phyCORE-i.MX7 / phyCORE-i.MX7 hardware design info

phyCORE-i.MX7

imx7(Hardware Development Guide, Datasheet)imx7d

i.MX7D Document on nxp.com

1.

-
    - PCM-061 phyCORE-i.MX7
    - PCB1458
    - PBA-C-09 phyBOARD-Zeta-i.MX 7
    - PCB1459
- phyCore-iMX7-Carrierboard-Footprint.pdf
-
    - 60pin REF-177862-03 (VM240) x 2
    - / SOM connector infomation
- Table 3
- / Figure 4
- phyCORE i.MX7 CPU
- Altium Designer
    - X4X60-500-B-C3
-
    -
    -
- dxf/step 3D
    - 3D Step
    - dxf
- PBA-C-09 phyBOARD-Zeta-i.MX 7
    -
    -
- PBA-C-09 phyBOARD-Zeta-i.MX 7 dxf/step 3D
    - 3D Step
    - dxf

2.

imx7

IO bankIO

- imx7 datasheet 4.1.10 Power-Up Sequence
- 4.3.2

https://wiki.phytec.com/download/attachments/34113565/phyCORE-i.MX7_Hardware_Manual.pdf?api=v2

X_3V3MEM_EN	X1B7

X_POR_BX_3V3MEM_EN

X_POR_B	B9

3.

X_PMIC_PWRON	X1B8

PMICPWRONPMIC100k

https://www.nxp.com/docs/en/data-sheet/PF3000.pdf

cpu

X_PMIC_PWRON

X_nWDOG_RST	X1B47

8.

X_MX7_ONOFF	X1B6

MX7cpuimx7reference manual.

4. /IO

a.I2C1

	CPU	
X_I2C1_SCL	N4	X1A1
X_I2C1_SDA	N5	X1A2

PMICRTCEEPROMI2C1

RTC

	CPU	
nRTC_INT	N23	N/A

PMIC

	CPU	
PMIC_SD_VSEL	AB3	N/A
PMIC_INT_B	J26	N/A

PMIC_STBY_REQ	AD11	N/A
PMIC_ON_REQ	AE13	N/A

b.

enet1phy

	CPU	
ENET1_TDATA0	E13	N/A
ENET1_TDATA1	D13	N/A
ENET1_TDATA2	E16	N/A
ENET1_TDATA3	F16	N/A
ENET1_TXC	G9	N/A
ENET1_TX_CTL	G11	N/A
ENET1_RDATA0	F7	N/A
ENET1_RDATA1	E7	N/A
ENET1_RDATA2	D7	N/A
ENET1_RDATA3	D16	N/A
ENET1_RXC	F11	N/A
ENET1_RX_CTL	E11	N/A
X_MDIO_D	AB5	A54
X_MDIO_MCLK	AB6	A55
ENET_RST_B	L23	N/A
ENET_INT_B	L22	N/A

c.SPI nor flash

	CPU	
QSPI_A_DATA0	T27	N/A
QSPI_A_DATA1	U26	N/A
QSPI_A_DATA2	T26	N/A
QSPI_A_DATA3	R27	N/A
QSPI_A_SCLK	T28	N/A
QSPI_A_SS0	P27	N/A

d.emmc

	CPU	
SD3_CLK	J6	N/A
SD3_CMD	L4	N/A
SD3_DATA0	G6	N/A
SD3_DATA1	G7	N/A
SD3_DATA2	L7	N/A
SD3_DATA3	L6	N/A
SD3_DATA4	L5	N/A

SD3_DATA5	J7	N/A
SD3_DATA6	J5	N/A
SD3_DATA7	J4	N/A
SD3_STROBE	J1	N/A
SD3_RESET_B	J2	N/A

e.DDR

f.

	CPU
EPDC1_DATA07	N28
SNVS_TAMPER3	AB9

5.

JTAG and Debug Board (PEB-EVAL-02)

Cortex-A7	UART5	X1_A23(RX),X1_A24(TX)
Cortex-M4	UART2	X1_B17(RX),X1_B18(TX)

6.

