

Description

QR Decomposition reference design is a complete linear equations system solution solver. The input of the design is a system matrix A [$N \times M$] and input vector. The system matrix A is decomposed to Q and R matrices using the Gram-Schmidt method, and the solution of the system is calculated by completing backward substitution.

The reference design is fully parameterizable over system dimensions N and M , as well as the processing vector size which defines the parallelization ratio of the dot product engine. This design implements parallel dot product engine using single-precision multiply-add blocks that perform most of the floating-point calculations. The design allows very efficient scheduling of decomposition subroutines, to maximize the IP throughput.

For more information and benchmarking:

www.altera.com/literature/wp/wp-01187-bdti-altera-fp-dsp-design-flow.pdf

www.altera.com/literature/wp/wp-01192-bdti-altera-fp-dsp-energy-efficiency.pdf

For additional information, please contact us at mil@altera.com or *contact your local Altera sales representative.*

Features

- Linear Equation System Solver
- Highly parameterizable and scalable QRD IP
- Floating point hardware demonstration
- Designed with Simulink®/Advanced DSP Builder

Applications

- Radar and Sonar STAP Algorithm
- Scientific Computing
- Adaptive Filtering

Figure 1: QR Decomposition Reference Design Block Diagram

