



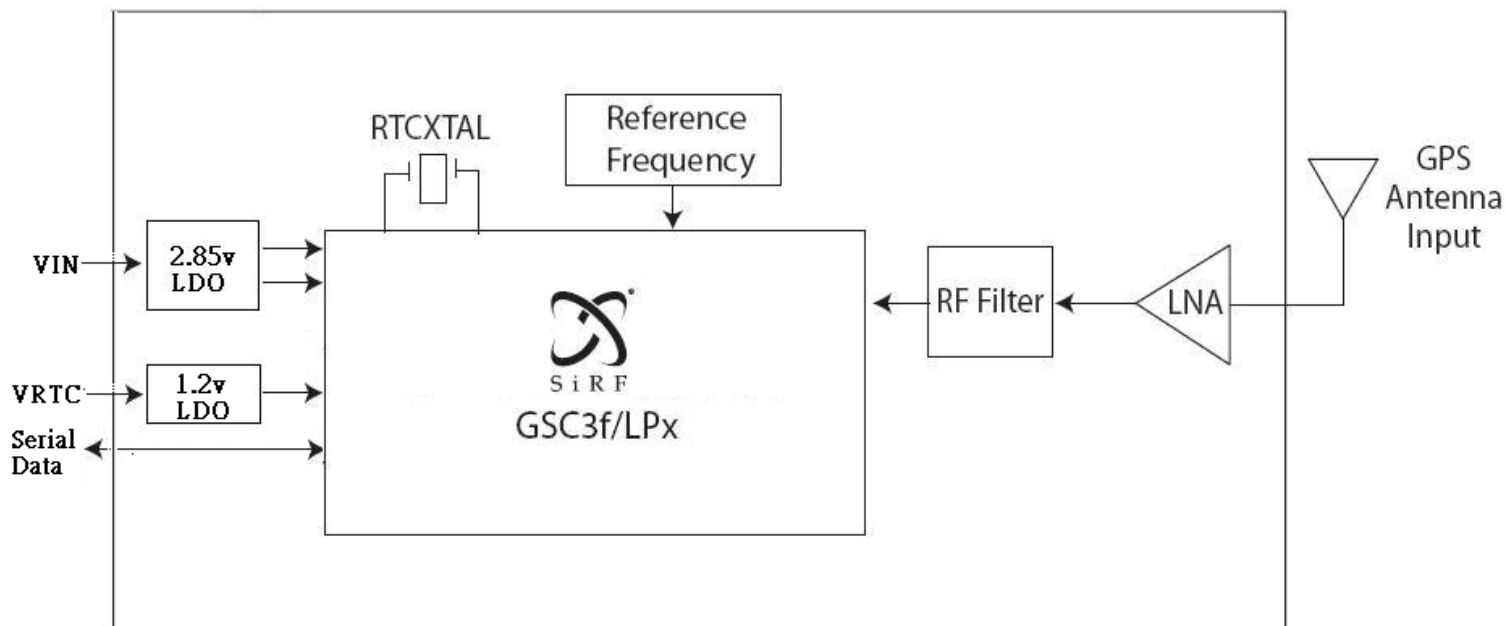
SiRF Star III GPS Module Features

- SiRF Star III high sensitivity solution
- Low Power: Under 60mW at full power / 46mW tracking power
- 3.0V to 3.6V operation
- High sensitivity for indoor fixes
- Support 20-channel GPS
- Built-in LNA and SAW filter
- Capable of SBAS (WAAS, EGNOS, MSAS)
- Interface: 2 UARTs & 5 GPIO
- RoHS Compliant
- Small form factor 15 x 13 x 2.2 mm

Applications

- Personal positioning and navigation
- Automotive navigation
- Fleet management
- Mobile phone navigation
- Marine navigation

