# 承 認 書

## Approval Sheet

編號 No.：　　日期 Date：　　年　　月　　日

| | |
|---|---|
| CUSTOMER 客戶： | |
| CUSTOMER MODEL No. 客戶型號： | |
| CPSS PART NO.<br>料　　號 | AFEB81701-02 |
| Description<br>品名規格 | SiRF III,4800,Reel 裝@1750/箱; Based on specification V1.0 |
| AGENT<br>代理商 | AGENT Part No.<br>代理商代號 |

□1.附樣品數量：_____ ；或照片　　□4.安規認證證書和報告

□2.電子檔和書面文件　　□5.其他_____

□3.材料材質測試報告，如：廠商限用物質保證書、SGS、RoHS…

| | |
|---|---|
| Customization Info.<br>客製化項目 | |

| 客 戶 | | CPSS | | |
|---|---|---|---|---|
| Approved By | Approved Date | Approved By | Checked By | Issued By |
| | | | | Fred Chien |

## 修 改 記 錄

| | 修 改 項 目 | 日　　期 | 人　　員 |
|---|---|---|---|
| 內容記載 | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| 備註 | | | |

# EB817

# GPS Engine Board Module

# Specification

Version 1.0

2007/5/7

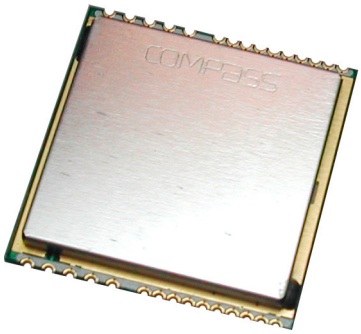
6F, No. 413, Sec. 2, Ti-Ding Blvd.,
Neihu Dist., Taipei, 114 Taiwan
TEL: +886-2-8751-8598
FAX: +886-2-8797-3898

# 1. Product Information

- Product Name: EB817
- Product Description:

EB817 engine board designed by Compass Systems (CPSS) is a compact size GPS (Global Positioning System) module. By using SiRF Star III chipset solution, EB817 GPS module processes lower power consumption and high sensitivity to satellite signals. According to these features, it is best-suited to be integrated into various portable electronic devices for use in automotive, handheld navigation, cellular handset, mobile computing and other GPS applications.




- Product Features:

::. Build on high performance, low-power SiRF star III chipset
::. Extreme fast TTFF (the time to first fix) at low signal level
::. 20 parallel channels for fast acquisition and reacquisition
::. SBAS (WAAS, EGNOS Euro Geostationary Navigation Overlay Service) support
::. Full navigation accuracy provided by Standard Positioning Service (SPS)
::. Reception frequency 1575.42MHz
::. CPU (ARM7TDMI) with 4Mb of external Flash memory
::. Advanced Power Management. (The mode of low power management when signal levels are less than 30dB Hz. Update rates are limited from 10 seconds to 255 seconds.)
::. Support standard NMEA 0183 protocol(Version. 3.0 GGA, GSA, GSV, RMC, VTG)
::. Internal RTC (Real Time Clock)
::. Build-in +3~+5V DC converter
::. 2 UARTS, high speed serial bus
::. Shielding case included

■ Firmware Version : GSW3.2.2

| | |
|---|---|
| Chips | GSC3eLP |
| Flash | 4M |
| Baud rate | 4800 BPS |
| Reception frequency | 1575.42MHz |
| Code Mode | NME-A0183 |
| Power Voltage | 3.3V |
| Dimension | 25.4*25.4*2.8 mm |

# 2. Technical Information

## ■ Characteristics

**::. Acquisition time ( Open Sky and Stationary)**

| | | |
|---|---|---|
| Reacquisition | | Average 0.1 seconds |
| Hot start | < | Average 01 seconds |
| Warm start | < | Average 38 seconds |
| Cold start | < | Average 42 seconds |

**::. Accuracy**

| | |
|---|---|
| Position | 10 meters RMS without SA |
| Velocity | 0.1 meters/second, without SA |
| Time | 1 microsecond synchronized to GPS time |
| Datum | WGS-84 (or by demand) |

**::. Sensitivity**

| | |
|---|---|
| Tracking sensitivity | -159dBm |

**::. Dynamics**

| | | |
|---|---|---|
| Altitude | < | 18000 meter maximum |
| Velocity | < | 515 meter/second maximum |
| Acceleration | < | 4g |

**::. Frequency** L1, 1575.42 MHz C/A code

## ■ Power

::. **Power consumption** under 50mA fully active

::. **Power Management** Advanced Power Management. (The mode of low power management when signal levels are less than 30dB Hz. Update rates are limited from 10 seconds to 255 seconds.)

