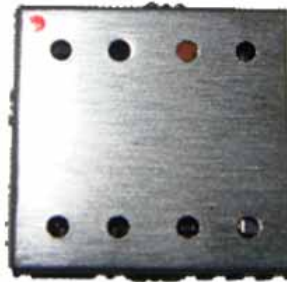


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1. Hardware Specification

1.1 Technical Specification

- Chipset SiRF Star (GSC3f/LP) Chipset

- Receiver L1(1575.42MHz), C/A code
- Channels 20CH
- Solution Update Rate 1/second

- Acquisition
 - Hot Start < 8 seconds average, TTFF (Open sky)
 - Warm Start < 38 seconds average, TTFF (Open sky)
 - Cold Start < 60 seconds average, TTFF (Open sky),

- Limits
 - Maximum Altitude 18000m
 - Maximum Acceleration 4g
 - Maximum Velocity 515m/s

- Power Consumption 75mA (RF Section 36mA + Digital Section 39mA)
Input voltage : DC 3.3V ± 5%

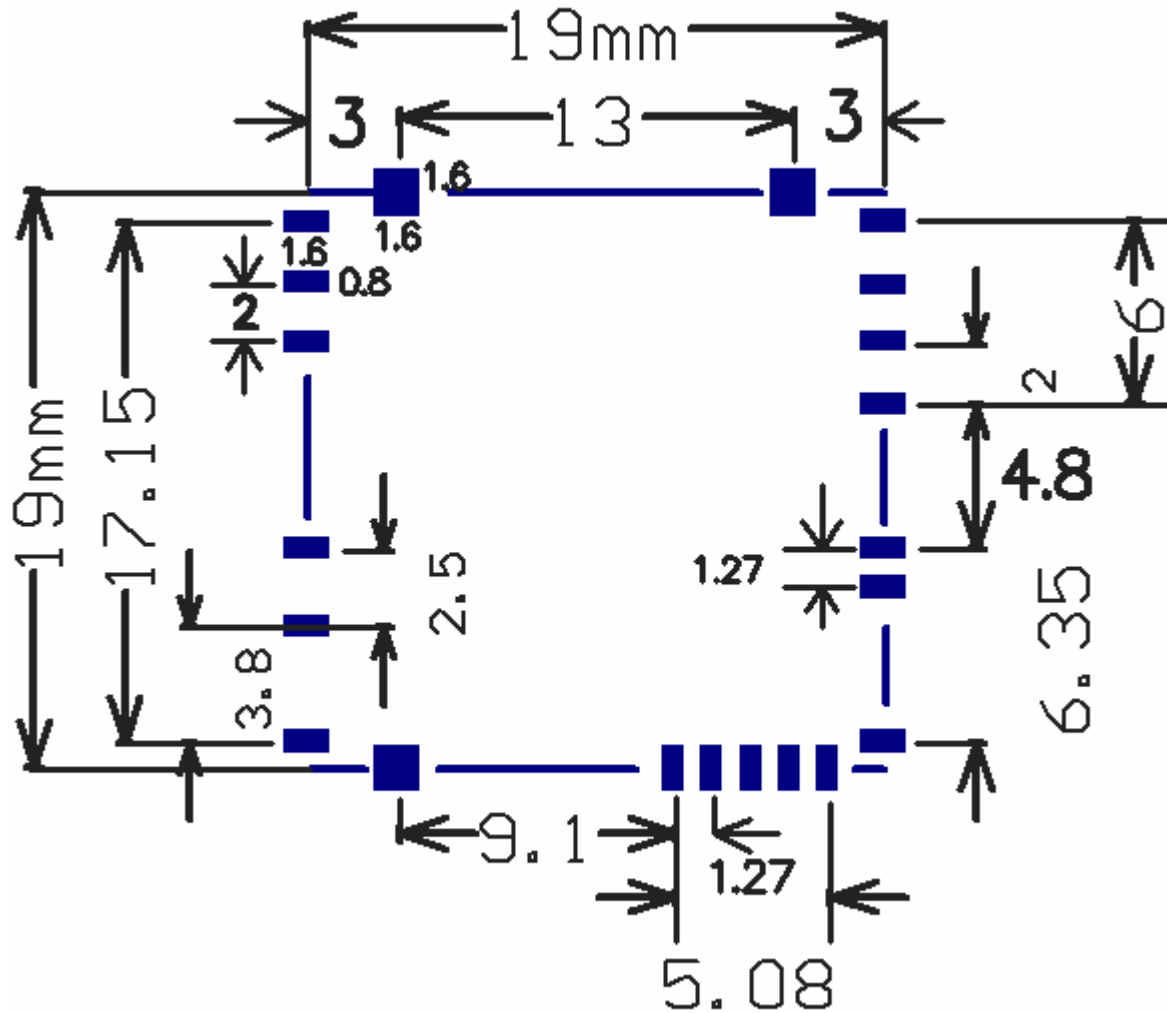
- GPS Software : GSW 3 Ver. 3.2.2
Protocols COM A : NMEA Protocols

