eSi-ADAS

EnSilica
your trusted IC partner

Radar Co-Processor for Advanced Driver Assistance Systems

The EnSilica eSi-ADAS™ radar co-processor provides a small, highly efficient and low-power solution to enhance the overall performance and capabilities of radar based ADAS systems for automotive, drone and UAV applications that require fast and responsive situational awareness.

Industry Leading Capabilities

Compared to current ADAS processing methods, eSi-ADAS offers a number of significant benefits:

- Short and long range radar modes
- Real-time tracking of over 128 objects
- Support for Range, Doppler and Azimuth
- Offload of radar target processing from the ECU
- Up to 10x lower power
- Up to 20x lower memory

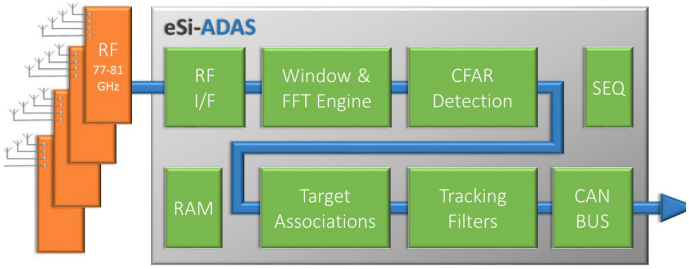
Ultra Fast, Ultra Small & Ultra Low-Power

The compact, low gate-count architecture of the eSi-ADAS co-processor enables the high bandwidth and computationally intensive operations involved in plot extraction and tracking to be quickly and efficiently processed at the radar receiver stage, significantly reducing the load and overhead on the main ADAS system ECU, CPU or DSP and at the same time boosting overall ADAS capabilities.

Operating on range, velocity and angular measurements eSi-ADAS applies advanced digital processing techniques including 3D Fast Fourier Transforms, burst averaging to improve signal-to-noise ratio, Constant False Alarm (CFAR) detection and Kalman Filtering. These operations all take place in real-time to constantly update over 128 objects and their associated movement.

To provide the most precise plot extraction eSi-ADAS operates in conjunction with a fast chirp capable RF stage and multiple receive channels.

EnSilica has implemented its patented techniques to overcome the disadvantages usually associated with processing fast chirp modulation, notably its high computational and memory requirements.

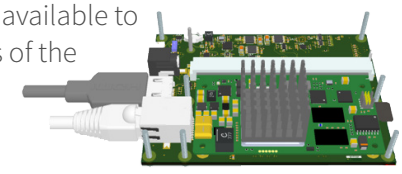


Technical Overview

- Advanced target data engine optimised for multichannel radar receivers (up-to 12)
- 4, 8, 12 or 16 baseband receive channels
- Advanced fast chirp processing
- Real-time FFTs for Range, Doppler and Azimuth
- Real time extraction and tracking of over 128 plots
- Low-latency - track updates every 50ms
- Combined LRR and SRR object tracking
- CAN bus interface providing recovered targets
- Programmable, all hardware solution
- No CPU/Software – reduced test for certification

FPGA Demonstrator

An FPGA-based module is available to enable the full capabilities of the eSi-ADAS co-processor to be evaluated.



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