Block Diagram



LM478 Outline



Operating conditions

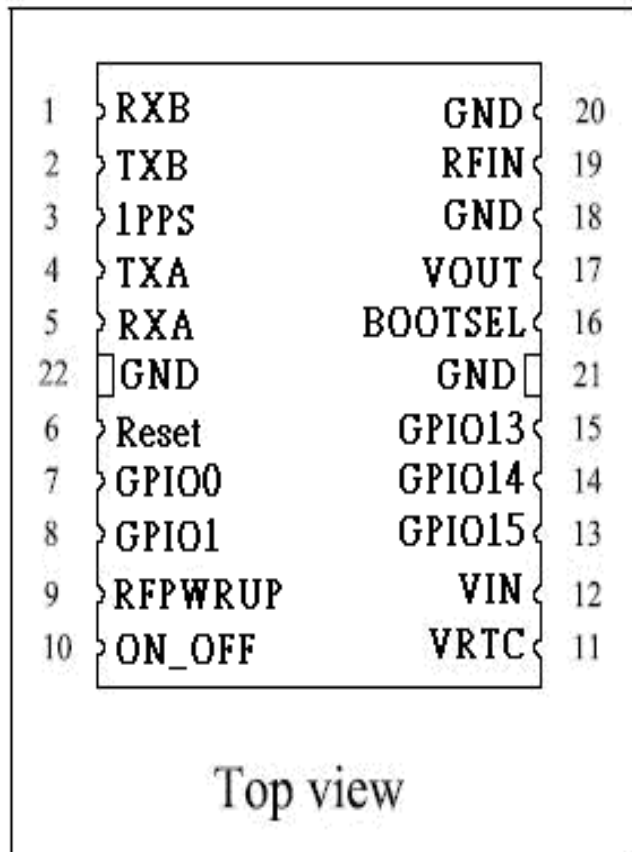
Power Supply				
Parameter	Min.	Typ.	Max.	Unit
VRTC	1.2	3.3	6	DCV
VIN	2.85	3.3	3.6	DCV
BOOTSEL	2.7	3.3	3.6	DCV
Temperature				
operating	-30°C ~ 85°C (-22°F ~ 185°F)			
storage	-40°C ~ 85°C (-40°F ~ 185°F)			
humidity	Operational up to 95% non-condensing			
Baud Rate				
operating	4800, 9600,19200, 38400, 57600 bps (default 57600)			
Active Antenna Option				
Amplifier Gain	18~22dB Typical			
Output VSWR	2.0 Max			
Noise Figure	1.5dB Max			

GPS Specification

Electrical Characteristics	
GPS Chipset	SiRF Star III
Frequency	L1, 1575.42 MHz
C/A Code	1.023 MHz chip rate
Channels	20 channel all-in-view tracking
Accuracy	
Horizontal Position*(1)	Autonomous <2.5m SBAS <2.0m
Datum	
Datum	Default: WGS-84
Acquisition Rate	
Hot start	1 sec., average
Warm start	35 sec., average
Cold start	35 sec., average
Protocol	
GPS Protocol	Default: NMEA 0183 (Secondary: SiRF binary)
GPS Output format	GGA(1sec), GSA(1sec), GSV(5sec), RMC(1sec), VTG (1sec) ,GLL is optional
Dynamic Condition	
Altitude Limit	18,000 meters (60,000 feet) max.
Velocity Limit	515 meters/sec. (1,000 knots) max.
Jerk Limit	20 m/sec**3
Acceleration Limit	Less than 4g
Sensitivity	
Acquisition	-142dBm
Tracking	-159dBm

