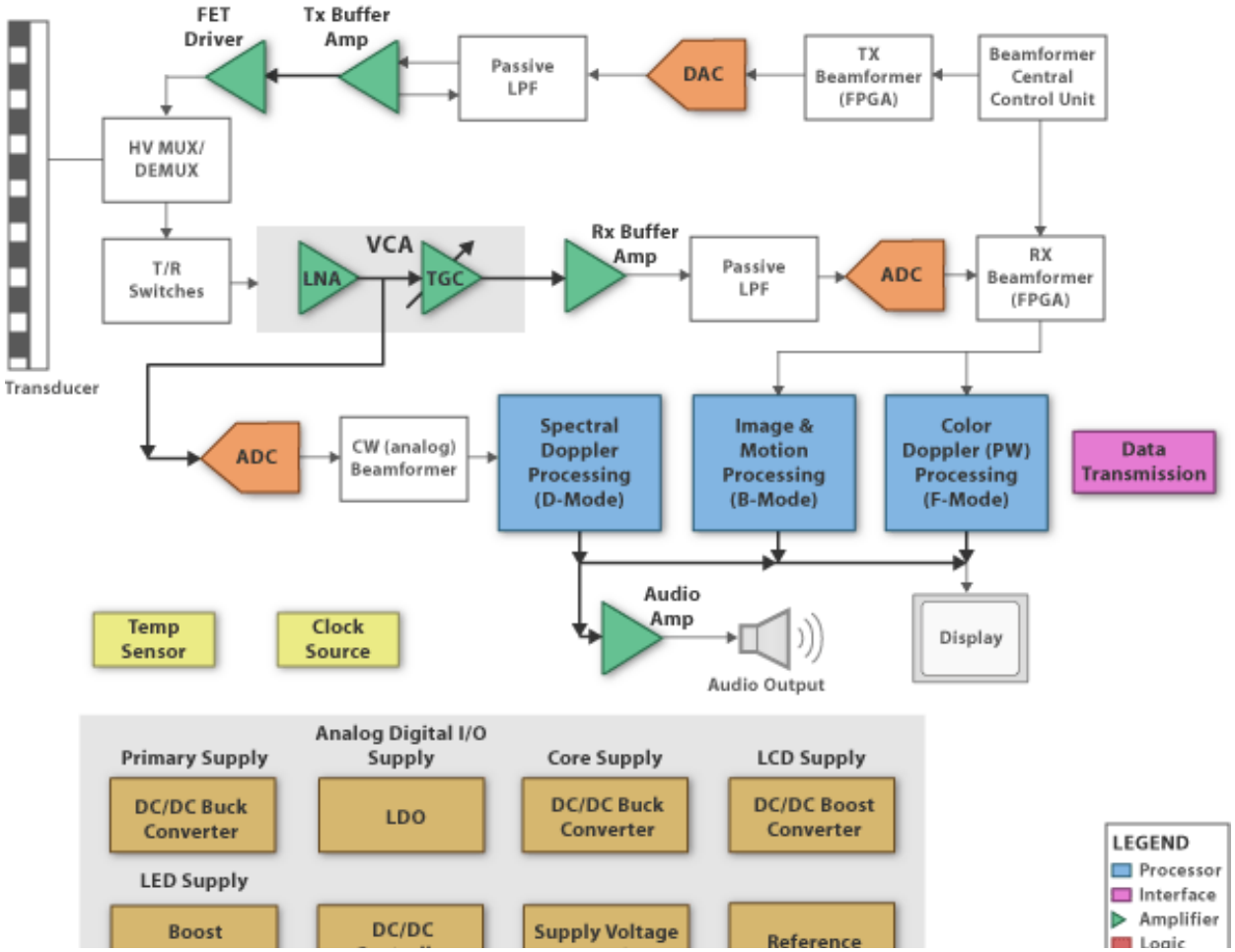
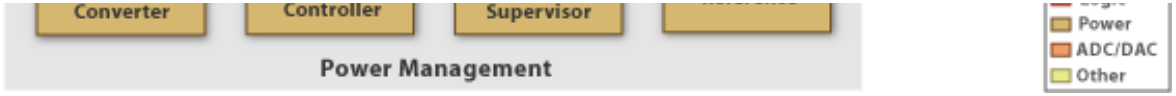
Ultrasound System

Ultrasound System design resources and block diagram.

Application Notes	Design Considerations
Reference Designs	Product Bulletin & White Papers
Selection and Solution Guides	News Releases & Authored Articles
Tools and Software	Similar End-Equipment Solutions

Block Diagram





Design Considerations

An ultrasound system is the most important tool in medical diagnostics. It provides an accurate representation of the internals of a human body and images of movement in the body. It contains of several hundreds of analog channels (up to 256 channels/system and 512 channels/3-D system), that make analog processing components highly important in determining the system performance.

The core subsystems include:

- Rx-input path
  - the input voltage noise level of the low noise amplifier (LNA) is key for the entire input signal path and determines the performance of the entire system. The ADCs have 12-bit resolution in high-end systems, mid-end work with 10-bit only. Lowest supply current is key for integration and due to high analog channel count.
- Tx-receive path
  - fast amplifiers are needed to get sharp and repeatable trasnmit pulses into the human body.
- Clock distribution
  - the clock performance has an important influence to the overall ADC performance and becomes more and more important with increasing number of channels.
- Image processing
  - up to 3 DSPs can be found per ultrasound sytem to enable fast and sharp image processing.
- Power Conversion
  - converts the input power to run various functional blocks.

Similar End-Equipment Solutions

- Magnetic Resonance Imaging