NXP Semiconductors
Application Note

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i.MX 6ULZ Migration Guide

Migrating from i.MX 6ULL to i.MX 6ULZ

1. Introduction

This application note provides an introduction to the i.MX 6ULZ architecture by highlighting the differences from i.MX 6ULL series processor upon which it is based. This migration guide is useful for the developers that migrate from the i.MX 6ULL to the i.MX 6ULZ.

Contents

1.1. i.MX 6ULZ processor overview

The i.MX 6ULZ processor is a high-performance, ultra-efficient processor featuring an advanced implementation of a single Arm® Cortex®-A7 core, which operates at speed up to 900 MHz. It is an ultra-low-cost extension of the i.MX 6ULL family product, which offers high performance processing with a high degree of functional integration and targeted towards the growing market of connected devices.

Its target applications contain more about following:

- Computing Engine
- Consumer Electronics
- Audio
- Voice Control

The i.MX 6ULZ application processors includes full audio suite: ESAI, I²S x 3, S/PDIF, and an integrated power management module that reduces the complexity of an external power supply and simplifies power sequencing. Each processor in this family provides various memory interfaces, including 16-bit LPDDR2, DDR3, DDR3L, raw and managed NAND flash, NOR flash, eMMC, Quad SPI and a wide range of other interfaces for connecting peripherals such as WLAN, Bluetooth®, GPS, displays and camera sensors. The i.MX 6ULZ is supported by discrete component power circuitry.

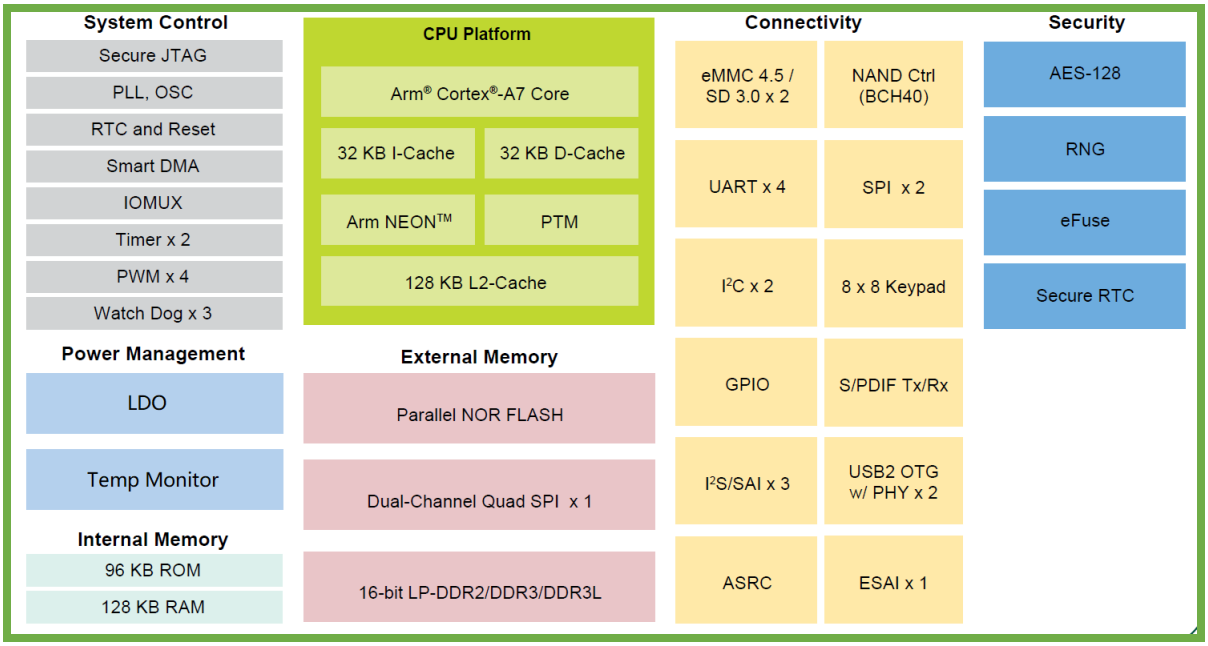

Figure 1. i.MX6ULZ Application Processor Block Diagram

2. Feature change summary

2.1. BSP support

The i.MX 6ULZ is supported by the Linux_ 4.14.62_1.0.0 BSP release.

