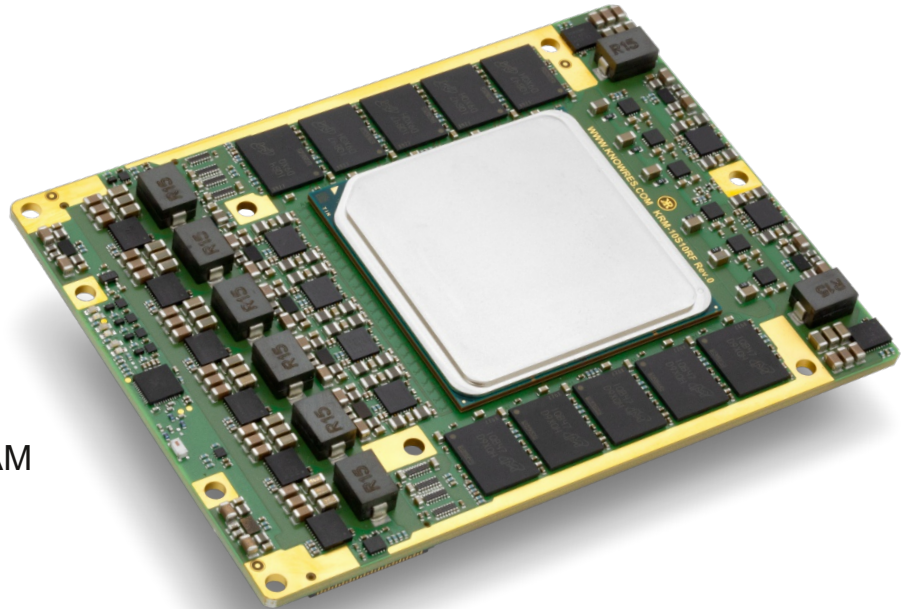


# KRM-10S10RF

## KEY FEATURES

- Intel Stratix 10 Direct RF
- 8x RF ADC and DAC @ 64GS
- 24 H & 24 E-tile transceivers
- 56 LOGIC I/O
- 44 HPS I/O
- 4GB 40-bit DDR4 HPS RAM
- 2 X 8GB 72-bit DDR4 ECC RAM
- Single 12V supply
- 120 x 90 mm



**The KRM-10S10RF is a full-featured Intel Direct RFSOM for use in a multitude of applications with analog signals up to 32GHz.**

### Unprecedented Bandwidth

With up to 32 GHz of analog bandwidth and eight 64GS/s analog to digital and digital to analog converters, coupled with a capable Stratix 10 FPGA fabric, the KRM-10 Direct RFSOM is ideally suited for a range of high bandwidth signal analysis or generation applications deployed in space-constrained environments.

The extensive FPGA fabric is complemented by two 72-bit DDR4 memory banks, suitable for sample buffering, real-time pattern storage for complex arbitrary signal generation, or extensive coefficient storage for edge AI implementations.