## ■ Interface

::. Baud rate Default baud rate for SSIII NMEA is 4800 baud.
The default serial port settings for SiRF binary mode is 57600, N, 8, 1.

::. Serial I/O port 2 UARTS, high speed serial bus

::. I/O Protocol NMEA 0183 (default)

::. I/O Connector 30-pin type

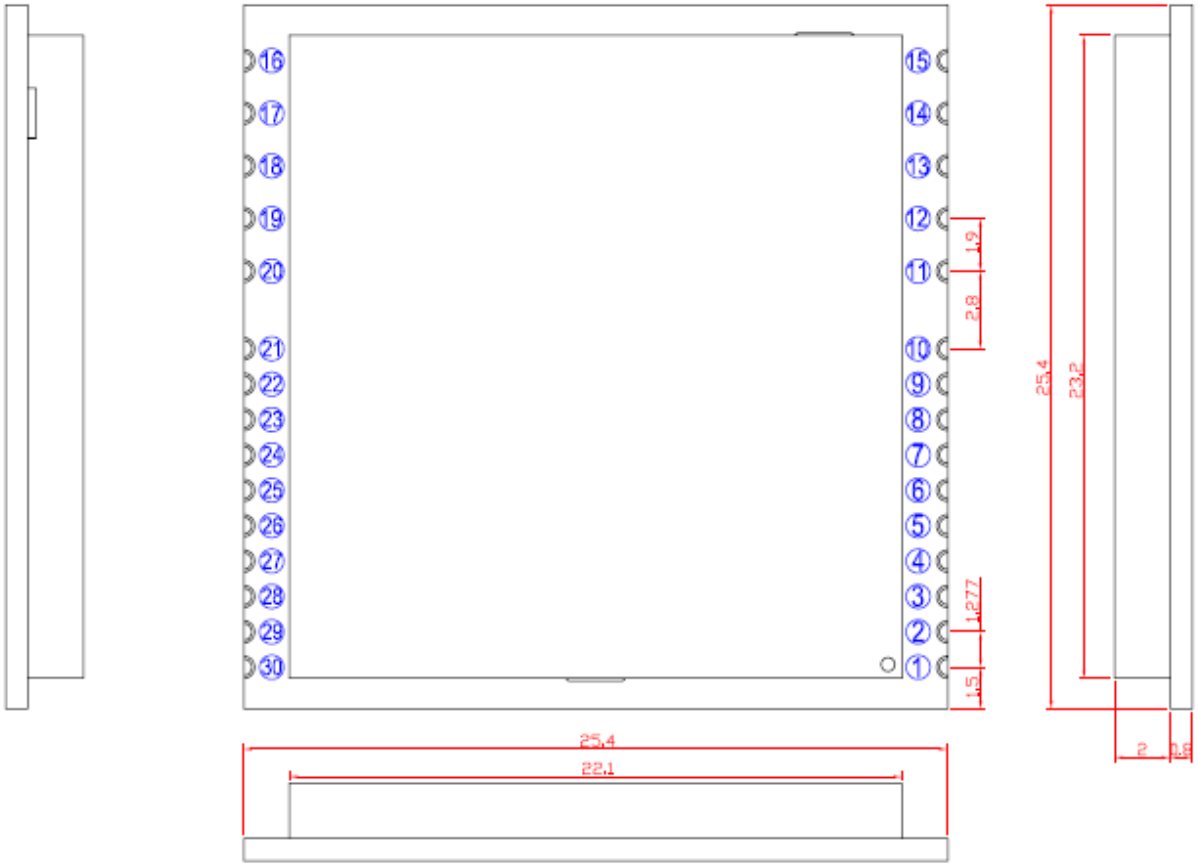
## ■ Physical Characteristics

::. Dimensions 25.4*25.4*2.8mm [W x L x H]

::. Weight 2g

::. Vibration 4G Max.

