ADAS development system runs Linux on TI TDA2X SoC

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D3 Engineering's "DesignCore RVP-TDA2x Development Kit for ADAS" taps TI's TDA2x, Jacinto 6, or AM562x, and offers a 3GHz FPD-Link III video input.

D3 Engineering's DesignCore RVP-TDA2x Development Kit for ADAS (Advanced Driver Assistance Systems) is a Rugged Vision Platform (RVP) dev kit designed for evaluating ADAS technology under realistic on-vehicle conditions. Applications include front or rear cameras with analytics, 3D Surround View with Car Black Box (CarBB), driver monitoring, and mirror replacement and camera monitoring systems (CMS), says the Texas Instruments platinum design partner.


DesignCore RVP-TDA2x Development Kit for ADAS (left) and exploded view

The kit features the Texas Instruments TDA2x SoC processor by default, with the automotive focused DRA74x Jacinto 6 and Sitara AM572x available as options. TI announced the TDA2X back in 2013, and unveiled an RT-RK Alpha development board for it in 2016.

TI's TDA2X SoC provides 2x Cortex-A15 cores, 4x Cortex-M4 cores, and 2x TI TMS320C66x DSPs. There's also a dual-core PowerVR SGX 544 GPU and a Vision AccelerationPac subsystem with up to 4x Embedded Vision Engines (EVEs) designed for accelerating ADAS applications. Each EVE combines an optimized vector coprocessor and a 32-bit programmable RISC core. The

design is very close to that of the Jacinto 6, with one main exception being that the latter offers only 2x EVE cores.
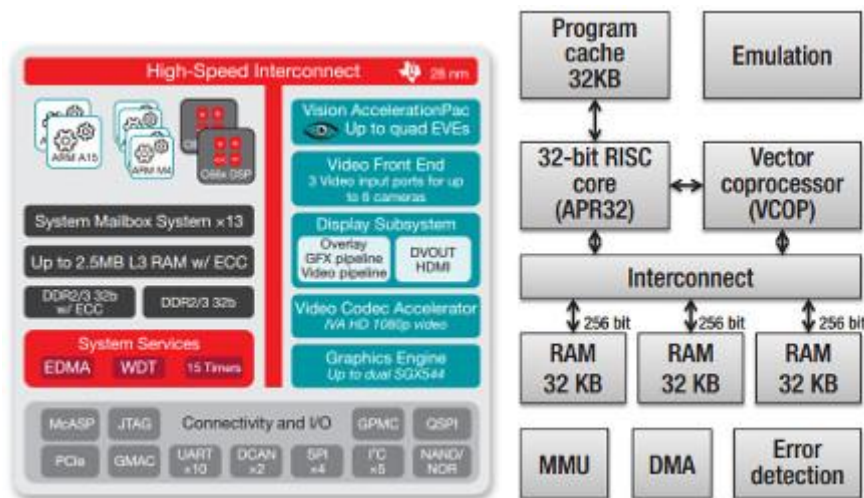
Block diagrams for TI TDA2X (left) and EVE
(click images to enlarge)

The TDA2X SoCs are pin compatible with TI's single Cortex-A15 core TDA2Eco SoCs, which have no EVE cores. There's also a software compatible TDA3x with 2x Cortex M4 cores, 2x C66x DSPs, and a single EVE, but no Cortex-A15 cores.

D3's RVP-TDA2x Development Kit includes a computer-on-module called the TDA2x SOM that features the TDA2x, or alternatively the Jacinto 6 or AM572x. (The AM572x lacks the EVE cores.) The COM, which offers 4GB of RAM with ECC and 8GB of eMMC, connects via a 180-pin header to a customizable baseboard. This in turn fits into a rugged 182.2 x 149.5mm enclosure with -40 to 85°C support. A Linux BSP includes D3 software frameworks, TI's BIOS Vison SDK, and demos.
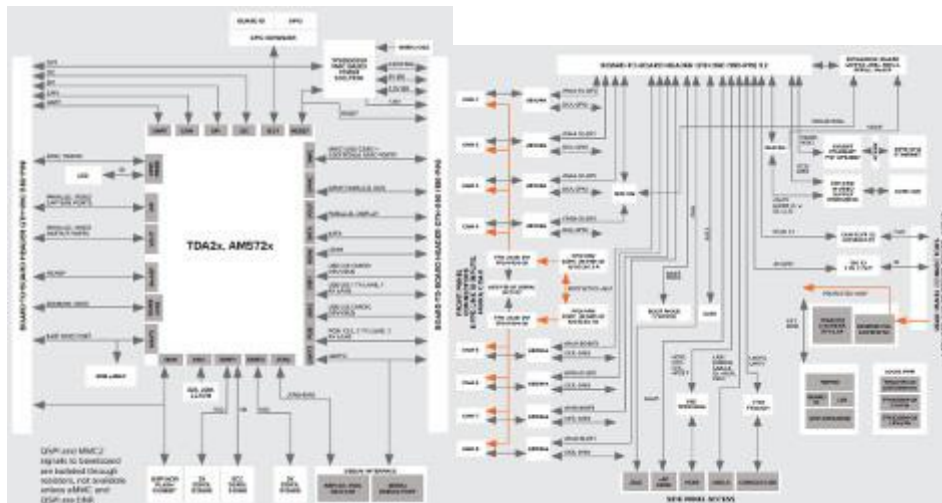
RVP-TDA2x SOM (left) and baseboard block diagrams
(click images to enlarge)

The key feature on the RVP-TDA2x baseboard is the 3GHz FPD-Link III video input, which enables synchronous acquisition of 8x 1080p video streams with real-time vision processing and analytics. There's also an HDMI output, as well as a GbE port, 2x CANbus ports, a USB 3.0 port, and a microSD slot.

The RVP-TDA2x is further equipped with a SATA interface, a JTAG connector, a serial UART (USB to UART bridge), and isolated DIO (2x in, 2x out). The rugged, aluminum device has a wide-range 9-40VDC power supply "with reverse bat."

A complete ADAS Development Kit is also available, which includes the RVP-TDA2x package plus 4x rugged camera modules, an HD display, cables, software, and calibration tools. "The components can be easily removed from the convenient wheeled test platform and installed on a test vehicle after initial verification," says D3 Engineering, which also provides OEM design services.

Further information

The DesignCore RVP-TDA2x Development Kit for ADAS is available now. More information may be found on D3 Engineering's RVP-TDA2x product page.