### Capable FPGA

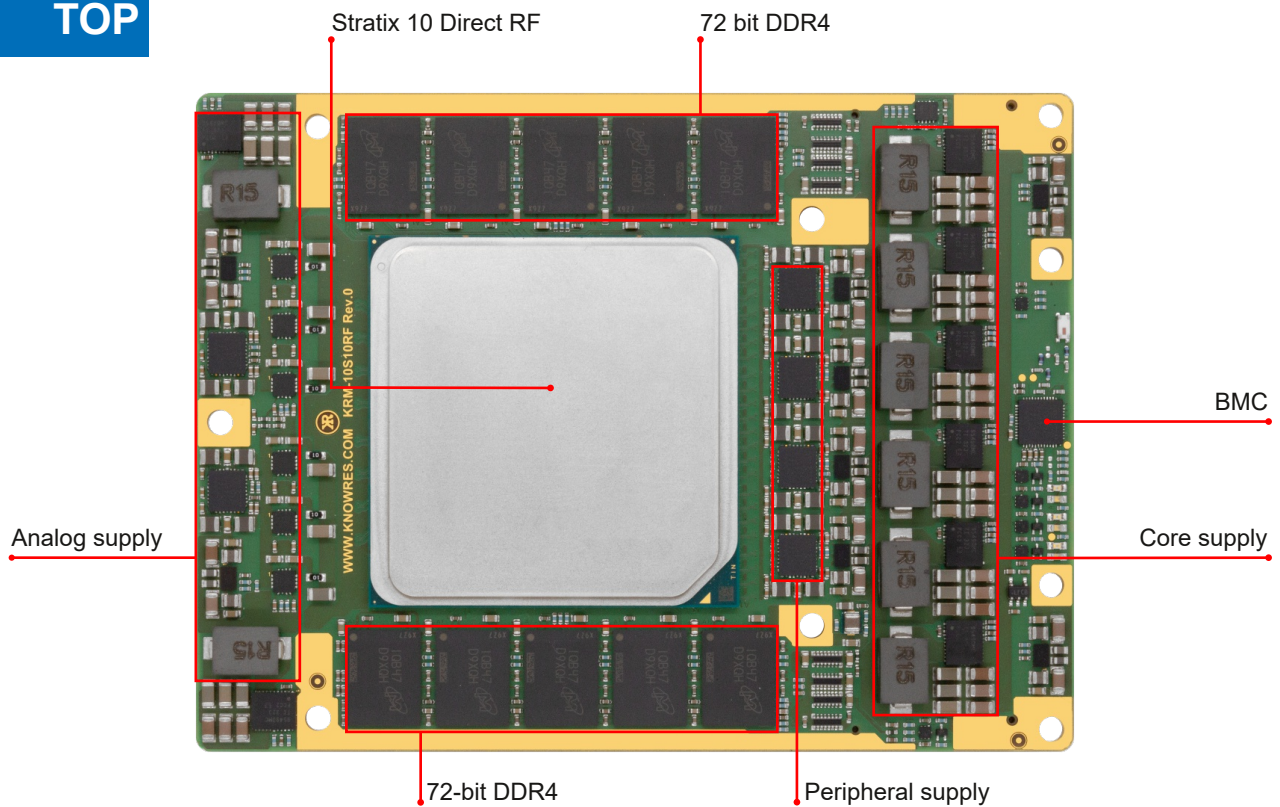
The Stratix 10 FPGA fabric features 11520 multipliers and 244 Mbit of embedded memory, enabling the implementation of powerful DSP algorithms to match the massive converter bandwidth. High data rate transfer to and from the FPGA is facilitated with 56 Gbit PAM-4 and 28 Gbit NRZ transceivers, allowing the SoM to be deployed as a PCIe peripheral or network attached device.

The quad core ARM A53 HPS subsystem with its own dedicated DDR4 memory is suitable for on-SoM control plane and data visualization applications.