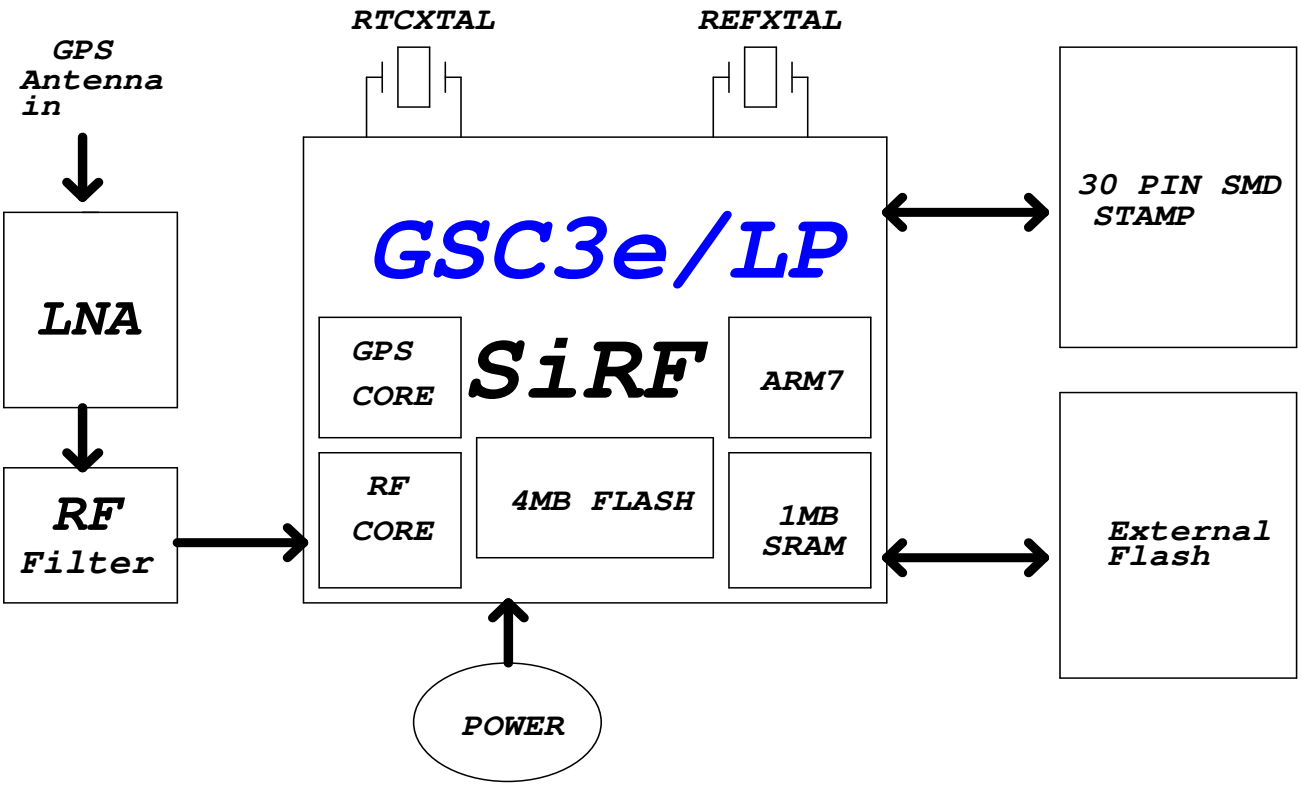
  



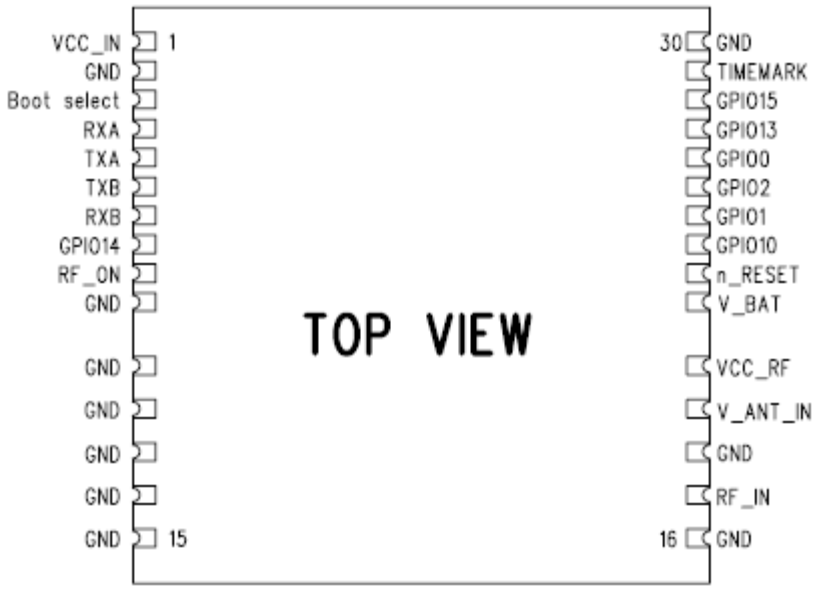

## ■ Environment Conditions

- Operating Temperature -20℃ to +80℃
- Storage Temperature -20℃ to +85℃
- Operating Humidity 5% ~ 95% RH, Non condensing

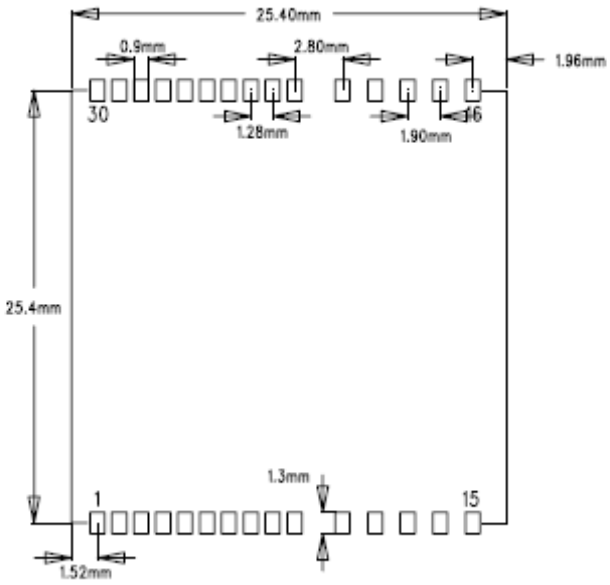
■ Functional Block Diagram




■ Pin Assignment of connector



■ Recommended land pattern dimension




■ Pin assignment description

| EB817 Pin assignment description | | | |
|---|---|---|---|
| **Pin** | **Pin Name** | **Type** | **Function description** |
| 1 | VCC_IN | I | + 3.3V~3.6Vdc power input (System Power) |
| 2 | GND | G | Ground |
| 3 | Boot select | I | Boot selection. Pull high this pin at power on stage for flash programming. |
| 4 | RXA | I | Serial Data input port A |
| 5 | TXA | O | Serial Data output port A |
| 6 | TXB | O | Serial Date output port B for user's application(not currently used). |
| 7 | RXB | I | Serial Date input port B for user's application(not currently used). |
