ARM

64 Bit Juno r2 ARM® Development Platform

Versatile Express Family

The Juno r2 ARM Development Platform (ADP) is a software development platform for ARMv8-A, it includes the Juno r2 Versatile Express board and an ARMv8-A reference software port available through Linaro.

The Juno r2 hardware delivers to software developers an open, vendor neutral ARMv8 development platform with

- Cortex® A72 and A53 MPCore™ for PCI-Express development with ARMv8-A
- Mali™-T624 for 3D Graphics Acceleration and GP-GPU compute
- a SoC architecture aligned with Level 1 (Server) Base System Architecture

The Juno r2 software stack available through Linaro delivers to developers an out of the box Linux software package running

- ARM Trusted Firmware
- a 64-bit Linux Kernel with big.LITTLE and Mali support
- Linux based file systems (e.g Android Open Source Project)

It enables:

- ARMv8-A AArch64 kernel and tools development for Cortex-A50 series
- PCI-Express development with ARMv8-A
- Secure OS & Hypervisors through ARM Trusted Firmware
- 64-bit drivers using a Versatile FPGA board that connects directly to the board
- 3D graphics and GPU compute with native big.LITTLE and Mali support
- Middleware & file systems porting and optimisation to 64-bit

- Real-time debug, trace and performance tuning with CoreSight technology

The Versatile Express™ family of development boards provide an excellent environment for developing the next generation of system-on-chip designs. Through a range of plug-in options, hardware and software applications can be developed and debugged.

Developers can use the system for early PCI-Express development with ARMv8-A, based on the Cortex-A72 and Cortex-A53 ARM v8 processors.

The system can be expanded by adding a LogicTile Express board to the tile site on the motherboard. This adds a large FPGA for prototyping custom logic blocks alongside the ARM processor.

The exported AXI interface from the Platform has dedicated routing, directly linking the Test Chip and FPGA. This ensures sufficient bandwidth is available for the user AXI subsystem.

A microcontroller-based configuration mechanism provides an easy, USB-based plug-and-play method for programming software, firmware and FPGA images into the system flash memory from an attached PC.

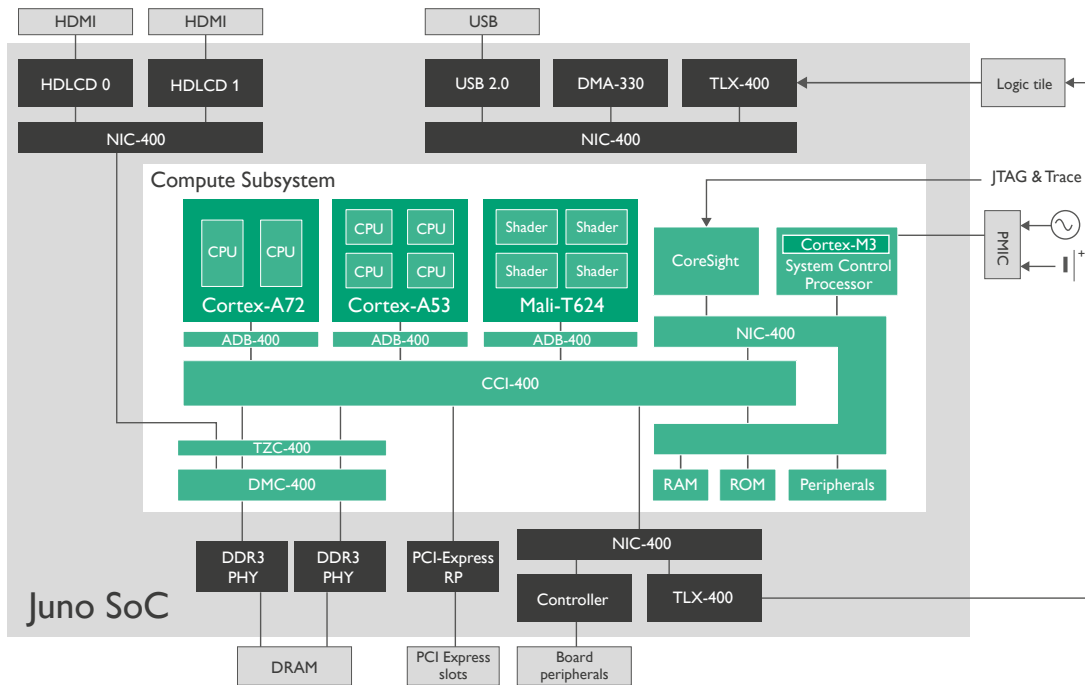AVAILABILITY: Q4 2015
PART NUMBER: V2M-Juno-0317D
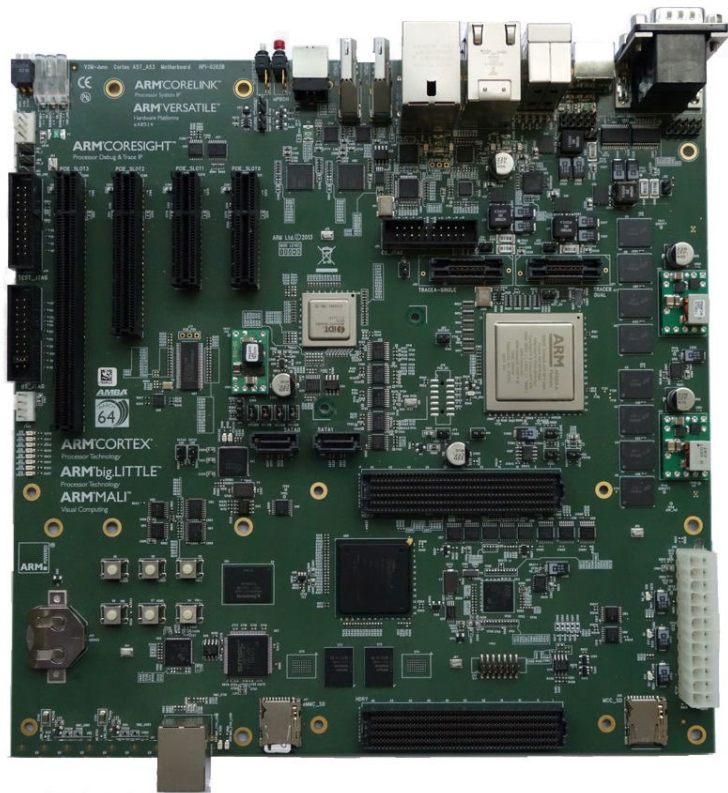
Features

