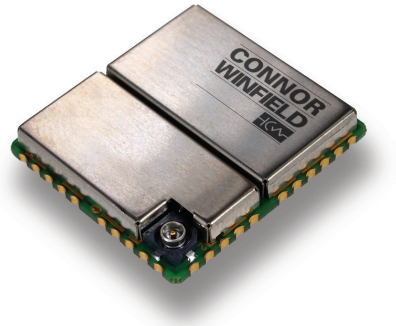
TiMax TI125 GPS Receiver

PRODUCT BRIEF

Description

The TiMax TI125 is a small OEM surface mount GPS module that has been specifically designed for use in synchronization and timing applications.



The TI125 has an on-board programmable NCO oscillator that outputs a synthesized frequency up to 30 MHz that is steered by the GPS receiver.

The TI125 has a self survey mode of operation that allows the receiver to enter a position hold mode to allow accurate timing to be continued with only one satellite being tracked.

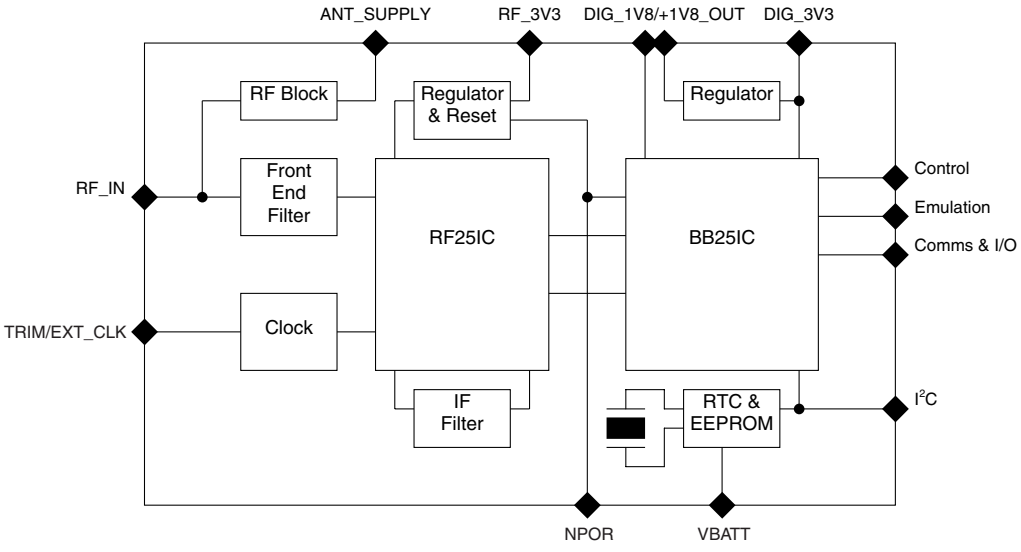
The output frequency is highly accurate and can achieve full PRC MTIE performance; and can also track satellites and provide GPS synchronization in weak signal areas such as indoor applications. This reduces the need for high antenna placement typically in many environments.

The TiMax TI125 is an exceptionally small surface mount package (25mm x 27mm x 4mm) with a highly integrated architecture that requires the minimum of external components allowing easy integration into host systems.

Applications

- Synchronization
- Timing
- Indoor Timing
- GPS Timing Modules
  (contact Connor-Winfield for further details)

Block Diagram



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TiMax TI125 GPS RECEIVER SPECIFICATIONS [1]

SPECIFICATIONS [1]