| 8 | GPIO14 | I/O | External GPS system power control , internal pull low. ( must be Low) |
| 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 | G | GPS signal input |
| 18 | GND | G | Ground |
| 19 | V_ANT_IN | I | + 3.0V~5Vdc DC power supply for active antenna. |
| 20 | VCC_RF | O | DC power supply for active antenna,2.85V |
| 21 | V_BAT | I | Battery backup input. 2.5V to 3.6V, 10uA typical. If Backup Battery on board this pin floating.(Option) |
| 22 | n_RESET | I | Reserved for System input reset (Active Low), If not use, this pin floating. |
| 23 | GPIO10 | I/O | General purpose I/O 10 |
| 24 | GPIO1 | I/O | General purpose I/O 1 |
| 25 | GPIO2 | I/O | General purpose I/O 2 |
| 26 | GPIO0 | I/O | General purpose I/O 0 |
| 27 | GPIO13 | I/O | General purpose I/O 13 |
| 28 | GPIO15 | I/O | LED indicate for GPS status |
| 29 | TIMEMARK | O | 1 PPS Time mark output |
| 30 | GND | G | Digital ground |

## ■ Definition of Pin assignment

**Pin 1: VCC_IN(+3.3V~3.6Vdc)**

This is the main DC power supply input pin. It provides voltage to module.

