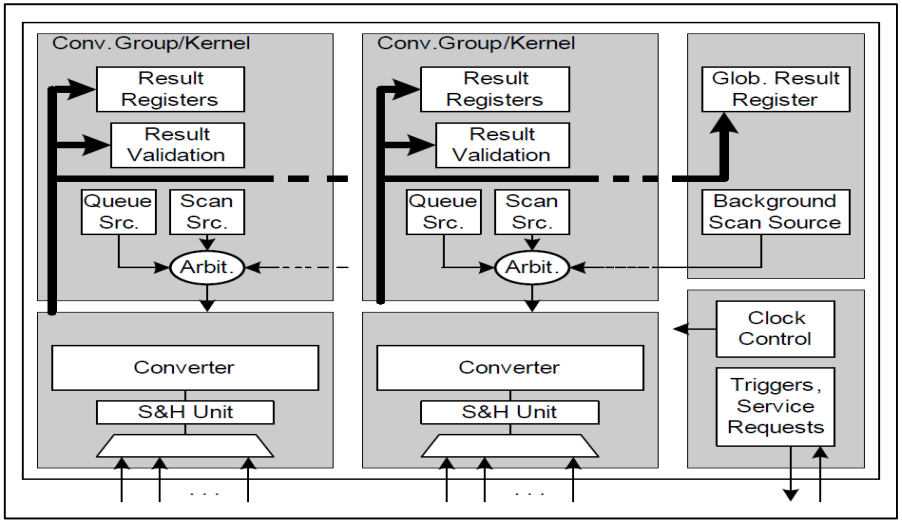
VADC

Versatile Analog-to-Digital Converter

AURIX™ TC2xx Microcontroller Training
V1.0 2019-03

VADC
Versatile Analog-to-Digital Converter



Highlights

- Up to 11 independent converters with up to 8 analog input channels each
- Conversion time below 1 µs is possible
- Flexible source selection and arbitration
- Powerful result handling

Key Features

- Flexible source selection and arbitration
- Powerful conversion result handling

Customer Benefits

- Programmable arbitration and conversion sequence
- Different trigger source selection
- Independent result registers with selectable FIR/IIR filter
- Fast Compare Mode

VADC
Flexible source selection and arbitration

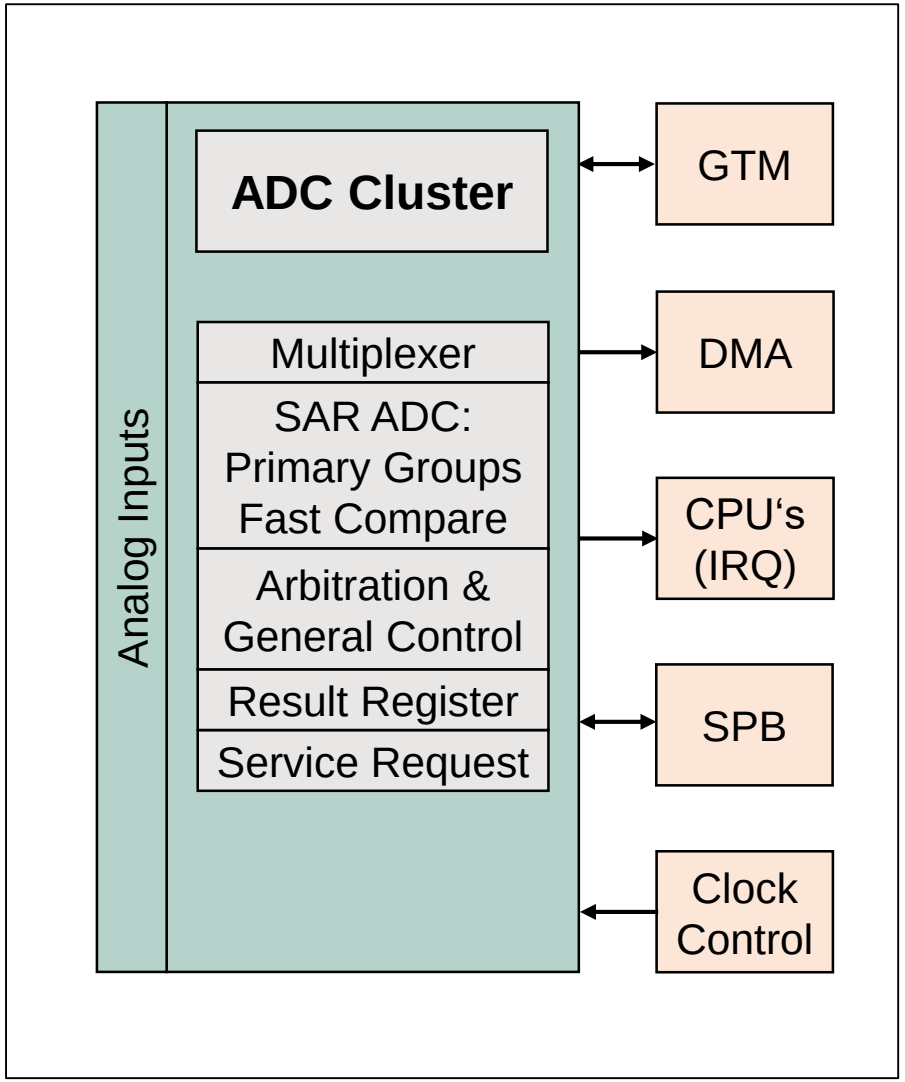
- Programmable arbitrary conversion sequence (single or repeated)
- Configurable auto scan conversion (single or repeated) on each converter
- Configurable auto scan conversion (single or repeated) in the background (all converters)
- Conversions triggered by software, timer events, or external events
- Cancel-inject-restart mode for reduced conversion delay on priority channels
- External analog multiplexer control, including adjusted sample time and scan support
- Conversion speed and sample time adjustable to adapt to sensors and reference

