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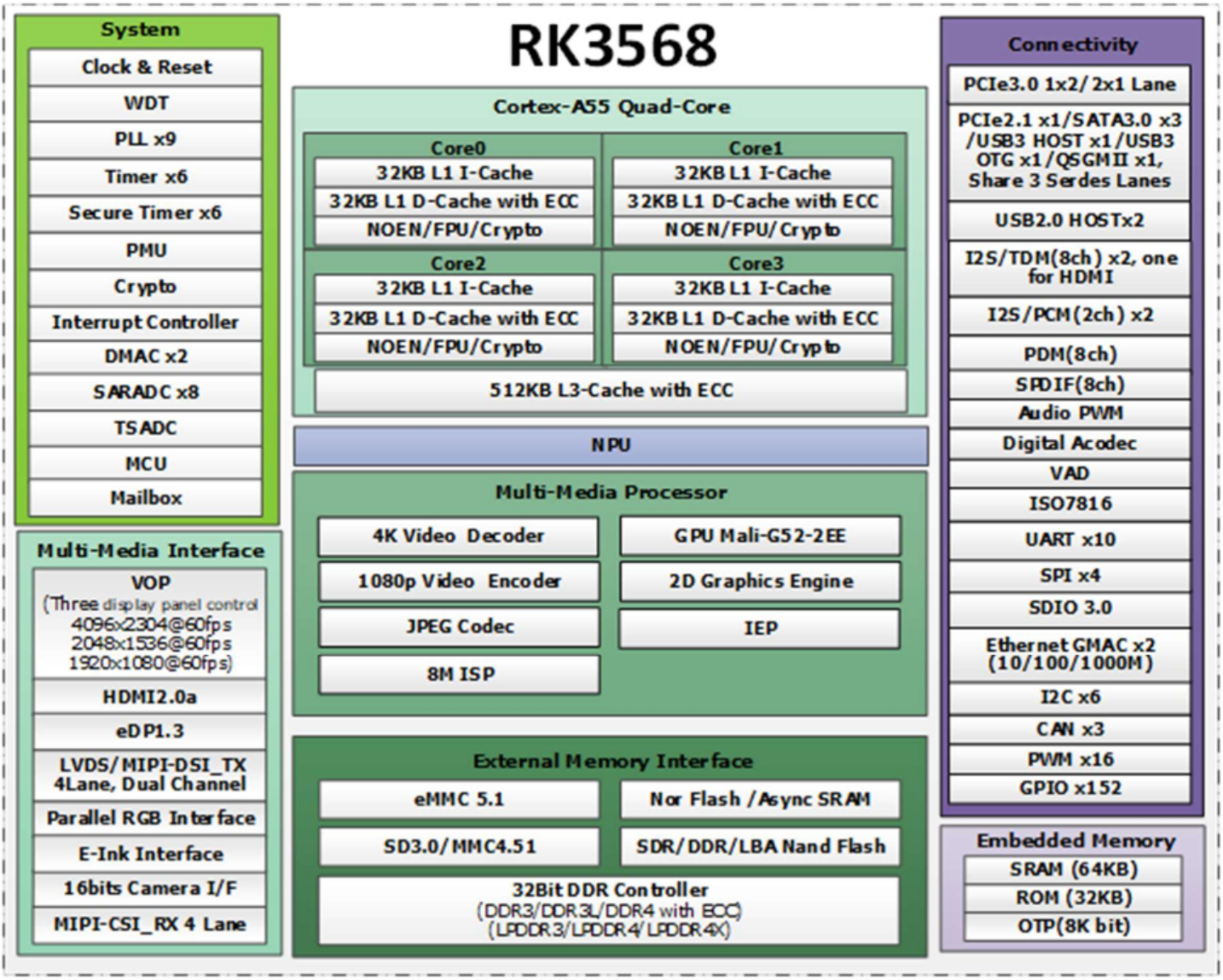
Rockchip RK3568

Overview

RK3568 page:

- Quad-core Cortex-A55 up to 2.0GHz
- Mali-G52 GPU
- LPDDR4/LPDDR4X/DDR4/DDR3/DDR3L/LPDDR3, ECC
- 4KP60 H.265/H.264/VP9 video decoder
- 1080P60 H.264/H.265 video encoder
- 8M ISP with HDR
- Dual dislplay, LVDS/MIPI-DSI/RGB/eDp/RGB/HDMI2.0/T-CON
- 1x8ch I2S/TDM, 1x8ch PDM, 2x2ch I2S
- USB3.0 x2/SATA3.0 x3/PCIE2.1/QSGMII
- PCIE3.0 1x2Lanes/2x1Lane