6.1 Boot Mode

X_BOOT_MODE0	B54	
X_BOOT_MODE1	B53	

imx7Reference Manual

/

Internal Boot10b

6.2 LCD1_DATA

BOOT_MODE02

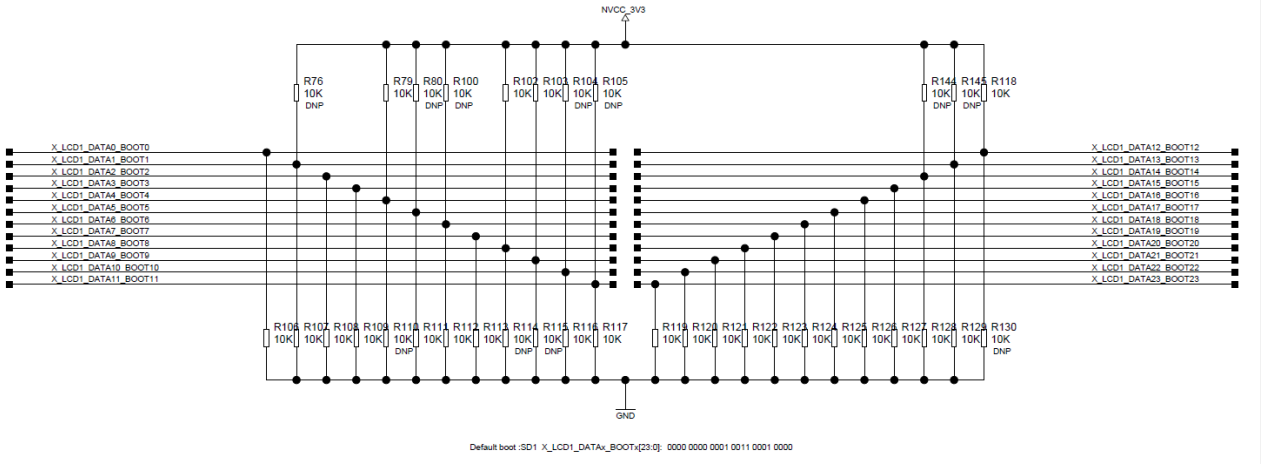
X_LCD1_DATA[0..21]_BOOT[0..21]

X_POR_B	B9

cpu

/ Examples on boot pin isolation

SD1SD1tf



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https://wiki.phytec.com/download/attachments/34113565/phyCORE-i.MX7_Hardware_Manual.pdf?version=6&modificationDate=1538759479000&api=v2

