Low Power NavIC / GNSS Baseband ASIC Receiver

Credit Card size Receiver Module (57mm x 68mm)

Space Applications Centre of ISRO has designed and developed NavIC + GNSS Baseband ASIC (NavASIC V3) to cater the navigation requirements of various ground and airborne applications with low power and small form factor. Memory based code generator up to 10230 length is implemented to support existing and futuristic signals. The ASIC supports All-in-view open GNSS signals including all open NavIC signals through 12 acquisition engines and 100 tracking channels. It has 32-bit dual core processor IP clocked up to 540 MHz along with several peripherals for various applications. The chip is developed with optimized power, performance and area (PPA). The ASIC also offers anti-jamming and anti-spoofing features.

S/N	Parameter	Specifications
1.	ASIC type & node	Digital Baseband ASIC (with on-chip PLL)
Performance and Features		
2.	Supported constellations	All NavIC signals, GPS, Galileo, GLONASS, Beidou, SBAS, QZSS Along with Pulsed CDMA Signal Support
3.	Acquisition and Tracking Channels	4 Acquisition Engines with 2046-tap correlators and 8 Massive Acquisition Engines with 10230-tap correlators 100 Nos. of Tracking Channels
4.	Sensitivity	Acquisition: 25 dB-Hz Tracking: 22 dB-Hz
5.	TTFF	Cold Start < 60 seconds (open sky, combined solution) Re-acquisition < 6 seconds (open sky, combined solution)
6.	Observables	Code and Carrier Phase
7.	Other Features	CW and Pulse Interference Mitigation Navigation Message Authentication
On-chip Processing Capability		
8.	On-chip CPU and Memory	Dual Core 32-bit Processor with 4 Mb SRAM and FPU
9.	Configurable Processor Clocks	180/300/420/540 MHz

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Interfaces		
10.	Digital IF ADC Input Width	8-bit/5-bit/2-bit configurable
11.	External Clocks	20 or 56-65 MHz ADC Sampling Clock 16/20 MHz PLL reference clock
12.	Number of ADC Inputs for Digital IF	4 Nos. of 8-bit input OR 8 Nos. of 2-bit input OR 4 Nos. of 5-bit input ADC Inputs are Configurable for various modes
13.	Data Interfaces	UART, SPI, I2C, MIL-1553, GPIOs
14.	Timing	1-PPS IN and 1-PPS OUT
Physical and Electrical Characteristics		
15.	No. of Functional & Total IOs	130, 196
16.	Core & IO Voltage	0.9V, 3.3V
17.	Power	0.2-0.7W*
18.	Package	Hermetically Sealed Ceramic Flip-chip BGA
19.	Die Size	6.5mm x 6.5mm
20.	Package Size	15mm x 15mm
*Average Power measured in various modes in lab environment.		

Applications

- Low power Handheld Terminals, Vehicle Tracking Systems, Timing Applications, Asset Tracking
- Real-Time Aircraft and Launch Vehicle Tracking.
- GAGANYAAN Crew module tracking & other short-life LEO missions
- Supports low and high dynamics applications with upto velocity of 10 km/sec, acceleration: 40 m/s^2, Jerk 13.5 g/s
- Either NMEA (default) or RTCM output is supported.

SAC/ISRO, offers to transfer this technology of the **Low Power NavIC / GNSS Baseband ASIC Receiver** developed by SAC to industries in India with adequate experience and facilities. Enterprises interested in obtaining knowhow may register and submit their proposal to Indian National Space Promotion & Authorization Centre (IN-SPACe), Ahmedabad.
https://www.inspace.gov.in

For more details, you may Contact:

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https://www.sac.gov.in/SAC_Industry_Portal

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