Struct



Thermal

- Commercial device **RK3568**:
  - Absolute Ratings:
    - Storage Temperature - Tstg -40…125 ℃
    - Max Conjunction Temperature - Tj 125 ℃
  - Recommended Operating Condition:
    - Ambient Operating Temperature T_A 0…80 ℃
  - Package Thermal Characteristics:
    - The testing PCB is 4 layers, 114.3mmx101.6mm, 1.6mm thickness, Ambient temperature is 25℃.
    - Junction-to-ambient thermal resistance □□□ 15.925 (℃/□)
    - Junction-to-board thermal resistance □□□ 10.813 (℃/□)
    - Junction-to-case thermal resistance □□□ 0.487 (℃/□)
- Industrial device **RK3568J**:
  - Absolute Ratings:
    - Storage Temperature - Tstg -40…125 ℃
    - Max Conjunction Temperature - Tj 125 ℃
  - Recommended Operating Condition:
    - Ambient Operating Temperature T_A -40…85 ℃
  - Package Thermal Characteristics:
    - The testing PCB is 4 layers, 114.3mmx101.6mm, 1.6mm thickness, Ambient temperature is 25℃.
    - Junction-to-ambient thermal resistance □□□ 15.5 (℃/□)
    - Junction-to-board thermal resistance □□□ 11.3 (℃/□)
    - Junction-to-case thermal resistance □□□ 2.43 (℃/□)

Docs

link	ext	description	version	date	lang
RK3568_Methods for Processing Unused Pins_V10_20201218_CN.xlsx	xlsx	Что делать с неиспользуемыми выводами	V1.0	2020.12.18	CN
RK3568_Package_PinLength_V1.0_20200917_EN.xlsx	xlsx	Длины проводников в корпусе table	V1.0	2020.09.17	EN
RK3568_PinOut_V1.0_20201230_EN.xlsx	xlsx	RK3568 PinOut	V1.0	2020.12.30	EN
RK3568_PinOut_V1.1_20210202.xlsx	xlsx	RK3568 Pinout	V1.1	2021.02.02	
Rockchip RK3568 Datasheet V1.0-20201210.pdf	pdf	RK3568 Datasheet	V1.0	2020.12.10	
Rockchip RK3568 Datasheet V1.2-20210601.pdf	pdf	RK3568 Datasheet	V1.2	2021.06.01	
Rockchip RK3568 TRM Part1 V1.1-20210301.pdf	pdf	RK3568 TRM Part 1	V1.1	2021.03.01	
Rockchip RK3568 TRM Part2 V1.1-20210301.pdf	pdf	RK3568 TRM Part 2	V1.1	2021.03.01	
RK3568_AIoT_REF_SCH_V10_20210204.DSN	DSN	Схема ref design AIoT (ORCAD)	V1.0	2021.02.04	
RK3568_AIoT_REF_SCH_V10_20210204.pdf	pdf	Схема ref design AIoT (pdf)	V1.0	2021.02.04	
RK3568_AIOT_REF_SCH_V10_20210204-162.DSN	DSN	Схема ref design AIoT (ORCAD) - Непонятно чем отличающаяся	V1.0	2021.02.04	

PCB routing

RockChip ref design: 0.035u\0.082 prepreg Dk4.5

impedance	w	s	Impedance	Comment
SE?	3.5 mil		??? Ohm	BGA breakout
SE?	4 mil		??? Ohm	LPDDR4, RGMII, EMMC
SE?	6 mil		??? Ohm	XTAL
DIFF100?	3.8 mil	6mil	??? Ohm	LPDDR4, CSI, DSI, eDP, MDI, HDMI
DIFF85?	4.7 mil	4mil	??? Ohm	PCIe 3.0
DIFF90?	4 mil	4mil	??? Ohm	SATA, USB3 SS, USB2

0201 - 0.25×0.3×0.3

Boot

Support system boot from the following device:

- Serial Nor Flash, 1bit or 4bits data width(device layout in FSPI IO)
- Serial Nand Flash, 1bit data width(device layout in FSPI IO)
- Asynchronous Flash Interface, 8bits data width
- eMMC Interface, 8bits data width
- SDMMC Card, 4bits data width
- Support system code download by USB OTG