NOTE

The machine name of 6ULZ is different from 6ULL when building Yocto Project. The dtb file names are also different when running Yocto Project.

2.2. Module change list

This section summarizes the architectural changes of the i.MX 6ULZ with respect to the i.MX 6ULL. The security features of 6ULZ are same with MCIMX6Y2.

Table 1. Architectural changes

Feature	MCIMX6Y0	MCIMX6Z0	MCIMX6Y1	MCIMX6Y2
Sub Family	6ULL Base	6ULZ	6ULL General Purpose 1	6ULL General Purpose 2
Core	ARM Cortex-A7	ARM Cortex-A7	ARM Cortex-A7	ARM Cortex-A7
Speed	528 MHz	Up to 900MHz	528 MHz	Up to 900 MHz
Cache	32 KB-I, 32KB-D 128KB L2	32 KB-I, 32KB-D 128 KB L2	32 KB-I, 32KB-D 128 KB L2	32 KB-I, 32KB-D 128 KB L2
OCRAM	128 KB	128 KB	128 KB	128 KB
DRAM	16-bit LP-DDR2, DDR3/DDR3L	16-bit LP-DDR2, DDR3/DDR3L	16-bit LP-DDR2, DDR3/DDR3L	16-bit LP-DDR2, DDR3/DDR3L
eFuse for Customer	256-bit	256-bit	256-bit	256-bit
NAND (BCH40)	Yes	Yes	Yes	Yes
Parallel Nor/EBI	Yes	Yes	Yes	Yes
Ethernet	10/100 MB x 1	None	10/100 MB x 1	10/100 MB x 2
USB with PHY	OTG, HS/FS x 1	OTG, HS/FS x 2	OTG, HS/FS x 2	OTG, HS/FS x 2
CAN	0	0	1	2
Graphic	None	None	None	PxP
CSI	None	None	None	16-bit Parallel CSI
LCD	None	None	None	24-bit Parallel LCD
Touch Screen Controller	None	None	None	Yes
QSPI	1	1	1	1
SDIO	2	2	2	2
UART	4	4	8	8
IIC	2	2	4	4
SPI	2	2	4	4
I2S/SAI	1	3	3	3
ESAI	0	1	1	1
S/PDIF	1	1	1	1
Timer/PWM	Timer x2, PWM x4	Timer x2, PWM x4	Timer x4, PWM x8	Timer x4, PWM x8
12-bit ADC	1 x 8ch	None	1 x 8ch	2 x 8ch
Security	No Security (The encryption/decryption functions in DCP are disabled)	Basic Security	Basic Security	Basic Security
Keyboard (8 x 8)	Yes	Yes	Yes	Yes
Temperature	-40° C to 105° C (Tj) -0° C to 95° C (Tj)	-0° C to 95° C (Tj)	-40° C to 105° C (Tj) -0° C to 95° C (Tj)	-40° C to 105° C (Tj) -0° C to 95° C (Tj)

2.3. PINMUX change list

According to the module change list, there are several modules that have been removed or reduced in 6ULZ-MCIMX6Z0 compare to MCIMX6Y2. Including Ethernet, CAN, Graphic, CSI, LCD, UART, I^2C, SPI, Timer/PWM and ADC.

Detailed PINMUX change can be found in the data sheet of i.MX 6ULZ named i.MX 6ULZ Applications Processors for Consumer Products. Meanwhile, the i.MX Pins Tool can also be a good reference.

3. Revision history

Table 2. Revision history

Revision number	Date	Substantive changes
0	10/2018	Initial release
1	03/2020	Updated Table 1

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