- Serial Port 1 channel – CMOS level
- Baud Rate 4,800 to 115,200 bps adjustable (default : 9,600)
- Firmware Upgrade 4Mbit Flash Memory field programming S/W available
- Position Accuracy <10m, Without SA imposed (95%)
- Tracking Sensitivity : -155dBm
- Datum Standard : WGS-84

1.2 Physical Specification

- Size & Volume : 19(w) x 19(d) x 0.8(h)mm

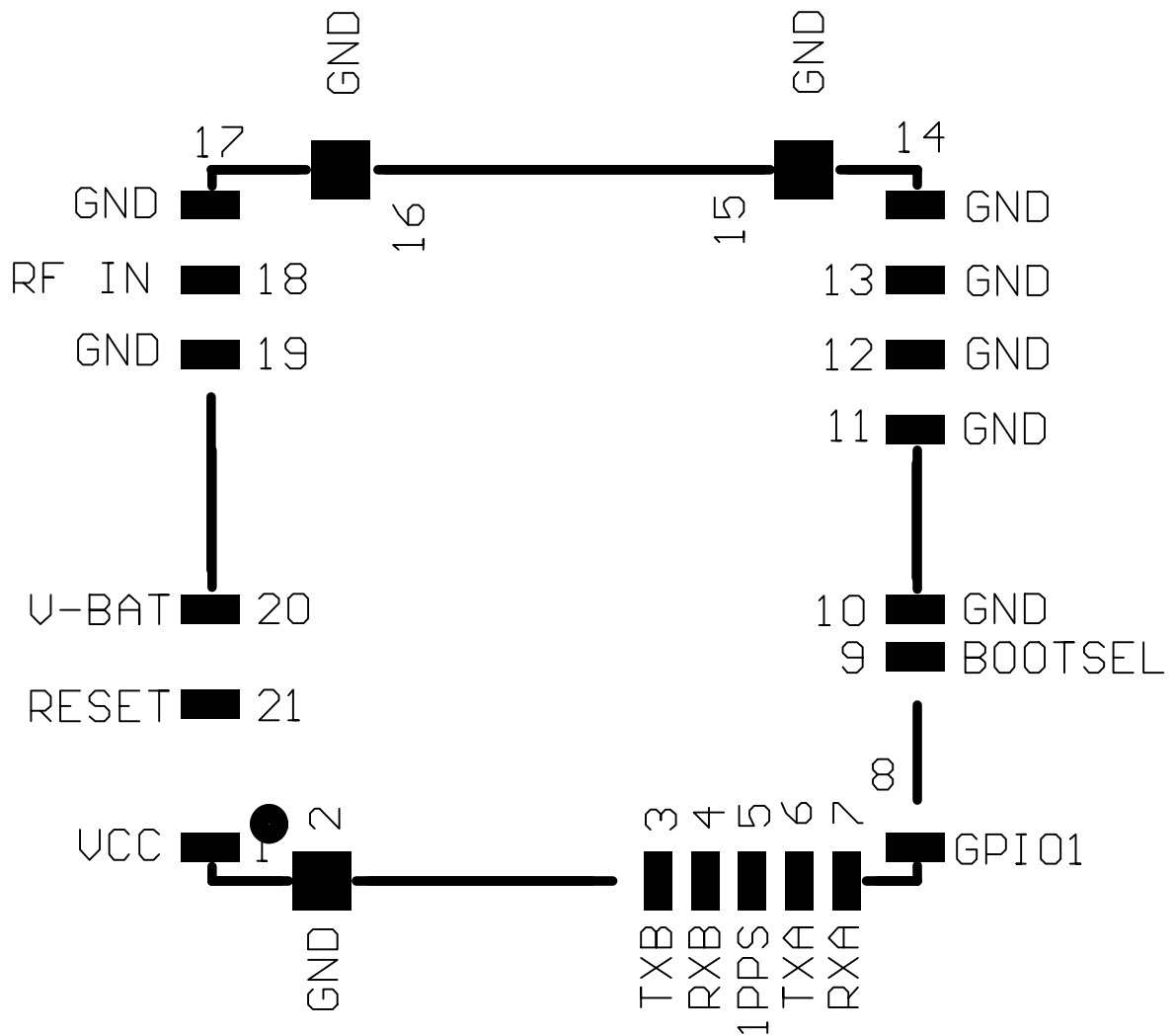
1.3 Recommend PCB Layout



2. Module Pin Assignments and Description Table

Pin No	Signal name	I/O	Description	N
1	VCC	I	Supply Voltage	
2	GND			
3	TXB	O	Serial outputs for channel B	

4	RXB	I	Serial inputs for channel B	
5	1PPS	I/O	1 pps timemark output	
6	TXA	O	Serial outputs for channel A	
7	RXA	I	Serial inputs for channel A	Pull up if not used
8	GPIO 1	I/O		Leave unconnected if not used
9	Bootsel	I	Module boots into special debug mode if VCC during reset	Leave unconnected if not used
10	GND			
11	GND			
12	GND			
13	GND			
14	GND			
15	GND			
16	GND			
17	GND			
18	RF IN	I	GPS signal from antenna	50Ω (1.57542GHz)
19	GND			
20	V-BAT	I	Backup Voltage supply for RTC and SRAM	Leave unconnected if not used
21	RESET	I/O	Active low reset	Leave unconnected if not used



RESET

An external reset is initiated by pulling RESET low for at least 1 μ s. If not used,

RESET can be left unconnected since there is an internal 10k pull-up resistor.

RESET is also used in Push-to-Fix mode in order to wake up the unit and request a position fix. Minimum pulse width is 1 μ s.

BOOTSEL

The boot signal BOOTSEL forces special debug mode when restarted with a reset signal or power-up. If not used, BOOTSEL can be left unconnected since there is an internal 1k pull-down resistor.

RF IN

The line on the PCB from the antenna (or antenna connector) has to be a controlled impedance line (Microstrip at 50Ω).

VBAT

This is the battery backup supply that powers the SRAM and RTC when power is removed. Without an external backup battery or on board battery, engine board will execute a cold start after every turn on. To achieve the faster start-up offered by a hot or warm start, either a backup battery must be connected or battery installed on board.

1PPS

This pin provides one pulse per second output from the engine board which is synchronized to within one microsecond of GPS time. The output is TTL negative level signal with negative logic.