VADC
Powerful conversion result handling

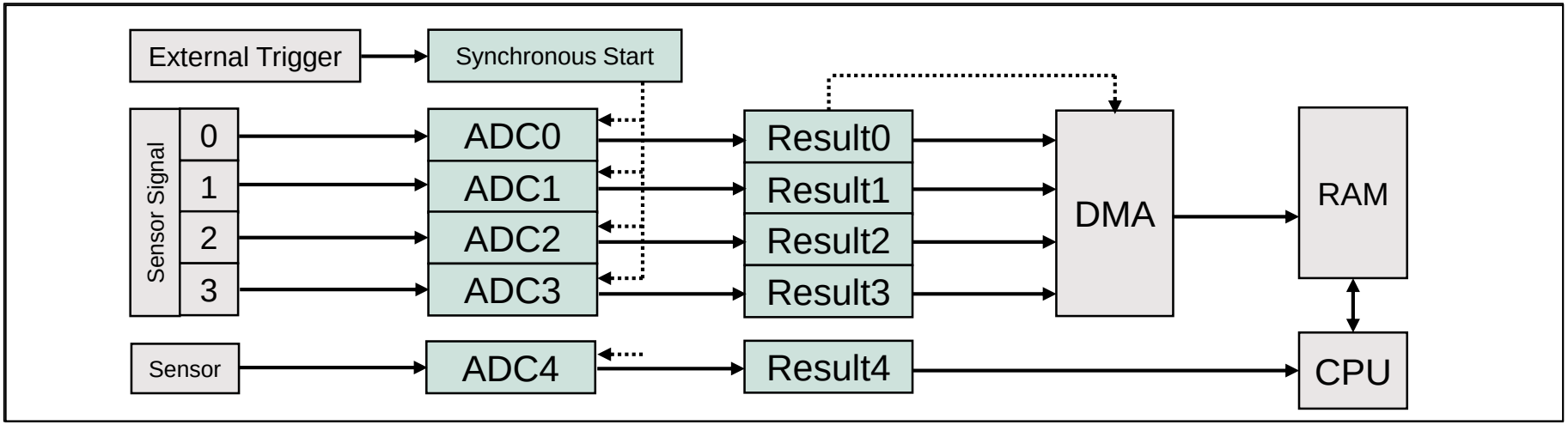
- Selectable result width of 8/10/12 bits
- Fast Compare Mode compares result register content directly with input signal
- Storage of conversion results to user-configurable registers
- Configurable limit checking against programmable border values
- Data alignment according to result width and endianness
- Wait-for-Read mode to avoid loss of data
- Data rate reduction through adding a selectable number of conversion results
- Result event generation
- Data reduction or anti-aliasing filtering. FIR/IIR filter with selectable coefficients

VADC
System integration

- The analog inputs are connected to a cluster of Analog/Digital Converters which convert analog input values (voltages) to discrete digital values
- Each converter of the ADC cluster can operate independent of the others
- The results of each channel can be stored in a dedicated channel-specific result register or in a group-specific result register
- A background converter can be configured



Application example
Synchronized conversions



Overview

- Synchronized Conversions for parallel sampling
- Result handling via DMA (Direct Memory Access)

Advantages

- Several independent ADC kernels can be synchronized for simultaneous measurements of analog input channels
- Synchronization for parallel conversions ensures that the sample phases of the related channels start simultaneously

Trademarks
All referenced product or service names and trademarks are the property of their respective owners.

Edition 2019-03
Published by
Infineon Technologies AG
81726 Munich, Germany

Do you have a question about this document?
Email: erratum@infineon.com

Document reference
AURIX_Training_1_
Versatile_Analog-to-Digital_Converter

IMPORTANT NOTICE
The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics (“Beschaffenheitsgarantie”) .

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer’s compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer’s products and any use of the product of Infineon Technologies in customer’s applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer’s technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on the product, technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies office (www.infineon.com).

WARNINGS
Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies’ products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.