

PEB-625
Specification

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1. OVERVIEW

PEB-625 is a high performance, low power consumption, small size, and very easy integrated GPS module board designed for a broad spectrum of OEM system applications. The GPS module receiver will track up to 20 satellites at a time while providing fast time-to-first-fix and one second navigation updates. The highly integrated digital receiver uses the SiRFstarIII single chipset.

PEB-625 uses highly advanced GPS technology and is capable of acquisition and tracking in very low signal-strength environments. This enables effective and reliable operation in all scenarios. Unique algorithms and multi-path mitigation provide an accurate fix in the most challenging GPS environments, such as urban “canyons” and other areas where GPS signals are weak or deflected off of surrounding buildings.

This hardware capability combined with software intelligence makes the board easy to be integrated and used in all kinds of navigation applications or products.

2. PRODUCT FEATURES

- High acquisition and tracking sensitivity
 - High sensitivity for indoor fixes
 - Low power consumption
 - Real-time navigation for location-based services
 - Extremely fast TTFF at low signal levels
- Highly integrated component
 - Automatic pick and place assembly
 - Maximum flexibility
 - Extensively configurable
 - EMI shielded
 - 200,000+ effective correlators for fast TTFF
 - Supports 20-channel GPS receiver
 - Digital, RF and 4Mb Flash in a single package (GSC3f Low power)
 - GSC3f IC with ARM7TDMI inside
 - 6 GPIO ports
 - Integrated TCXO (± 0.5 ppm)
 - SBAS (WAAS and EGNOS) support
 - Board size 25.4mm X 25.4mm X 3 mm

3. TECHNICAL SPECIFICATIONS

3.1 Electrical Characteristics

General

GPS	SiRF StarIII GSC3f/LP-7979
Frequency	L1, 1575.42MHz
C/A Code	1.023MHz chip rate
Channel	20

Accuracy

Position	10 meters CEP without SA 2DRMS approximately 5 meters, WAAS support
Velocity	0.1 meters/second without SA
Time	1 microsecond synchronized to GPS time

DGPS Accuracy

Position	1 to 5 meters, typical
Velocity	0.05 meters/second, typical

Sensitivity

Acquisition	-144 dBm
Tracking	-159 dBm

Acquisition Rate

Hot start	1 sec, average
Warm start	38 sec, average
Cold start	42 sec, average

Dynamic condition

Altitude	18,000 meters max.
Velocity	515 m/sec max.
Acceleration	4g, max
Jerk	20 meters/second ³ max.

DC Power

Main Power	3.3V DC
Continuous Mode	50mA @3.3V DC
Backup Battery Power	3V DC

Protocol

Protocol Message	SiRF binary and NMEA-0183
Baud Rate	4800bps

1PPS Pulse

Level	CMOS
Pulse duration	100ms
Time reference	At the pulse positive edge
Measurements	Aligned to GPS second, ± microsecond

Datum

WGS-84

3.2 Absolute Maximum Ratings

Parameter	Min	Max	Unit
Power supply voltage(VCC, VBAT)	-0.3	6.0	V
Serial port input voltage	-0.3	6.0	V
GPIO voltage	-0.3	6.0	V
Storage temperature	-40	85	°C

3.3 Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Power supply voltage	VCC	3.0	3.3	5.5	V
I/O input high level	V _{IH}	2.0			V
I/O input low level	V _{IL}			0.8	V
I/O output high level	V _{OH}	2.4			V
I/O output low level	V _{OL}			0.4	V
Antenna input voltage	VANT	2.7	3.3	5	V
VCCRF output voltage	VCCRF	2.7	2.8	2.9	V
Operating temperature	Top	-30		85	°C

3.4 Battery Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Backup battery supply voltage	VBAT		3.0		V
Supply current	IBAT		6		uA

4. MECHANICAL CHARACTERISTICS

4.1 Dimension

The following illustrates the dimensions of PEB-625:

