DRA72x Automotive Applications Processors Technical Brief

1 Introduction

This technical brief introduces the features, subsystems, and architecture of the DRA72x (Jacinto 6 Eco) family of high-performance infotainment processors.

The DRA72x is a high-performance, infotainment application device family, based on enhanced OMAP™ architecture integrated on a 28-nm technology.

1.1 Features

- The features include:
  - Streaming video up to full high definition (Full-HD) (1920×1080p, 60 fps) including enablement for bring-your-own-device (BYOD) functionality
  - 2-dimensional (2D) and 3-dimensional (3D) graphics and composition
  - Decode of digital radio standards (HD Radio™, DAB, DRM), as well as analog AM/FM/RDS capability
  - Advanced audio processing, noise suppression, and speech enhancement capabilities
  - Support for multiple concurrent high-definition displays and video inputs/cameras
- The device is composed of the following subsystems:
  - ARM® Cortex®-A15 microprocessor unit (MPU)
  - One digital signal processor (DSP) C66x subsystem
  - Image and video accelerator high-definition (IVA-HD) subsystem
  - Two ARM Cortex-M4 processing subsystems, each including two ARM Cortex-M4 microprocessors
  - Display subsystem (DSS)
  - Video processing (VPE) subsystem
  - Video input capture (VIP) subsystem
  - 3D-graphics processing unit (GPU) subsystem, including POWERVR™ SGX544-MPx single-core subsystem
  - 2D-graphics accelerator (BB2D) subsystem, including Vivante™ GC320 core
  - Three pulse-width modulation (PWM) subsystem
  - Real-time clock (RTC) subsystem
  - Debug subsystem
- The device provides a rich set of connectivity peripherals, including:
  - One USB3.0 and two UBS2.0 subsystems
  - SATA 2 subsystem
  - PCI Express Gen2 subsystem
  - 3-port Gigabit Ethernet Switch subsystem
- The device also integrates:
  - On-chip memory
  - External memory interfaces
  - Memory management
  - Level 3 (L3) and level 4 (L4) interconnects
  - System peripherals
  - Car, audio and media peripherals including CAN, MOST MLB, and Ethernet AVB
  - Radio accelerators

1.2 Applications

- Automotive Navigation and Multimedia Systems
- Automotive Display Audio Systems
- Rear Seat Entertainment

1.3 Description

The DRA72x device is offered in a 760-ball, 23×23-mm, 0.8-mm ball pitch with Via Channel™ Array (VCA) technology, ball grid array (BGA) package. Figure 1-1 is the block diagram of the DRA72x device.

The architecture is designed to deliver high-performance concurrencies for automotive applications in a cost-effective solution, providing full scalability from the DRA74x (Jacinto 6) family of infotainment processors, including advanced graphical and voice HMI, and multimedia.

The device includes state-of-the-art integrated power management techniques required for high-performance infotainment products.

PRODUCT PREVIEW

1.4 Functional Block Diagram

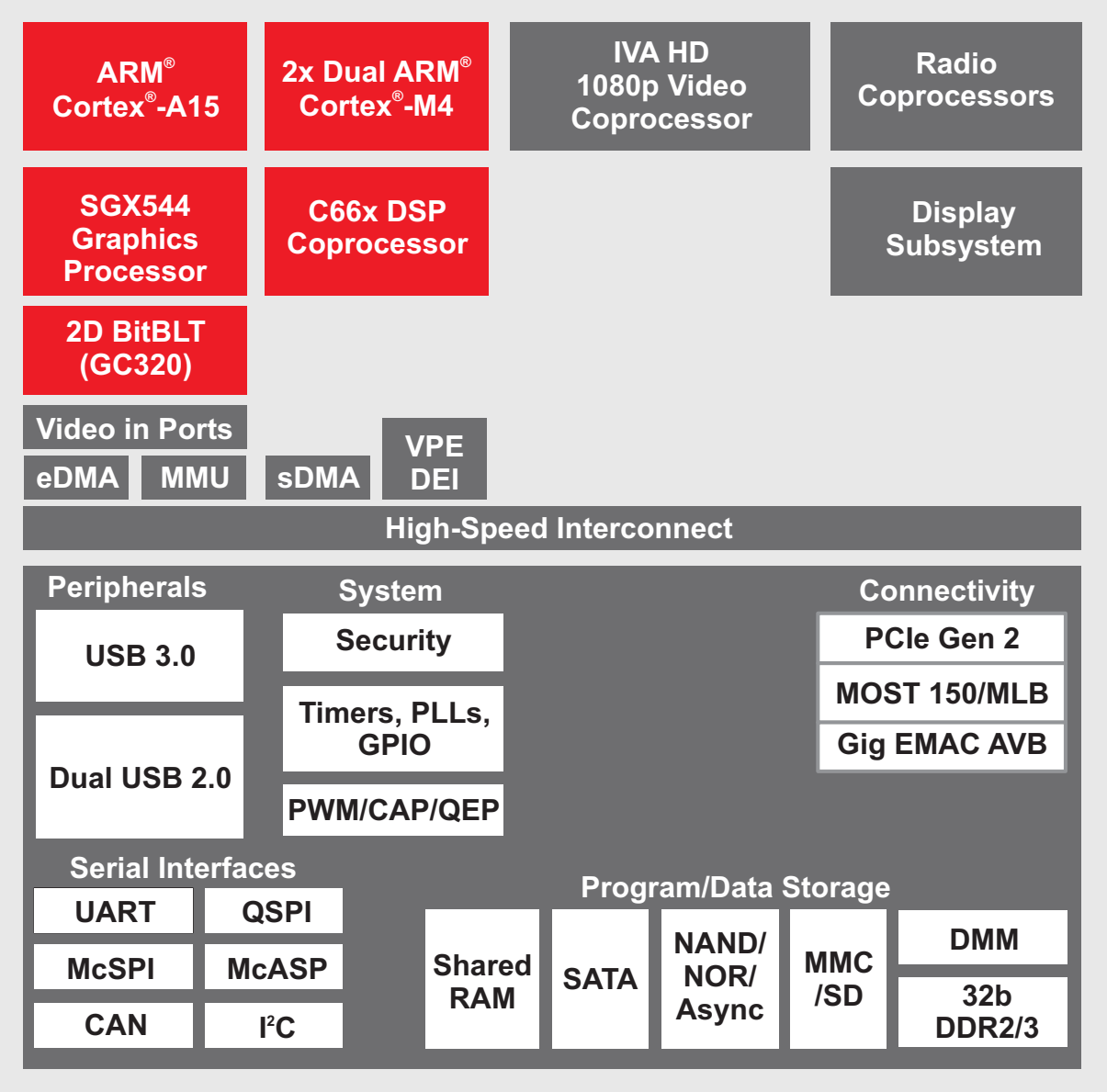

Figure 1-1. DRA72x Block Diagram

1.5 Trademarks

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POWERVR is a trademark of Imagination Technologies Limited.
Vivante is a trademark of Vivante Corporation.
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PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
DRA726APGABCQ1	ACTIVE	FCBGA	ABC	760	60	RoHS & Green	Call TI	Level-3-250C-168 HR	-40 to 125	DRA726APGABCQ1 784 784 ABC	Samples
DRA726APGABCRQ1	ACTIVE	FCBGA	ABC	760	250	RoHS & Green	Call TI	Level-3-250C-168 HR	-40 to 125	DRA726APGABCQ1 784 784 ABC	Samples

(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
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(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead finish/Ball material - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

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