**Pin 2: GND**

This pin connect to system ground

**Pin 3: Boot select**

Set this pin to high for programming flash. If not use, this pin floating.

**Pin 4: RXA**

This is the main receiver channel and is used to receive software commands to the board from SIRFdemo software or from user written software.

**Pin 5: TXA**

This is the main transmitting channel and is used to output navigation and measurement data to SiRFdemo or user written software.

**Pin 6: TXB**

For user's application (not currently used).

**Pin 7: RXB**

This is the auxiliary receiving channel and is used to input differential corrections to the board to enable DGPS navigation.

**Pin 8 : GPIO14**

External GPS system power control , internal pull low. Pull hi to off GPS system power.If not use, this pin floating.

**Pin 9: RF_ON**

This pin indicates state of RF voltage. If not use, this pin floating.

**Pin 17: RF_IN**

This pin receiver signal of GPS analog .due to the RF characteristics of the signal the design has to certain criteria. The line on the PCB from the antenna(or antenna connector) has to be a controlled impedance line (Microstrip at 50Ω).

**Pin 19: V_ANT_IN**

This pin is reserved an external DC power supply for active antenna. If using 2.85V active antenna, pin 19 has to be connected to pin 20. If using 3.3V or 5V active antenna, this pin has to be connected to 3.3V or 5V power supply. If not use, this pin floating.

**Pin 20: VCC_RF**

This pin provides DC voltage 2.85 for active antenna. If not use, this pin floating.

**Pin 21: Backup battery (V_BAT)**

This is the battery backup input that powers the SRAM and RTC when main power is removed. Typical current draw is 10uA. Without an external backup battery or super cap, the TMP will execute a start after every power on. To achieve the faster start-up offered by a hot or warm start, either a battery backup must be connected or a super cap installed. To maximize battery lifetime, the battery voltage should not exceed the supply voltage and should be between 2.5V and 3.6V.

With the super cap (BT1) installed, and after at least ten minutes of continuous operation, the data retention is about seven hours.

Backup Battery on board this pin floating.(Option)

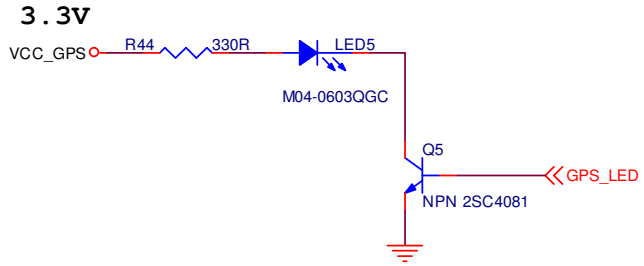
Note that even though all other components are rated at –30 to +85 deg C, a typical super cap is specified over a temperature range of –25 to +70 deg C and a typical rechargeable Lithium battery is over –20 to +70 deg C.

**Pin 22: n_RESET**

This pin provides an active-low reset input to the board. It causes the board to reset and start searching for satellites. If not use, this pin floating.

**Pin 28:GPIO15(LED)**

This pin indicates state of satellites. Circuit reference as below. If not use, this pin floating.




**Pin 29: TIMEMARK**

This pin provides one pulse-per-second output from the board, which is synchronized to GPS time. This is not available in Trickle Power mode. If not use, this pin floating.