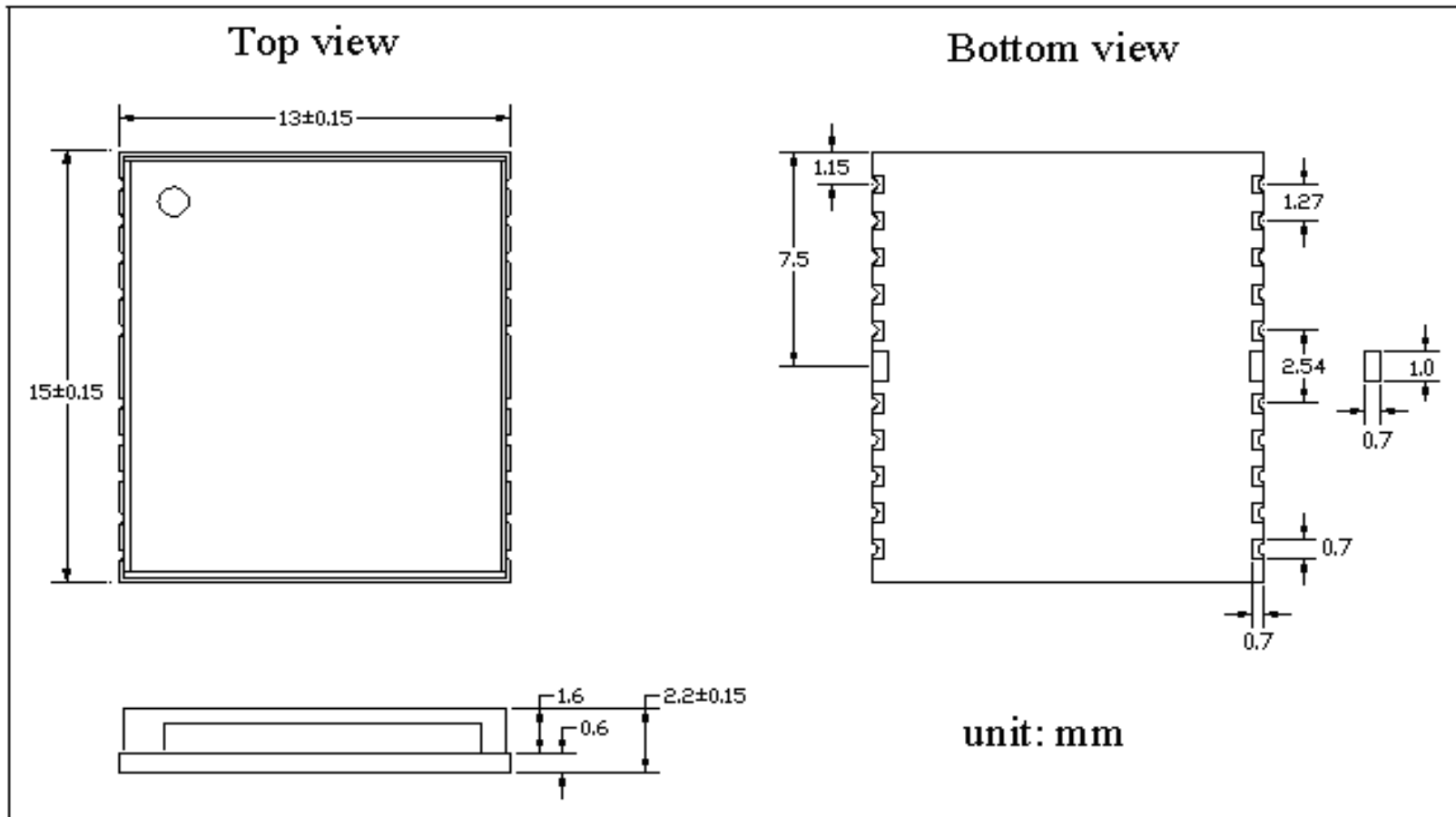
***(1). 50% 24hr static,-130dBm**

LM478 Pin Function

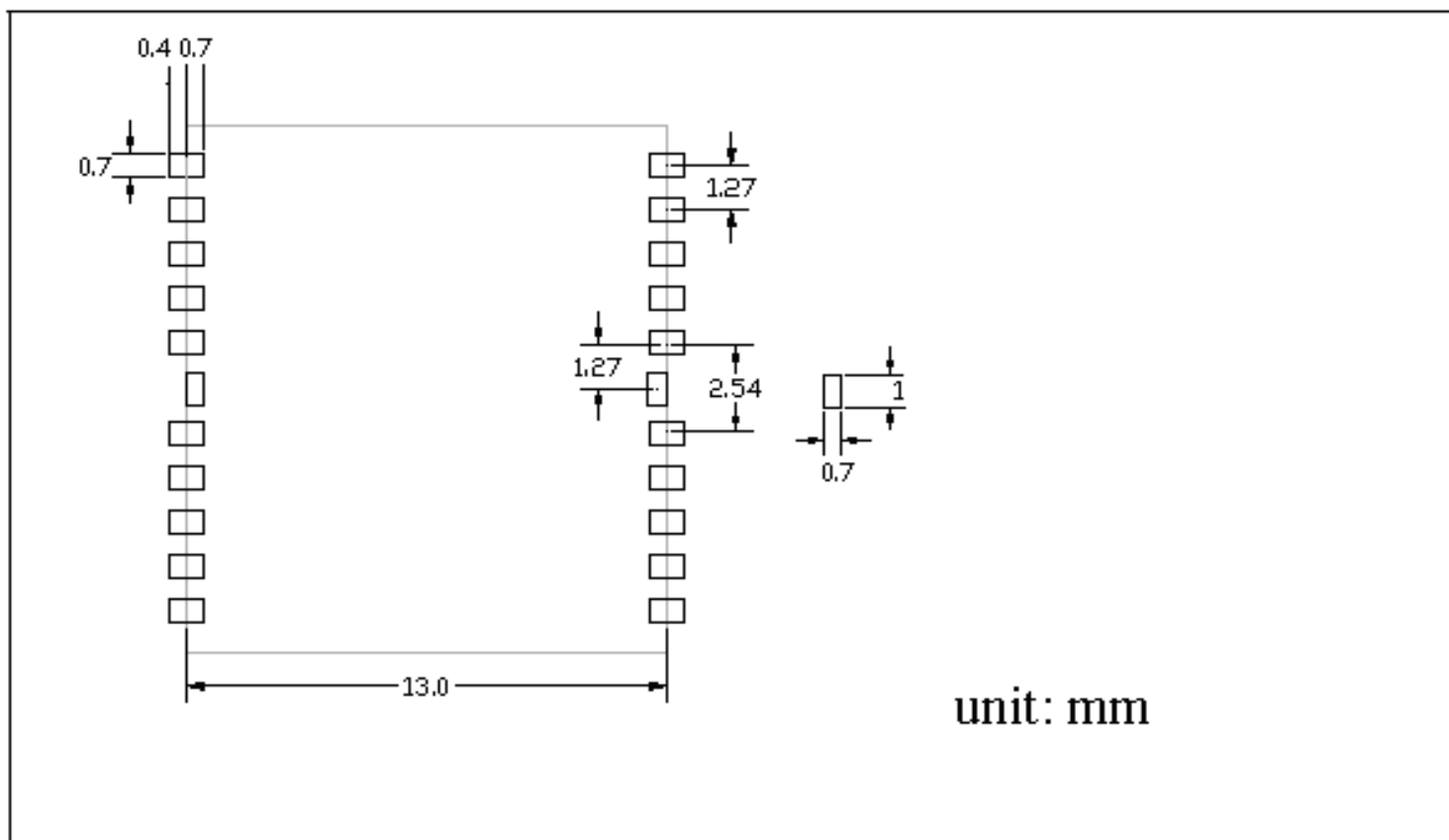


Pin#.	Pin Name	Pin Type	Pin description
1	RXB	Input	Serial receive port for channel 1 (leave it open normally)
2	TXB	Output	Serial message output port for channel 1 (leave it open normally)
3	1PPS	Output	Pulse per second (1us pulse)
4	TXA	Output	Serial message output port for channel 0
5	RXA	Input	Serial receive port for channel 0
6	RESET	Input	Reset input (leave it open normally)
7	GPIO0	I / O	General purpose I/O
8	GPIO1/LED	I / O	LED Indicator (Acquisition :one flash per second / Tracking: Always ON)