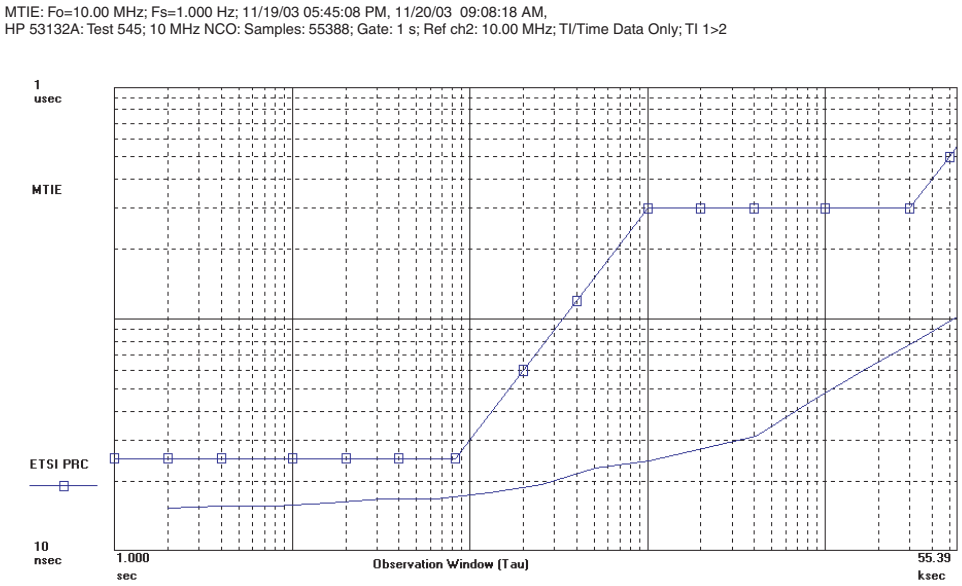
Physical	Module dimensions	25mm (D) x 27mm (W) x 4.2mm (H)
	Supply voltages	3V3 (Digital I/O), 3V3 (RF), 1V8 (Core option), 3V (Standby Battery)
	Operating / Storage Temp	-30°C to +75°C / -30°C to +80°C [2]
	Humidity	5% to 95% non-condensing
	Max Velocity / Altitude	515ms^{-1} / 18,000m
	Max Acceleration / Jerk	4g / 1gs^{-1} (sustained for less than 5 seconds)
Sensitivity	Acquisition w/network assist	-155dBm
	Tracking	-156dBm
	Aquisition Stand Alone	-143dBm
Acquisition Time	Hot Start with network assist	Outdoor: <2s Indoor (-148dBm): <5s
	Stand Alone (Outdoor)	Cold: <45s Warm: <38s Hot: <5s Re-acquisition: <0.5s (90% confidence)
Accuracy	Position: Outdoor / Indoor	<5m rms / <50m rms
	Velocity	<0.05ms^{-1}
	Latency	<200ms
	Raw Measurement Accuracy	Pseudorange <0.3m rms, Carrier phase <5mm rms
	Tracking	Code and carrier coherent
Power	1 fix per second	0.6W typically
	Coma Mode Current (RF3V3+DIG 3V3)	10mA
	Standby Current (VBATT)	1.5µA
Interfaces	Serial	3 UART ports, CMOS levels; USB v1.1
	Multi-function I/O	1PPS Frequency Output available on GPIO [0] Event Counter/Timer Input Up to 4 x GPIO (multi-function) 2 x LED Status Drive I²C, External Clock (on special build)
	Protocols	Network Assist, NMEA 0183, Proprietary ASCII and binary message formats
	1pps Timing Output	10nS rms accuracy, <5nS resolution User selectable pulse width
	Event Input	30nS rms accuracy, <10nS resolution
	Frequency Output (GPIO [0])	10 Hz to 30 MHz (TiMax TI125)
	Receiver Type	12 parallel channel x 32 taps up to 32 point FFT. Channels, taps and FFT can be switched off to minimize power or simulate simpler designs.
General	Processor	ARM 966E-S on a 0.18µ process at up to120 MHz.

Note: 1. The features listed above may require specific software builds and may not all be available in the initial release.
2. Please contact factory for other temperature options.

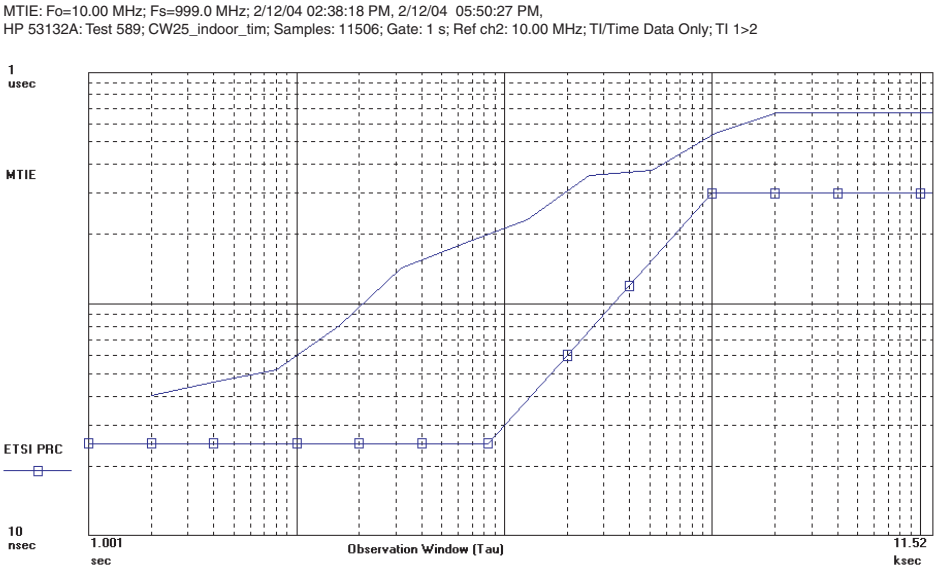
CONNOR WINFIELD

TiMax TI125 GPS MTIE PERFORMANCE

The graph below demonstrates the MTIE performance of the TiMax TI125 output frequency relative to a Caesium atomic clock, with the TiMax TI125 operating with a clear view of the sky.



The graph below demonstrates the ability of the TiMax TI125 to continue to provide a GPS disciplined output frequency with the GPS aerial located completely inside a building (the degradation of MTIE performance is due to the effects of signal multi-path)



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