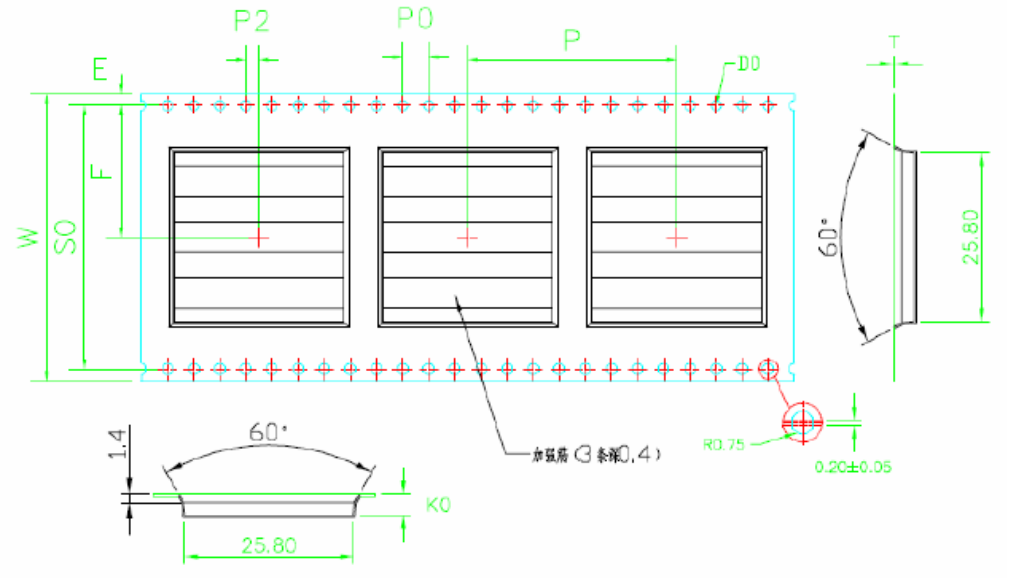
## Pin 10,24,25,26,27 : GPIO Functions

Several I/Os are connected to the digital interface connector for custom applications.

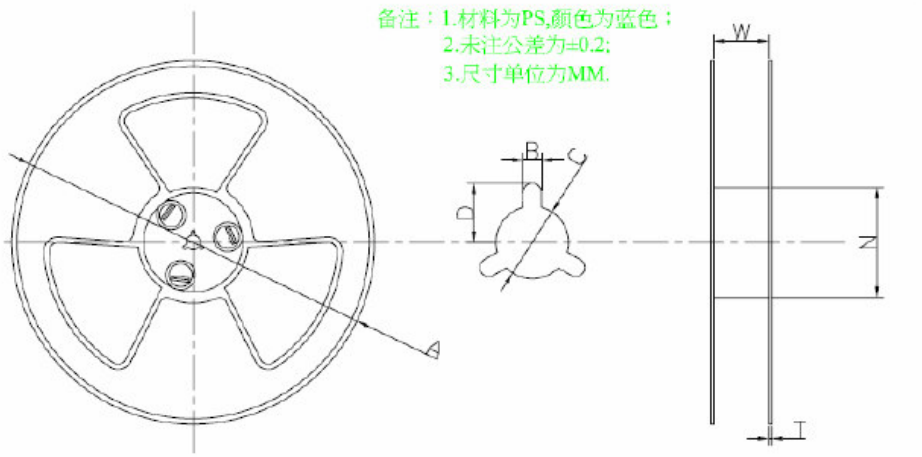
# ■ Appendix A. Packing information

## ::. Reel Packing




| ITEM | W | A0 | B0 | K0 | K1 | P | F | E | S0 | D0 | D1 | P0 | P2 | T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIM | 44.00 | 25.80 | 25.80 | 3.40 | 0.00 | 32.00 | 20.20 | 1.75 | 40.40 | 1.50 | 0.00 | 4.00 | 2.00 | 0.30 |
| ALTERNATE | | | | | | | | | | | | | | |
| Custom Confirm: _____ Date: _____ | | | | | ☐ Accept ☐ Rejection Reason: _____ | | | | | | | | | |

## ::. 350 pcs per reel




| A±1 | B±0.2 | C±0.3 | D±0.2 | T±0.2 | N±0.5 | W±0.3 |
|---|---|---|---|---|---|---|
| Ø330 | 2.5 | Ø13.4 | 10.75 | 2.0 | Ø100 | 44.5 |

**::. 1,750 pcs per carton**