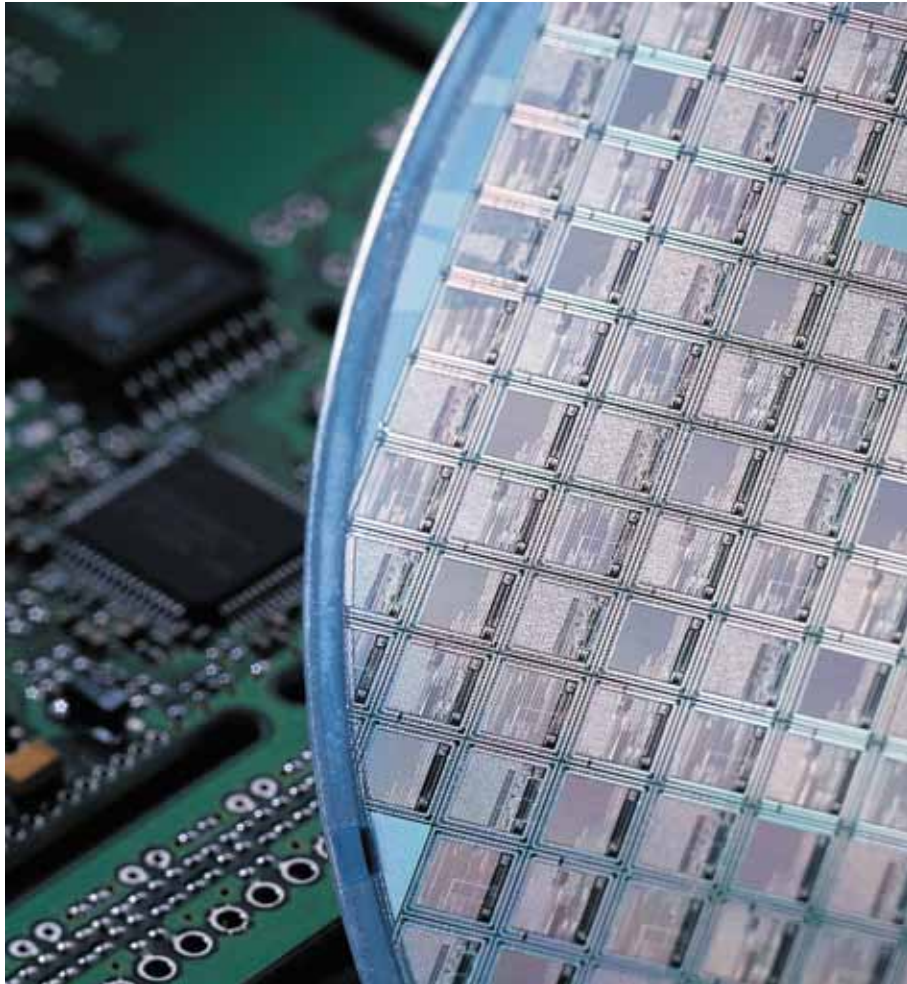


**ShortLink**



**Low Power Design™**  
ASIC and electronic design

# ASIC and electronic design

**Our development services concentrate on low-power portable products and wireless communication – often in the form of mixed-signal ASIC and RF ASIC in combination with embedded systems. In addition, we have a well-equipped laboratory for test and measurement, offering our customers a unique complete solution.**

## ASIC design

We have gained extensive experience and knowledge of various ASIC solutions throughout our years of analog and digital design. However, our core areas of competence are in low-power mixed-signal and RF ASIC design.

### ASIC advantages

Our ASIC-competence and technology offer the customer the following benefits:

- Quick time-to-market and lower development cost thanks to our building block portfolio.
- Overall function and performance can often be significantly better than the corresponding discrete solution, especially concerning lower power consumption which enables longer battery life time.
- Thanks to the difficulty to copy an ASIC, you get automatic intellectual property protection.
- The product's weight and size can often be reduced considerably. For portable products, both of these parameters are important and sometimes crucial advantages.
- Even at relatively low volumes, our ASIC designs often result in lower cost solutions compared to the equivalent discrete design.
- Minimizing the total number of components on the board leads to higher reliability and lower production cost. Also, an ASIC is rigorously tested before delivery. This all results in considerably lower production and maintenance costs.