9	RFPWRUP	Output	Indicate power state
10	ON_OFF	Input	Edge triggered soft on/off request.
11	VRTC	Power	RTC power input
12	VIN	Power	VDD power input
13	GPIO15	I / O	General purpose I/O
14	GPIO14	I / O	General purpose I/O
15	GPIO13	I / O	General purpose I/O
16	BOOTSEL	Input	Module boot mode select (leave it open normally)
17	VOUT	Power	2.85v for active Antenna
18	GND	GND	Common ground
19	RFIN	Input	GPS RF signal input
20	GND	GND	Common ground
21	GND	GND	Common ground
22	GND	GND	Common ground

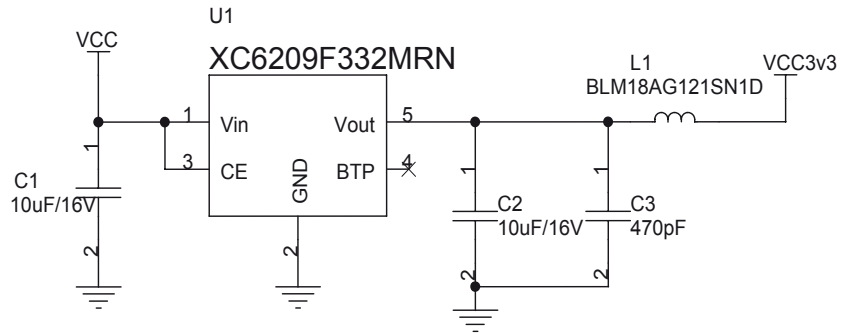
Outline Dimensions



Recommended Solder Pad Layout



GPS Power



Active Antenna