6.2 Boot Device Selection

7. SD2/SD3

SDIO1.8vJP22/JP23

8. /

> X_PMIC_PWRONX_3V3MEM_ENX_3V3MEM_ENX_PMIC_PWRON

i.MX7bug

https://www.nxp.com/docs/en/errata/IMX7DS_3N09P.pdf

e10574: Watchdog: A watchdog timeout or software trigger will not reset the SOC

Workaround1

1. WDOG_B

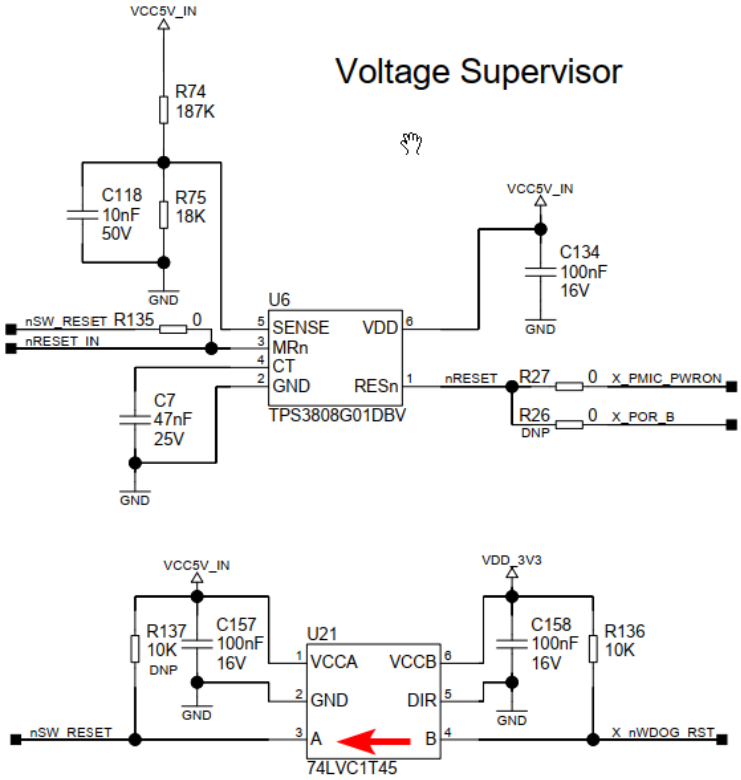
X_nWDOG_RST	X1B47

https://stash.phytec.com/projects/PUB/repos/linux-phytec-fsl/browse/arch/arm/boot/dts/imx7s-pba-c-09.dtsi?at=refs%2Fheads%2Fv4.9.11-phy

CPU100KGPIO

2. NVCC_GPIO1X_3V3MEM_EN
3. PMICPWRON

X_PMIC_PWRON	X1B8



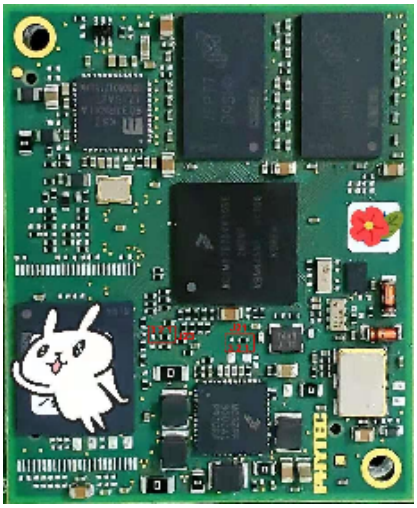
4. PMICPWRON

U65V5VU215vX_nWDOG_RSTX_PMIC_PWRON

9.RGB LCD

Signal	Red	Green	Blue
0	X_LCD1_DATA16_BOOT16	X_LCD1_DATA8_BOOT8	X_LCD1_DATA0_BOOT0
1	X_LCD1_DATA17_BOOT17	X_LCD1_DATA9_BOOT9	X_LCD1_DATA1_BOOT1
2	X_LCD1_DATA18_BOOT18	X_LCD1_DATA10_BOOT10	X_LCD1_DATA2_BOOT2
3	X_LCD1_DATA19_BOOT19	X_LCD1_DATA11_BOOT11	X_LCD1_DATA3_BOOT3
4	X_LCD1_DATA20_BOOT20	X_LCD1_DATA12_BOOT12	X_LCD1_DATA4_BOOT4
5	X_LCD1_DATA21_BOOT21	X_LCD1_DATA13_BOOT13	X_LCD1_DATA5_BOOT5
6	X_LCD1_DATA22_BOOT22	X_LCD1_DATA14_BOOT14	X_LCD1_DATA6_BOOT6
7	X_LCD1_DATA23_BOOT23	X_LCD1_DATA15_BOOT15	X_LCD1_DATA7_BOOT7

10.1.8V



A.SD2

J231+21.8V2+33.3V

	CPU	
X_SD2_CLK	G1	X1B36
X_SD2_CMD	G2	X1B37
X_SD2_DATA0	F2	X1B38
X_SD2_DATA1	E2	X1B39
X_SD2_DATA2	H3	X1B40
X_SD2_DATA3	G3	X1B41
X_SD2_CD_B	E1	X1B32
X_SD2_WP	D1	X1B33
X_SD2_RESET_B	J3	X1B34

B.SPI1

J211+21.8V2+33.3V

	CPU	
X_SPI1_SCLK	K2	X1B43
X_SPI1_MISO	M3	X1B44
X_SPI1_MOSI	L3	X1B45
X_SPI1_SS0	N3	X1B46

C.UART7

J211+21.8V2+33.3V

	CPU	
X_UART7_RX	N1	X1B49
X_UART7_RTS	P2	X1B50
X_UART7_TX	N2	X1B51
X_UART7_CTS	R2	X1B52

11.

SNVS

1. VBAT
    a. RTCRV-4162-C7
2. R172

https://wiki.phytec.com/productinfo/application-notes/application-note-boot-i-mx7-without-pressing-the-power-button