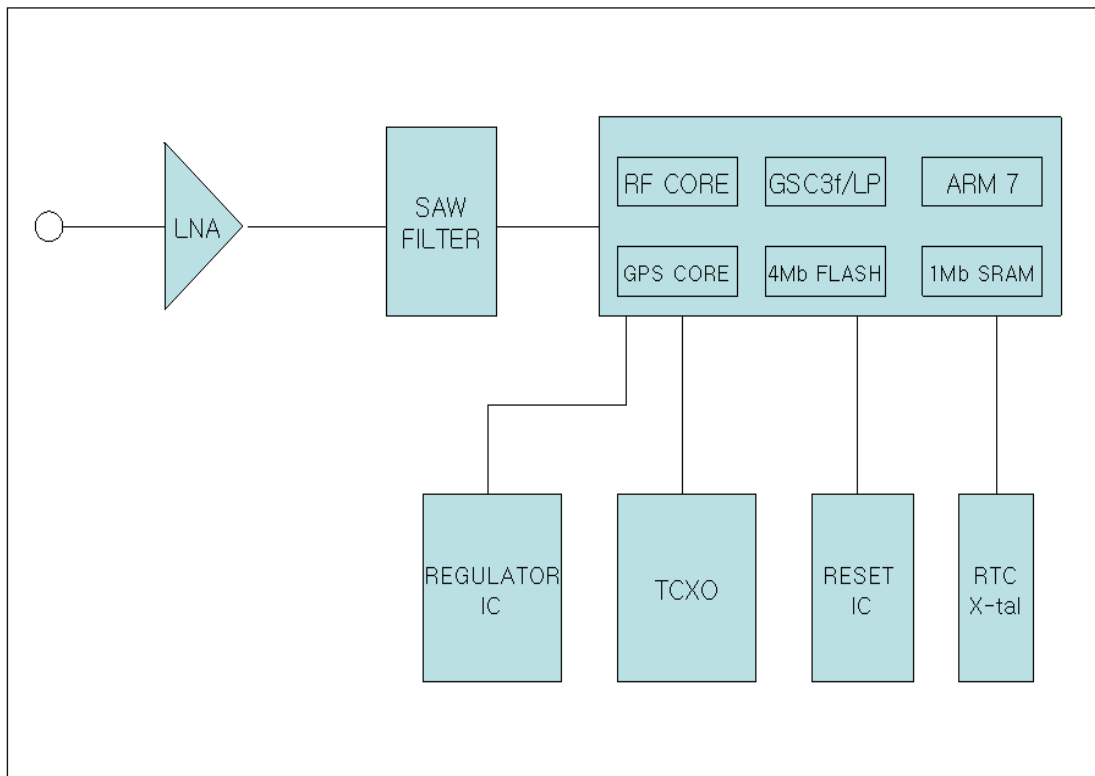
3. Operating Conditions

3.1. DC Characteristics

(Test Temperature : 25)

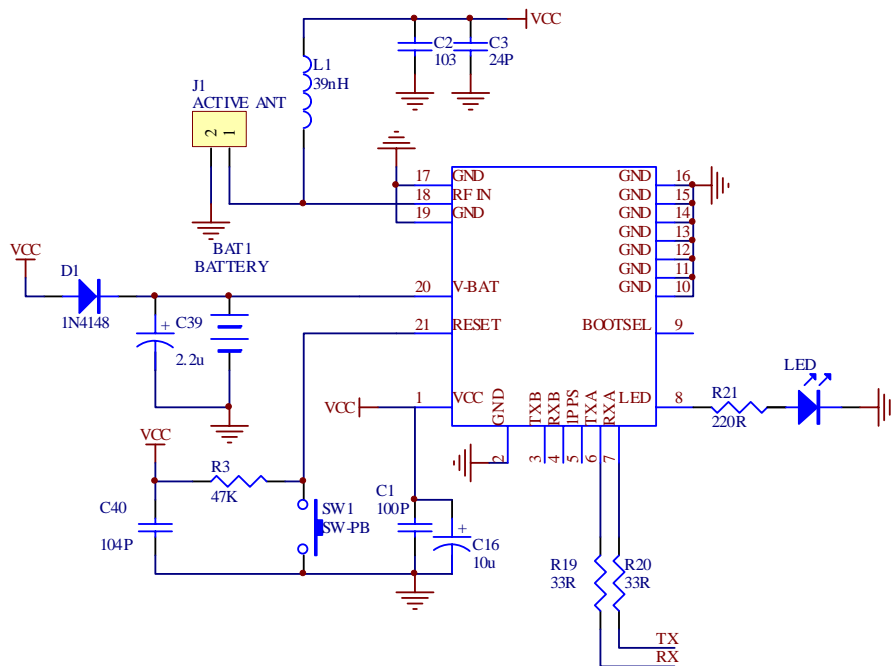
Parameter	Condition	Min	Typ	Max	Unit
Power Supply voltage (Module input power)	VCC	3.15	3.3	5	V
BOOTSEL input voltage	BOOTSEL	2.6	3.3	4.2	V
Backup battery input voltage	V_BAT	3	3.3	5	V

4. The Block Diagram of Module



5. Application Schematics

6.1 For Active Ant.



6. NMEA-0183 Output Message

A-380 module supports a subset of the NMEA-0183 standard for interfacing marine electronic devices as defined by the National Marine Electronics Association (NMEA).

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NMEA Output messages

The following is written assuming the user has a basic understanding of NMEA protocols and their use.

GGA : Time, position and fix type data.

GLL : Latitude, longitude, UTC time of position fix and status.

GSA : GPS receiver operating mode, satellites used in the position solution, and DOP values.

GSV : The number of GPS satellites in view satellite ID numbers, elevation, azimuth,

and SNR values.

MSS : Signal-to-noise ratio, signal strength, frequency, and bit rate from a radio-beacon receiver.

RMC : Time, date, position, course and speed data.

VTG : Course and speed information relative to the ground.

ZDA : PPS timing message (synchronized to PPS).

7. Reflow Profile

