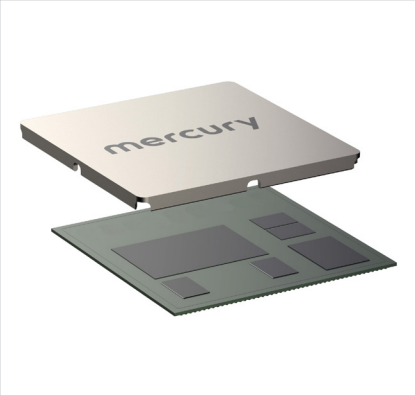
RFS1140 RF SiP

RF System-in-Package: 64GSPS and Versal® Adaptive SoC Enabled Processing

Direct-to-digital processing at chip scale

- North American design and manufacturing at a DMEA-accredited facility
- High-speed data conversion with four channels
- Up to 64 GSPS per channel
- On-chip memory



The advanced System-in-Package RFS1140 consists of an AMD Versal® Adaptive SoC, Jariet high-speed data converters and integrated memory. This technology, combined with Mercury's North American design and manufacturing, brings commercial technology to mission-critical applications creating a trusted and secure solution for modern sensor processing at the edge.

The RFS1140 offers direct digitization and massive processing while maintaining SWaP-C optimization through the reduction of multiple boards and reducing overall system cost. The on-chip memory simplifies system design and integration and contributes to the overall system longevity.

Included in the SiP is the AMD Versal ® Adaptive SoC for the heterogeneous integration of best-in-class technology for increased performance per unit area. With direct digitization up to 36 GHz and 4 channels each of ADC and DAC data conversion operating up to 64 GSPS per channel that includes a 32 GHz bandwidth 1st Nyquist zone. It also includes broad instantaneous bandwidths of > 4 Ghz. The RFS1140 offers the most advanced processing capability for applications where ultra-low data latency is critical for success.

Highlights

- First advanced Versal ® RFSiP developed and manufactured in North America with ultra-fast data conversion rates up to 64 GSPS
- On-chip memory for ease of system design and integration
- Development platform available — ask your sales representative for details

64 GSPS
direct digitization

4
channels ADC/DAC

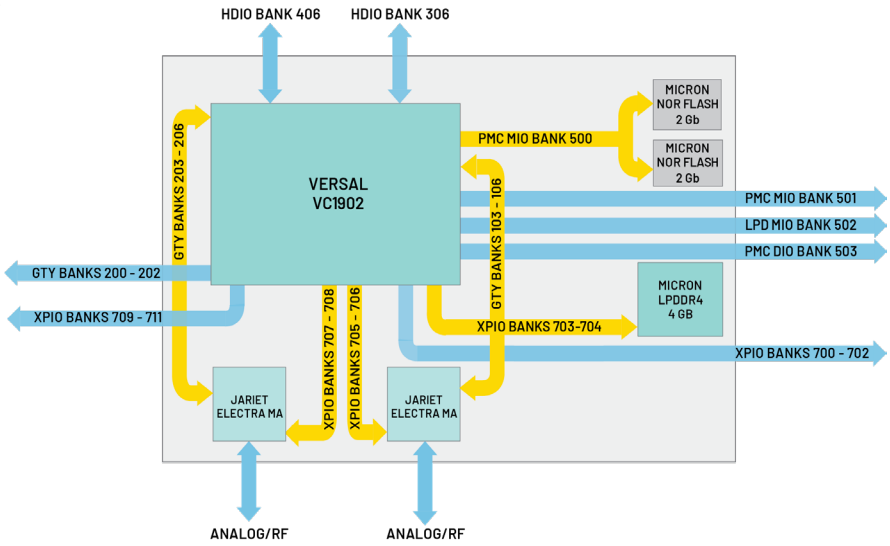
AMD Versal®
technology

4 GB
LPDDR4 memory

APPLICATIONS

- Military and aerospace: Radar, Electronic Warfare (EW), Electronic Attack (EA), Intelligence, Surveillance and Reconnaissance (ISR), Electronic Intelligence (ELINT)
- Commercial communications: 5G base station
- Point-to-Point (PtP) communication
- Test and measurement equipment
- Autonomous vehicles
- Radiometry
- Phased array and data aggregation

RFS1140 BLOCK DIAGRAM



AMD VERSAL® ADAPTIVE SOC

AMD Versal® devices combine adaptable processing and acceleration engines with medium-density programmable logic and configurable connectivity coupled with AI and DSP acceleration engines. This enables customized, diverse hardware solutions for a wide variety of applications in the data center, automotive, 5G wireless, wired, and defense industries. Versal ® devices feature transformational technologies like an integrated silicon host interconnect shell and Intelligent Engines (AI and DSP), Adaptable Engines and Scalar Engines which provide superior performance per watt over conventional FPGAs, CPUs, and GPUs.

HIGH-SPEED JARIET DATA CONVERSION

The Jariet Electra-MA transceiver enables the end user to eliminate substantial portions of the RF and microwave block diagram. The device has 10-bit converters which are extremely DC power efficient. Each channel is based on interleaved ADCs and DACs followed by programmable digital up and down conversion, linear and non-linear equalization, and a 16-bit SerDes baseband data interface. A 12-bit interface is also available for x8 and x16 decimation and interpolation rates. For single-ended applications that would not benefit from array-based phase noise improvements, the clock multiplier unit can be bypassed and a half-rate low-noise reference clock injected. Refer to the Technical Specifications for more device features and options.

RFS1140 TECHNICAL SPECIFICATIONS

Power

- RFSiP designed for a max power of 145W, Typical 125 W
- Power is highly dependent on use case

Memory

- 4 GB LPDDR4 (256 M x 32}
- 4 Gb NOR Flash

Part Number Ordering

RFS1140-MM02RFI-ES1

Mechanicals

- Dimensions: 47.5mm x 47.5mm x 5 mm
- Operating temperature range -40° C to +85° C

Development Support

- Vitis enabled platform infrastructure with BSP

Versal ® Adaptive SoC Resources available for customer's application

- 12 GTYs
- XPIO Triplet 1 (Banks 700-702) and Triplet 4 (Banks 709-711)

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