



TS-GE004

Ultra High Sensitivity SiRF StarIII 7989 GPS
Module with Patch Antenna

Documentation History

Revision	Description	Date	Remark
V1.0	Release	Sep 2009	
V2.0	Update	Feb 2011	Update spec table

Content

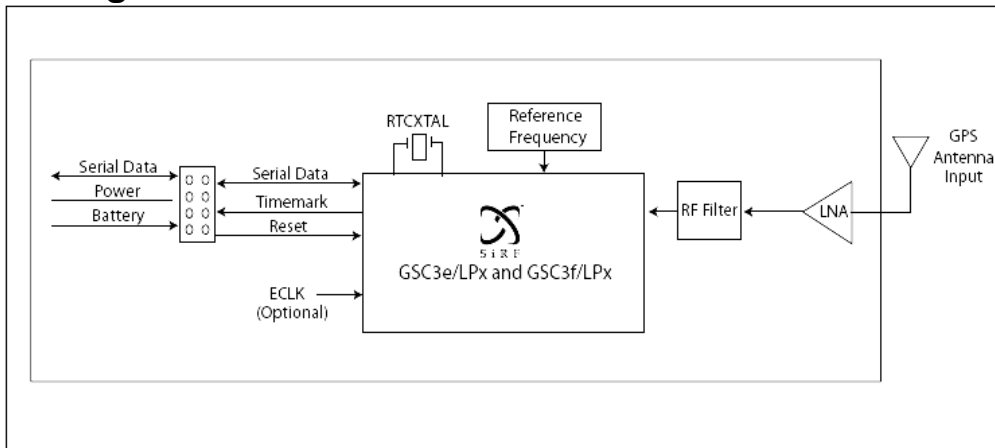
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TS-GEB004

Features

- ✓ 20 channel SiRF StarIII7989 positioning engine
- ✓ Ultra high sensitivity to -158 dBm
- ✓ SBAS (WAAS, MSAS, and EGNOS) support
- ✓ Supports Power saving modes
- ✓ Build in backup battery
- ✓ Support UART and RS232 ports
- ✓ Ultra low power consumption Approx 60mW
- ✓ Ultra miniature 29x29 mm PCB dimension.
- ✓ Operating temperature range: -30 to 85°C
- ✓ RoHS compliant (lead-free)

Block diagram

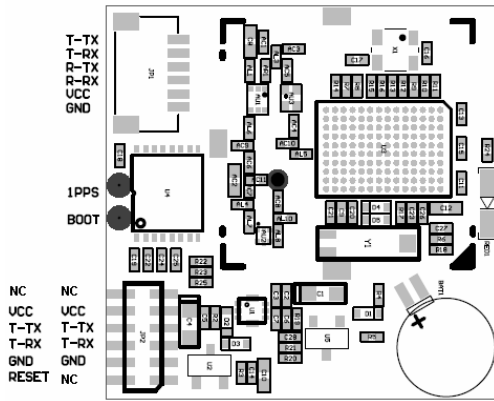


TS-GEB004 GPS Module

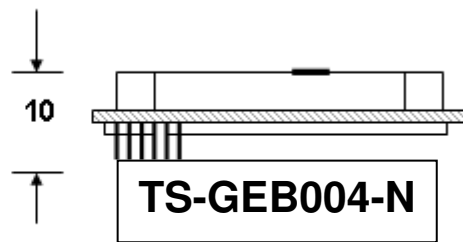
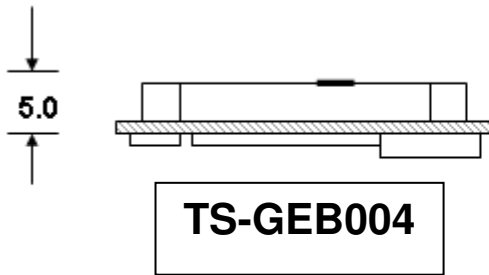
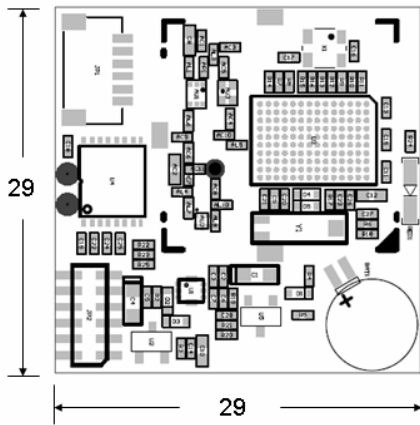
Technical Specifications

Chipset		SiRF StarIII GSC3eLP
General	Frequency Channels, C/A code	L1, 1575.42MHz 20, 1.023 MHz chip rate, 8192 time/frequency search windows
Accuracy	Position Time DGPS- Position	5 meters CEP 50 nanosecond rms (1 PPS) 2.0 meters CEP
Acquisition Rate	Reacquisition Cold start Warm start Hot start	< 1 sec, typical 35 sec, typical 35 sec, typical 1 sec, typical
Sensitivity	Tracking Acquisition/Reacquisition Cold start	-159dBm -155dBm -144dBm
Dynamic Condition	Altitude Velocity	18,000 meters (60,000 Feet) max. 515 meters /sec (1000 Knots) max.
Power	Main Power Supply current Backup power	3.3 VDC typical 5V Max 60 mA 1.4 ~ 5V
Serial Port	Electrical interface Protocols Data Rate	UART, RS232 NMEA0183 v3.0 4800bps @ 1sec intervals
Environmental	Temperature Operating Range	- 30 °C to + 85 °C
Interface	I/O connector	6 pin connector (TS-GEB004) 12 pin patch 1.27m (TS-GEB004-N)

PIN assignment



Dimension



Unit: mm

Pin Definition JP1

Pin#	Name	Type	Description
1	TTL-TX	Output	UART TXD output
2	TTL-RX	Input	UART RX input
3	RS-TX	Output	RS232 TX
4	RS-RX	Input	RS232 RX
5	Vcc	PWR	DC power input 3.3 – 5V
6	GND	PWR	Ground

JP2

Pin#	Name	Type	Description
1,12	NC		
2,11	Vcc	PWR	DC power input 3.3 – 5V
3,10	T-TX	Output	UART TX output
4,9	T-RX	Input	UART RXD input
5,8	GND	PWR	Ground
6	Reset	Input	
7	NC		

Boot: High Boot from Flash, Low Boot from serial port
1pps: 1 Pulse Per second Output (1uS high going pulse)

Output NMEA Messages

Table 3 NMEA-0183 Output Messages

NMEA Sentence	Description
GGA (default)	Global Positioning System Fixed Data
GLL (default)	Geographic Position - Latitude/Longitude
GSA (default)	GNSS DOP and Active Satellites
GSV (default)	GNSS Satellites in View
RMC (default)	Recommended Minimum Specific GNSS data
VTG (default)	Course Over Ground and Ground Speed
ZDA (default)	Time and Date