- Compute Subsystem
  - Dual Cluster, SMP configuration
  - Cortex-A72 MP2 cluster (r0p0eac)
    - Overdrive 1.2GHz operating speed
    - Caches: L1 48KB I, 32KB D, L2 2MB
  - Cortex-A53 MP4 cluster (r0p3)
    - Overdrive 950MHz operating speed
    - Caches: L1 32KB, L2 1MB
  - Quad Core MALI T624 r1p0
    - Nominal 600MHz operating speed
    - Caches: L2 128KB
  - CoreSight ETM/CTI per core
  - DVFS and power gating via SCP
  - 4 energy meters
  - DMC-400 dual channel DDR3L interface, 8GB 1600MHz DDR
  - Internal CCI-400, 128-bit, 533MHz

- Rest of SoC
  - Internal NIC-400, 64-bit, 400MHz
  - External AXI ports: using Thin-Links
  - DMAC : PL330, 128-bit
  - Static Memory Bus Interface : PL354
  - 32bit 50MHz to slow speed peripheral
  - HDCLCD dual video controllers: 1080p

- Expansion support
  - 4 lane Gen 2.0 PCI-Express slots
  - AXI expansion to FPGA daughterboard
  - USB 2.0 with 4 port hub

- Debug
  - ARM JTAG : 20-way DIL box header
  - ARM 32/16 bit parallel trace

Juno r2 Software Overview

- System Control Processor (SCP) Firmware
  - System initialization, cold boot flow and controls clocks, voltage, power gating.
  - Delivered as binary via Linaro with public programmers interface
- Application Processor (AP) Software — all delivered as source via Linaro
  - ARM Trusted Firmware — supporting PSCI power controls and trusted execution environments
  - Choice of UEFI or U-Boot firmware
  - Linux — support for both latest kernel and Linaro Stable Kernel which includes Mali GPU drivers and Android patch-set.
    - Includes big.LITTLE scheduling and Intelligent Power Allocation support from ARM
  - Linaro supported Linux filesystems including:
    - Busybox
    - OpenEmbedded (yocto)
    - Android (Linaro Confectionery Release) — contains user-space driver for the Mali GPU

Motherboard Express for Juno r2 architecture

ARM