### RF ASIC

Radio solutions for data communication and different types of audio communication are areas where we have vast experience. Integrating these systems on silicon minimizes size and power consumption. Furthermore, the total cost is drastically lowered because the number of external components can be reduced substantially. In addition, we

are very experienced in low-power, low-voltage ASIC design – down to 1 volt. For example, the antenna in portable radio products is often near the body, placing special demands on the antenna construction. This is one usage where our fully anechoic test chamber proves to be a valuable resource. The combination of our experience and resources makes it possible for us to offer a powerful radio solution, which is optimal for low-power and portable products.

### Mixed-signal ASIC

To both reduce time and cost for customer-specific development work, we have a number of complete building blocks for analog and digital functions. We also have building blocks for low-power radio transceivers. Combining these blocks with customer-specific modules and a microcontroller creates a powerful single-chip solution – System-on-Chip (SoC) – which is small, compact and cost-effective.

### Fabless ASIC production

Besides ASIC design, we are also responsible for the whole chain of production, from wafer manufacturing to tested and encapsulated circuits. We also handle all the logistics and delivery to our customers, who benefit from this simplified production flow.

## Electronic design

### Analog systems

We have many years of experience with discrete analog design, focusing on low power consumption, low supply voltage and special applications requiring performance beyond the ordinary. Examples of these special applications are highly sensitive instrumental amplifiers or an audio system with strict requirements for sound quality, dynamic range and low noise, often in combination with minimal power consumption. In many cases, discrete analog circuit solutions are used as a complement to an ASIC to create a complete system solution with optimal performance.

### RF/radio systems

Over the years, we have worked with many different radio solutions in the frequency band from 30 MHz to 2.45 GHz. Our development of radio systems is carried out in direct connection with our test and measurement laboratory. The fully anechoic test chamber





enables us to perform EMC and radio testing, as well as optimizing small built-in antennas. These capabilities and services mean that we can offer our customers a competitive total solution.

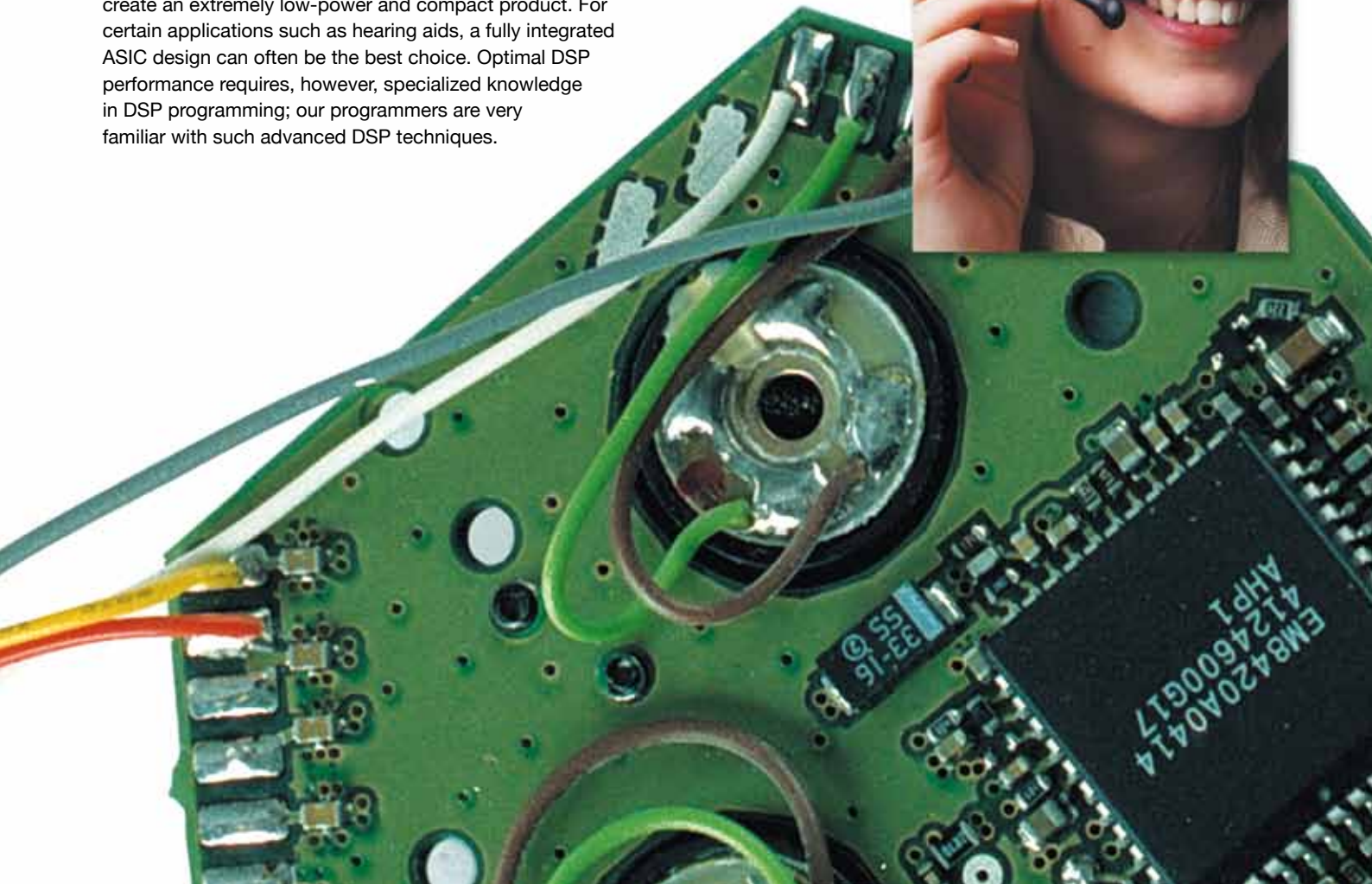
### Embedded systems for portable products

