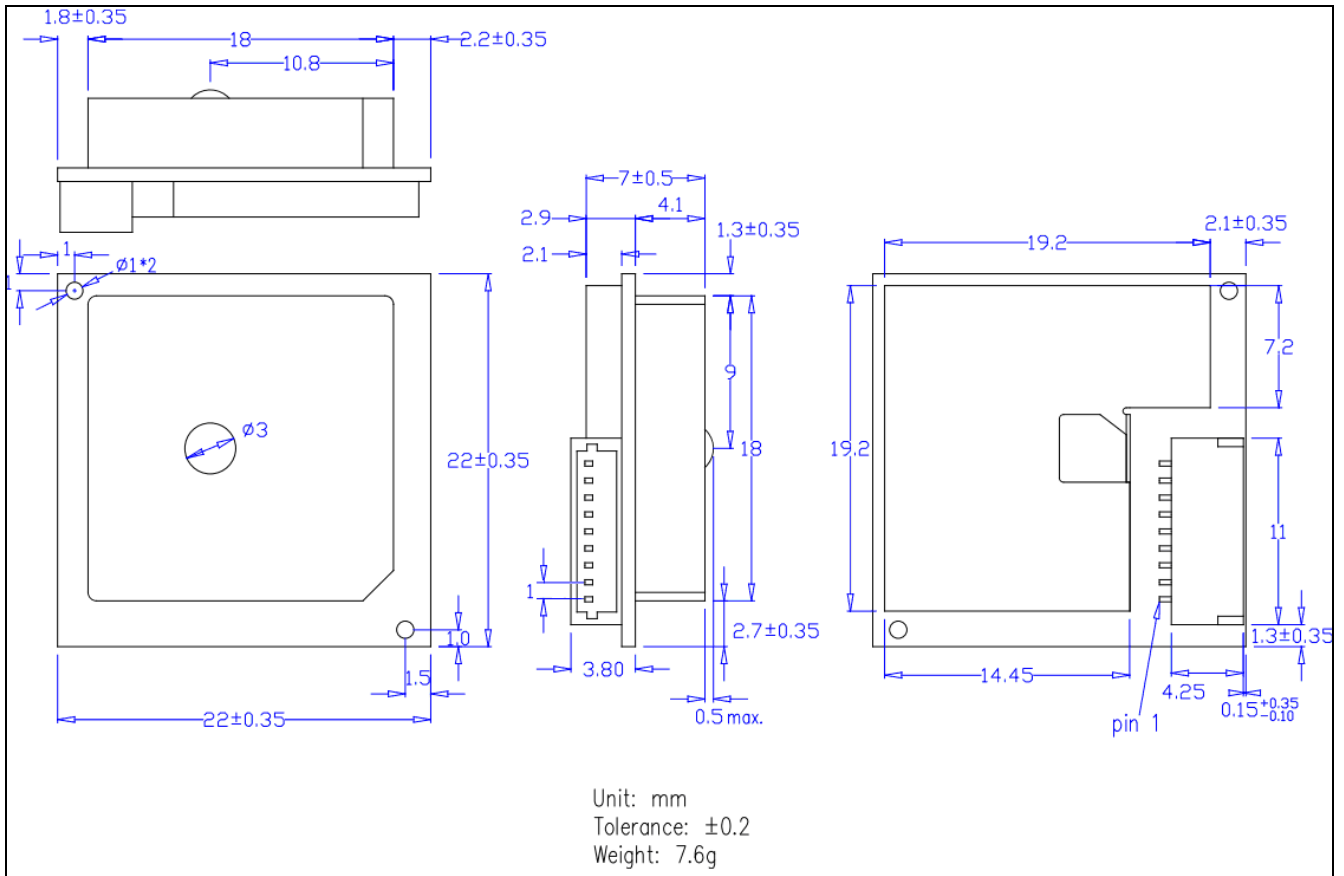
5.2 DC Electrical characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input Voltage	VCC		3.0	5.0	5.5	V
Input Backup Battery Voltage	V_BCKP		1.6		3.6	V
Supply Current	Ivcc	Acquisition Tracking		54 28		mA
Backup Battery Current	Ibat			12		uA
High Level Input Voltage	V _{IH}		2.21		3.3	V
Low Level Input Voltage	V _{IL}		0		0.9	V
High Level Output Voltage	V _{OH}		2.21		3.3	V
Low Level Output Voltage	V _{OL}				0.4	V
High Level Output Current	I _{OH}			2		mA
Low Level Output Current	I _{OL}			2		mA

5.3 Temperature characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units
Operating Temperature	Topr	-25	-	85	°C
Storage Temperature	Tstg	-25	25	85	°C

6 Mechanical specification
6.1 Outline dimensions



The connector's part number is 1W1001WOR0-09NA from the company, TOKUTSU. It belongs to WAFER horizontal SMT single row connector, pitch 1.0mm