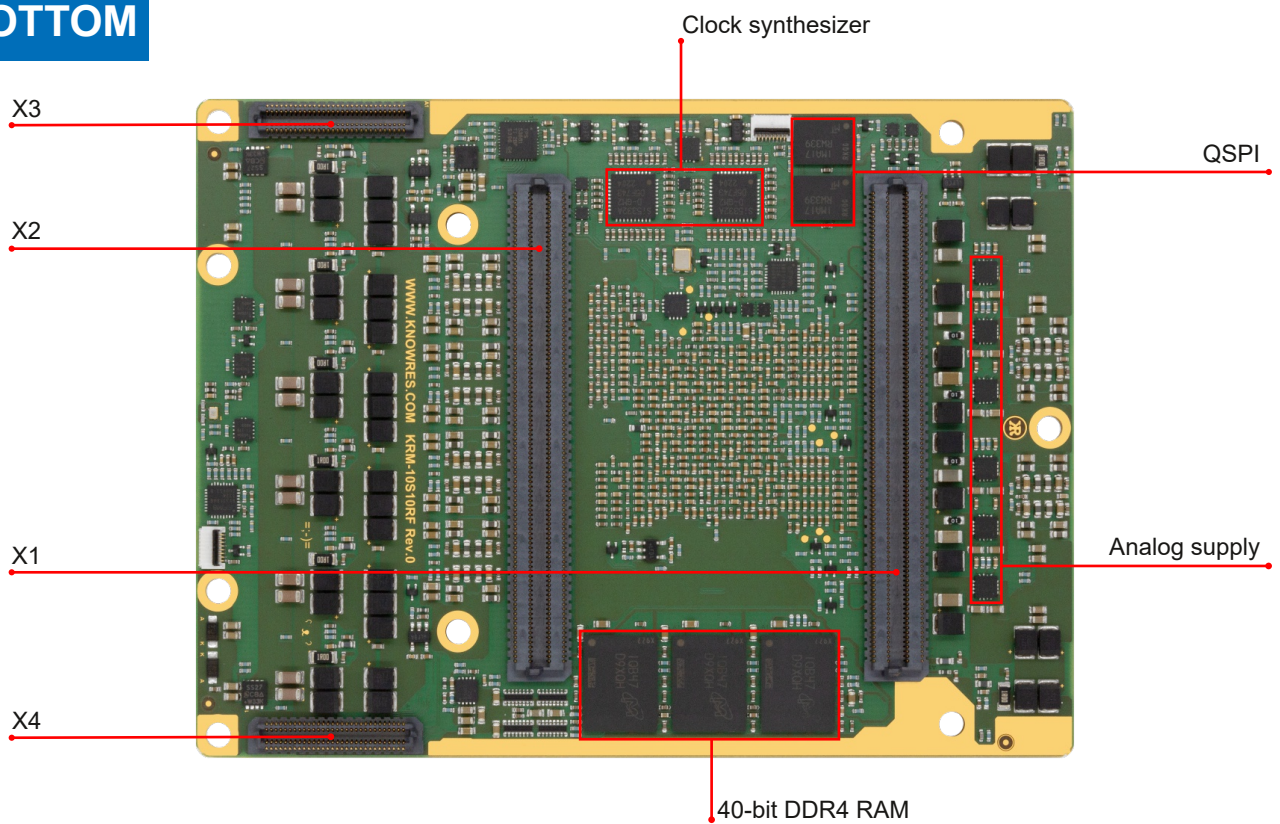
### System Integration

All advanced Knowledge Resources FPGA SoMs feature a housekeeping bus that ensures the SoM can be the master or slave of deterministic, system-wide power sequencing and peripheral initialization for glitch-free, stable interaction within a larger system of analog and digital peripherals and peers. The analog front-end personalization is implemented on the carrier level for maximum flexibility, and multi-module converter synchronization is explicitly supported by the SoM's clocking architecture.

## TOP



## BOTTOM



# FEATURES

## Core Component

- Intel Stratix 10AX 1SA28

## Direct RF-Subsystem

- 8x 10-bit ADC up to 64GS/s
- 8x 10-bit DAC up to 64GS/s

## Processing System

- Quad Core ARM Cortex™-A53

## FPGA Fabric

- 2753 kLEs
- 11520 18x19 multipliers
- 244 Mb embedded RAM

## Memory Configuration

- 4 GB, 40-bit DDR4 ECC HPS RAM
- 2 instances of 8 GB, 72-bit DDR4 Logic Fabric RAM
- Dual QSPI to 512 MB on SDM

## Digital I/O

- 22 & 22 HPS\_A & B I/O to 1V8
- 48 Logic I/O to 1V8
- 6 Logic I/O to 3V
- 24 E-tile transceivers
- 24 H-tile transceivers
- BMC UART / HPS UART
- BMC status signals
- JTAG

## BMC

- Board Management Controller for
  - On-module clock configuration
  - Power sequencing & telemetry
  - Boot mode selection
  - Housekeeping for multi-module systems

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## Power

- 12V input (11.0-12.8V)

## Digital Clocking

- 4:16 clock tree
  - External clock or on-board master
  - All digital module elements can be derived from one master clock
- On board clock sources for
  - DDR4 interface reference clocks
  - HPS reference clock
  - E-tile transceiver clocks 3x
  - H-tile transceiver clocks 4x
- Direct clock inputs on connectors
  - E-tile transceiver clocks 4x
  - H-tile transceiver clocks 4x

## RF Clocking

- Dedicated SYNC, SYSREF, CKREF and CEXT inputs on X1 RF connector for each A-tile
- Supports CKREF and CKEXT clock modes
  - SW controlled configuration
- Switched 12V supply-out and housekeeping/control signals to power and configure the clocking system
- Dedicated PL-SYSREF and PL-SYCLOCK inputs
- SYSREF request out

## RF I/O

- Differential DC-coupled low-loss paths from BGA to SoM connector

## Dimensions

- 120 x 90 mm
- 17 mm max. height with heat-spreader

## Environmental

- Industrial temperature range