This is one of our areas of specialization and we have, among other things, developed numerous medical measuring instruments, measurement data collection, personal protection equipment, intelligent sensors etc, often, in combination with various radio links. In many cases, these designs are battery operated and require very low power consumption in order to extend the battery life time. Also, these systems usually have a high demand placed on analog performance and powerful signal processing.

### DSP

Digital Signal Processing (DSP) is an interesting area with great potential. We primarily design low power DSP-solutions aimed for audio applications.

DSP solutions can be designed from discrete electronics as well as completely integrated in an ASIC. This can create an extremely low-power and compact product. For certain applications such as hearing aids, a fully integrated ASIC design can often be the best choice. Optimal DSP performance requires, however, specialized knowledge in DSP programming; our programmers are very familiar with such advanced DSP techniques.



# Why choose us as a supplier and development partner?

We have extensive experience and solid competence in the area of **low-power portable electronics and wireless communication systems**.

Our skills are comprised of ASIC (application-specific integrated circuit), discrete electronics, and embedded systems with focus on mixed-signal, RF and advanced analog functions. In addition, we have a well-equipped lab for test and measurement, and we can, therefor, offer our customers unique total solutions.

We develop solutions for the following areas:

- wireless communications – audio , data communication, and remote control
- portable measurement instruments – often requiring very high measurement sensitivity
- protection equipment – hearing, vision, and radiation
- home electronics
- medical products

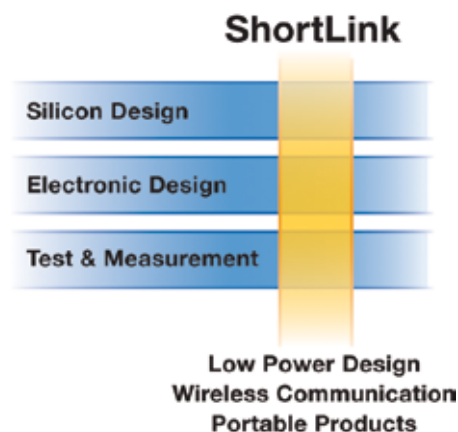
Our objective is to provide top competence within ASIC and electronic design, when developing your products – to make you more competitive.

## References

We have vast experience with several market-leading customers from various industry sectors, including:

- Ericsson Mobile Communications
- Ericsson Microwave Systems
- Great Nordic Netcom (GNN)
- Hörnell Elektrooptik
- Sordin
- 3M
- ZMD
- Comfort Audio
- Nilfisk Advance
- StoraEnso

Read more at [www.shortlink.se](http://www.shortlink.se).



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