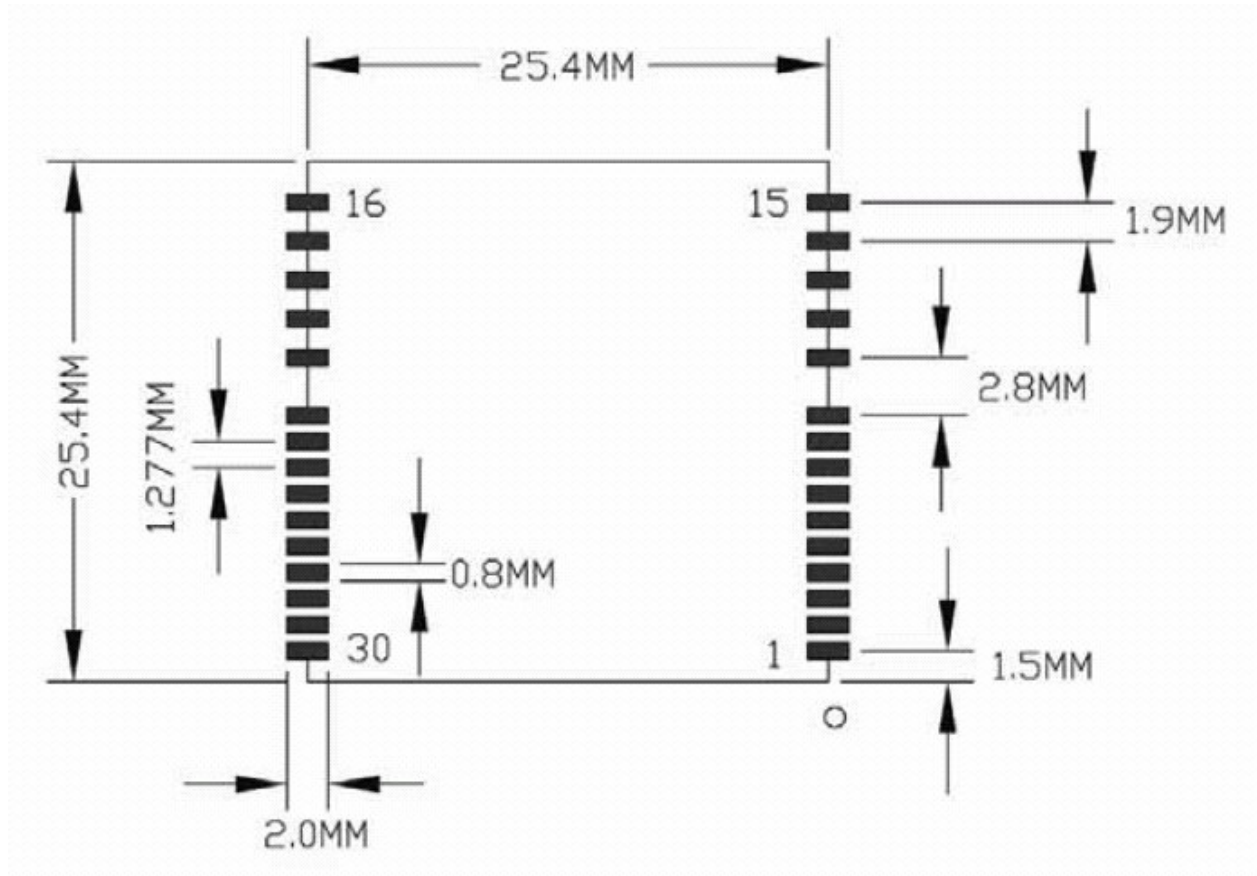


Figure 4-1 PEB-625 Dimensions

5. PAD DETAILS

This chapter describes the function of the pads on the module.

5.1 PAD List

The following table lists the names and functions of the PEB-625 pads:

PIN	Name	Description	I/O
1	VCC	Main power Vcc (3.3V± 5%)	I
2	GND	Digital ground	-
3	BOOTSEL	Boot mode	I
4	RXD0	Serial input for channel 0	I
5	TXD0	Serial output for channel 0	O
6	TXD1	Serial output for channel 1	O
7	RXD1	Serial input for channel 1	I
8	SPI_EN	Control-line for production test. Leave it open.	-
9	VCCGSP3	Control output for baseband. Leave it open.	O
10	GND	Digital ground	
11	RF_GND	Analog ground	
12	RF_GND	Analog ground	
13	RF_GND	Analog ground	
14	RF_GND	Analog ground	
15	RF_GND	Analog ground	
16	RF_GND	Analog ground	
17	RF_IN	Antenna signal input	I
18	RF_GND	Analog ground	-
19	V_ANT	Active Antenna bias voltage (3.3V)	I
20	VCCRF	Supply RF bias voltage (2.85V DC, max. 25mA)	O
21	V_BAT	Power for RTC and SRAM	I
22	RESET_N	Reset the unit if active low	I
23	VCC	Main power (3.3V± 5%)	I
24	SPI_DATA	Control-line for production test. Leave it open	O
25	NADC_D	Control-line for production test. Leave it open	I
26	SPI_CLK	Control-line for production test. Leave it open.	I
27	GPIO0	General purpose I/O	I/O
28	GPIO1	General purpose I/O	I/O
29	1PPS	1 PPS timemark output	O
30	GND	Digital ground	

6. APPLICATION SCHEMATIC

