

GR-89 GPS Receiver Module

■ Main Features

- SiRF GSC3f/LP chipset with embedded ARM7TDMI CPU available for customized applications in firmware.
- 20-Channel GPS Receiver for fast acquisition and reacquisition.
- Very compact size, only 25.4 * 25.4 * 3 mm.
- 200,000 effective correlators for fast Time To First Fix (TTFF), even at poor satellite signal.
- Built-in WAAS/EGNOS Demodulator.
- Low power consumption with Advanced Trickle-Power and Push-To-Fix mode.
- Support NMEA-0183 v2.2 data protocol and SiRF binary code.
- Real time navigation for location based services.
- For Car Navigation, Marine Navigation, Fleet Management, AVL and Location-Based Services, Auto Pilot, Personal Navigation or touring devices, Tracking devices/systems and Mapping devices application.

■ Specifications

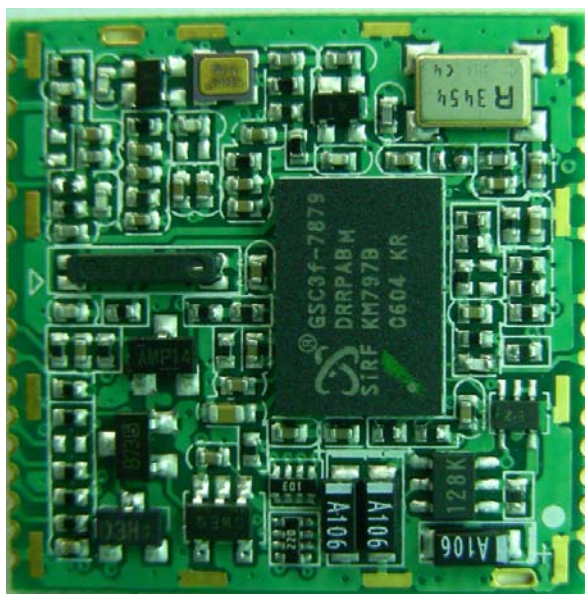
- Acquisition at low signal levels:
 - Cold/Warm/Hot start: 42/38/1 sec. (average)
- Position Accuracy※:
 - Autonomous: <10 meters at 2DRMS.
 - SBAS: <7 meters at 2DRMS, WAAS corrected.
 - DGPS: 1-5 meters at DGPS corrected.
- Receiver:
 - Tracking : L1/CA code
 - Channel : 20

- Max. Update rate: 1 HZ
- Time mark output 1 pulse/sec, aligned with GPS time ± 0.1 usec
- Max. Altitude/Velocity : < 60,000 ft / < 1,000 knots※.
- Protocol Support : NMEA-0183, SiRF Binary, AI3/F
- Datum: WGS-84 (default), selectable for other Datum.
- Processing Core
 - 200,000+ effective correlators for fast TTFF and high sensitivity acquisition.
 - Processor Type: ARM7TDMI
 - Processor Speeds 49 MHZ
 - Integrated program Flash 4Mbit
 - Minimum tracking signal levels: -159 dBm※
 - Interface : CMOS 3V
 - Dimension: 25.4 x 25.4 x 3 mm
 - Weight: 3 g
 - Operating Temperature : -20 ℃ to +70 ℃
 - Storage Temperature: -40 ℃ to +85 ℃
 - Operating Humidity: 5% to 95%, No Condensing
 - Power : input voltage 3.3V ~ 5.5VDC
 - Operational current: less than 65 mA (without antenna)
- RF DC power supply for active antenna max 50 mA

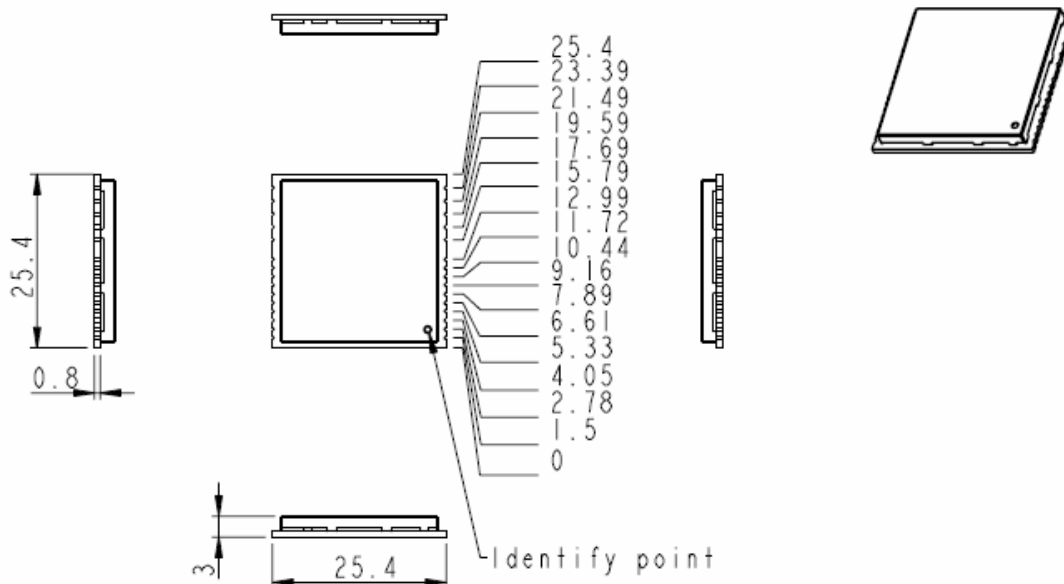
※: According to SiRF GSC3f/LP specification.