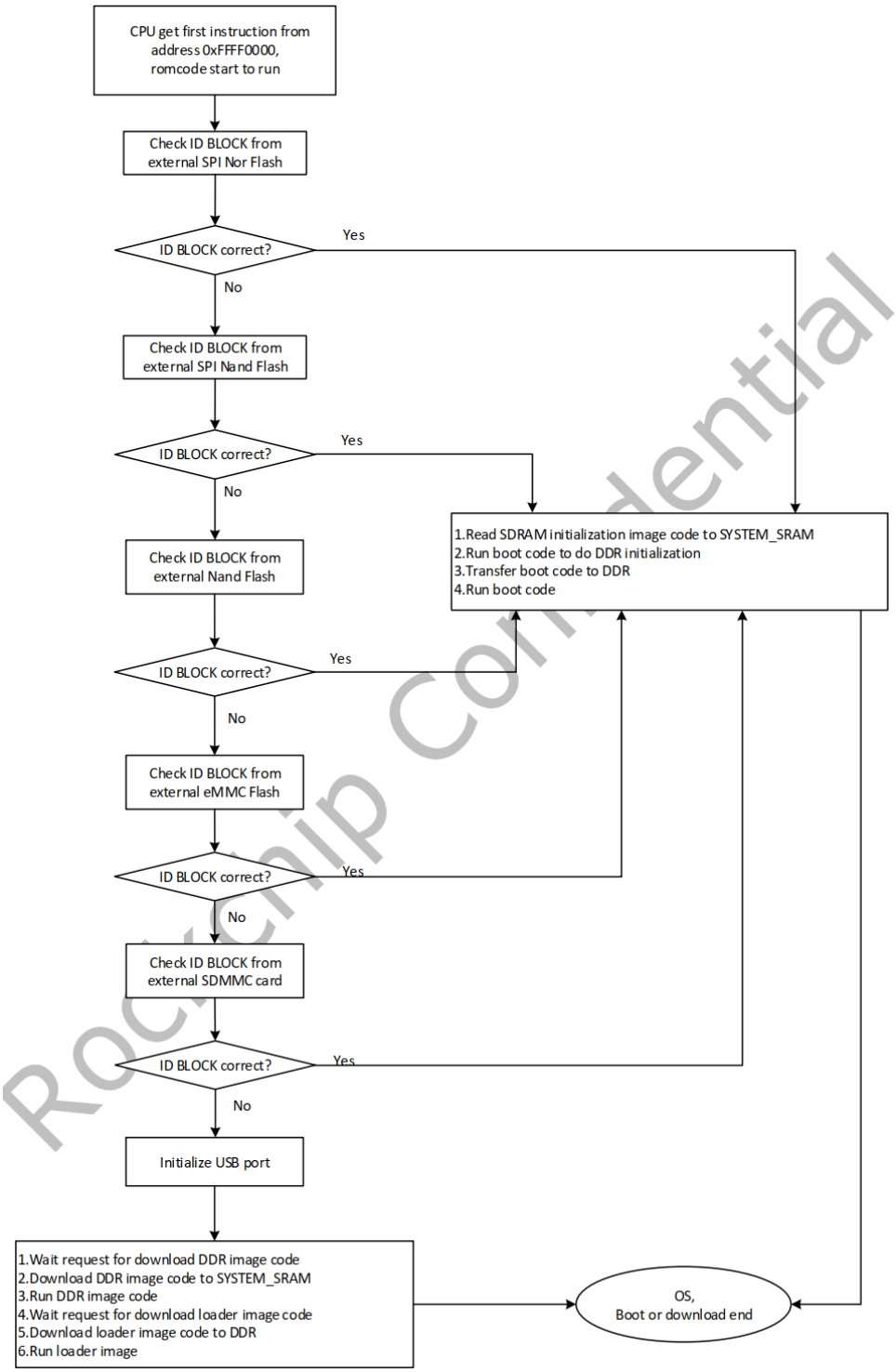


Fig. 1-1RK3568Boot Procedure Flow

Rockchip Confidential

https://roc-rk3328-cc.readthedocs.io/en/latest/flash_emmc.html

https://wiki.t-firefly.com/en/ROC-RK3568-PC/01-bootmode.html

Есть 2 режима для записи eMMC - RockChip USB mode и Maskrom USB mode:

- RockChip USB mode
  - работает, если работает bootloader и SARADC0 == 0 ????
- Maskrom USB mode.
  - работает, если ничего не работает, и D0 (или Clock) bootmedia закорочен на

землю

```
For eMMC or Nand Flash:
If eMMC_D0/FLASH_D0=0V at after power on and reset,
then system will enter into Maskrom mode.
```

```
For SPI Flash:
If FSPI_CLK=0V at after power on and reset,
then system will enter into Maskrom mode.
```

```
If SARADC_VIN0=0V
at after power on and reset,
then system will
enter into loader mode.
```

http://opensource.rock-chips.com/wiki_Boot_option#Boot_flow