■ Module snapshot and pin out definition.

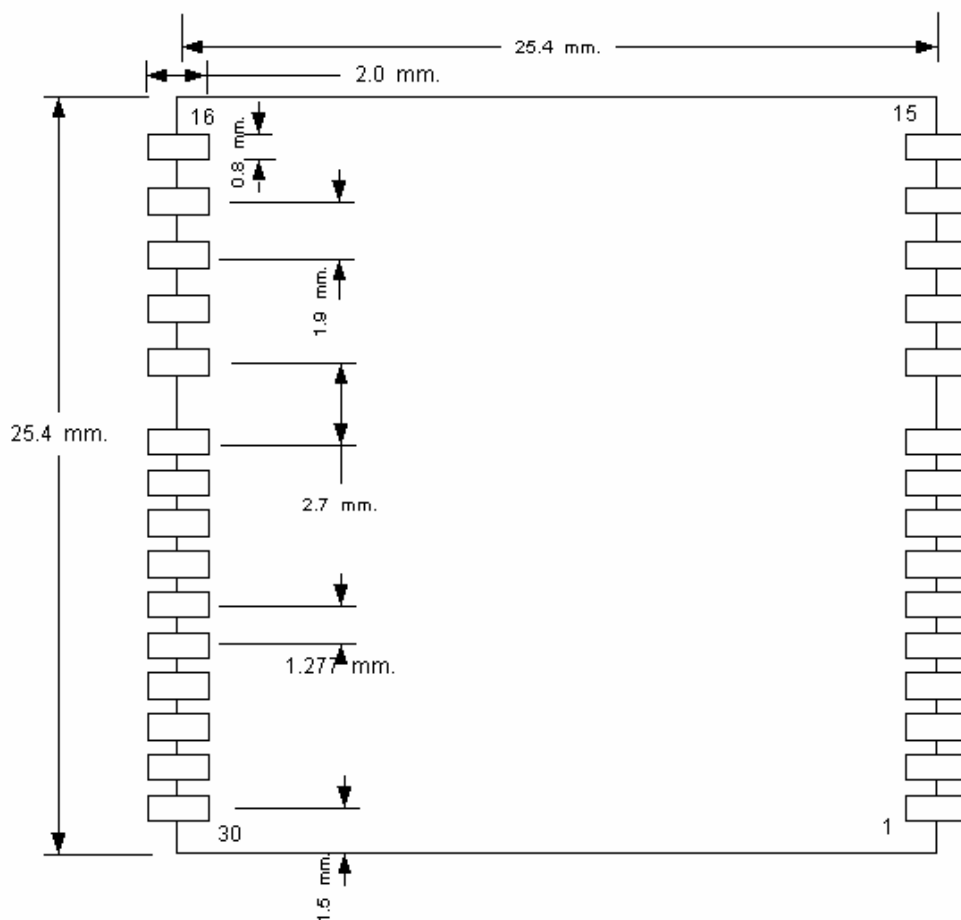
Picture



Mechanical dimension (unit mm)



Recommend PCB layout



Pin assignment

Pin	Pin Name	Type	Function description
1	VCC_IN	I	3.3 ~ 5 V supply input
2	GND	G	Ground
3	BOOT_SEL	I	Boot selection. Pull high this pin at power on stage for flash programming.
4	RXDA	I	Serial Data input A
5	TXDA	O	Serial Data Output A
6	TXDB	O	Serial Data Output B
7	RXDB	I	Serial Data input B
8	GPIO14	I/O	General purpose I/O. flash at 1Hz when position is fixed.
9	RF_ON	O	Indication for RF power supply. Flashes in trickle power mode.

10	GND	G	Ground
11	GND	G	Ground
12	GND	G	Ground
13	GND	G	Ground
14	GND	G	Ground
15	GND	G	Ground
16	GND	G	Ground
17	RF_IN	I	GPS signal input
18	GND	I	Ground
19	V_ANT_IN	I	Antenna power supply input
20	VCC_RF_O	O	Antenna power supply, 3.0V
21	V_BAT	I	RTC and backup SRAM power, 2.6 ~ 3.6 VDC.
22	nRESET	I	Reset, active low
23	GPIO10	I/O	General purpose I/O
24	GPIO1	I/O	General purpose I/O
25	GPIO2	I/O	General purpose I/O
26	GPIO0	I/O	General purpose I/O
27	GPIO13	I/O	General purpose I/O
28	GPIO15	I/O	General purpose I/O
29	PPS	O	1 PPS output, synchronized with GPS time. TIME_MARK 1 PPS output, 1us/s
30	GND	G	Ground